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The New Farm Program Payments: What's in Store for Minnesota?

Thomas F. Stinson and Barry M. Ryan

It is a new era for Minnesota's feedgrain and wheat producers. Last year's Federal Agricultural Improvement and Reform (FAIR) Act—the farm bill—calls for commodity program payments to be “decoupled” from market prices for at least the next six years. Instead of getting more federal payments when crop prices decline, and less when prices strengthen, each eligible producer will now receive a fixed, annual production flexibility contract (PFC) payment. The FAIR Act also removes the possibility of special disaster relief programs to protect farm income in years when crops are destroyed by flood or drought.

The new “transition” payment depends only on the producer's historical base (official production level) for each covered commodity and on the number of acres enrolled nationally in the program. The payments are unrelated to current market prices or to the number of acres planted to any particular commodity.

FAIR eliminated the first line of defense against price volatility, but not all of the farm-income safety net was removed. A nonrecourse loan program which offers substantially less price protection than that provided by the previous target price and deficiency payment program remains in place. The new farm bill also extended the Conservation Reserve Program (CRP), although enrollment eligibility has been modified and average rental payments may decline in Minnesota.

The federal government expects American farmers to operate in an institutional environment that stresses market prices rather than price supports.

As with all farm legislation, individual farmers have the most at stake. The additional planting flexibility available under the new farm bill is likely to have a greater impact on farm income than the change in the federal payments, but those payments will continue to play an important role in farm incomes.

In states like Minnesota, where farm income plays an important role in the economy, the impact of these changes is likely to extend well beyond the farm

gate. In many counties farm income makes up a substantial portion of the local economy so shifts in expected levels in the future or increases in its volatility must be incorporated into main street business plans as well.

Farm Programs Added \$400 Million to State's Economy

USDA farm program spending totaled more than \$435 million in 1995, the most recent year for which complete data are available (**Figure 1**). Feedgrain stabilization program payments

(See *Payments* page 2)

Will the Real Cost of Production Please Stand Up?

Kent D. Olson and Heman D. Lohano

We frequently hear people argue that economies of size—large farms face lower production costs—inevitably lead to a loss of small farms. Or that farmers today just can't make it because *the* cost of production is too high.

In reality, there are as many costs of production as there are farmers. That's because “production” is not a simple process. Factors affecting production

costs include yield, farm size, production methods, and management ability. Yield, in turn, depends on factors like soil condition, soil fertility, weed pressure, input use, timeliness, management, weather, climate, and region. Some of these factors can be controlled by farmers, some cannot.

(See *Production* page 6)

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(principally deficiency payments for corn) totaled \$197 million, while deficiency payments to wheat growers added another \$45 million. Conservation payments to Minnesota landowners were \$109 million, including \$101 million in CRP payments. Minnesota farmers also received federal disaster relief payments of \$50 million. Nearly \$20 million of manufactured milk products were purchased from Minnesota producers. Commodity loans and purchases, emergency livestock assistance, payments under the wool act, the potato diversion program, and the dairy determination program, as well as loan deficiency payments and the federal state warehouse examination agreement, totaled another \$13 million.

These 1995 payments were noticeably lower than those in 1993 and 1994. Disaster assistance payments from the flood-filled 1993 crop year totaled over \$478 million in 1994—more than the total of all farm program payments in the state in 1995. Deficiency payments for both feedgrains and wheat in 1993 were about double those in 1995, reflecting lower market prices in 1993.

Earlier farm programs reduced the volatility of farm incomes, cushioning farmers from disasters such as floods and droughts, as well as low prices (Figure 2). Combined program payments and disaster relief ranged from \$900 million in 1988 to as little as \$300 million in the early 1990s. Disaster relief provided after the 1988 drought and the 1993 rains show up in 1989 and 1994, respectively, because payments were made in the fiscal year beginning after October 1 of the affected crop years.

Lower Federal Payments Expected Beyond 1997

On average, PFC payments are expected to be slightly less than the commodity program payments made during the past ten years. If market prices return to the higher levels of a year ago, however, payments will exceed those that would have been available under the old program rules.

Clearly, the stream of future program payments under FAIR will be much less variable than were payments under the old target price/deficiency payment system. Because federal payments will

no longer vary inversely with market revenues, overall farm income will likely become more volatile than in the past.

Future payments to Minnesota farmers can be estimated because the nationwide dollar amount to be allocated to PFC contracts for corn, other feedgrains, and wheat is already specified in law. If no additional land is entered into the program, the amount paid to any area farmer in any year will equal the total amount authorized for distribution multiplied by the proportionate share of 1996 payments, which we know.

Final federal farm program spending totals for 1996 have not been published, but we can make reasonable estimates of the new federal transition payments for the next several years. Preliminary Farm Service Agency

records indicate that PFC payments for feedgrains were \$172 million and \$88 million for wheat last year. Disaster assistance was only \$4 million, well below levels of the previous three years (Figure 2).

CRP payments will probably be down slightly from the 1993-95 average as some contracts expire and the land is returned to production. Most CRP contracts, however, were extended through 1996, so payments likely remained at roughly the \$100 million level.

PFC payments in 1997 are expected to increase to \$365 million, while receipts in subsequent years will trend down slightly as the amount authorized for agricultural program payments declines (Figure 3). By 2002 the amount available will be only about 75 percent—\$4 billion nationally—of that available in 1997.

Figure 1. Selected USDA Spending in Minnesota

	1993	1994	1995	1996 (est.)
Feedgrains	\$440.2	\$131.0	\$197.1	\$172.1
Wheat	88.7	77.0	44.8	88.2
Disaster Assistance	44.2	478.7	50.9	4.0
Conservation (inc. CRP)	106.7	109.4	109.4	100.0
Dairy (procurement)	38.8	41.1	19.4	33.0
Other spending	17.2	24.5	13.1	17.0
Total program spending	735.8	861.7	434.7	414.3

Figure 2. Federal Farm Program Payments and Disaster Assistance in Minnesota: Actual 1985-1996; Authors' Estimates 1997-2002

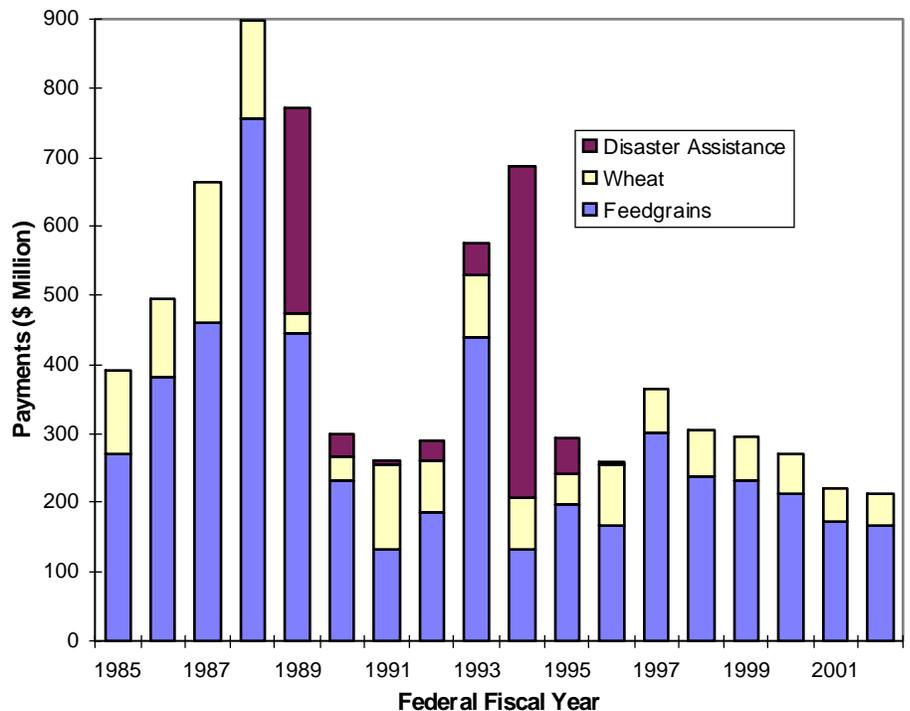


Figure 3. Expected PFC Payment Levels (Cents per Bushel)

	1996	1997	1998	1999	2000	2001	2002
	Actual			USDA Estimate			
Wheat	87.4	61.0	65.0	63.0	57.0	46.0	45.0
Corn	25.1	46.0	36.0	35.0	32.0	26.0	25.0
Grain Sorghum	32.3	50.0	42.0	40.0	37.0	30.0	29.0
Barley	33.2	25.0	26.0	24.0	22.0	18.0	17.0
Oats	3.3	3.0	3.0	3.0	3.0	2.0	2.0

Note that estimated 1997 PFC payments for corn are 46¢ per bushel, then fall back in succeeding years. Not all of the 1997 payment will be seen in local economies, however, since some must go to repay excess advance deficiency payments received by producers early in the 1996 crop year.

Other categories of federal farm payments are more difficult to project. Future CRP receipts will depend on the number of acres enrolled and the price at which they are enrolled. FAIR extended the CRP program, but revised eligibility rules give increased emphasis to water quality and wildlife habitat and less to wind erosion and air quality. Because of this, fewer acres are expected to qualify in Minnesota. Annual rental rates under the new program are also expected to decrease in some areas because they will be based on current county-wide average cash rents.

Future dairy program payments are also likely to fall, reducing the incomes of some producers. According to the new rules, federal purchases of butter, cheese, and nonfat dry milk are scheduled to terminate in 2000. Those purchases averaged more than \$30 million per year during the past few years. In 1994 purchases of manufactured milk products from Minnesota dairies totaled over \$40 million.

Payment Changes at the Local Level

Federal farm program payments and disaster assistance have played an important role in the farm economies of many Minnesota counties. In 1993, these payments exceeded \$8 million in 34 of the state's 87 counties and exceeded \$4 million in another 21 (**Figure 4**). Polk County farmers received the most (\$22 million), but total payments in Marshall, Martin, Mower, and Freeborn counties each exceeded \$15 million.

In 1994, when the flooding and poor growing season made many farmers eligible for disaster assistance, federal payment averages were much larger. Combined farm program payments and disaster assistance reached more than \$20 million in Polk, Marshall, Nobles, Martin, Jackson, Renville, Redwood, and Murray counties, and exceeded \$15 million in Kittson, Freeborn, Mower, and Cottonwood counties. Thirty-eight counties received at least \$8 million in payments that year.

In 1995, crop prices were higher and weather conditions were more favorable, so federal farm payments fell dramatically. Only in Polk and Marshall counties did payments exceed \$15 million, and there were only four counties, all in Northwestern Minnesota, where program payments were greater than \$8 million on a county-wide basis.

Most farmers will receive less in transition payments than they have in recent years under the combination of the target price, deficiency payment program, and disaster relief program. Our estimates of county totals reflect that fact (**Figure 4**). Only in four counties—Polk, Marshall, Renville, and Martin—are aggregate payments expected to exceed \$8 million in 1996 and 1997. This marks a substantial decline from the number of counties where payments exceeded that level in 1993 and 1994. Aggregate payments are estimated at between \$4 million and \$8 million in thirty-six counties.

Even if periodic (and substantial) disaster payments are removed from the 1993-95 payment calculations, PFC contract payments to farmers in most Minnesota counties will fall short. Of course, if there are no disasters and if prices remain relatively high through 2002, farmers would not have received as much under the old programs as they will under the PFC contract program. However, even counties receiving the most under FAIR's provisions will receive substantially less than in the

recent past. Twelve counties will receive \$5-\$10 million less under the FAIR program than they had on average from 1993 through 1995, and an additional 42 counties will receive between \$1 million and \$5 million less. In the remaining 33 counties, differences between the FAIR payments and the average payments received over the past three years is less than \$1 million (**Figure 5**). Counties where farmers previously received the most will see the larger reductions under the new system.

Changes in CRP Rules Will Also Affect Local Economies

CRP payments at the county level are usually smaller than the commodity program payments discussed above, but in some counties they remain an important source of farm income. Equally important, because the CRP payments do not depend on market prices or the current year's crop yield, they have provided additional income in poor crop years or years when prices are low, reducing the likelihood of catastrophic losses for participating farms.

Under the new CRP rules, land is automatically eligible if it is in one of four nationally designated conservation priority areas—one of which is the Prairie Pothole region of the Upper Midwest—or in a state designated conservation priority region. Parts of northwestern Minnesota have been put into the second category. Otherwise, qualified land must have an erosion index greater than eight, be in a cropped wetland, or be put into an environmentally beneficial practice such as filter strips, riparian buffers, grass waterways, or shelter belts.

USDA ranks all eligible CRP offers according to an Environmental Benefits Index and selects those promising the most environmental benefits for the least cost. These rules, plus interest in returning land to production under the new PFC program, are likely to reduce the amount of Minnesota land enrolled in the CRP over the next few years. Western and Southwestern Minnesota counties currently have the largest CRP enrollments (**Figure 6**). In nine counties CRP payments totaled more than \$3 million, and in an additional 28 counties they were more than \$1

Figure 4. Federal Farm Payments in Minnesota Counties

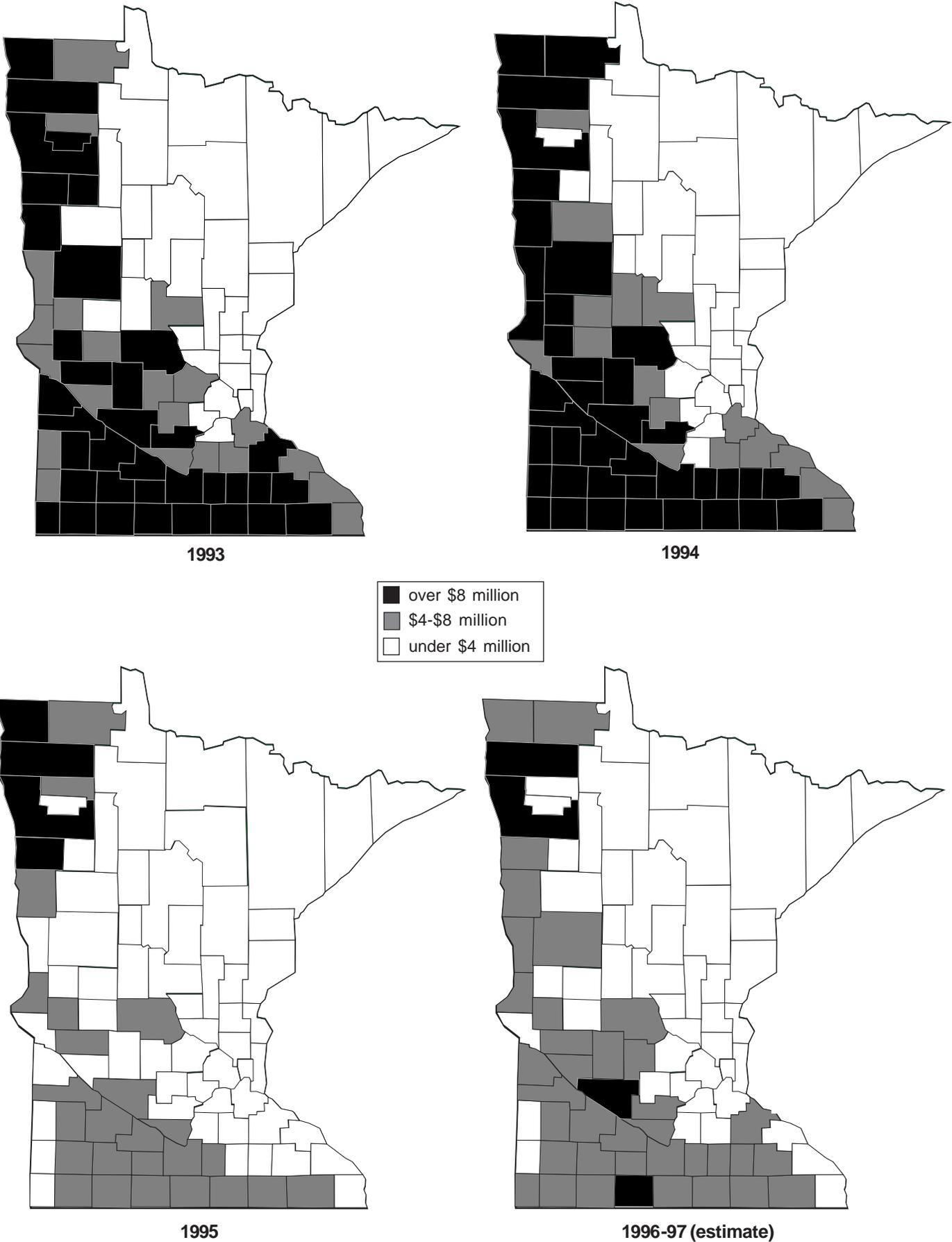
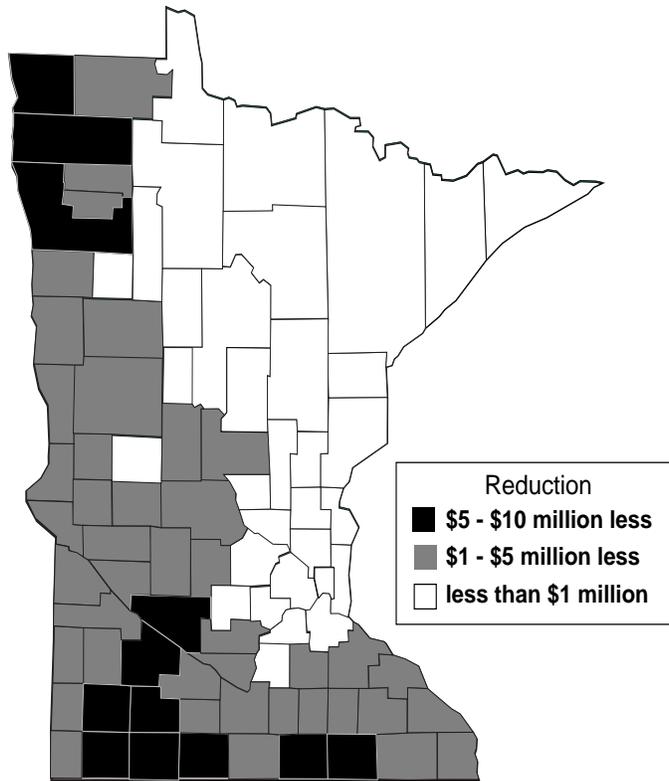


Figure 5. Spending Reductions from Old Program (1993-95 Averages) to New Program (1996-97 Average)



million. Landowners in Marshall County received the most (\$7.4 million in 1996), while total rental payments in Roseau, Polk, Ottertail, Lincoln, and Fillmore counties exceeded \$4 million each.

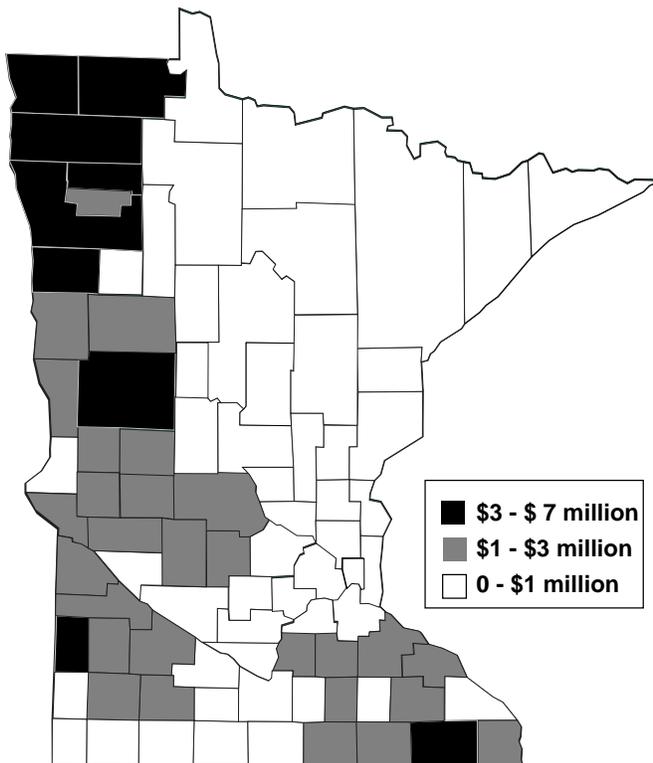
Impact on Main Street

While the new PFC program and a revised CRP will likely yield fewer federal dollars for Minnesota between now and 2002, they will eliminate mandatory set-asides and permit a return to production of land formerly enrolled in the CRP. Federal payment losses might be offset by income from higher levels of production. Minnesota farmers may end up no worse (on average) than before. Indeed, average farm income might increase under normal growing conditions and no dramatic price changes. In normal years, main street businesses might see little change under the new institutional environment.

It appears, however, that there are likely to be fewer “normal” years. Because annual PFC payments are fixed into the future, independent of market prices, overall farm incomes will be more volatile. In years of good yields and strong prices (such as 1996), farm incomes will be higher than before because the PFC payment will not be reduced. But in years when growing conditions are poor or crop prices are low, farm incomes could fall below the levels attained under the previous program.

This means there are also likely to be fewer normal years on main street. Businesses in communities where agriculture is an important part of the economy will need to pay even closer attention to the short-term agricultural outlook when making plans. Increased volatility in farm income is likely to increase volatility in local retail sales.

Figure 6. Annual Aggregate CRP Payments in Minnesota Counties: 1995



(*Production continued from page 1*)

Take, for example, the 1995 per-bushel mean listed cost of producing corn on owned land on 154 farms in southwestern Minnesota. It was \$2.16. Is \$2.16 the “true” cost of production? No, for three reasons. First, the process of allocating costs to enterprises and of valuing some resources is not an exact science—even though computers may make it look that way. Second, not all costs are included in this estimation of the average listed cost. Third, since \$2.16 is an average cost, we know that some of the farmers had higher costs of production and some had lower costs.

In this article we will look closer at these three reasons and examine the relationship between costs and farm size for two major crops—corn and soybeans. We use data from the farms that belong to the Southeastern Minnesota Farm Business Management Association (“Southeastern Association”) and Southwestern Minnesota Farm Business Management Association (“Southwestern Association”). Both are coordinated by members of the Department of Applied Economics. These farms maintain detailed records of costs, yield, and prices for the whole farm and for each of their enterprises. At the end of the year we analyze and summarize these records, using our FINPACK and FINANSUM programs.

On many farms, the records for one enterprise, say corn, are kept separate for different rental arrangements, locations, and landowners. Thus, one farm might have several “electronic” cornfields because the farmer both owns land and rents land. In this report, all variables are measured on the basis of the enterprise for the entire farm, which may include one or more fields. In order to avoid any discrepancies in cost characteristics due to rental arrangements, those fields that are share-rented are excluded from our analysis here. Only fields operated on owned land or on cash-rented land are included.

These summaries cover all farms except those that are very small, or show extreme or clearly erroneous data. Farms under 10 acres in size are not included because they are considered too small to support viable corn and soybean enterprises. Farms with extreme but correctly reported data, for example zero yield or very low yield due to natural factors, are excluded. Finally, farms with cost components that deviate from the average by more

than three standard deviations are also excluded.

Determining Costs

The average listed cost for a given enterprise on owned land includes seed, fertilizer, chemicals, crop insurance, drying fuel, equipment fuel and oil, repairs, custom hire, hired labor, machinery and building leases, utilities, marketing, real estate taxes, farm insurance, dues and professional fees, interest paid, machinery and building depreciation, and other miscellaneous expenses. Some of these costs (seed and fertilizer costs, for example) can be directly and obviously allocated to corn production (or soybeans, or hogs, etc.). But other costs cannot be identified as easily. Few farmers keep detailed records of how many hours each machine is used in each part of their business, for example. For these other expenses (e.g., machinery, insurance, and full-time labor), farmers rely on an arbitrary method of assigning percentages to each enterprise. Though all participating farmers strive for accuracy, the process is not exact.

Keep in mind that the average listed cost used here does not include two big items: a charge for unpaid labor and management and a charge for the owner’s equity in the business.

If the total listed costs were adjusted to reflect the costs of unpaid labor and the equity in the land, the average per-bushel corn production cost for the Southwestern Association, for example,

would jump from \$2.16 to \$2.73 per bushel. (This estimate uses a wage rate of \$8 per hour and an opportunity cost of 6% for the value of the land. The amount of labor used is estimated and allocated by the farmers to each crop.) For corn in the Southwestern Association, the average was 3.12 hours per acre in 1995. The land adjustments are made with a weighted average value of land and an estimate of the amount of the interest due on land loans.

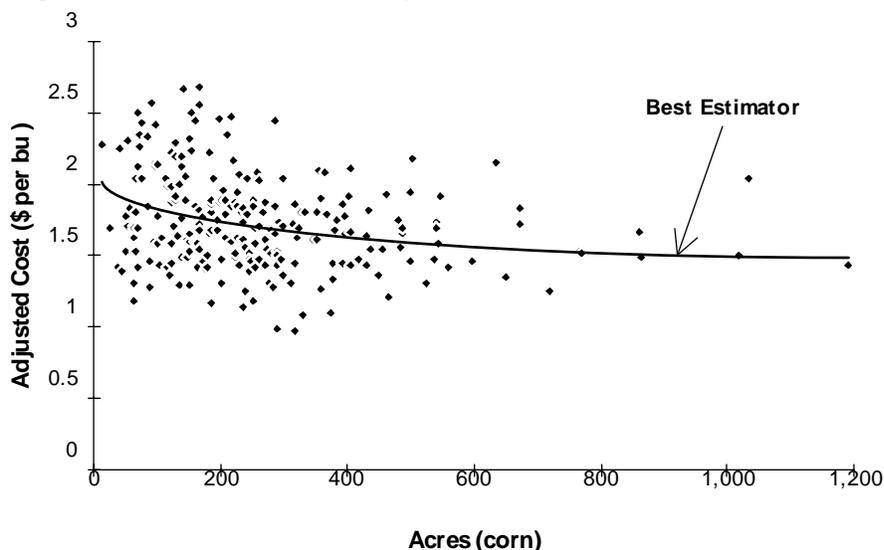
Even this adjustment is insufficient for us to say we have the “true” cost of production. The value of equity in machinery and buildings should also be estimated and included, but our records do not contain enough information to allow this adjustment.

If we look closer at the record data, we find the average varies among farms. The 31 farms with the highest returns over direct expenses showed average listed costs of \$1.86 per bushel; the lowest 31 farms, \$2.48. The average cost of corn production on cash rented land was \$2.42 in the Southwestern Association and \$2.25 in the Southeastern Association. (For rented land, the cash rent is included in place of the real estate taxes and any land debt expenses.)

Adjusted Production Cost Calculation

To highlight individual differences in production costs, we need a better measure. In what follows, we have reduced listed costs by removing costs of financing and insuring the crop, the

Figure 1. Cost-Size Relationship for Corn



Source: Southeastern and Southwestern Minnesota farm records

costs associated with landownership and rent, and some miscellaneous costs that are allocated from the whole farm to a specific crop.

By removing these costs, we have a truer representation of differences in the cost of production and not differences in financing, insuring, land acquisition, or association dues (i.e., costs that are not a result of production decisions).

This distinction means cost differences between farms are due to just production decisions and production

differences. Also, since some land is debt-free and some is not, and market values are estimated for counties and not individual farms, land costs cannot be accurately estimated. Excluding them provides a more accurate picture of differences between farms.

The costs included in the following discussion are the variable costs of seed, fertilizer, crop chemicals, drying fuel, fuel and oil, repairs, custom hire, direct hired labor, machinery and building leases, utilities, marketing,

and miscellaneous direct costs; the allocated overhead expenses of machinery and building leases and depreciation; and the labor cost estimated from the allocated labor hours at a cost of \$8 per hour.

Using this list of costs, the average adjusted cost for corn production on all farms in both the Southwestern and Southeastern Associations is \$1.73 per bushel (**Figure 2**). This adjusted cost decreases somewhat as the corn acreage increases: from \$1.85 for farms with 10-160 acres of corn down to \$1.58 for farms with more than 640 acres of corn. (A similar pattern of decreasing costs is found when the farms are divided on the basis of total crop acreage not just corn acreage. We don't show that graph here.)

In some analyses not reported here, we have shown that crop yields are not statistically related to farm size. Therefore, any observed economies of size such as those reported in this article must be due to financial, and not physical, benefits of being a larger farm.

But examination of individual farm records shows that the story is more complicated. There is no clear picture of economies of size. The scatter diagram of cost-size relationship (**Figure 1**) suggests that low costs per bushel occur over a wide range of farm sizes. That is, low-cost production is found in all farm sizes. We should note, however, that higher farm costs are found more frequently at smaller sizes, so the spread in per-bushel costs decreases as size increases.

A similar story can be told for soybeans. The average adjusted cost of production decreases somewhat as soybean acreage increases (**Figure 3**)—about 30¢ or 10% from high to low. But, as with corn, low-cost farms are found at all acreages (**Figure 4**). Also, as with corn, those farms that do have higher costs tend to be smaller.

Conclusion

Portrayal of any single number as the true cost of production is incorrect. While federal policy does not include price protection, any policy setting a single price level gives the lower-cost producers higher returns. This is especially true if the price level is set above the average cost estimate. A farm does not have to be large to have low costs. A large, low-cost farm will certainly have a larger net income due to selling more bushels, but some small, low-cost farms can compete with large farms in the marketplace.

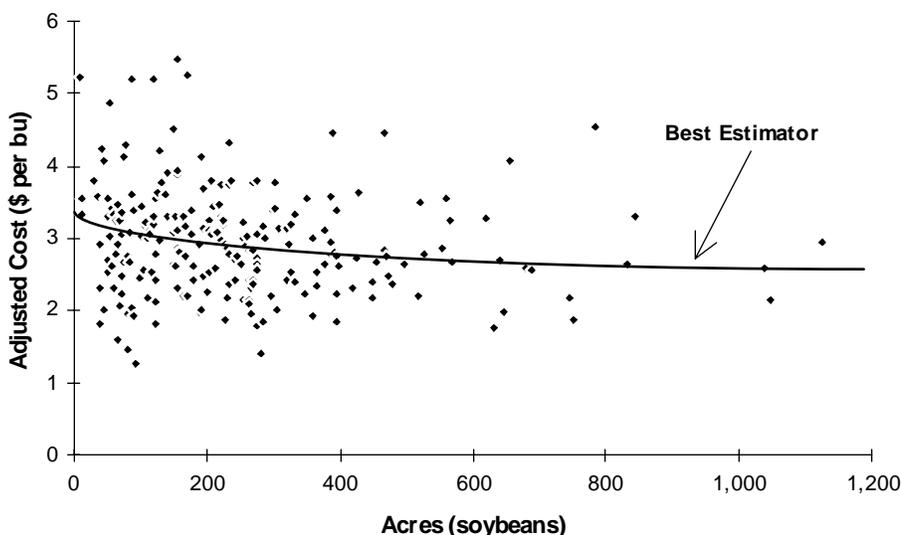
Figure 2. Corn Production by Corn Acreage Class

	All farms	10-160 acres	160-320 acres	320-640 acres	>640 acres
No. of farms	249	82	104	52	11
Corn land (acres)	260	104	236	433	838
Total land (acres)	690	401	606	1054	1916
Yield (bu/acre)	121	120	122	119	127
Adjusted Cost (\$/bu)	1.73	1.85	1.7	1.65	1.58

Figure 3. Soybean Production by Soybean Acreage Class

	All farms	10-160 acres	160-320 acres	320-640 acres	>640 acres
No. of farms	235	92	84	47	12
Bean land (acres)	249	91	237	436	819
Total land (acres)	710	438	628	1075	1941
Yield (bu/acre)	44	44.8	44.4	42.3	41.6
Adjusted Cost (\$/bu)	2.94	3.1	2.86	2.81	2.78

Figure 4. Cost-Size Relationship for Soybeans



Source: Southeastern and Southwestern Minnesota farm records

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