

STAFF PAPER SERIES

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by

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Kent Olson

Due to the extremely low prices in the last half of 1998, concern has been voiced about farm income levels. To obtain a quick estimate of the impact on income, the average 1997 income of 208 farms in the Southwestern Minnesota Farm Business Management Association is adjusted by the changes in price levels and changes in crop yields. The essential question is: “What if farms produced the same crop acreage and the same number of animals and used the same production methods as they did in 1997, but received 1998 prices and yields?” This simple method of adjusting only prices and yields does not reflect the complexity of farmers’ decision making and the differences in the economic conditions between 1997 and 1998. However, in mid-August, this simple method provides an indication of the magnitude of the decline in farm income for 1998, and the need for action by farmers and others involved in agriculture.

SUMMARY

Farm income in Southwestern Minnesota is estimated to drop to extremely low and possibly negative levels in 1998 due to the very low prices now in the market place. Expected

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high yields on some farms will soften but not overcome the blow of the low prices; those farms with crop losses face a worse situation.

Based on the average 1997 farm income statement in the Southwestern Minnesota Farm Business Management Association and the price and yield conditions for 1998, average gross cash income in 1998 is estimated to drop 17% from 1997. Before depreciation is subtracted, net cash farm income in 1998 is predicted to be below 10% of 1997 levels: \$5,367 compared to \$56,469 in 1997. After accounting for depreciation and inventory changes, accrual net farm income is estimated to drop from \$40,598 in 1997 to -\$42,647 in 1998 -- a drop of over 200% (Table 1). This would be the first negative average accrual net farm income in the 59 year history of the Southwestern Minnesota Farm Business Management Association.

When these losses are factored into the balance sheet, the debt/asset ratio is estimated to rise from 48% at the end of 1997 to 53% at the end of 1998 with assets valued on a market basis. The rate of return on assets (ROA) is estimated to drop from 6.3% to -6.7%, and the rate of return on equity (ROE) is estimated to drop from 5.1% to -13.8% (Table 2). Both ROA and ROE are estimated using assets valued on a market basis.

POTENTIAL CHANGES

For many reasons, this estimate of farm income, made in mid-August will differ from the actual results recorded and calculated in January and February of 1999. Hopefully this estimate of extremely poor income will spur farmers to act and respond to opportunities to raise income and decrease expenses. The first step farmers (and all those involved in agriculture) need to take is to fight the urge to deny this potential problem. The second step is to respond as possible and needed.

The markets may move differently from what is forecast in this estimate. Local prices are reported to be near \$1.60 per bushel for corn, below \$5.00 for soybeans, and in the low \$30s for hogs. If these prices continue for any length of time this fall, farm income will be lower than estimated. However, at these low prices most farmers will not sell grain or livestock unless forced to. Decreased cash sales will lower cash income but will not drastically alter accrual net farm income due to ending inventories being higher than if the products had been sold. Farmers are also now able to receive 1999 transition payments in 1998.

In the face of lower income, farmers will respond in several ways. First of all they will cut expenses in every way possible. With over half of the year and most of the production expenses already spent or committed, farmers do not have much room for adjustment, but they can make some adjustments. Prepaid expenses will decline, capital expenditures will decline or perhaps almost stop, nonessential repairs will not be made, family living expenses will be curtailed, etc. Farmers will also take advantage of the government loan programs and the loan deficiency payment (LDP) programs to raise their 1998 cash receipts. A recent rule change allows farmers to receive all of their 1999 government transition payments in 1998. When possible, many farm families will also take steps to increase nonfarm income to replace the decline in farm income. Also, some farmers will work on developing a political approach to finding help from the federal and state governments.

CALCULATION ASSUMPTIONS AND PROCEDURES

These estimates are based on the average income statement for the Southwestern Minnesota Farm Business Management Association in 1997. The price and yield conditions in 1998 are used to adapt the 1997 average as if the 1997 situation had happened in 1998. Since this

is an average farm, that is, an amalgamation of many different types of farms, several assumptions and different procedures need to be made rather than just estimating changes in crop and animal production, prices, expenses, and inventories for a single farm. Although this process seems more complicated than it need be, the result is a better estimate of what farms on average may be facing in 1998 rather than estimates for a few single farms that may not reflect average conditions.

As a first step, cash farm income is adjusted based on changes in prices and, for corn and soybeans, changes in yields which determine physical amounts available for sale. For the price estimate, monthly prices for 1997 and the first 7 months for 1998 are taken from Minnesota Agricultural Statistics Service (MNASS). Prices for the remaining 5 months of 1998 are estimated based on current market trends. Simple annual averages are then used to calculate price changes for corn, soybeans, all beef, milk, and all hogs (Table 3).

Since we do not know when during the year the 208 farms in the Southwest Association sold their products (corn, for example), the estimated price change from 1997 to 1998 is used to estimate the change in the value of sales. For example, the corn price in 1998 is estimated to be 85% of the 1997 level. So if everything is constant, 1998 corn sales are expected to be 85% of the 1997 level due to prices changes alone; soybean sales, 82%; beef, 95%; and hogs, 71%. Milk, the only positive spot in these prices, is expected to have an average 1998 price that is 10% higher than the 1997 levels.

Cash crop sales for 1998 are estimated not just on price changes alone but also on changes in yield from one year to the next. In 1998, the corn yield for members in the Southwestern Association is estimated to be about 150 bushels per acre due to good growing conditions. This is higher than the 1997 average of 126 bushels and the 1996 average corn yield of 133 bushels per acre. These fluctuations certainly affect the amount of production farmers have for sale in

different years. In 1998, the soybean yield is estimated to be 45 bushels per acre; in both 1997 and 1996, it was 42 bushels per acre.

If they do not feed their grain to their own livestock, farmers usually sell (in the current year) the crop produced last year, and store the current year's crop to sell in the following year. Thus, 1997 crop sales are most likely from crops produced in 1996. To make a yield-adjusted estimate of the 1998 crop sales, 1997 sales (of crops produced in 1996) need to be adjusted by the change in yields between 1996 and 1997. The historical yields show that the corn yield, for example, was 133 bushels per acre in 1996 and 126 bushels in 1997. Thus, for lack of a better estimate of changes in physical sales, 1998 corn sales are estimated to be 95% ($126/133$) of 1997 levels. The amount of soybeans for sale in 1998, compared to 1997, is estimated not to change because soybean yields were the same in 1996 and 1997.

To estimate the net effect of price and yield changes on 1998 crop sales, the 1997 average sales is multiplied by the 1998 price as a percent of 1997 price (85% for corn) and by the difference in yields between 1996 and 1997 (95% for corn). For corn, 1998 sales are estimated to be \$58,480 in 1998 compared to \$72,569 in 1997.

Similar physical adjustments for livestock sales are not as obvious or easy, and are not made in this estimate of 1998 income. For beef, milk, and hogs, the 1998 sales are estimated by multiplying the 1997 level by the 1998 price as a percent of 1997.

Transition payments under the 1996 FAIR are estimated not to change between 1997 and 1998. Technically, the transition payment per bushel of corn will drop from \$0.46 in 1997 to \$0.36, but farmers were required to pay back about \$0.10 per bushel in 1997 from a 1996 payment. So the change is nullified and no change is estimated for this projection.

All other cash income is expected to decrease by 11% based on the USDA's index of all prices received by farmers, 139 in 1997 and estimated to be 124 in 1998.

These adjustments of 1997 sales, based on price changes and yield changes, result in an estimated total gross cash farm income of \$298,468 in 1998 for this average. This is a decrease of 17% from the 1997 level.

Based on the USDA's index of prices paid by farmers in May 1998 versus May 1997, farm expenses are estimated to decline by 2%. Since sales are already estimated to be lower, cash expenses are also dropped another \$5,000 to account for fewer expenses for 1999 being prepaid in 1998. This figure of \$5,000 is an arbitrary number chosen to account for this expected behavior of farmers. It is approximately 21% of the ending 1997 value of prepaid expenses and supplies.

Thus, net cash farm income in 1998 is estimated to be less than 10% of the 1997 level: \$5,367 in 1998 versus \$56,469 in 1997. (Depreciation has not been subtracted from this income figure.)

Accrual net farm income, a more accurate estimate of the current year's income, accounts for changes in inventory levels and for depreciation. Inventory levels of crops are adjusted from ending 1997 levels by the price change from December 1997, to the estimated price for December 1998, and by the increase in inventories due to higher yields in 1998, as noted above. The decrease in prepaid expenses is also reflected in the inventory change. Because of expected lower capital expenditures for machinery and equipment, depreciation is estimated to drop from \$35,640 in 1997 to approximately \$30,000 in 1998.

As a result of adjusting the 1997 sales, expenses, inventories, and depreciation, the 1998 accrual net farm income is estimated to drop precipitously from \$40,598 in 1997 to -\$42,647 in

1998. A negative average accrual net farm income has never occurred in the 59 year history of the Southwestern Association.

To estimate the effect of the negative accrual net farm income on the balance sheet, several adjustments need to be made. Assets and liabilities are adjusted for the net farm income loss (-\$42, 647) and the additional losses due to estimated income tax payments paid in 1998 (\$8,000), estimated family living (\$32,000), and the estimated gain from nonfarm income (\$20,000). To account for the resulting net retained earnings of -\$62,647, the ending cash balance is decreased by \$7,633; prepaid expenses by \$5,000; crop inventories by \$7,938; livestock inventories by \$5,076; nonfarm assets by \$2,000. In addition, current notes are increased by \$33,000 and nonfarm liabilities by \$2,000. To account for the decreased level of expenditures for machinery and equipment, that asset item is decreased by 10%. All other assets (including farmland values) and liabilities are left at 1997 levels.

As a result of these changes for the ending, market-valued balance sheet for 1998, the average debt/asset ratio is estimated to increase from 48% at the end of 1997 to 53% at the end of 1998. Using \$25,000 for the value of operator's labor and management and the 1997 level of interest payments (\$22,282), ROA is estimated to drop from 6.3% to -4.6%. ROE is estimated to drop from 5.1% to -13.8%.

This simple method of adjusting only prices and yields does not reflect the complexity of farmers' decision making and the differences in economic conditions between 1997 and 1998. However, this estimate does provide an indication of the possible severity of the income change and the need for corrective actions.

Table 1. Net Farm Income estimated for 1998.

Based on all farms in the Southwestern Minnesota Farm Business Management Association

	actual 1997 (208 farms)	estimated prices (98 as % of 97)	estimated yields (97 as % of 96)	predicted 1998	percent change
Cash Farm Income					
Corn	72569	85%	95%	58480	
Soybeans	86906	82%	100%	71661	
Beef	37010	95%		35271	
Milk	13902	110%		15227	
Hogs	91965	71%		65746	
Gov't transition pmts.	8486	100%		8486	
All other cash income	48872	89%		43598	
Total Gross Cash Farm Income	359710			298468	-17%
Cash Farm Expense					
Total Cash Farm Expense	303241	98%	Decr. in "prepaids": -5000	293101	-3%
NET CASH FARM INCOME	56469			5367	-90%
Inventory Changes					
Crops & Feed change	-2086			-7938	
Market Livestock change	11614			-5076	
Accts Rec & other change	2022			0	
Prepaid Exp & Supp. change	7055			-5000	
Accts Payable change	1164			0	
Total Inventory Change	19769			-18014	-191%
Depreciation & other capital adjustments					
Total Depr. & oth. cap. adj.	-35640			-30000	-16%
NET FARM INCOME	40598			-42647	-205%
less est. family living	34139			32000	
less income tax paid	9542			8000	
plus nonfarm income	18982			20000	
= RETAINED EARNINGS	15899			-62647	

Table 2. Ending Balance Sheets (market values)

	actual	predicted	1998 estimates using cost basis:
	1997	1998	
ASSETS			
Current Assets	219495	193846	193846
Intermediate Assets	215895	196044	63881
Long-Term Assets	447823	447823	296204
TOTAL FARM ASSETS	883213	837713	553931
Total Nonfarm Assets	133096	131096	102176
TOTAL ASSETS	1016309	968809	656107
LIABILITIES			
Current farm liabilities	144096	177096	177096
Intermediate farm liabilities	46090	46090	46090
Long-term farm liabilities	128562	128562	128562
TOTAL FARM LIABILITIES	318748	351748	351748
Total Nonfarm Liabilities	9095	11095	11095
Total Deferred Liabilities	162297	154182	0
TOTAL LIABILITIES	490140	517025	362843
NET WORTH (farm & nonfarm)	526169	451784	293264
Net Worth CHANGE	46216	-74385	-68763
RATIO ANALYSIS			
Total Liabilities / Assets	48%	53%	55%
ROA	6.3%	-4.6%	-6.7%
ROE	5.1%	-13.8%	-20.6%
value of operator's labor & mgt =		25000	25000
estimated 1998 interest for ROA= 1997 actual amount		22282	22282

Table 3. Farm Product Prices, 1997 & 1998

Item	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual (simple average)	Ratio (98/97)
Corn	1997	2.44	2.41	2.59	2.59	2.52	2.48	2.29	2.29	2.27	2.35	2.35	2.3	2.41	85.28%
	1998	2.36	2.36	2.36	2.29	2.28	2.18	2	1.8	1.7	1.7	1.8	1.8	2.05	
Soybeans	1997	6.86	7.17	7.79	8.08	8.23	8.22	7.44	7.02	6.48	6.5	6.61	6.5	7.24	82.49%
	1998	6.39	6.4	6.21	6.14	6.16	5.98	5.9	5.8	5.7	5.6	5.7	5.7	5.97	
Beef (All Beef)	1997	59.7	59.7	61.1	62	62.1	61.2	61.4	62.1	61.6	60.6	61	60.3	61.07	95.31%
	1998	60.7	59.6	57.7	59	59.5	59.5	57.4	57	57	57	57	57	58.20	
Milk	1997	13.27	13.43	13.38	12.62	12	11.8	11.85	12.96	13.55	13.8	14.57	14.2	13.12	109.56%
	1998	14.97	14.84	14.23	13.43	12.57	14.24	14.7	14.7	14.7	14.7	14.7	14.7	14.37	
Hogs	1997	54.8	54	50.4	54.5	59.2	58.9	60.4	57.3	51.9	49.1	46.8	43.7	53.42	71.50%
	1998	36.3	37.3	35.4	35.4	42.4	43.5	38	37	37	38	39	39	38.19	

Source: MNASS, *Agri-View*, various issues, for 1997 and Jan-July, 1998. Aug.-Dec. 1998, are estimated.