1-14-1987

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COOPERATIVE EXTENSION SERVICE

Economics Newsletter

SDSU

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No. 245 January 14, 1987

Have Land Prices Hit Bottom?

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Producers, rural government officials, lenders and policy makers are all asking the question, "Have land prices hit bottom?" One approach to answering this question is to compare observed land prices in the actual land market with those prices based on current returns being earned from farmland. Because of the large government payments associated with the Food Security Act of 1985, an additional question must be asked, "How much of the current price of land is associated with government payments rather than current market prices for grain?"

In this Newsletter issue, estimates of land prices for a cash grain farm with and without farm program payments are presented. These potential farmland prices are estimated under three crop scenarios, namely, those involving bumper, average and poor yields. Prices used in the analysis reflect market outlook and government policies as of August 1986.

Basic Farm Being Analyzed

The 640 acre farm used in this analysis has 600 acres of tillable land used for production. The ASCS base yields represent the average yield estimates in the analysis. These per-acre yields are 75 bushels for corn and oats, 30 bushels for soybeans and 3 tons for alfalfa (Table 1). Three yield scenarios are specified, with "bumper" and "poor" yields being 33 percent above and below base yields, respectively.

Because the government program requires acreage to be setaside for program crops, the total number of acres farmed will be less than 600 acres. In this case study, 80 acres are idled (Table 1). Government participation will reduce the amount of grain the producer will have available to sell under each crop scenario. Government participation will also reduce the costs directly related to crop production, while not altering the fixed costs for the farming operation. A more detailed discussion of the farm program and cost structure of this farm is presented in Economics Staff Paper 86-6 "Land Prices: An Estimate Based on the Capitalized Value Approach."

Production Practices and Direct Production Costs

The production practices and direct costs are based on South Dakota Extension Service publication Expected Production Costs for Major Crops in South Dakota for the East-Central region dated October 1985. Background research by the authors was conducted to update the cost estimates to summer 1986 cost levels.

Actual cost levels for a specific producer may differ from the estimates shown in the Newsletter because of differences in management, equipment and financing. For example, the producer is assumed to use a six month operating loan at 13.50 percent to finance direct production costs (i.e. costs which vary with the acreage planted and yield levels). If a producer does not use this type of loan, the produer would increase the amount of cash available for land payments as much as $5.78 per acre for corn or as little as $3.11 per acre for alfalfa.

Price and Revenue Outlook

The price scenario used assumes that there will be no further cut in

Table 1: Basic Price and Acreage Information Required for the Analysis.

	Corn	Oats	Soybeans	Alfalfa
		Base Acreages		
A. Without Program	300	100	150	50
B. With Program	240	80	150	50
	Projected Per-Acre Crop yields Under Scenarios			
	(bu.)	(bu.)	(bu.)	(bu.)
C. Bumper Yield	100	100	40	4
D. Average Yield	75	75	30	3
E. Poor Yield	50	50	20	2
	Projected Crop Prices			
F. Cash Price	$1.60	$0.80	$4.50	$35.00
G. Support Price	$1.75	$0.89	$4.65	N.A.

government support prices (Table 1). The reduction of the national soybean support price from $5.02 to $4.77 resulted in a $4.65 soybean support price being used in the analysis. The reductions associated with Gramm-Rudman were not incorporated into the analysis. Such reductions reduce government payments--thereby forcing land market prices lower.

The average cash price used in the analysis is based on an expectation that not all the crop will be marketed in the fall. Also, producers are expected to receive slightly less than the maximum feasible deficiency payment for the corn and oats. This assumes the national average price will average slightly above the support price for the year. If large crops in the Southern Hemisphere become reality, the cash price scenario selected will be too optimistic.

Two Levels of Residual Returns

Fixed costs are those costs that do not vary with changes in the level of yields or acreage planted. Also, participation in the government program does not alter these costs. Fixed costs include depreciation, insurance, utilities, real estate taxes, interest on machinery investment, family labor and management. In the calculation of fixed costs, the machinery investment consisted entirely of USED equipment with a total value of $43,430. The producer was assumed to require a 13.50 percent rate of return on this machinery investment. New equipment for this farm would have required an investment of between $160,000 and $200,000. If an assumption of new equipment had been made in the analysis, the depreciation and interest expense on the machinery investment would have been significantly higher.

Another major fixed cost was the return for management and family labor. The return for management and farm labor was assumed to be $20,000.

To analyze the sensitivity of the estimated land price to the management and family labor cost assumption, two levels of cost recovery were specified. With the first level, all direct production and fixed costs except for the $20,000 allocated to management and family labor were subtracted from the farm's total revenues. With the second level, all direct production and fixed costs, including the return for management and family labor, were subtracted. The estimated cash residual after deducting the specified costs was considered to be allocated to the farmland.

Cash Flow Available per Acre

Average levels of cash flow available per acre based on 640 acres are reported for the two fixed cost recovery levels under each yield scenario (Table 2). With the bumper crop scenario, cash residuals for both levels of fixed cost recovery and both government program scenarios are positive. The poor crop scenario

income levels were low or negative in all the scenarios.

Estimated Land Value

The estimated capitalization value of this land was found by dividing the estimated cash flow by a specified interest rate. The interest rate selected was 10.5 percent. This interest rate is approximately equal to the Federal Land Bank interest rate charged their above-average credit risk customers. If the interest rate available to the farmland buyer is lower, the capitalized value of the land would be higher.

In the summer of 1986, land of the productive quality discussed in this analysis was selling in the range of $280 to $375 per acre. If producers or investors are basing their purchase decision on an average yield and the current farm program continuing, the current price is consistent with the producer receiving some return to used machinery and management. But this return is clearly not sufficient to equal the specified 13.5 percent return on the machinery investment and $20,000 for management and family labor.

Have Land Prices Bottomed?

Have land prices bottomed? If the producer could expect a bumper crop yield every year and continued funding of the federal farm program at current levels, the answer would be yes. However, if expectations are for average yields or reduced government support, the answer would be no.

The parentheses in Table 2 imply negative cash flows and negative land values based on the capitalization approach. In such cases, the losses may be minimized by not farming the land. Agricultural land with poor productivity may be simply abandoned. Although productive land may suffer the loss of

Table 2: Projected Cash Flow Available per Acre and Capitalized Land Prices With and Without the Farm Program for Three Specified Crop Scenarios

Crop Scenario	With Farm Program	Without Farm Program	Difference
CASH FLOW AVAILABLE PER ACRE			
1. No Return to Farmer for Management and Farm Labor			
A. Bumper Yield	$70.11	$45.72	$24.39
B. Average Yiled	$39.16	$10.45	$28.71
C. Poor Yield	$ 8.22	($24.83)	$33.05
2. Return to Management and Farm Labor Included as a Cost			
A. Bumper Yield	$38.86	$14.47	$24.39
B. Average Yield	$ 7.91	($20.80)	$28.71
C. Poor Yield	($23.03)	($56.08)	$33.05
CAPITALIZED LAND PRICES			
3. No Return to Farmer for Management and Farm Labor			
A. Bumper Yield	$668	$435	$233
B. Average Yield	$373	$100	$273
C. Poor Yield	$ 78	($236)	$314
4. Return to Management and Farm Labor Included as a Cost			
A. Bumper Yield	$370	$138	$232
B. Average Yield	$ 75	($198)	$273
C. Poor Yield	($219)	($534)	$315

*Numbers in parentheses are negative numbers.

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additional value, less productive land may result in an investment that is essentially worthless.

A poor crop in a local region and continued excess national grain production would imply significant downward pressure on land prices. Potential cash flow difficulties would exist even with the current level of government support, if a producer were using newer equipment and had a moderate level of leverage.

The capitalization approach used does not allow any net income for principal payments.

Preview of the Future

Agricultural land is the residual holder of the profitability of agriculture. During the late 1970's and early 1980's, producers were willing to invest a significant portion of their reserve investment funds in farmland. Producers in the last part of the 1980's are probably going to be less willing to utilized this management strategy. Their desire to diversify their investments may limit any upward pressure on land values by producers. Offsetting this trend is the fact that the amount of investment capital required to purchase a tract of land of a specific size has declined.

The Food Security Act of 1985 contains clear indications of lower future government support for agriculture. The Act contains provisions for reducing target support prices in 1988. Also, the potential exists for further reductions in support loan prices. If grain carryovers are not reduced, this will imply further reductions in the cash prices received by producers. These developments would imply a continued downward pressure on land values.

Interest rates and agricultural input prices have all been declining in the past two years. If interest rates and agricultural input prices start to increase, the profitability of land ownership will decline further.

In summary, this analysis shows that those currently purchasing agricultural land as an investment appear to be betting that the federal government is going to develop a farm program, which will improve market prices above current levels or maintain current payment levels. They appear, also, to be betting that the U.S. government and other governments will achieve a coordinated economic policy that will result in real growth in the world economy and increased international trade for U.S. agriculture during the 1990's. Finally, they could be betting on further declines in the level of interest rates.