

## Simulating some options

The consequences of interest rate buy-downs and lengthening repayment terms along with asset restructuring on individual firms can be illustrated using a representative cash grain farm and a representative hog farm. The cash grain farm comprises 435 acres of row crop land and has total assets valued at \$925,000; the hog farm is a farrow-to-finish operation consisting of 425 acres of land and total assets valued at \$965,000. Different financial structures for both farms are reflected through debt-to-asset ratios of 33, 50, and 67 percent. Additional assumptions used in the analyses are summarized in Table 1. The financial consequences of various policy options were simulated over a 10-year period using the Iowa State University financial planning model, which was econometrically estimated using farm record data from the Iowa Farm Business Association for the years 1964-1982.

The primary indicators of financial stress employed in these analyses are the debt-service-coverage ratio (DSCR) and its three-year moving average (ADSCR). The DSCR is defined as the firm's income net of family living expenditures, income taxes, and production expenses other than interest and rental payments on leased land divided by the firm's annual debt service obligation including interest on all

loans and principal payments on intermediate and long-term loans plus land rent. A DSCR of less than 1.0 in any year indicates that the firm has insufficient net income after taxes and family living expenses to meet its annual debt service obligation. An ADSCR of less than 1.0 indicates that the firm's payments problem is more persistent and less likely to be the result of a single "bad" year.

The results of the analyses are summarized in Tables 2 and 3. These results indicate that the risk of illiquidity is generally greater for the representative cash grain farm than for the hog farm for all initial leverage positions or financial policies considered. For the more highly leveraged cash grain farm (50 or 67 percent debt) and the highly leveraged hog farm (67 percent debt), the probability of failure as measured by the ADSCR is very high—exceeding 90 percent in the base run. The interest rate buy-down policy is marginally effective in reducing the probability of failure for the 67 percent leveraged hog farm, but a large reduction in the probability of failure for this highly leveraged hog farm and the 67 and 50 percent leveraged cash grain farms is attained only with the asset restructuring plan.

**Table 1**  
Parameter values for the representative farm analyses

Model	Asset value increase			Loan Terms		
	Current assets	Intermediate assets	Fixed assets	Current	Intermediate	Long-term
	(----- percent -----)					
Base	0	0	1.9	1 yr. @ 14%	1 yr. @ 14%	25 yr. @ 12%
Interest rate buy-down	0	0	1.9	Interest rate on current and intermediate debt reduced to 10% in initial year of planning horizon, 14% thereafter; rate on long-term debt 9% for first 4 years, 12% thereafter		
Reduced repayment rate	0	0	1.9	<i>Principal</i> payments on long-term (real estate) debt reduced by 25% for first 4 years; payments in later years correspondingly higher		
Asset restructuring	0	0	1.9	1 yr. @ 14%	1 yr. @ 14%	Leased

**Table 2**  
**Results of representative cash grain farm analyses**

Model	Probability of debt service coverage ratio less than 1.0		Probability of 3-yr. average debt service coverage ratio less than 1.0		Terminal equity	
	In any annual observation <sup>1</sup>	In any model period <sup>2</sup>	In any annual observation <sup>3</sup>	In any model period <sup>4</sup>	Average	Range
	(----- percent -----)				(----- dollars -----)	
<b>33 percent debt</b>						
Base	29	82	17	54	799,882	694,205 - 870,590
Interest rate buy-down	20	74	8	28	829,710	737,406 - 899,907
Reduced repayment rate	25	80	15	48	799,884	695,353 - 870,089
Asset restructuring	1	14	0	0	899,926	795,843 - 1,003,493
<b>50 percent debt</b>						
Base	92	100	98	100	492,140	303,645 - 601,114
Interest rate buy-down	73	100	86	100	555,656	399,273 - 644,419
Reduced repayment rate	89	100	98	100	494,277	306,523 - 602,366
Asset restructuring	8	26	0	0	668,697	565,691 - 770,827
<b>67 percent debt</b>						
Base	100	100	100	100	86,230	(174,998) - 245,512
Interest rate buy-down	100	100	100	100	221,428	22,062 - 347,560
Reduced repayment rate	100	100	100	100	90,083	(171,144) - 249,365
Asset restructuring	37	68	10	34	423,182	320,195 - 515,061

<sup>1</sup> The proportion of 500 observations (10 x 50 runs) of the DSCR with a value of less than 1.0.

<sup>2</sup> The proportion of 50 model runs in which the value of the DSCR fell below 1.0 at least once in the 10-year model period.

<sup>3</sup> The proportion of 400 observations (8 years x 50 runs) of the ADSCR with a value of less than 1.0.

<sup>4</sup> The proportion of 50 model runs in which the value of the ADSCR fell below 1.0 at least once in the 10-year model period.

**Table 3**  
**Results of representative hog farm analyses**

Model	Probability of debt service coverage ratio less than 1.0		Probability of 3-yr. average debt service coverage ratio less than 1.0		Terminal equity	
	In any annual observation <sup>1</sup>	In any model period <sup>2</sup>	In any annual observation <sup>3</sup>	In any model period <sup>4</sup>	Average	Range
	(----- percent -----)				(----- dollars -----)	
<b>33 percent debt</b>						
Base	6	20	0	0	1,11,006	867,765 - 1,370,145
Interest rate buy-down	4	14	0	0	1,146,494	907,841 - 1,405,283
Reduced payment rate	5	22	0	0	1,112,778	868,737 - 1,373,140
Asset restructuring	1	1	0	0	1,360,227	975,307 - 1,788,137
<b>50 percent debt</b>						
Base	20	68	10	36	777,407	524,976 - 1,000,256
Interest rate buy-down	15	56	5	18	837,039	595,862 - 1,069,931
Reduced payment rate	19	66	8	28	779,718	526,846 - 1,004,210
Asset restructuring	3	20	0	0	1,119,841	756,990 - 1,607,309
<b>67 percent debt</b>						
Base	49	96	55	92	440,866	127,390 - 653,342
Interest rate buy-down	39	88	36	80	524,589	252,516 - 732,026
Reduced payment rate	48	94	52	90	443,196	130,835 - 656,769
Asset restructuring	6	12	0	0	849,383	485,483 - 1,430,555

<sup>1</sup> The proportion of 500 observations (10 x 50 runs) of the DSCR with a value of less than 1.0.

<sup>2</sup> The proportion of 50 model runs in which the value of the DSCR fell below 1.0 at least once in the 10-year model period.

<sup>3</sup> The proportion of 400 observations (8 years x 50 runs) of the ADSCR with a value of less than 1.0.

<sup>4</sup> The proportion of 50 model runs in which the value of the ADSCR fell below 1.0 at least once in the 10-year model period.

For the representative farms of lower leverage, the 33 percent debt cash grain farm and the 50 percent debt hog farm, the probability of failure in the base run is much lower than for comparable firms of higher leverage. For these firms, the interest rate buy-down policy reduces the probability of failure by one-half relative to the base run, the asset restructuring policy completely eliminates the probability of failure, and the reduced repayment rate policy is of intermediate effectiveness in reducing the probability of failure. Finally, the 33 percent debt hog farm is well insulated from the financial stress affecting the firms of higher leverage cate-

**Interest rate subsidies.** As a consequence of the severe problems faced by agriculture because of high interest rates, various proposed policy responses include interest rate buy-downs or subsidies that focus on reducing this component of the cost structure for farmers. However, a preferred alternative to interest rate buy-downs for agriculture would be a fiscal policy that reduces the size of the government deficit and the demands of the federal government on the capital markets. Such policy would result in lower market rates on interest throughout the U.S. economy and would, through a reduction in the foreign exchange value of the dollar, increase export demand for agricultural commodities.

**Asset leasebacks.** As suggested earlier, much of the current asset restructuring involves liquidation of real estate and other capital items for cash, but there is only so much liquidity in rural communities, and cash liquidations frequently result in substantial liquidation losses. Other means of liquidation must be investigated and could be facilitated by public policy.

For example, lending institutions might be encouraged to take the title of real property in lieu of debt obligations, and then lease this property to the original debtor. This arrangement would keep the property off the market and thus reduce the chance of resource markets being depressed further. In addition, by leasing the property to the original operator, the

lender can convert a nonperforming asset into one that generates at least some rate of return in the form of rental payments. To reduce the possibility that the lender must tie up its liquidity in such assets, a government program could be implemented to provide funds to the lender in the amount of the assets taken back in lieu of debt.

One of the purposes of a leaseback program is to stabilize resource values. A critical issue today is whether the public sector should play a role in asset liquidations in the form of regulating, monitoring or facilitating the process. Legitimate concerns have been expressed about the attitudes of some lenders who are encouraging cash sales of assets without recognition of the implications for the producer or the asset markets. Collateral values are declining, in part because of forced sales of assets for cash into a market where there is limited buying power. We need to be much more innovative in the liquidation process, and we need to evaluate whether public policy can assist in this area.

**Recapitalization** is another alternative that might involve public policy. In many cases, the financial structure of the business could be significantly improved through an infusion of equity from outside the firm, either by a debt holder exchanging his obligation for an equity position in the firm, or an outside investor providing additional funds to reduce indebt-

edness. An equity infusion may at first glance appear unlikely. In some cases, however, family members may be willing to provide such an infusion or an investor might be willing to contribute capital funds for a larger-than-proportionate share of the ownership of the firm or to take advantage of the tax shelter available from operating losses. A third source of an equity infusion is the lender. If the firm has current cash flow problems because of high leverage and aggressive growth, but also has strong management and the potential for reasonable future earnings, the lender may minimize losses or increase the chances for recovery by converting debt obligations into equity.

The role of public policy in this area of outside equity infusions or recapitalization may be one of reassessing current legislation that discourages these arrangements. Many states have passed laws that restrict or prohibit outside equity investments in agriculture. Alternatively, a government-financed venture capital entity might be formed to make the necessary equity capital infusion into agriculture under terms that are more acceptable to both farmer and investor. Such an arrangement could be financed with state revenue bonds or federal funding. An institution similar to the Agricultural Development Banks used in many Third World countries, involving a combination of public and private sector funding, might be a viable institutional innovation in the U.S. capital markets at the present time.

**Information** to facilitate the adjustment process, including programs to facilitate the merger of business firms, to retrain and relocate people, and to disseminate the best information on adjustment strategies and resource availability could be provided through public policy. However, it appears that such programs would be an inadequate response to the current financial stress problem in agriculture.

### **Conclusions**

A significant number of farmers are suffering financial stress. Given the complex nature of the problem, a public policy approach that focuses only on one characteristic of that problem will probably be ineffective. Specifically, price and income support programs, which have been the major component of agricultural policy in the past, may be quite inef-

fective in solving the current problem and may, in fact, compound and contribute to long run financial problems in agriculture.

Alternative policy options appear better targeted to the problem. While spiraling farm debt suggests that debt restructuring is the answer to the current financial stress, a restructuring of agricultural assets remains the key to a long-term solution. Results of both firm level and aggregate analyses indicate that asset restructuring through sale-leasebacks is preferable to interest rate buy-downs or liability restructuring in reducing financial stress for individual farm firms and the industry. Rearranging liabilities is not a permanent solution to the current financial stress, because even with more time to repay, many farmers will not be able to service their debt with current or expected interest rates, productivity, and input and commodity prices. However, debt restructuring is an important mechanism for buying time to implement more permanent solutions. Asset restructuring, including liquidation, debt reductions, and equity infusions, will be required to improve the long-term survivability of many farm businesses. The aggregate analyses indicate that a general reduction in interest rates and more rapid growth in exports would significantly reduce the financial stress that the U.S. agricultural sector is now facing.

One of the key objectives of any public policy to alleviate financial stress should be to protect the resource markets from collapsing. Stabilizing resource values is critical to maintaining the stability of the agricultural production sector and rural communities. But using government intervention to stabilize resource values at levels that are not supportable in the long run by market prices can result in very high government expenditures, inefficient resource allocation, and higher consumer prices for food products.

The agricultural sector has suffered significant wealth losses. An important public policy concern is how those losses will be shared among the various members of the private sector, and between the public sector and the private sector. A related concern is how to minimize the losses. What may be needed is a public sector contingency plan that can provide a safety net in case the farm economy continues to be stagnant or the resource markets begin to collapse. A strategy of doing nothing today

could, if the financial condition of agriculture continues to deteriorate, very easily result in irresistible political and economic pressures later to implement drastic options, such as a general and extended debt moratorium or significant increases in commodity support prices. But inappropriate action now may interfere with the long-run adjustments in resource values and utilization that must occur in order that the United States retain an efficient and financially sound agricultural sector.

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<sup>1</sup> The first article in this publication, "The Financial Stress In Agriculture," by Gary Benjamin,

provides a discussion of the causes, extent and nature of the current financial stress in the farm sector.

<sup>2</sup> "Financial Stress in Agriculture," Summary of presentations at a workshop on October 22, 1984, at the Kansas City Federal Reserve Bank.

<sup>3</sup> Bankruptcy Act, Chapter 7, Public Law No. 95-593. 92 Stat. 2549, 1978.

<sup>4</sup> J. W. Looney, "The Bankruptcy Reform Act of 1978 and the Farmer: A Survey of Applicable Provisions," *South Dakota Law Review*, vol. 35, 1980, pp. 509-27.

<sup>5</sup> Harl, Neil E., "Restructuring Debt In Agriculture," Department of Economics, Iowa State University, Ames, Iowa. May, 1984.