

Agricultural Finance and Credit: The Farm View (Micro)

Robert W. Jolly

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The financial crisis in agriculture has been a reality for some farm families since early 1980. As with any industry-wide upheaval, it was slow developing. And its origins can be traced back at least a decade. Today we know more about farm financial conditions than at anytime since the crisis began. However, little consensus exists among farmers, policymakers or academics about agriculture's capacity to adjust to financial stress, or the type of public intervention that would be appropriate if existing institutions and markets need to be assisted in making this transition.

This paper will be largely descriptive. Hopefully, it will lead to a more fruitful assessment of the policy papers that will be presented later in the conference.

U.S. Farm Financial Conditions - 1985

The current farm financial problems appear, at first glance, to be widespread and fairly uniform among farm families. This is not the case. Some farmers are earning acceptable incomes and rates of return. Others are failing utterly. These differences make public financial policy difficult to design and even more difficult to administer.

Another characteristic that makes the farm financial problem difficult is that it possesses both human and financial dimensions. Farm financial stress is a human problem. It affects a definable group within the farm population. As with any crisis, financial stress causes suffering and pain. There is a financial side as well. Financial and farm asset markets are not performing well. Many institutions ranging from county seat banks and grain elevators to the Farm Credit System seem to be in jeopardy. Although the human side of this crisis gets some play in the press, it is the financial dimension that receives the attention of policymakers.

Incidence and Relative Frequency of Financial Stress

Measuring financial stress is not straightforward. In the short-run, a negative cash flow can indicate stress. It may also reflect expansion or a routine buildup in grain or livestock inventories. The debt-to-asset (D/A) ratio has been widely used as a measure of stress. Normally the D/A ratio measures solvency. However, it can also be used as a rough measure of liquidity. With rates of return to owned assets currently averaging 6 to 7 percent and debt service costs (principal and interest) averaging 15 to 16 percent, farmers with a D/A ratio exceeding 40 percent would be expected to have negative cash flows.

Insolvency is the extreme measure of stress. When a farm's debts exceed the value of its assets, in most cases, it will fail and cease operation. However, the insolvency rate is not a good leading indicator of financial problems.

Table 1 gives the proportion of farms occurring in these three stress categories for the U.S. and ten regions. These estimates are based on data from the USDA's Farm Costs and Return Survey (FCRS). These data reflect January 1985 conditions.

- Slightly more than 50 percent of U.S. farm operators in 1984 failed to generate a positive cash flow. In other words, farm and nonfarm income could not meet all cash obligations including debt service.
- Over 18 percent of farmers in the U.S. had D/A ratios over 40 percent. Nearly 3 percent were insolvent.
- Financially stressed farmers were most common in the Lake States, Corn Belt and Northern Plains. For the most part this reflects the distribution of farm operations in the United States.
- In relative terms, a greater proportion of farm operators were experiencing cash flow problems in the Northeast and the Delta.
- Farmers with high D/A ratios, including insolvent operations, were relatively more common in the Corn Belt, Northern Plains and the Delta.
- Appalachia, Southern Plains and Mountain States showed average or above average proportions of farmers with cash flow problems. However, insolvency and high D/A ratios seem significantly less than in the Midwest.

One commonly held belief is that farm debt problems primarily affect large high-rolling operations or midsized, inefficient farms. Table 2 reports the frequency of financial stress by annual sales class categories.

- The size composition of the farm population defined by the FCRS is given in the column headed Total Farms. Over 60 percent of the population has annual sales less than \$40,000. In terms of corn production, this would be a farm less than 120 acres.
- The frequency of financial stress follows the farm size distribution closely. The most common farm size with cash flow or solvency problems is a small part-time operation.
- In relative terms some differences between small and large farms are evident. Small farms tend to experience relatively more cash flow problems. Larger farmers, on the other hand, show proportionally a much greater frequency of high leverage and insolvency.

Severity of Financial Stress

The severity of financial stress in the United States cannot be directly inferred from Tables 1 and 2. A farm firm's earned equity

growth rate (EGR) can provide an approximate measure of the severity of financial stress. The equity growth rate, in this analysis, is calculated by dividing the firm's value of earned equity growth by its current net worth. The dollar growth in earned equity is equal to net cash farm income plus off-farm income less family living expenditures. If positive, this money is available to reduce principal, replace capital equipment, expand, or as a risk reserve. If negative, the shortfall is either added to debt or discharged by the lender. In this ratio form, the magnitude of the equity gain or loss is expressed relative to the size of the farm's net worth.

In Table 3 five EGR ranges are defined. Farms with an EGR less than -20 percent are losing over 20 percent of their equity from earnings alone. With declining asset values, farms in this category are extremely vulnerable to financial failure. Insolvent firms are also included in this category. Farms with an EGR from -20 to -5 percent are likely experiencing serious financial difficulties. Interest is continuing to accumulate and principal payments are being made. Farms with an EGR from -5 to +5 percent are in limbo. They cannot replace equipment or meet all principal repayment requirements. With an EGR from +5 to +20 percent the farm business is showing reasonable progress. Equity may still fall due to declining asset values. However, the farm's earnings are satisfactory. A farm with an EGR exceeding 20 percent would, at first glance, seem exceptional. This high EGR may be due to a very high earnings on assets. However, it may also be due to a small positive income combined with an even smaller net worth.

The distribution of farm operators -- their debt and assets among the five EGR categories -- is given in Table 3. Several key results need to be indicated:

- For the U.S. 15 percent of the farm operators are insolvent or have an EGR less than 20 percent. These farmers control nearly 28 percent of U.S. farm operator debt and 8.8 percent of farm assets. In general this group will be unlikely to survive.
- At the other extreme, 15.5 percent of farm operators had an EGR exceeding 20 percent in 1984. This group controls 14.7 percent of the debt and 10 percent of the assets.
- Combining firms with an EGR less than 5 percent, 60.9 percent of the operators controlling 64.1 percent of the debt are likely to experience financial stress and need to make operating changes to remain viable.
- In relative terms, the Corn Belt and Lake States show fewer farmers in the -20 percent EGR groups and more in the +20 percent groups.
- In the Delta, Southern Plains and Southeast more operators are experiencing severe financial stress compared with the national average. Further these farmers owe 30 percent of the regional farm debt.

- The Pacific States show a very high concentration of debt, 35 percent, held by relatively few severely-stressed farm operators.

In Table 4, we look at the severity of financial stress as a function of farm size.

- The largest farm sizes have the greatest proportion of both high income and high stress farms.
- Farmers with annual sales under \$100,000, show relatively few high EGR farms. The concentration of debt in stressed operations is greater than average for these small farms as well.
- Financial stress affects all size categories. In terms of the sector, more debt and assets and fewer operators are in the larger sales category.

Characteristics of Farm Operators

The FCRS data set contains relatively little demographic data on farm operators. Table 5 reports characteristics of Iowa farm families by D/A class. These data were collected in early 1985.

- The low debt Iowa farmers tend to be older, operate smaller acreages and have fewer dependents.
- Education level does not seem to be greatly affected by D/A class.
- The largest farms in terms of assets and acreage are in the 40 to 70 percent D/A group.
- The distribution of farm operators, their debt and assets among D/A groups parallels the national data. Iowa farmers with D/A ratios over 40 percent control over 70 percent of the operator debt.

The rapidly falling asset values have dramatically changed the financial condition of Iowa farmers in just a year's time. Table 6 gives the percentage change between 1984 and 1985 in the balance sheet for farmers within a given D/A group.

- The sample average showed a loss in asset value of 17.7 percent -- roughly equal to the decline in land values. Debt levels increased slightly, but non-real estate debt increased and real estate debt declined. Overall, equity fell nearly 25 percent in one year.
- Farmers in the 40-70 percent D/A group experienced moderate to severe stress. Changes in their average balance sheet followed the sample average. However, equity fell 34.5 percent.

- The high-debt farm operators in the 70-100 D/A group lost over 88 percent of their equity in one year. This occurred despite their attempts to reduce debt. Falling asset values and partial liquidation were the likely culprits.
- Farms that were insolvent in January 1984 increased non-real estate debt during the year. Asset values declined. Net worth, already negative, fell an additional 62 percent.

Farm-Level Adjustments to Financial Stress

Data presented in this report suggest that up to two-thirds of the farm debt in the United States is held by farm businesses experiencing financial stress. This is clearly an unstable situation. In the short-run, farms may adjust by attempting to increase productivity, by reducing costs or by reducing principal repayment. In the longer run, farm operations will need to adjust enterprises and in many cases restructure assets and liabilities. Financial restructuring involves selling assets, reducing debts and, in some situations, renegotiating principal balances with lenders. The restructuring process takes time. For some farm businesses, the adjustment is relatively minor. For others, so much of the asset base must be sold that the firm will likely fail before the restructuring can be accomplished.

Restructuring requirements for financially stressed farm businesses were estimated from Iowa Farm Finance Survey data. The average farm in 40-70 and 70-100 D/A group was restructured using three common techniques. A scale-back assumes the farmer sells assets, retires debt and reduces the size of the business. A sale-leaseback assumes assets and associated liabilities are liquidated, but the assets could be leased from an investor at prevailing rates. Debt discharge assumes the lender writes off sufficient debt to produce a positive cash flow.

The results of this analysis are presented in Table 7 for three income levels. At current income levels, the average 40-70 percent D/A producer shows a negative cash flow of \$-11,400. Using a scale-back, a positive cash flow could be produced by selling 28.6 percent of the firm's owned assets. Over 44 percent of the debt would be reduced. A sale-leaseback reduces the extent of liquidation required to 21.5 percent. If the lender would discharge 20 percent of the debt -- about \$72,000 (Table 5), the business would have a positive cash flow. The results in Table 7 suggest:

- For moderate debt operations and current income levels, liquidation requirements are extensive but generally feasible.
- Changes in income levels have a significant impact on the extent and feasibility of restructuring for this moderate debt group.
- Debt discharge, in general, offers only a partial solution to restructuring problems.

- For high-debt farms, in the 70-100 percent D/A group, all restructuring options seem nearly infeasible. The prospect of liquidating 70 to 80 percent of a farm's asset base with a lease-back seems fortuitous at best. Farmers in this group, in general, are living on borrowed time.

Final Comments

Currently only a third of the farmers in the U.S. are experiencing serious financial problems. Unfortunately, this group also owes most of the money. Financial restructuring offers the primary long-term solution to this debt crisis. However, it will take time -- perhaps up to an additional five years. Further, there is real doubt as to the capacity of agricultural asset markets to accommodate this massive adjustment. Up to 15 to 20 percent of farm assets may be liquidated as farmers and lenders attempt to adjust to current economic conditions. This compares to the historical 2-4 percent moved volume. Improved incomes, lessen, but do not eliminate the need for extensive restructuring. Lower farm incomes would be a disaster. The key financial policy issue is how to buy sufficient time to make the transition without incurring unacceptable economic and human costs along the way.

Table 1. Incidence and Relative Frequency of Financially Stressed Farm Operations by Region

Region	Total ^{1/}	Negative ^{3/} Cash Flow		D/A Ratio Over 40 Percent		Insolvent	
Northeast	7.2	4.5 ^{1/}	62.8 ^{2/}	1.0 ^{1/}	14.2 ^{2/}	0.2 ^{1/}	3.0 ^{2/}
Lake States	12.7	6.0	47.3	3.3	25.6	0.4	3.3
Corn Belt	21.3	9.9	46.4	5.3	24.7	0.8	3.9
Northern Plains	10.7	5.3	49.1	2.9	26.7	0.4	4.0
Appalachia	13.7	6.6	48.0	1.3	9.5	0.1	0.9
Southeast	6.0	2.9	48.3	0.8	13.2	0.2	3.0
Delta	5.4	3.5	64.4	1.0	17.7	0.2	4.1
Southern Plains	12.0	6.1	51.2	1.3	11.2	0.3	2.1
Mountain	5.4	2.9	53.4	1.2	22.0	0.1	2.4
Pacific	5.7	2.7	47.5	1.0	16.6	0.2	3.2
United States	100.0	50.3		19.0		3.0	

^{1/}Percent of U.S. farms.

^{2/}Percent of farms in region.

^{3/}Net cash income from farming plus off-farm income less estimated family living expenditures and principal payment.

Source: 1984 Farm Costs and Returns Survey, USDA.

Table 2. Incidence and Relative Frequency of Financially Stressed Farm Operations by Sales Class

<u>Annual Sales</u> <u>(\$1000)</u>	<u>Total ^{1/}</u> <u>Farms</u>	<u>Negative ^{3/}</u> <u>Cash Flow</u>	<u>D/A Ratio</u> <u>Over 40%</u>	<u>Insolvent</u>
500 +	1.8 ^{1/}	0.7 ^{1/}	38.9 ^{2/}	0.7 ^{1/} 38.9 ^{2/} 0.1 ^{1/} 6.0 ^{2/}
250-499	4.1	1.5	36.6	1.6 39.0 0.2 5.8
100-249	13.6	5.4	39.7	4.5 33.1 0.6 4.7
40-99	18.1	8.6	47.5	5.0 27.6 0.8 4.4
10-39	23.3	13.4	57.5	3.8 16.3 0.8 3.4
Less than 10	39.2	20.6	52.6	3.4 8.7 0.4 1.0
United States	100.0	50.3	19.0	3.0

^{1/}Percent of U.S. farms.

^{2/}Percent of farms in region.

^{3/}Net cash income from farming plus off-farm income less estimated family living expenditures and principal payment.

Source: 1984 Farm Costs and Returns Survey, USDA.

Table 3. Percentage Distribution of Farm Operators, Their Debts and Assets by Equity Growth Rate and Region

Region	Equity Growth Rate (percent)				
	Insolvent or Less -20	-20 to -5	-5 to +5	+5 to +20	Over +20
Northeast					
Operators	16.5	23.9	31.2	17.6	11.0
Debt	26.8	16.7	21.7	19.9	14.7
Assets	7.4	19.9	43.2	10.0	9.5
Lake State					
Operators	12.7	15.9	28.7	28.1	14.8
Debt	23.1	12.6	23.5	30.6	10.0
Assets	8.5	12.4	33.4	37.3	8.3
Corn Belt					
Operators	14.2	15.3	26.0	25.2	19.2
Debt	28.1	11.4	20.0	20.5	20.0
Assets	9.9	12.4	33.8	30.2	13.9
Northern Plains					
Operators	17.5	13.7	28.9	25.8	13.9
Debt	24.2	17.7	23.6	21.1	13.4
Assets	9.7	13.4	37.9	30.8	8.3
Appalachia					
Operators	14.4	18.8	26.6	23.9	16.3
Debt	16.9	11.1	22.9	25.6	23.5
Assets	5.7	13.8	40.1	27.4	13.1
Southeast					
Operators	15.9	19.9	24.9	23.4	15.7
Debt	37.6	15.9	15.7	16.1	14.5
Assets	9.5	15.1	43.1	20.1	12.5
Delta					
Operators	19.0	24.6	27.1	15.1	14.2
Debt	32.6	18.6	25.1	9.5	14.2
Assets	9.1	18.3	33.5	15.2	8.1
Southern Plains					
Operators	17.4	19.0	27.3	21.1	15.1
Debt	35.1	19.5	17.8	15.5	12.2
Assets	9.1	16.9	47.0	18.8	8.3
Mountain					
Operators	14.0	13.6	39.1	20.5	12.7
Debt	24.6	15.2	29.6	18.6	11.8
Assets	8.2	11.8	53.4	20.4	6.3
Pacific					
Operators	10.7	17.2	31.0	27.1	14.2
Debt	35.1	11.5	20.8	20.4	12.2
Assets	8.4	12.9	44.5	25.2	8.8
United States					
Operators	15.1	17.5	28.3	23.6	15.5
Debt	27.6	14.3	22.2	21.2	14.7
Assets	8.8	14.3	40.8	26.2	10.0

Source: 1984 Farm Costs and Returns Survey, USDA.

Table 4. Percentage Distribution of Farm Operators, Their Debts and Assets by Equity Growth Rate and Sales Class

Sales Size Class ((\$1000))	Equity Growth Rate (percent)				
	Insolvent or Less -20	-20 to -5	-5 to +5	+5 to +20	Over +20
500 +					
Operators	16.1	8.9	18.9	23.3	32.8
Debt	32.6	7.5	18.2	21.2	20.4
Assets	13.1	12.8	28.7	27.4	17.9
250-499					
Operators	13.7	6.5	17.8	27.0	23.5
Debt	22.4	9.9	23.2	26.6	17.9
Assets	9.5	8.1	35.9	32.7	13.7
100-249					
Operators	13.0	10.2	23.0	33.3	20.5
Debt	22.8	15.5	22.6	25.5	13.6
Assets	7.8	11.3	37.8	32.8	10.3
40-99					
Operators	15.3	14.0	32.2	25.5	12.9
Debt	31.5	20.0	25.3	14.5	8.7
Assets	9.5	15.0	47.5	22.6	5.4
Less than 40					
Operators	15.4	21.0	29.0	20.5	13.9
Debt	31.9	17.0	20.8	15.6	14.6
Assets	7.3	20.0	45.1	20.5	8.2
United States					
Operators	15.1	17.5	28.3	23.6	15.5
Debt	27.6	14.3	22.2	21.2	14.7
Assets	8.8	14.3	40.8	26.2	10.0

Source: 1984 Farm Costs and Returns Survey, USDA.

Table 5. Average 1985 Financial Condition of Sample Iowa Farm Operators
By 1985 Debt-to-Asset Ratio

Financial Characteristics	Debt-to-Asset Ratio (%)					All
	0-10	10-40	40-70	70-100	100+	
Assets (\$1000)						
Non-Real Estate	136	166	236	156	85	166
Real Estate	282	375	420	348	152	340
Total	418	541	656	504	237	506
Debts (\$1000)						
Non-Real Estate	6	44	121	143	190	60
Real Estate	4	82	238	251	124	101
Total	10	126	359	394	314	161
Net Worth (\$1000)	408	415	297	110	-77	345
Debt-to-Asset Ratio (%)	2.4	23.3	54.7	78.2	132.5	31.8
Operator Characteristics						
Age	59	54	48	46	45	54
Years in Farming	35	29	25	23	22	29
Dependents	2.4	3.1	3.5	3.7	3.3	3.0
Dependents <18 Years	0.3	0.8	1.1	1.4	1.2	0.7
Husband Education ^{1/}	2.2	2.3	2.4	2.3	2.4	2.3
Wife Education ^{1/}	2.4	2.4	2.5	2.4	2.4	2.4
Acres Owned	235	280	295	271	159	261
Acres Rented	114	172	285	302	326	193
Acres Operated	327	430	562	539	484	433
Off-Farm Income	\$7738	\$5795	\$6621	\$5574	\$9426	\$6779
Percentage Distribution						
% Operators	35	32	21	7	4	100
% Assets	29	34	28	7	2	100
% Debts	2	25	48	17	8	100

^{1/} Educational attainment, highest level attended

1 = grade school, 2 = high school, 3 = college or vocational

Source: 1985 Iowa Farm Finance Survey.

Table 6. Percentage Change in Financial Condition, 1984-1985
Iowa Farm Operators

	-----1984 Debt-to-Asset Ratio-----			
	<u>Average</u>	<u>40-70</u>	<u>70-100</u>	<u>100+</u>
Assets				
Non-Real Estate	- 8.8	- 6.9	-16.5	1.4
Real Estate	-21.5	-20.6	-31.4	-32.4
Total	-17.7	-16.1	-26.2	-21.2
Debts				
Non-Real Estate	13.2	7.0	- 2.4	11.8
Real Estate	- 1.9	- 1.6	-16.9	-32.7
Total	3.2	1.3	-10.4	- 6.9
Net Worth	-24.8	-34.5	-88.4	-62.2

Source: 1985 Iowa Farm Finance Survey.

Table 7. Average Percent Asset and Debt Liquidation
Required to Service Remaining Debt
Iowa Farm Operators

Income Level ^{1/}	Debt-to-Asset Ratio					
	40-70			70-100		
	Low	Current	High	Low	Current	High
Net Cash Flow (\$1000)	-20.0	-11.4	-2.9	-37.4	-30.5	-23.7
Restructuring Option (Percentage Change)						
Scaleback						
Asset	43.0	28.6	8.7	NF	NF	NF
Debt	66.6	44.3	13.5	NF	NF	NF
Sale-Leaseback						
Asset	35.5	21.5	5.8	86.3	74.8	61.8
Debt	55.0	33.3	9.0	94.1	81.5	67.4
Debt Discharge						
Debt	35.6	20.3	5.2	59.3	48.4	37.6

Source: Jolly and Doye, FAPRI Staff Report #8.

^{1/}Current income - 7.5 percent cash return on assets; low income - 6.5 percent cash return on assets; high income - 8.5 percent cash return on assets. The recovery rate on liquidated assets is assumed to be 85 percent.