Draft for comment
April 7, 1983

Toward Understanding the Financial Situation in Agriculture

Emanuel Melichar

Senior Economist
Division of Research and Statistics
Board of Governors of the Federal Reserve System
Washington, D.C. 20551

Toward Understanding the Financial Situation in Agriculture

Emanuel Melichar
Board of Governors of the Federal Reserve System

In earlier papers I have shown that the USDA's aggregate net farm income series has misled some writers into concluding--incorrectly--that recent returns in farming have been at levels similar to those of the Great Depression. But after understanding that real rates of income returns to farm operators' labor and capital have actually been much higher than in the Depression, an alternative question emerges--why have a significant number of operators nevertheless been experiencing devastating Depression-like losses even though the majority of their colleagues have been reaping positive, albeit relatively low, profits?

This paper reviews the historical aggregate returns, supplementing USDA data for 1940-82 with my estimates of similar series for 1910-39, and then discusses the nature and scope of individual farm financial distress, using newly available evidence derived from the Census Bureau's 1979 Farm Finance Survey.

During the last decade the farm sector experienced the most recent of its several major booms, and now it is undergoing typical post-boom difficulties. The general pattern is familiar: a sharp rise in demand for farm products raises profits and triggers expansion of crop acreage and increases in land prices. When demand drops, individual farmers facing sunk costs cannot rationally reduce their own output. As continued high output leads to lower product prices, those farmers who entered or expanded late in the boom, or those who borrowed heavily to do so, experience financial stress.

In this situation, farmers, lenders, and the government have all searched historical experience for useful tactics and programs. Since the mid-1930s, the core of the Federal response has consisted of price and income support programs. Before such programs, as illustrated in Chart 1 by data for the early 1920s, farm output prices fell as needed for continued high output to

Chart 1

FARM INCOME AND EARNINGS ON CAPITAL

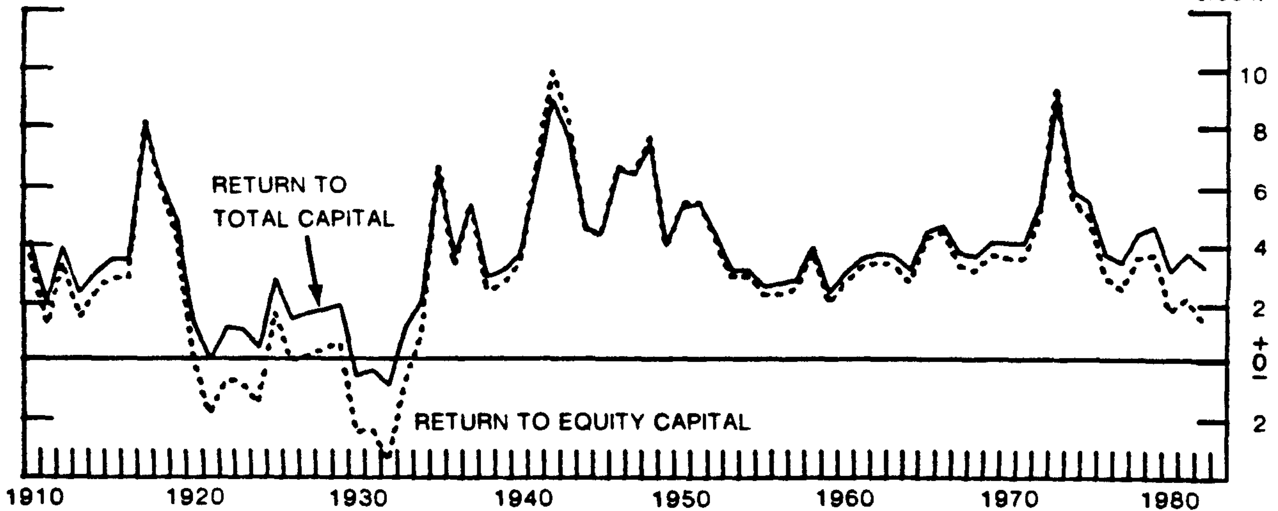
Billions of 1982 dollars

GROSS INCOME

EARNINGS BEFORE INTEREST

EARNINGS AFTER INTEREST

200
180
160
140
120
100
80
60
40
20
+
0
−
20



Return to total capital = Earnings before interest/assets

Return to equity capital = Earnings after interest/(assets-debt)

clear the market, eliminating profits and producing the prolonged period of financial distress that was required to force supply-demand adjustment. Under the programs, when demand falls, part of the output stream is first set apart as stocks; next, if continued high output results in unsustainable increases in these stocks, supply-reduction measures are implemented. These considerations loom large in current developments.

Although the return to total capital has been fairly well supported, its current level of 3.3 percent is far below interest rates being paid by indebted farmers. As rising interest rates opened this gap in recent years, the average return to equity was depressed as indicated in the lower panel of Chart 1. In this respect the present period differs from the last post-boom experience, in the 1950s, when interest rates were not much higher than the return to capital. Now, indebted farmers are generally experiencing much greater financial strain than those without debt, whereas, in earlier decades, farmers using credit had generally made the faster financial progress.

Table 1 illustrates the present importance of a farmer's relative debt level on his rate of profit or loss after payment of interest, and it also shows the difference made by the rate of interest being paid. The table assumes a farm with the sector average return to total capital, 3.3 percent, which is also the return to equity if the farmer has no debt. At the sector average debt/asset ratio of 20 percent, and paying the sector average interest rate of 11 percent on outstanding debt, the return to equity is 1.4 percent--the circled figure. At debt/asset ratios above 50 percent, increasingly stressful losses are sustained--moderate if debt consists mainly of old long-term fixed-rate loans at an interest rate such as 7 percent, more severe if debt is composed of short-term bank loans at last year's average loan rate of 17 percent. And, because similar tables for 1980 and 1981 would look much the same as this one for 1982, highly-leveraged operators have probably sustained cumulative losses.

Table 1

Effect of alternative debt leverage and cost on profitability of a farm in 1982

Debt/asset ratio (percent)	Interest rate on outstanding debt (percent)		
	7	11	17
	Return to equity capital in 1982 (percent)		
0.............	3.3	3.3	3.3
10.............	2.9	2.4	1.8
20.............	2.4	1.4	.0
30.............	1.7	.0	-2.6
40.............	.8	-1.8	-5.8
50.............	-.4	-4.4	-10.4
60.............	-2.2	-8.2	-17.2
70.............	-5.3	-14.7	-28.7
80.............	-11.5	-27.5	-51.5
90.............	-30.0	-66.0	-120.0

This farm had the farm sector average rate of return to total capital (before interest payments on any borrowed capital), 3.3 percent.

If it also had the farm sector average debt/asset ratio of 20 percent and the average interest rate of 11 percent on that debt, its return to equity capital was 1.4 percent (row 3, column 2).

Given these relationships, the relative incidence of severe financial stress depends greatly on the distribution of farmers among the various debt positions. The top panel of Table 2 shows such information derived from the recently available 1979 Farm Finance Survey, including data adjusted and updated to be indicative of current conditions. These estimates indicate that a majority of farm operators have relatively little or no debt. The last column shows that only about one-seventh of all operators now have debt-to-asset ratios over 50 percent--the relative debt level that the preceding table indicated to be associated with unprofitable operations.

For lenders, however, the amount of debt owed by farmers experiencing financial stress is more important than farm numbers, and from this perspective the picture looks much different. The middle panel of Table 2 indicates that about half of the total debt is owed by operators with debt/asset ratios over 50 percent, and thus lenders see much of their money in the hands of operators who are experiencing financial difficulties. Viewed in another way, an estimated 84 percent of total operator debt is owed by the 30 percent of operators with debt/asset ratios that are above the all-operator average of 23.5 percent. Thus the bulk of farm debt is owed by a sizable minority of operators whose relative debt is large enough that, at current interest rates, scheduled debt service may easily exceed recent earnings before interest.

The last panel of Table 2 indicates that the share of farm assets owned by heavily-indebted operators is only slightly more than proportional to their numbers, and far below their share of total debt. For instance, the 14 percent of operators who are most heavily indebted are responsible for about half the debt but own only 16 percent of total operator assets. Thus most operator-owned assets are in relatively strong financial hands, as are most of the additional farm assets owned by landlords.

Table 2

Estimated distribution of operators and operators' farm debt and assets, by relative debt level of operator

Date and adjustments of finance survey data	Relative debt level of farm operator (debt/asset ratio, percent) 0-10	11-30	31-50	51-70	71-90	91 and over	Percentage in debt/asset ratio classes over 50 percent
	Percentage distribution of operators						Operators
Original survey data, 1/1/80..........	65	17	9	5	2	1	8
Adjusted for underreporting, 1/1/80...	63	16	10	6	3	3	11
And updated to reflect 1980-82 developments, 1/1/83................	58	18	11	7	4	3	14
	Percentage distribution of debt						Debt
Original survey data, 1/1/80..........	7	28	28	20	10	7	37
Adjusted for underreporting, 1/1/80...	5	22	25	21	13	13	48
And updated to reflect 1980-82 developments, 1/1/83................	5	20	24	21	16	15	52
	Percentage distribution of assets						Assets
Original survey data, 1/1/80..........	56	24	12	6	2	1	9
Adjusted for underreporting, 1/1/80...	53	22	13	7	3	2	12
And updated to reflect 1980-82 developments, 1/1/83................	47	23	14	8	5	3	16

Data from the 1979 Farm Finance Survey, Bureau of the Census, as tabulated by ERS, USDA, and (a) adjusted for probable underreporting on the survey date and (b) updated to reflect changes during 1980-82, including increases in total debt and assets, an increase in the number of indebted operators, and liquidation by some operators with high debt/asset ratios. The USDA's balance sheet of the farming sector was the primary reference for both the adjustment and updating. Debt was apparently underreported to a greater extent than assets, and debt increased faster than asset values during 1980-82; thus both the adjustment and updating moved operators, debt, and assets into higher debt/asset ratio classes. These estimates supersede those presented to the National Agricultural Credit Committee on March 14, 1983. A detailed description of the adjustments and updating is being prepared.

Table 3 shows how operators and their debt and assets are distributed among debt/asset ratio classes in each of four farm-size groups. Operators of the larger farms are much more likely to be heavily indebted than those with smaller farms--about one-third has a debt/asset ratio over 50 percent--but even so, a sizable proportion has relatively low debt. Less than a tenth of the operators of very small farms has a debt/asset ratio over 50 percent.

However, because there are relatively few large farms, the last column of Table 3 shows that operators of medium-sized and smaller farms comprise most of the heavily-indebted group likely to be experiencing profit problems. But in spite of their lower numbers, operators of large farms do account for significant proportions of the debt and assets of all heavily-indebted operators.

Given the foregoing data, valid assessments of the financial situation of agriculture must recognize both the continuing aggregate profitability and the pronounced profit variability related primarily to the degree of indebtedness. Federal programs have been effectively supporting returns before interest payments, helping to keep the majority of operators out of financial difficulty, but cumulative losses after debt service have been progressively forcing the minority of operators who are heavily indebted into actions such as debt restructuring and partial liquidation of assets. By 1982, complete liquidations due to financial stress were reportedly about double their normally low level. Last fall, most observers expected even higher levels of severe stress to be evident this spring. Instead, however, several developments have produced a reprieve. The decline in interest rates, while so far merely slowing the rise in the sector average rate on outstanding debt, has provided significant relief for farmers with short-term loans--especially for those borrowing from the larger banks whose rates had earlier risen the most. In addition, the government programs offered for 1983 appear likely to bolster farm earnings to a greater extent than many observers had expected, and are providing lenders

Table 3

Estimated distribution of farms by relative debt level within farm-size groups, January 1, 1983

Size of farm (annual sales, $000)	Relative debt level of farm operator (debt/asset ratio, percent)						Percentage distribution of numbers or amounts in debt/asset ratio classes over 50 percent, by farm-size groups
	0-10	11-30	31-50	51-70	71-90	91 and over	
	Percentage distribution of operators						Operators
All farm operators.............	58	18	11	7	4	3	100
Large farms (200 and over)....	20	25	20	16	10	9	11
Medium farms (40 to 199)......	34	26	16	11	7	6	39
Small farms (10 to 39)........	55	20	11	7	4	4	23
Very small farms (under 10)...	73	12	7	4	2	1	27
	Percentage distribution of debt						Debt
All farm operators.............	5	20	24	21	16	15	100
Large farms (200 and over)....	3	15	23	22	18	21	41
Medium farms (40 to 199)......	5	21	25	21	16	13	41
Small farms (10 to 39)........	7	26	22	20	14	12	10
Very small farms (under 10)...	8	24	27	17	13	9	7
	Percentage distribution of assets						Assets
All farm operators.............	47	23	14	8	5	3	100
Large farms (200 and over)....	26	26	21	13	8	6	40
Medium farms (40 to 199)......	38	28	16	9	5	3	42
Small farms (10 to 39)........	61	21	9	5	3	2	11
Very small farms (under 10)...	73	14	7	3	2	1	8

See notes to Table 2.

with a logical basis for carrying more of the troubled borrowers for at least another year. However, the gap that has arisen between the average return to total capital and the average interest rate on farm debt remains nearly as large as in 1982. Heavily indebted operators are likely to remain in financial difficulty until the gap narrows significantly. This will inevitably occur, as a large difference between rates of return earned by borrowers (investors) and lenders (savers) cannot persist. Technically, the gap can be closed in several diverse ways, including a return to high rates of inflation, a boom in farm profits, or further deflation of farm asset values. A more generally welcome and sustainable way, however, would be further reduction in interest rates, which would close the gap by reversing the primary development that opened it.