ASSESSING THE FINANCIAL STRENGTH OF IOWA'S FARM BUSINESSES

ROBERT W. JOLLY AND ALAN VONTALGE

Department of Economics
College of Agriculture
Iowa State University
174 Heady Hall
Ames, IA 50011-1070

April 1999

ASSESSING THE FINANCIAL STRENGTH OF IOWA'S COMMERCIAL FARM BUSINESSES

Robert W. Jolly and Alan Vontalge*

For most Iowa farmers the euphoria of 1996 has been replaced with the gloom of 1998. The prospect of rising farm incomes buoyed by expanding export markets, innovative technological developments and market-oriented farm and trade policies seemed almost certain a year or so ago. Farmers understood that increased income volatility and lower safety nets would require that greater attention be paid to managing risk. But trading increased income for increased risk exposure seemed to many like a reasonable bargain -- particularly in view of the fact that agriculture=s dwindling political clout could not maintain a generous subsidy program for farmers.

However, with prices for corn, soybeans, cattle and hogs all down 15 to 30 percent from 1997 levels, many farmers are questioning whether they were simply dealt a bad hand in 1998 or if they are playing a game they can=t win.

The underlying causes for the current downturn are largely economic -- global production expansion has occurred at a pace that exceeded expected shifts in demand. This situation has worsened considerably due to Asian and Russian economic woes. The consequence is sharply lower prices for all commodities. In certain areas, poor weather conditions have exacerbated financial problems. Most Iowa farmers, however, expect to harvest a normal crop in 1998.

Along with the economic fundamentals, many farmers are questioning the suitability of the Freedom-to-Farm Act in this new environment. Ostensibly the transition payments were intended to ease the shift from the old feedgrain program apparatus to an economic environment without price and production interventions. The underlying assumption for the Freedom-to-Farm Act was that U.S. agriculture faced a future of expanding opportunities -- that farming would be, on average, a profitable business. With proper risk management instruments and skills, farmers expected they could earn adequate rates of return without the traditional price supports.

But suppose that the low prices persist? Suppose that prices for hogs reflect the long-run cost structure of large scale integrators? What if corn and soybean prices reflect the cost structure of the largest and most efficient cash grain operations? Under this scenario, surviving farm operations must be able to achieve unit production costs and quality standards competitive with the large-scale industry leaders. Expanding demand cannot be expected to provide any headroom for higher-cost farm businesses.

If this situation plays out, then there is another important transition implicit in Freedom-to-Farm -- a rapid exit of farm operations unable to compete at low commodity price levels without

*Professor and Extension Program Specialist, respectively, Department of Economics, Iowa State University, Ames, Iowa 50011-1070.

direct subsidization from the government. Note that this transition is driven by increasing efficiency due to new technology and organizational innovation. It is not a Afarm crisis≅ driven by excessive debt, high rates of interest, and crashing asset values. If this transition continues, production agriculture in the United States will be more efficient -- and probably larger scale and more integrated than today. This is a positive development for food consumers and certainly strengthens the United States' competitive position in export markets. But this transition also carries with it the inevitability of farm business failure and broken dreams. The human cost of the transition on farm families and rural communities needs to be carefully considered.

The next two years or so will bring a great deal of uncertainty. One of the most critical issues is duration -- how long will low commodity prices persist? A one-year downturn is one thing. Three to five years of low prices is quite another. Most farmers and financial institutions can adapt to a short, albeit significant, drop in income. However, the transition to a period of sharply lower long-term prices will require major changes to the structure of production agriculture and rural communities.

This paper presents estimates of the financial strength of Iowa commercial farm businesses. Using recent farm-level financial data we examine the financial condition of representative commercial farms at the beginning of 1998. We then assess the financial status of farm businesses should commodity prices remain at or near their average levels experienced in 1998. Price and yield assumptions used in this report are given in Table 1.

Financial Data

The financial data used in this analysis are obtained from members of the Iowa Farm Business Association (IFBA). The data set includes complete financial information from nearly 1,200 operations. The reliability of the financial data is very good, since they are derived from summaries of formal accounting systems. However the data set is not representative of all farms in Iowa. Tables 2 and 3 compare farm size and operator age of the IFBA sample with the most recent Iowa Agricultural Census. It is clear the IFBA farms are larger than the Census. Further, the IFBA operators are mid-career -- most in the 35-55 age group. The IFBA data, however, is probably more representative of Iowa=s commercial farms than is the Census. Recall that the Census enumerates all Afarms≅ that sell at least $1,000 of agricultural commodities per year.

Measuring Farm Financial Conditions

In this analysis, farm financial conditions are assessed using a simple financial scoring model. The financial scoring model is summarized in Table 4. Farms in the IFBA data set are classified according to two ratios. The first ratio (CFE) measures the relationship between cash flow from all sources -- farm and nonfarm -- for the operator=s household and their equity position. This measure is calculated as follows:

1) CFE = (NFI + Dep + OFI − FL) ÷ E

Where:

NFI = accrual net farm income
Dep = depreciated
OFI = off-farm income from labor and investments
FL = withdrawals for family living expenditures

The net cash flow measure, in parenthesis, used in computing this ratio does not include scheduled principal payments or income taxes. If the CFE is positive, cash is available to pay taxes, reduce debt, expand or replace capital. If CFE is negative, the shortfall must be borrowed. The CFE ratio allows us to compare the magnitude of net cash flow relative to the equity base of the business. For example, if the CFE for a farm operation is -20 percent, then the business has lost 20 percent of its equity, before tax payments. Note too, that cash flow has been adjusted to account for inventory changes. This adjustment allows us to capture the business=s cash flow potential -- not just its cash sales for the current year. The second ratio used in the scoring model is the familiar debt-to-asset (D/A) ratio. The D/A ratio shows, in percentage terms, the business=s level of indebtedness.

Table 4 presents a matrix that combines the two measures into a financial score. Note that the financial score attempts to reflect near term (1-3 years) survivability of the business if income conditions continue at the assumed levels. The financial categories in the scoring model are defined as follows:

1. **Strong.** Farms in this group show adequate to excellent liquidity and acceptable solvency. Expansion may be feasible.

2. **Stable.** Farms in this group will not likely fail. However they may experience moderate cash flow problems or capital replacement may be less than levels required to remain in business long term.

3. **Weak.** Farms in this group can survive if operating changes and asset or debt restructuring occur. Farms are vulnerable to income losses or asset value declines. Note this group contains farms with large losses and high equity as well as those with positive earnings and low equity.

4. **Severely stressed.** Survival of farms in this group is unlikely.

The assignment of cells within the matrix to financial stress categories is based, in part, on estimated principal repayment rates, vulnerability to loss or asset value declines and rates of equity loss. As with most scoring models, this one suffers from the arbitrariness of boundaries and the inescapable reliance on judgement. It shares a common ancestry with the classification model employed by ERS since the mid-1980s. (Jolly and Olsen, 1995, Jolly et al, 1985, Morehart and Prescott, 1986.)

Table 4 also gives information on the distribution of farms cross the CFE and D/A categories. For example, a farm business with a CFE between -5 percent and 5 percent and a D/A ratio between 40 percent and 70 percent is assigned to group 3 -- weak financial condition. In 1997, 33 farms or 2.86 percent of the entire sample fell into this specific category.

Actual 1997 Financial Conditions

In Tables 5a-5d, we give estimates of financial conditions prevailing in 1997. The financial scores are based on 1997 beginning balance sheets and actual 1997 income. Note this analysis examines farm financial under the assumption that 1997 incomes continue over a 2-3 year period. Figures 1 and 2 summarizes information on income and cash flow levels and operator and liability distributions.

Under 1997 income conditions:

- Most farm businesses are in strong (49.6 percent) or stable (36.6 percent) condition.

- Only 3.5 percent were in severe financial condition and 10.3 percent in weak condition.

- Financially stressed farm businesses held 23.1 percent of liabilities in the data set.

- Businesses in strong financial condition earned more than $89,000 in farm income plus an additional $12,000 from off-farm sources.

- Strong farm businesses received more than $15,000 in government payments.

- Farms classified as severe, only break-even in terms of farm income. However, their accrual net cash flow shortfall was more than -$18,000.

- Farms in strong and stable condition were larger than those classified as weak or severe.

- Strong and stable farms showed more dependence on cash grain enterprises.

- Weak and severe businesses were operated by younger managers.

- Operator age was greatest for stable farms.

In general, the financial picture that emerges from the 1997 data is a rather strong one. Most farms are financially sound, earning acceptable incomes with excellent risk-bearing

ability. Relatively few farms are financially stressed. Even the financially-stressed businesses, on average, show positive net worth and would have some restructuring options available to them.

Vulnerability Under 1998 Conditions

The estimated financial scores presented in the previous tables were based on 1997 income conditions. Suppose, however, that 1998 conditions would persist over the next 1-3 years? In this case, 1998 incomes are used as a proxy for lower income levels possible over the next year or two.

Table 6 summarizes the results of the financial scoring procedure. Note that the distribution across D/A categories in 1998 is only slightly changed from 1997. As expected, however, there are significant downward shifts in the CFE ratio.

In Table 7, we show the shift in farms= financial status from 1997 to 1998 economic conditions.

- Slightly more than 20 percent of farms are classified as strong under 1998 conditions compared with nearly 50 percent in 1997. However, the majority of these operations are still classified stable under 1998 conditions.

- Financially stressed farms increase to a third of the sample -- 22 percent weak and 11 percent severe.

In Tables 8a-8d we present a complete set of financial statements using the projected 1998 financial scores to classify the farms in the data set. Figures 3-7 summarize the 1998 projections with comparison to 1997 conditions.

- Financially stressed operations comprising 33 percent of the data set, control over 50 percent of outstanding debt.

- The severe group has, on average, more equity than in 1997. This implies more restructuring flexibility. Note this reflects the fact that the number of farms in this group has increased significantly.

- Financially-stressed farms were smaller in terms of assets and total sales than strong and stable operations.

- Farms in severe financial condition are operated by younger farmers.

- Financially-stressed farms are more reliant on livestock earnings than cash grain.

- Doubling government payments would reduce, but does not eliminate the negative cash flows experienced by farm businesses in weak or severe financial conditions.

Policy Implications

What to do? The analysis presented in this paper is admittedly rough. However, there is a clear and unmistakable warning for Iowa farmers, lenders, and farm leaders:

- Financial stress is very real. Our analysis indicates that average incomes for Iowa's commercial farms could fall by 60 percent from 1997 levels over the next year or two. Financially stressed farmers, however, will experience significantly greater declines.

- The key issue is duration. If prices remain at their current levels for a year and then return to levels experienced in 1997, most farm businesses will recover. Severely stressed operations will not, however.

- If the price declines we are experiencing persist for 2-3 years, significant financial stress will occur. Perhaps as many as a third of Iowa=s commercial farm businesses would require financial restructuring or liquidation. This adjustment would pressure financial institutions as well as land markets.

- Longer term efforts to increase efficiency through research or improved market access are likely to prove beneficial. However, they hold little promise for resolving near-term financial adjustment problems.

- In the short term, many farmers will benefit from programs offering financial counseling, business planning and mediation services. Many face significant decisions about their ability to compete under what may be fairly arduous conditions. Delaying decisions and actions will only make things worse.

- Some public assistance in the form of loan guarantees or interest rate subsidies may be appropriate in certain situations. In general programs that foster financial restructuring are likely to be more effective than direct income subsidies that simply stave off the inevitable.

- Elements of the farm safety net are still in place -- transition and loan deficiency payments in particular. These are crude devices to use for facilitating financial restructuring of farm businesses. However, they do hold the potential to infuse additional income into the farm sector.

- For potentially profitable farm business, income tax treatment of operating losses will reduce actual loss levels in subsequent tax years.

- Current farm policy, as represented by the Freedom-to-Farm Act, needs to be carefully reassessed both in terms of its objectives and design. More attention needs to be paid to ensuring an orderly restructuring or exit of farm operations unable to compete under future market conditions. Further the adequacy of this legislation to

deal with price volatility, efficiency, food security, and the cost of increased risk-bearing merits careful attention.

Although much of the farm policy debate and the implied managerial response has focused on risk and risk management, the real managerial challenge for farmers may well be reducing unit production costs and adjusting the business' financial structure to a period of low and volatile prices. Willard Cochrane's treadmill is, in all likelihood, alive and well.

References:

Cochrane, Willard Wesley. 1959. "Farm Prices, Myth and Reality." University of Minnesota Press, Minneapolis, Minnesota.

Jolly, Robert W., Arnold Paulsen, James D. Johnson, Kenneth H. Baum and Richard Prescott. 1985. "Incidence, Intensity, and Duration of Financial Stress Among Farm Firms." *American Journal of Agricultural Economics*, Vol. 67, No. 1.

Jolly, Robert W. and Douglas R. Olsen. 1985. "1985 Iowa Farm Finance Survey." FM-1821, Cooperative Extension Service, Iowa State University, Ames, Iowa.

Morehart, Mitchell J. and Richard Prescott. 1986. "Farm Operating and Financial Characteristics, January 1985." USDA, Economic Reserve Service, National Economics Division, Washington, D.C.

Table 1. Iowa Price and Yield Assumptions
(calendar year basis)

	1997 [1]	1998 [2]
Corn		
Price ($/bu.)	2.52	2.14
Yield (bu./a.)	138	143
Transition Payment ($/bu.)	0.46	0.36
Loan Deficiency Payment ($/bu.)	0.00	0.20
Soybeans		
Price ($/bu.)	7.33	5.76
Yield (bu./ac.)	46.5	50.0
Loan Deficiency Payment ($/bu.)	0.00	0.20
Market Hogs		
Price ($/cwt.)	51.80	36.00
Market Steers		
Price ($/cwt.)	65.80	62.00
Milk		
Price ($/cwt.)	13.00	14.40

---

[1] Actual, Iowa average
[2] Projected

Table 2. Comparison of Farm Size Distribution between 1997 Farm Business Association and 1992 Ag Census

Farm Size (Acres)	Farm Business Association		1992 Iowa Ag Census	
	Number of Observations	Percent	Number of Observations	Percent
1 to 9	0	0.0%	7,129	7.4%
10 to 49	6	0.5%	10,345	10.7%
50 to 179	80	7.1%	24,518	25.4%
180 to 499	433	38.4%	33,988	35.2%
500 to 999	473	41.9%	15,830	16.4%
1000 and up	136	12.1%	4,733	4.9%
Average Acres	599		325	

Table 3. Comparison of Farm Age Distribution between 1997 Farm Business Association and 1992 Ag Census

Age Group	Farm Business Association		1992 Iowa Ag Census	
	Number of Observations	Percent	Number of Observations	Percent
Under 25	6	0.5%	2,276	2.4%
25 to 34	92	8.1%	13,100	13.6%
35 to 44	382	33.5%	22,200	23.0%
45 to 54	323	28.3%	19,769	20.5%
55 to 64	253	22.2%	20,857	21.6%
65 and up	85	7.4%	18,341	19.0%
Average Age	47.6		50.3	

Table 4. Financial Scoring Model
1997 Conditions

DA (Debt/Asset Ratio)

Frequency Percent Row Percent Column Percent Financial Status Group	CFE (Accrual Cash Flow/Equity Ratio)						
	Insolvent	Less Than -20%	-20% to -5%	-5% to 5%	5% to 20%	Over 20%	Totals
Insolvent	13 1.1 100.0 100.0 severe	0	0	0	0	0	13 1.1
70 % to 100%	0	4 0.3 6.9 26.7 severe	4 0.3 6.9 8.3 severe	2 0.2 3.4 0.8 weak	11 1.0 19.0 1.9 weak	37 3.2 63.8 15.4 weak	58 5.0
40 % to 70%	0	3 0.3 1.2 20.0 severe	16 1.4 6.6 33.3 severe	33 2.9 13.6 12.4 weak	109 9.5 44.9 19.1 stable	82 7.1 33.7 34.2 stable	243 21.1
10 % to 40%	0	0 0.0 0.0 0.0 weak	14 1.2 3.6 29.2 weak	88 7.6 22.7 33.1 stable	222 19.3 57.4 38.9 strong	63 5.5 16.3 26.3 strong	387 33.6
0 % to 10%	0	8 0.7 1.8 53.3 weak	14 1.2 3.1 29.2 weak	143 12.4 31.6 53.8 stable	229 19.9 50.7 40.1 strong	58 5.0 12.8 24.2 strong	452 39.2
Totals	13 1.1	15 1.3	48 4.2	266 23.1	571 49.5	240 20.8	1,153 100.0

Source: 1997 Iowa Farm Business Association.

CFE Ratio =
 (Accrual Net Farm Income + Depreciation + Non-Farm Income - Family Living Expenses) / Beginning Net Worth

D/A Ratio = (Total Liabilities / Total Assets)

Table 5a. 1997 Beginning Balance Sheet by 1997 Financial Status

			Financial Status		
Number of Observations	**Total** 1153	**Strong** 572	**Stable** 422	**Weak** 119	**Severe** 40
Farm Assets					
Feeding livestock	$49,967	$48,590	$49,729	$47,226	$80,341
Corn	75,208	81,439	72,965	59,858	55,436
Soybeans	52,084	60,715	48,102	30,573	34,666
Other feed	5,959	6,068	6,313	3,374	8,350
Supplies, prepaid expenses	30,845	35,503	30,900	14,873	11,168
Total short term assets	$214,062	$232,314	$208,008	$155,904	$189,961
Breeding livestock	21,311	20,182	22,366	21,414	26,031
Machinery, equipment	110,413	118,301	108,613	92,431	70,100
Total intermediate assets	$131,724	$138,483	$130,979	$113,845	$96,131
Land and improvements	393,874	413,828	430,616	247,324	156,879
Total assets	$739,660	$784,625	$769,603	$517,073	$442,971
Farm Liabilities					
Operating notes, accounts payable	59,468	37,596	71,105	95,064	143,569
Intermediate and long term due	2,219	1,871	2,299	3,967	1,169
CCC Loans	3,732	1,579	5,672	6,202	6,702
Total short term debt	65,419	41,045	79,076	105,233	151,440
Intermediate term debts	31,495	19,878	38,178	55,717	55,065
Long term debts	82,528	56,243	100,601	126,563	136,722
Total liabilities	$179,442	$117,165	$217,855	$287,513	$343,226
Farm Net Worth	$560,218	$667,459	$551,748	$229,560	$99,745
Working capital	$148,643	$191,269	$128,932	$50,671	$38,521
Percent of Observations	100.0%	49.6%	36.6%	10.3%	3.5%
Percent of Total Short-Term Liab.	100.0%	31.1%	44.2%	16.6%	8.0%
Percent of Total Intermediate Liab.	100.0%	31.3%	44.4%	18.3%	6.1%
Percent of Total Long-Term Liab.	100.0%	33.8%	44.6%	15.8%	5.7%
Percent of Total Liabilities	100.0%	32.4%	44.4%	16.5%	6.6%

Source: 1997 IFBA Data.

62

Table 5b. 1997 Income Statement [1]
by 1997 Financial Status

			Financial Status		
Number of Observations	Total 1153	Strong 572	Stable 422	Weak 119	Severe 40
Income					
Crops:					
Corn	$73,670	$80,941	$68,407	$61,606	$61,118
Soybeans	82,116	92,592	75,661	65,798	48,957
Crop Insurance	598	586	448	1,106	841
Transition Payments	13,862	15,051	13,274	10,918	11,820
Other Crop Income	11,121	10,741	11,165	12,062	13,296
Total Crop Income	$181,367	$199,910	$168,955	$151,489	$136,032
Livestock:					
Swine	$99,296	$100,477	$93,750	$110,690	$107,032
Beef	53,584	50,581	57,246	37,978	104,324
Dairy	3,977	3,435	5,187	3,629	0
Other Livestock	1,649	1,359	2,501	174	1,201
Total Livestock Income	$158,507	$155,852	$158,684	$152,472	$212,557
Other Farm Income	3,997	4,930	3,310	1,772	4,533
Total Farm Income	$343,871	$360,693	$330,948	$305,733	$353,121
Expenses					
Operating Expenses	$100,870	$103,813	$99,377	$93,181	$97,419
Purchased Feed	45,318	42,130	44,201	54,839	74,374
Purchased Livestock	45,503	41,526	46,556	46,610	87,965
Other Cash Expenses	16,290	16,783	16,216	13,781	17,482
Rent	30,813	32,367	28,008	32,123	34,279
Interest	17,140	13,077	19,782	23,624	28,086
Depreciation	20,009	21,719	19,557	15,660	13,272
Total Expenses	$275,943	$271,414	$273,697	$279,820	$352,877
Accrual Net Farm Income	$67,928	$89,279	$57,251	$25,913	$244
Operator and family labor charge	$21,374	$21,490	$21,427	$20,936	$20,456
Charge for equity capital	30,269	36,894	28,291	13,361	6,699
Return to Management	$16,286	$30,896	$7,533	($8,384)	($26,910)
Off Farm Income	$10,249	$12,062	$8,436	$9,593	$5,398
Family Living Expenses	$37,226	$35,966	$39,482	$35,129	$37,674
Accrual Net Cash Flow	$60,960	$87,093	$45,762	$16,038	($18,760)

[1] Accrual statement, adjusted for inventory changes.
Source: 1997 IFBA Data.

Table 5c. 1997 Financial Ratios by 1997 Financial Status

		Financial Status			
Number of Observations	**Total** 1153	**Strong** 572	**Stable** 422	**Weak** 119	**Severe** 40

Ratios: [1]

	Total	Strong	Stable	Weak	Severe
ROA	9.3%	11.9%	7.5%	4.8%	3.4%
PM	17.8%	22.8%	14.9%	8.1%	2.3%
TO	59.0%	59.1%	51.7%	70.0%	103.5%
OER	0.66	0.62	0.68	0.76	0.80
DER	0.07	0.07	0.07	0.06	0.04
IER	0.05	0.04	0.06	0.08	0.08
NFIR	0.22	0.27	0.19	0.10	0.07
ROE	10.2%	12.0%	9.6%	12.5%	-14.7%
COD	7.8%	7.8%	8.0%	7.9%	7.6%
D/A	0.26	0.14	0.30	0.52	0.96
Current Ratio	3.01	5.86	2.50	1.52	1.04

[1] Ratio Definitions are as follows:

ROA (Return on Assets) = $\dfrac{\text{(Accrual Net Farm Income + Interest Expense - Unpaid Family Labor)}}{\text{Total Assets}}$

PM (Profit Margin) = $\dfrac{\text{(Accrual Net Farm Income + Interest Expense - Unpaid Family Labor)}}{\text{Gross Farm Revenue}}$

TO (Turnover Ratio) = $\dfrac{\text{Gross Farm Revenue}}{\text{Total Assets}}$

OER (Operating Expense Ratio) = $\dfrac{\text{(Total Operating Expense + Fixed Expense - Interest Expense - Depreciation Expense)}}{\text{Gross Farm Revenue}}$

DER (Depreciation Expense Ratio) = $\dfrac{\text{Depreciation Expense}}{\text{Gross Farm Revenue}}$

IER (Interest Expense Ratio) = $\dfrac{\text{Interest Expense}}{\text{Gross Farm Revenue}}$

NFIR (Net Farm Income Ratio) = $\dfrac{\text{Accrual Net Farm Income}}{\text{Gross Farm Revenue}}$

ROE (Return on Equity = $\dfrac{\text{(Accrual Net Farm Income - Unpaid Family Labor)}}{\text{Net Worth}}$

COD (Cost of Debt) = $\dfrac{\text{Interest Expense}}{\text{Total Liabilities}}$

D/A (Debt/Asset Ratio) = $\dfrac{\text{Total Liabilities}}{\text{Total Assets}}$

Current Ratio = $\dfrac{\text{Current Assets}}{\text{Current Liabilities}}$

Source: 1997 IFBA Data.

Table 5d. 1997 Descriptive Information by 1997 Financial Status

			Financial Status		
Number of Observations	Total 1153	Strong 572	Stable 422	Weak 119	Severe 40
Total Acres Operated	599	620	604	520	475
Row Crop Acres	499	561	469	393	332
Hay/Pasture Acres	100	59	135	127	143
Labor Months	16.8	17.4	16.3	16.3	15.3
Average Corn Yield	137.5	140.8	135.1	132.1	131.5
Average Corn Price	$2.51	$2.53	$2.51	$2.47	$2.48
Livestock Returns/$100 Feed Fed	$154.44	$162.55	$148.83	$147.03	$134.23
Sources of Farm Income:					
Crops	57%	60%	55%	52%	45%
Livestock	34%	31%	36%	38%	44%
Other	9%	9%	9%	9%	10%
Value of Farm Production Per Person	$191,155	$205,867	$183,223	$162,768	$149,264
Value of Farm Production Per $1 Exp.	$1.41	$1.53	$1.33	$1.17	$1.09
Farm Types: [1]					
Cash Grain	33.6%	36.9%	32.5%	26.1%	20.0%
Grain-Livestock	29.0%	30.8%	26.3%	30.3%	27.5%
Hog	24.3%	22.7%	25.8%	26.1%	25.0%
Beef	7.3%	5.1%	8.5%	9.2%	20.0%
Dairy	1.6%	1.2%	2.1%	1.7%	0.0%
Mixed	4.3%	3.3%	4.7%	6.7%	7.5%
Operator Age	47.6	46.9	49.7	44.1	44.4

[1] Farm type definitions are as follows:
Cash grain farms if crops are greater than 95 percent of gross farm income.
Grain-livestock farms if crops are greater than 50 percent but less than 95 percent of gross farm income.
Hog farms if pork is greater than 50 percent of gross farm income.
Beef farms if beef is greater than 50 percent of gross farm income.
Dairy farms if dairy is greater than 50 percent of gross farm income.
Mixed farms are all other farms.

Source: 1997 IFBA Data.

Table 6. Financial Scoring Model
Projected 1998 Conditions

DA (Debt/Asset Ratio)

Frequency / Percent / Row Percent / Column Percent / Financial Status Group	CFE (Accrual Cash Flow/Equity Ratio)						
	Insolvent	Less Than -20%	-20% to -5%	-5% to 5%	5% to 20%	Over 20%	Totals
Insolvent	10 / 0.9 / 100.0 / 100.0 / severe	0	0	0	0	0	10 / 0.9
70 % to 100%	0	33 / 2.9 / 42.9 / 34.7 / severe	6 / 0.5 / 7.8 / 3.9 / severe	10 / 0.9 / 13.0 / 1.9 / weak	8 / 0.7 / 10.4 / 2.7 / weak	20 / 1.7 / 26.0 / 25.3 / weak	77 / 6.7
40 % to 70%	0	31 / 2.7 / 12.0 / 32.6 / severe	52 / 4.5 / 20.2 / 33.5 / severe	89 / 7.7 / 34.5 / 17.1 / weak	66 / 5.7 / 25.6 / 22.4 / stable	20 / 1.7 / 7.8 / 25.3 / stable	258 / 22.4
10 % to 40%	0	12 / 1.0 / 3.3 / 12.6 / weak	42 / 3.6 / 11.5 / 27.1 / weak	182 / 15.8 / 49.7 / 35.0 / stable	108 / 9.4 / 29.5 / 36.7 / strong	22 / 1.9 / 6.0 / 27.8 / strong	366 / 31.7
0 % to 10%	0	19 / 1.6 / 4.3 / 20.0 / weak	55 / 4.8 / 12.4 / 35.5 / weak	239 / 20.7 / 54.1 / 46.0 / stable	112 / 9.7 / 25.3 / 38.1 / strong	17 / 1.5 / 3.8 / 21.5 / strong	442 / 38.3
Totals	10 / 0.9	95 / 8.2	155 / 13.4	520 / 45.1	294 / 25.5	79 / 6.9	1,153 / 100.0

Source: 1997 Iowa Farm Business Association.

CFE Ratio =
 (Accrual Net Farm Income + Depreciation + Non-Farm Income - Family Living Expenses) / Beginning Net Worth

D/A Ratio = (Total Liabilities / Total Assets)

Table 7. Changes in Financial Status from 1997 to 1998

1997 Financial Status	1998 Financial Status				
Frequency Percent Row Percent Column Percent	Strong	Stable	Weak	Severe	Totals
Strong	233 20.2 40.7 90.0	270 23.4 47.2 53.3	58 5.0 10.1 22.7	11 1.0 1.9 8.3	572 49.6
Stable	26 2.3 6.2 10.0	227 19.7 53.8 44.8	124 10.8 29.4 48.6	45 3.9 10.7 34.1	422 36.6
Weak	0 0.0 0.0 0.0	10 0.9 8.4 2.0	68 5.9 57.1 26.7	41 3.6 34.5 31.1	119 10.3
Severe	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 0.4 12.5 2.0	35 3.0 87.5 26.5	40 3.5
Totals	259 22.5	507 44.0	255 22.1	132 11.4	1,153 100.0

Source: 1997 Iowa Farm Business Association.

Table 8a. 1998 Beginning Balance Sheet
by Projected 1998 Financial Status

			Financial Status		
Number of Observations	**Total** 1153	**Strong** 259	**Stable** 507	**Weak** 255	**Severe** 132
Farm Assets					
Feeding livestock	$54,814	$41,846	$56,269	$55,251	$73,828
Corn	76,703	83,679	80,474	67,989	65,365
Soybeans	58,817	72,787	62,411	47,126	40,191
Other feed	7,750	8,224	8,829	6,543	5,009
Supplies, prepaid expenses	34,283	48,533	37,944	20,741	18,416
Total short term assets	$232,367	$255,068	$245,928	$197,650	$202,808
Breeding livestock	22,298	19,346	23,550	21,379	25,052
Machinery, equipment	123,920	124,386	130,529	118,857	107,396
Total intermediate assets	$146,217	$143,732	$154,080	$140,236	$132,449
Land and improvements	412,343	378,778	522,519	301,773	268,627
Total assets	$790,927	$777,578	$922,526	$639,659	$603,883
Farm Liabilities					
Operating notes, accounts payable	68,414	35,850	56,851	89,242	136,485
Intermediate and long term due	2,648	3,155	1,933	2,940	3,835
CCC Loans	5,325	2,469	5,207	5,522	11,003
Total short term debt	76,387	41,474	63,992	97,704	151,323
Intermediate term debts	37,273	19,472	32,398	47,469	71,229
Long term debts	88,555	54,676	73,308	112,548	167,243
Total liabilities	$202,216	$115,622	$169,698	$257,722	$389,795
Farm Net Worth	$588,711	$661,956	$752,828	$381,938	$214,088
Net worth change from 1997	$32,848	$70,137	$38,841	$7,611	($14,586)
Working capital	$155,980	$213,594	$181,936	$99,946	$51,485
Percent of Observations	100.0%	22.5%	44.0%	22.1%	11.4%
Percent of Total Short-Term Liab.	100.0%	12.2%	36.8%	28.3%	22.7%
Percent of Total Intermediate Liab.	100.0%	11.7%	38.2%	28.2%	21.9%
Percent of Total Long-Term Liab.	100.0%	13.9%	36.4%	28.1%	21.6%
Percent of Total Liabilities	100.0%	12.8%	36.9%	28.2%	22.1%

Source: 1997 IFBA Data.

68

Table 8b. Projected 1998 Income Statement [1]
by 1998 Financial Status

			Financial Status		
Number of Observations	**Total 1153**	**Strong 259**	**Stable 507**	**Weak 255**	**Severe 132**
Income					
Crops:					
Corn	$65,462	$80,583	$65,161	$55,526	$56,149
Soybeans	69,401	78,281	71,022	62,713	58,674
Crop Insurance	598	732	501	657	591
Transition Payments	10,849	12,072	10,953	10,100	9,494
Other Crop Income	11,121	12,198	11,386	9,972	10,211
Total Crop Income	$157,431	$183,865	$159,022	$138,968	$135,120
Livestock:					
Swine	$69,011	$26,279	$56,987	$95,701	$147,480
Beef	50,476	57,313	57,449	36,666	36,959
Dairy	4,407	6,210	5,639	2,407	0
Other Livestock	1,649	1,944	1,538	326	4,054
Total Livestock Income	$125,543	$91,745	$121,613	$135,100	$188,493
Other Farm Income	3,997	8,098	3,251	2,144	2,399
Total Farm Income	$286,972	$283,708	$283,886	$276,212	$326,013
Expenses					
Operating Expenses	$100,870	$91,801	$101,104	$102,758	$114,117
Purchased Feed	40,588	18,456	32,288	56,280	85,581
Purchased Livestock	40,952	34,049	40,704	38,295	60,586
Other Cash Expenses	16,290	12,898	17,393	16,739	17,844
Rent	30,813	30,045	26,643	34,315	41,570
Interest	18,422	10,018	16,674	22,737	33,286
Depreciation	20,009	19,763	20,977	18,659	19,383
Total Expenses	$267,944	$217,029	$255,782	$289,782	$372,368
Accrual Net Farm Income	$19,028	$66,679	$28,104	($13,571)	($46,355)
Operator and family labor charge	$21,374	$20,296	$21,981	$20,890	$22,093
Charge for equity capital	30,269	33,826	37,542	20,589	14,052
Return to Management	($32,615)	$12,557	($31,419)	($55,049)	($82,500)
Off Farm Income	$10,249	$17,289	$8,903	$7,195	$7,502
Family Living Expenses	$37,226	$31,837	$40,045	$36,083	$39,180
Accrual Net Cash Flow	$12,060	$71,894	$17,939	($23,799)	($58,650)

[1] Accrual statement, adjusted for inventory changes.
Source: 1997 IFBA Data.

Table 8c. Projected 1998 Financial Ratios by Projected 1998 Financial Status

Number of Observations	Financial Status				
	Total 1153	Strong 259	Stable 507	Weak 255	Severe 132
Ratios: [1]					
ROA	1.0%	7.8%	2.5%	-4.4%	-8.0%
PM	3.9%	17.8%	6.4%	-7.1%	-12.2%
TO	44.4%	44.7%	34.6%	52.3%	66.5%
OER	0.76	0.63	0.74	0.87	0.94
DER	0.08	0.08	0.08	0.07	0.06
IER	0.07	0.04	0.06	0.09	0.11
NFIR	0.09	0.25	0.12	(0.03)	(0.11)
ROE	-3.9%	6.9%	1.8%	-8.8%	-34.4%
COD	7.9%	7.3%	7.7%	8.2%	8.5%
D/A	0.28	0.14	0.18	0.36	0.77
Current Ratio	2.92	6.78	3.93	2.12	1.23

[1] Ratio Definitions are as follows:

ROA (Return on Assets) =
$$\frac{\text{Accrual Net Farm Income + Interest Expense - Unpaid Family Labor}}{\text{Total Assets}}$$

PM (Profit Margin) =
$$\frac{\text{Accrual Net Farm Income + Interest Expense - Unpaid Family Labor}}{\text{Gross Farm Revenue}}$$

TO (Turnover Ratio) =
$$\frac{\text{Gross Farm Revenue}}{\text{Total Assets}}$$

OER (Operating Expense Ratio) =
$$\frac{\text{(Total Operating Expense + Fixed Expense - Interest Expense - Depreciation Expense)}}{\text{Gross Farm Revenue}}$$

DER (Depreciation Expense Ratio) =
$$\frac{\text{Depreciation Expense}}{\text{Gross Farm Revenue}}$$

IER (Interest Expense Ratio) =
$$\frac{\text{Interest Expense}}{\text{Gross Farm Revenue}}$$

NFIR (Net Farm Income Ratio) =
$$\frac{\text{Accrual Net Farm Income}}{\text{Gross Farm Revenue}}$$

ROE (Return on Equity =
$$\frac{\text{(Accrual Net Farm Income - Unpaid Family Labor)}}{\text{Net Worth}}$$

COD (Cost of Debt) =
$$\frac{\text{Interest Expense}}{\text{Total Liabilities}}$$

D/A (Debt/Asset Ratio) =
$$\frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Current Ratio =
$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Source: 1997 IFBA Data.

Table 8d. 1998 Descriptive Information by Projected 1998 Financial Status

| | | Financial Status | | | |
Number of Observations	Total 1153	Strong 259	Stable 507	Weak 255	Severe 132
Total Acres Operated	599	609	635	545	545
Row Crop Acres	499	517	557	404	447
Hay/Pasture Acres	100	92	78	141	97
Labor Months	16.8	16.1	16.8	16.8	18.3
Livestock Returns/$100 Feed Fed	$154.44	$171.86	$155.80	$148.20	$140.42
Sources of Farm Income:					
Crops	57%	68%	58%	50%	42%
Livestock	34%	21%	32%	42%	51%
Other	9%	12%	9%	9%	7%
Value of Farm Production Per Person	$191,155	$214,352	$192,533	$173,851	$174,227
Value of Farm Production Per $1 Exp.	$1.41	$1.65	$1.43	$1.25	$1.17
Farm Types: [1]					
Cash Grain	33.6%	50.2%	33.1%	26.3%	16.7%
Grain-Livestock	29.0%	29.7%	31.6%	27.1%	21.2%
Hog	24.3%	7.7%	20.3%	34.5%	52.3%
Beef	7.3%	6.6%	8.5%	7.1%	4.5%
Dairy	1.6%	3.1%	1.4%	1.2%	0.0%
Mixed	4.3%	2.7%	5.1%	3.9%	5.3%
Operator Age	47.6	46.0	50.6	45.6	42.7

[1] Farm type definitions are as follows:
Cash grain farms if crops are greater than 95 percent of gross farm income.
Grain-livestock farms if crops are greater than 50 percent but less than 95 percent of gross farm income.
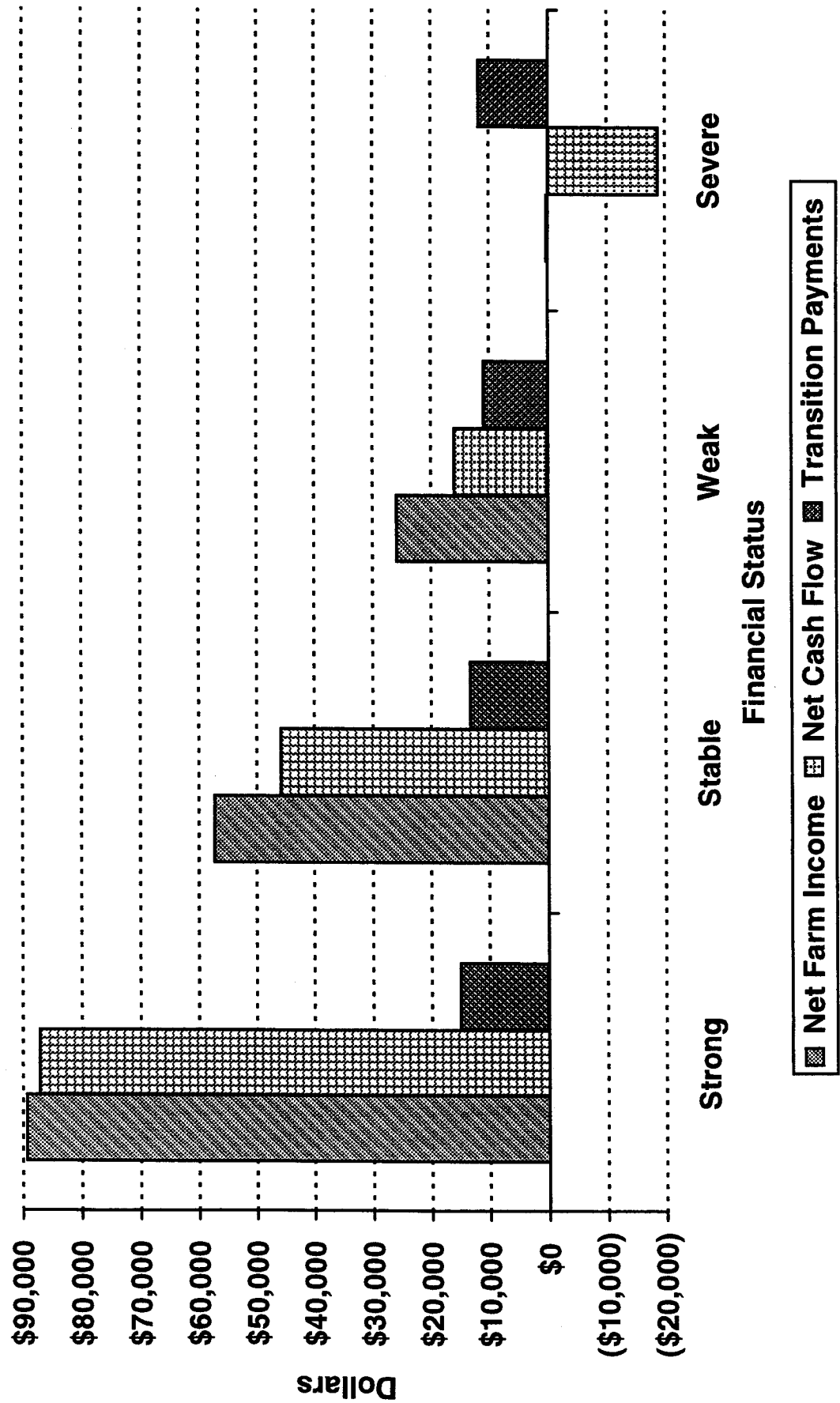Hog farms if pork is greater than 50 percent of gross farm income.
Beef farms if beef is greater than 50 percent of gross farm income.
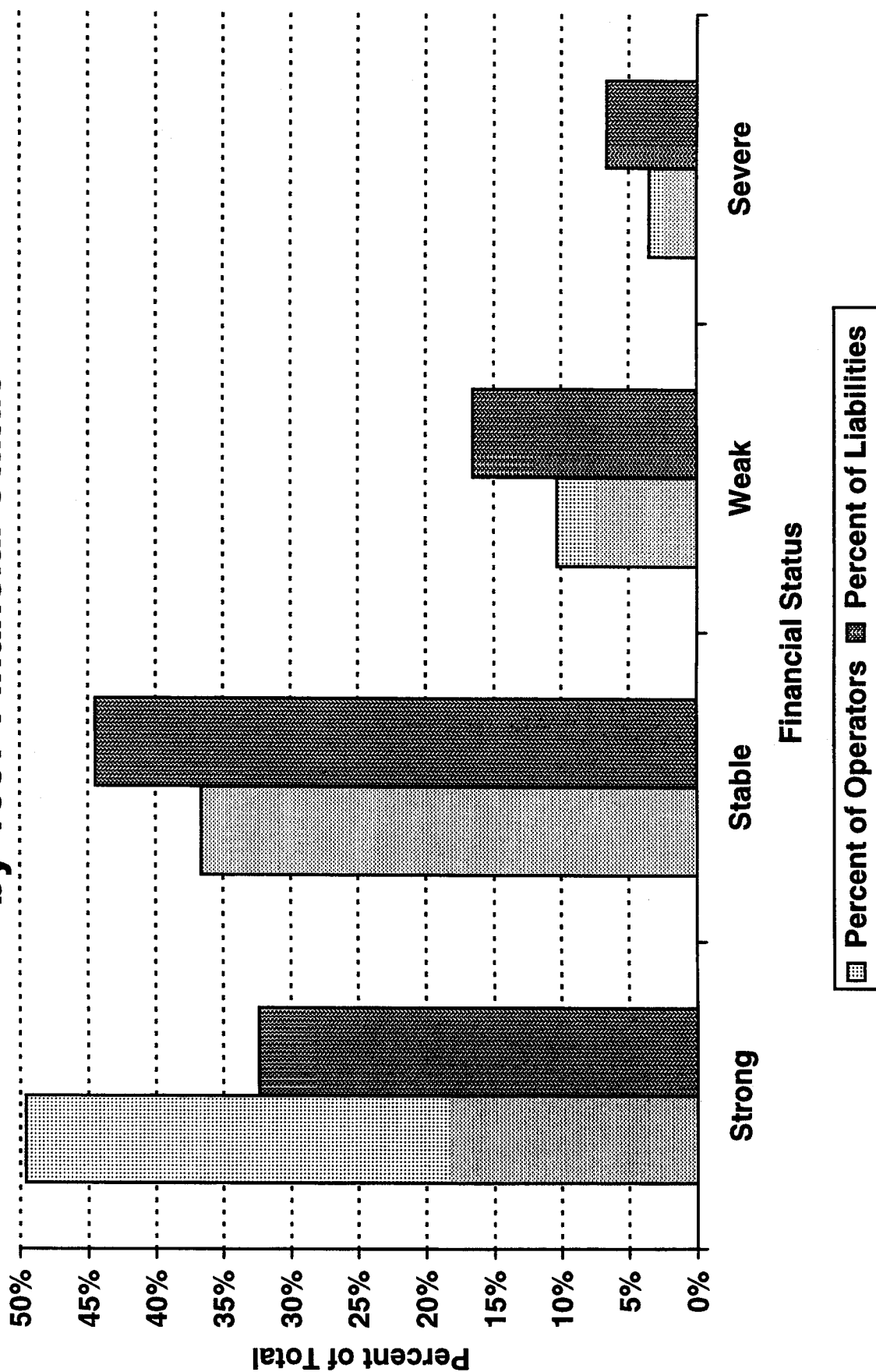Dairy farms if dairy is greater than 50 percent of gross farm income.
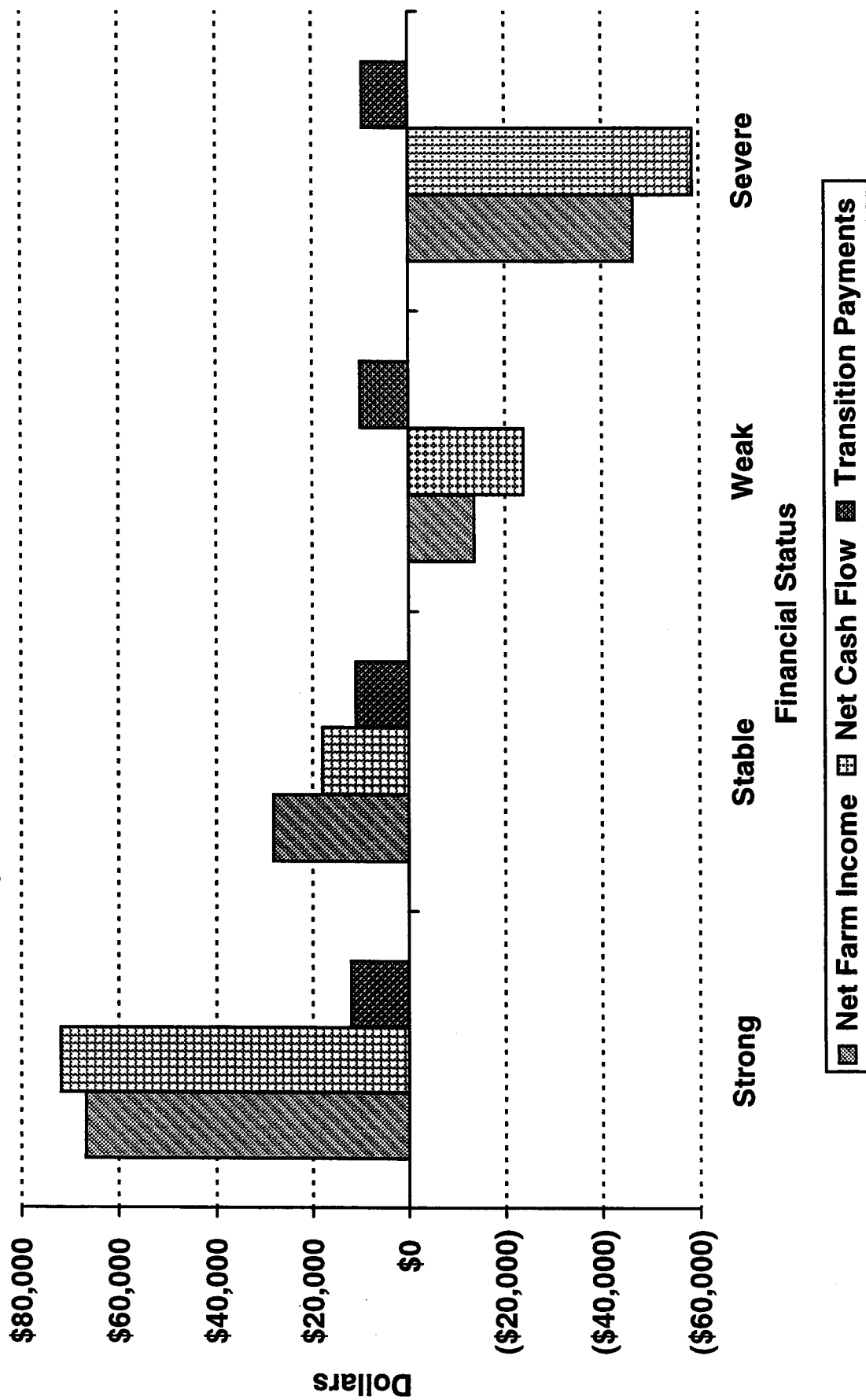Mixed farms are all other farms.

Source: 1997 IFBA Data.

Figure 1.

# Income Measures for 1997
by 1997 Financial Status

Net Farm Income ☐ **Net Cash Flow** ☒ **Transition Payments**

Financial Status

Strong / Stable / Weak / Severe

Dollars

$90,000 / $80,000 / $70,000 / $60,000 / $50,000 / $40,000 / $30,000 / $20,000 / $10,000 / $0 / ($10,000) / ($20,000)

Figure 2.   Percentage Distributions, Operators & Liabilities by 1997 Financial Status

Percent of Total

Financial Status: Strong, Stable, Weak, Severe

Legend: Percent of Operators, Percent of Liabilities

Figure 3.   Projected Income Measures, 1998 Conditions by 1998 Financial Status

Legend: ■ Net Farm Income ⊞ Net Cash Flow ▨ Transition Payments

Y-axis (Dollars): $80,000 / $60,000 / $40,000 / $20,000 / $0 / ($20,000) / ($40,000) / ($60,000)

X-axis (Financial Status): Strong / Stable / Weak / Severe

Figure 4. 1998 Net Worth and Projected 1998 Cash Flow by 1998 Financial Status
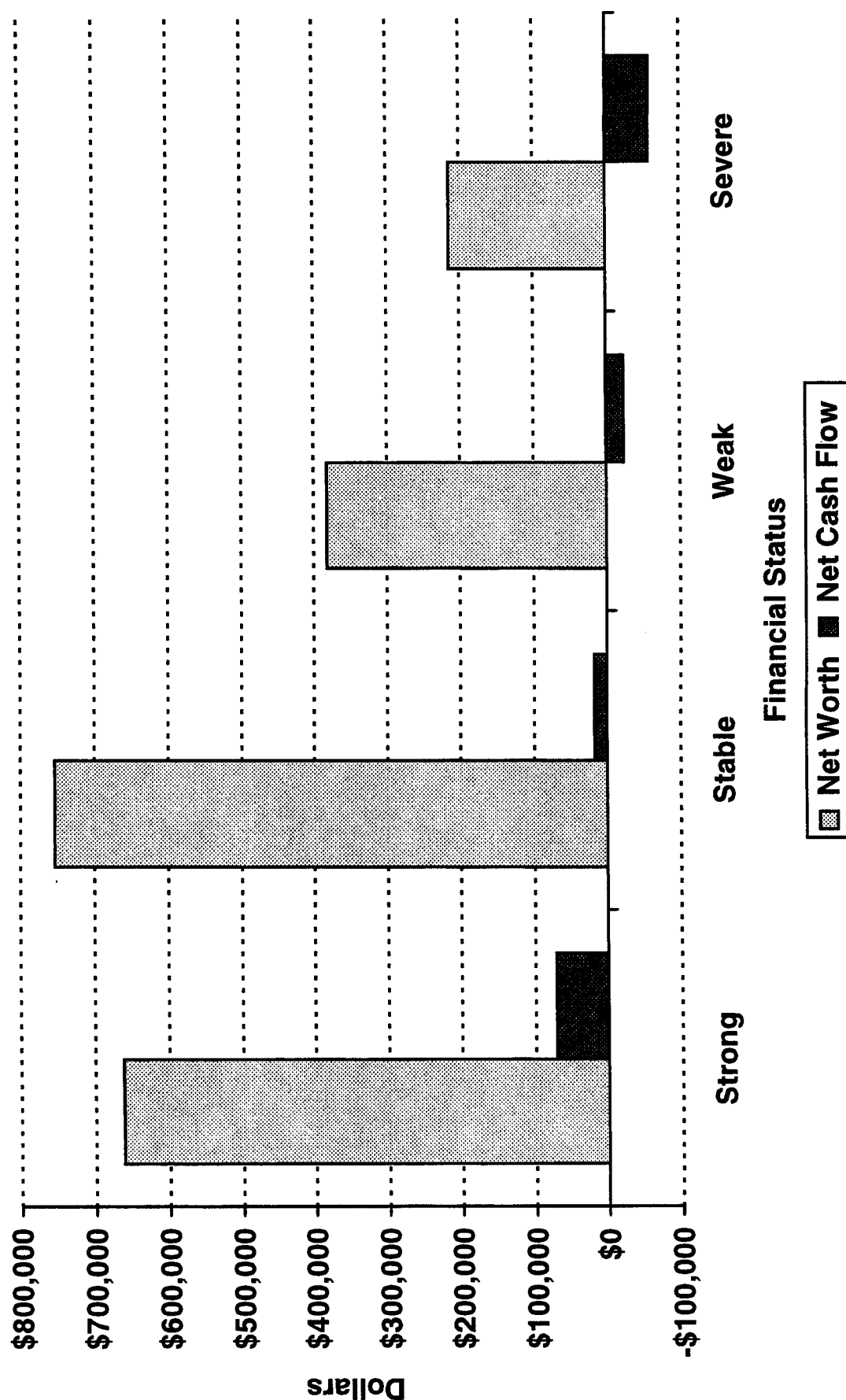
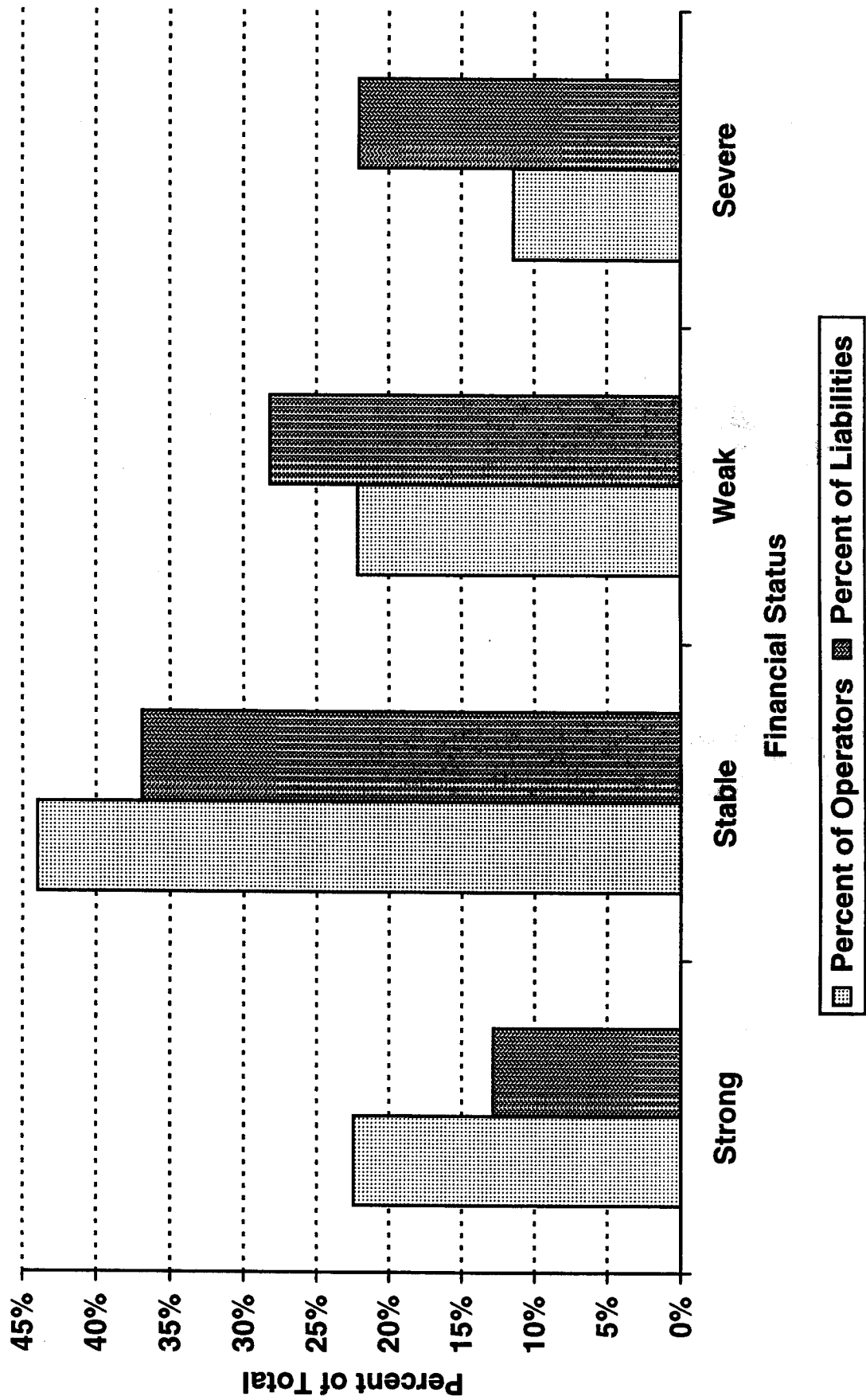Figure 5. Percentage Distributions, Operators & Liabilities by 1998 Financial Status
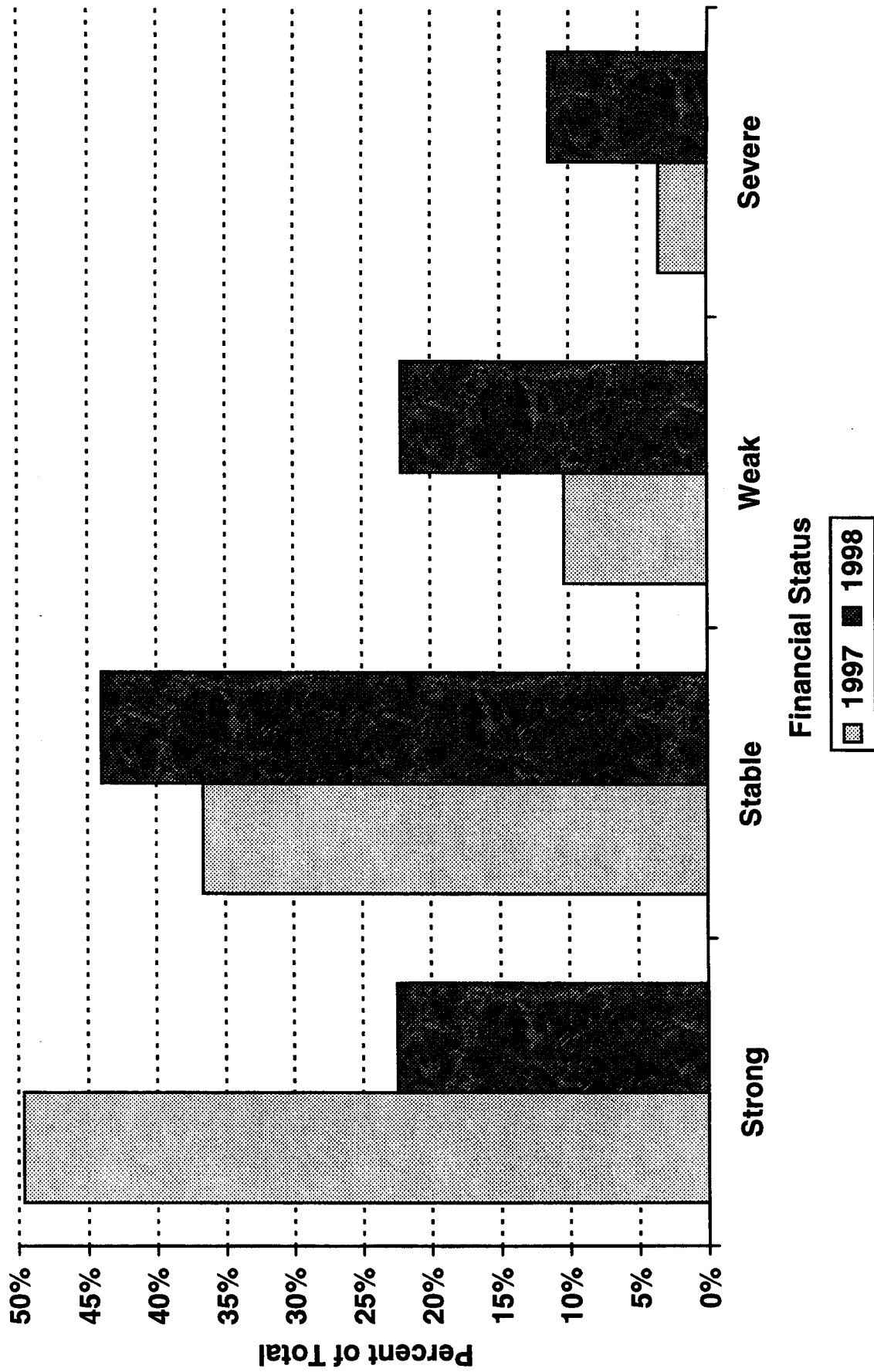
Figure 6. **Change in Operator Distribution, 1997-1998**

Figure 7.   Change in Total Debt Distribution, 1997-1998

Financial Status

☐ 1997   ■ 1998

Percent of Total

45%
40%
35%
30%
25%
20%
15%
10%
5%
0%

Strong   Stable   Weak   Severe

78