

FINANCIAL TROUBLESHOOTING

For a farmer, a lender, or an extension specialist, untangling a farm business that is experiencing financial problems can be a daunting task. Different financial problems often require different strategies. Management decisions, technical difficulties, and family problems contribute in complex ways to undesired financial outcomes. In many cases, a clear course of action to resolve the financial difficulties is not easily determined.

This publication describes a simple framework that farmers, lenders, or extension specialists can use to identify the type of financial problem a farm business is experiencing, clarify the underlying causes, and list a number of management responses that could contribute to its resolution.

The term “troubleshooting” comes from the electronics or automotive repair industry. Using a series of diagnostic tests, along with a decision tree, a wiring diagram, or a taxonomy, a repair specialist can quickly identify and replace a failed component. Unfortunately, a farm business is not as structured or predictable as a radio or an engine. Further, human behavior always complicates the identification and implementation of needed managerial or business changes. Nevertheless, it is possible to borrow some ideas from troubleshooting and apply them to farm business analysis. Using the framework in this publication, you should be able to approach the resolution of financial problems in a more systematic way.

Identifying the problem

The financial performance of any business can be assessed using three well-known concepts: profitability, liquidity, and solvency.

Profitability is the most important determinant of long-term business performance. Profit in an economic sense is the return to management (and operator labor in the case of a family farm) and equity. In the long run, the farm manager must earn a competitive return on these contributed resources if the business is to continue. In the short run, the farmer must earn sufficient returns to at least pay for variable costs. If this is not possible, then some short-term response to minimize losses will be necessary. Profit can be measured with an income statement at the farm or enterprise level. In addition, there are a number of financial measures or ratios that can provide further insight into a farm’s profitability.

Liquidity, or cash flow, refers to the ability of the business to meet its cash obligations within a specific time period. Profitability and liquidity are related concepts—but by no means are they equivalent. Unlike profit, cash flow includes loan principal payments, proceeds from liquidated assets, and family living expenses. Cash flow does not include profitability factors such as depreciation, the value of inventory changes, or capital gains and losses. Liquidity is best measured with cash flow statements or budgets.

Solvency refers to the ability of the farm business to secure debt or withstand adverse conditions. Solvency is synonymous with net worth or owner equity. Owner equity serves as a source of security for acquiring debt capital. Or it can simply serve as a potential credit source, a credit reserve to allow borrowing for unexpected events. Finally, solvency indicates the risk-bearing ability or capacity of the business. Solvency is measured using a balance sheet.

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The first step in financial troubleshooting is to identify the type of problem that the farm is experiencing. Is the problem one of profitability, liquidity, or solvency? More than one of the above? Income statements, cash flows, and balance sheets can be used together to characterize the farm's financial performance. Several years of data summarized in a trend sheet provide an ideal measure. Failing that, a single year's financial statements can give some insight into the problem. Financial statements calculated for a typical year also can help sort out the long-term problems from situations arising from a specific year.

Identifying potential causes

A farm that is experiencing financial difficulties is, in most cases, in that predicament for several reasons. It is extremely rare to find a situation where a single management problem or decision is the sole cause of poor financial performance. The consequences of financial difficulties will be low profitability, liquidity, or solvency. The underlying cause generally will be associated with one or more diagnostic or causative factors—efficiency, scale, and debt structure.

Efficiency, as used in this publication, refers to the observed relationship between inputs and outputs in the farm business. Efficiency can be measured in physical terms—crop yields, pigs per litter, rate of gain. Efficiency also can be examined using economic measures such as variable costs per acre or returns per dollar of feed fed. There are no perfect measures of efficiency. Normally you will have to examine several aspects of the business before a clear picture begins to emerge. Efficiency, to a large extent, is determined by the farmer's managerial and technical skills. In larger operations, efficiency will reflect the performance of the owner as well as hired managers and workers.

Farms with low efficiency generally will show below average profitability. Efficiency and profitability are two sides of the same coin. Low returns and high costs also can affect liquidity. In the long run, poor profitability translates into losses in earned equity and reduced solvency, although

some farm businesses may have sufficient equity to withstand low efficiency for many years.

Improving efficiency, in the majority of cases, requires improving basic farm management and technical skills. This is not easy. Detailed production records can help identify problem areas. Outside technical or managerial consultants or experienced specialists also can be helpful. In the end, improving efficiency means improving resource allocation, enterprise choice, and the motivation and coordination of farm employees.

Scale refers to the size of the farm business. Farms can be too large or too small. In large or complex operations, managerial control or input can be spread too broadly. The efficiency of the business suffers as a consequence. Scale problems occur more frequently with farm businesses that are too small. In particular, scale problems occur when the labor supply is large relative to the capacity of the farm to fully employ and support it. Even large, complex farm businesses can have scale problems of this sort, such as when several families attempt to farm together. Small farms also may have higher production costs per unit because fixed investment costs are spread over relatively low output levels.

Scale can be assessed by determining the labor requirements for the farm and comparing that to the existing labor supply after making allowances for off-farm work. Other labor-based measures of scale include sales per worker or workers per acre. A similar set of measures can be developed for the capital stock—investment per acre, per animal produced, or per worker.

Full employment is, in most cases, necessary to ensure an acceptable standard of living. If labor is in excess, the dollars withdrawn for wages or family living expenses can adversely affect the profitability and liquidity of the farm business. If the scale of a business is inadequate—the farm is too small relative to its labor supply—a number of options can be considered. The labor supply can be reduced through off-farm employment or by eliminating hired or family employees. Or labor utilization can be increased through expansion—

by purchasing or leasing additional assets, shifting to more labor-intensive enterprises, or attempting to improve productivity through more intensive management.

Debt structure refers to the amount of outstanding debt, its term, and cost. A farm can have too little debt, limiting its size, efficiency, growth, and earning capacity. For the most part, however, debt structure problems arise when the debt load is excessive, too costly, or must be paid off over too short a term.

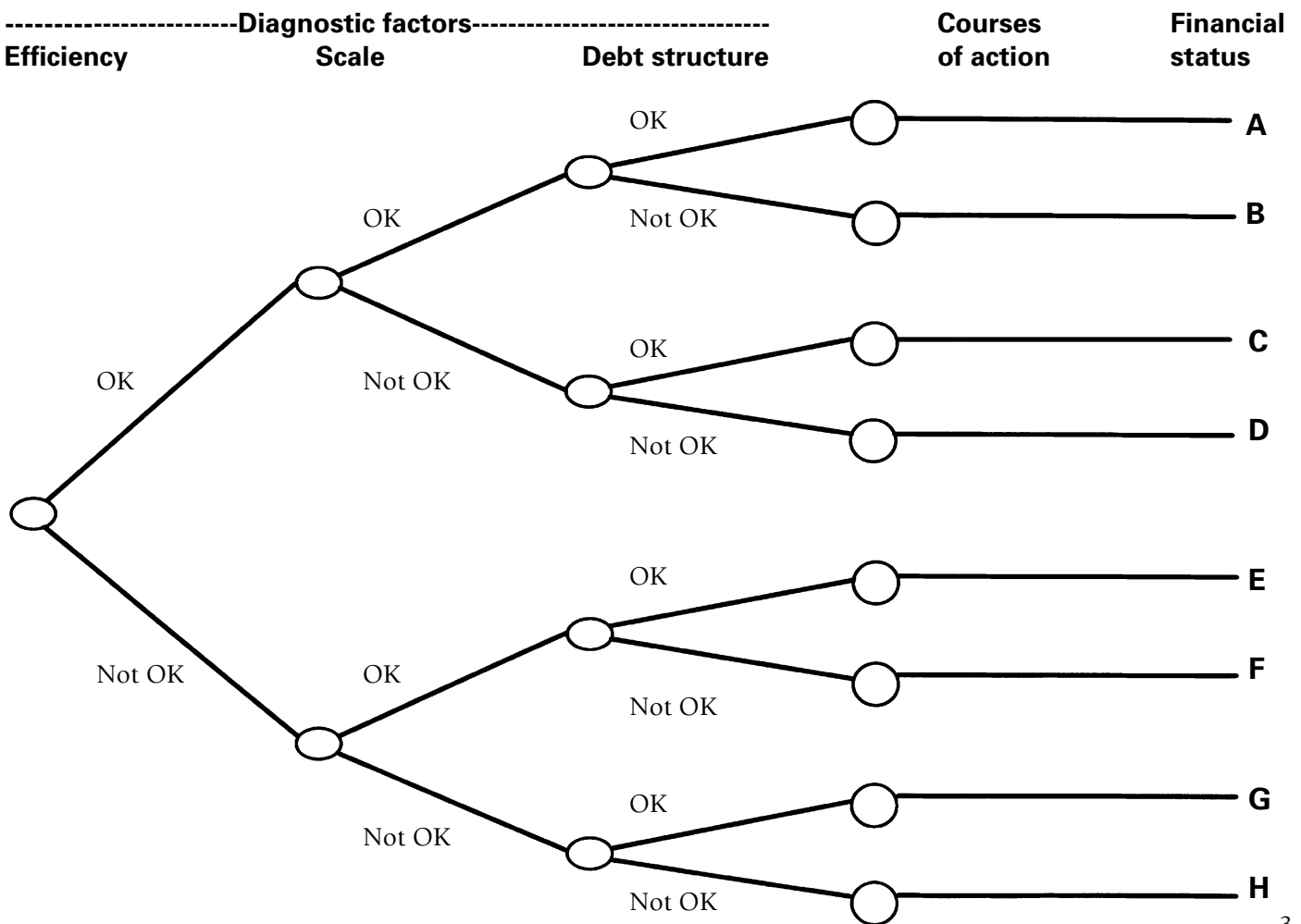
Debt structure influences profitability through interest costs, liquidity through debt servicing requirements, and solvency through the value of the assets available to secure the farm's liabilities. Some debt structure problems are relatively easy

to resolve—for example, lengthening loan terms to improve cash flow. Most, however, involve adjusting the asset or liability structure of the business. Farmers might sell assets and reduce liabilities. Or they may simply attempt to eliminate assets that have debt service requirements in excess of their cash-generating potential. Lenders in certain situations may be willing to consider debt write-off, forbearance on interest or principal payments, or sale-lease back options. Adjusting debt structure usually requires a negotiated settlement between borrower and lender.

Troubleshooting with a diagnostic tree

Figure 1 sketches out a diagnostic tree, a procedure that involves examining the efficiency, scale, and debt structure of a farm business. In the

Figure 1. Financial troubleshooting diagnostic tree



interest of simplicity, the analyst decides whether or not the factor is “OK” or “not OK” at each node (oval) in the diagnostic tree. Clearly this oversimplifies the process. But it demonstrates the interrelationship of efficiency, scale, and debt structure, and the courses of action that might be appropriate to remedy each problem.

The diagnostic tree also implies that a range of specific management options or adjustments

exists for farms on each branch. A farm business with acceptable efficiency but unacceptable scale and debt load faces choices that are quite different from a farm with poor efficiency, acceptable scale, and unacceptable debt load. Further, there always is a question of order or priority in attempting to resolve financial problems. Which problem should be fixed first? Table 1 presents several management courses of action for each branch on the diagnostic tree. The lists are by no means

Table 1. Financial troubleshooting diagnostic factors and courses of action

-----Diagnostic factors-----			Courses of action
Efficiency	Scale	Debt structure	
Financial status A			
OK	OK	OK	<ol style="list-style-type: none"> 1. Review financial performance annually. 2. Keep current on new technology. 3. Examine potential for expansion. 4. Consider off-farm investments.
Financial status B			
OK	OK	Not OK	<ol style="list-style-type: none"> 1. Restructure debt: lengthen term or reduce interest rate to improve cashflow. 2. Sell assets to reduce debt. 3. Reduce debt through “shelving” or write-off. 4. Consider Chapter 12 bankruptcy.
Financial status C			
OK	Not OK	OK	<ol style="list-style-type: none"> 1. Address scale problem or else cash flow problems will develop. 2. Expand by adding an enterprise or expanding existing enterprises. Use records to make expansion decisions. 3. Investigate custom crop farming or custom livestock feeding. 4. Use resources fully: machinery, labor. 5. Examine whether management ability and emotional stability are sufficient to handle the additional stress of expansion. 6. Increase off-farm employment, but assess its effect on efficiency. 7. Consider retiring, if appropriate.
Financial status D			
OK	Not OK	Not OK	<ol style="list-style-type: none"> 1. Identify several low cost ways to expand, such as renting additional land or facilities, custom feeding livestock, crop-share renting vs. cash renting, or custom crop farming. 2. Increase off-farm income, but assess its effect on efficiency. 3. Scale back the farm business to allow a significant increase in off-farm income. 4. Declare Chapter 7 bankruptcy and start again.

exhaustive. They simply illustrate ways in which profitability, liquidity, or solvency problems might be resolved, given a farm's efficiency, scale, and debt structure.

A case study

This section illustrates the financial consequences of inadequate efficiency, scale, and debt structure on a farm business. The analysis follows the troubleshooting diagram presented in figure 1.

Although the financial measures are shown to be significantly affected by changes in the three factors, the specific relationships among the financial measures may not apply to other farm conditions or situations.

Case farm, base analysis. The case farm is assumed to have generally acceptable (i.e., OK) levels of efficiency, scale, and debt structure. The farm produces corn and soybeans on 1,000 acres.

Table 1. Financial troubleshooting diagnostic factors and courses of action (continued)

-----Diagnostic factors-----			Courses of action
Efficiency	Scale	Debt structure	
Financial status E			
Not OK	OK	OK	<ol style="list-style-type: none"> 1. Improve enterprise record keeping and analysis. 2. Re-orient priorities: spend more time on management. 3. Deal with facts. Management is a personal thing and affects self-worth 4. Work to improve and sustain management. 5. Use advisory services. 6. Improve marketing skill and performance. 7. Examine family living expenditures and operating costs. 8. Evaluate whether the operation is too large to manage efficiently. 9. Discuss whether to quit farming while equity is still good. 10. Establish a point where additional credit should not be extended. 11. Decide if an off-farm job would be better than self-employment.
Financial status F			
Not OK	OK	Not OK	<ol style="list-style-type: none"> 1. Determine if debt problems are due to poor efficiency or outside circumstances. Will debt problems develop again if solved now? 2. Evaluate long-term. Is there a future in farming?
Financial status G			
Not OK	Not OK	OK	<ol style="list-style-type: none"> 1. Determine if farming is a "hobby" rather than a business. 2. Consider leaving before equity is gone. 3. Determine if resources can be employed better elsewhere. 4. Obtain off-farm employment.
Financial status H			
Not OK	Not OK	Not OK	<ol style="list-style-type: none"> 1. Decide if resolving this difficult situation is worth the hassle. 2. Consider the effects on marriage, family, health, and so on. 3. Consider selling out or declaring bankruptcy.

Table 2. Balance sheet, income statement**Balance sheet**

	Assets	Liabilities
Current	\$ 596,300	\$158,400
Intermediate	547,900	155,700
Long-term	1,401,800	140,300
Nonfarm	<u>172,900</u>	<u>88,000</u>
Total	\$2,718,900	\$542,400
Net worth		\$2,176,500

Income statement

Revenue	
Crops	\$175,800
Livestock	<u>442,600</u>
Total	\$618,400
Cash Expenses	
Operating	\$328,900
Interest	34,000
Hired Labor	<u>25,000</u>
Total	\$387,900
Net Cash Income	\$230,500
Depreciation	95,800
Net Farm Income	\$134,700

Table 3. Cash flow summary**Inflow**

Net cash farm income	\$230,500
Nonfarm income	<u>15,000</u>
Total	\$245,500

Outflow

Family living	\$ 30,000
Taxes, Social Security	54,400
Debt service	<u>85,800</u>
Total	\$170,200

Net cash flow \$ 75,300

It also has a 250-sow farrow-to-finish enterprise, marketing approximately 4,000 hogs per year. Approximately 70 percent of the corn crop is fed to hogs. The farm is managed by a single family. One spouse works part-time off the farm. They employ one full-time worker plus seasonal labor. Approximately 7,000 hours of labor are used on the farm. The farm's financial statements are summarized in tables 2 and 3. The following changes are made to the case farm to illustrate the impact of altered levels of efficiency, scale, and debt structure on common financial performance measures.

Efficiency of the farm is reduced by increasing the crop production expenses by 10 percent and reducing hog marketing rates by approximately 17 percent, from 8.4 to 7.0 pigs marketed per litter. These changes reduce gross farm income by 9.5 percent and increase cash expenses by 1.9 percent.

Scale is reduced by increasing hired labor by 3,500 hours. This represents the addition of a second family to the farm business—an increase of the yearly labor costs of approximately \$30,000 per year. Total full-time equivalent increases from 2.5 to 4.0 as a consequence.

Debt structure. In the base analysis, the farm business has a total debt-to-asset ratio of 20 percent. To illustrate an unsatisfactory debt structure, the debt-to-asset ratio is increased to 70 percent. Long-term liabilities increase six-fold. Intermediate and current liabilities also are increased.

Table 4 reports a number of common financial measures for the case farm for different combinations of efficiency, scale, and debt structure. The specific combinations A through H follow the troubleshooting diagram in figure 1. A is the base analysis, B is a debt structure problem only, C is a scale problem only, and E is an efficiency problem only. The remaining branches are combinations of the three problems.

Analysis of the case study. Two critical steps in financial troubleshooting involve determining whether or not a financial problem exists and if so, determining its most likely cause. Debt structure problems, in this example, are most clearly indicated by high debt-to-asset ratio, negative or low cash flows and other liquidity measures, and low returns-to-equity. The assumed change in debt structure is rather large. Consequently, the observed change in financial measures is dramatic.

Scale problems, represented by increased labor, reduce profitability and expense measures. Net farm income falls by the increase in labor expense. However, liquidity is not as adversely affected

because the increase in expenses results in reduced tax liability. Output of the farm measured by the turnover ratio is not affected by this change, since this ratio measures only efficiency of capital use and not efficiency of labor use.

Finally, a reduction in efficiency alone results in fairly pervasive changes. Net farm income and all the associated profitability measures decrease. Further net cash flow is reduced by nearly 50 percent.

Summary

Troubleshooting a farm business requires an orderly approach, good data, and occasional

Table 4. Financial troubleshooting case study*

	A	B	C	D	E	F	G	H
Net farm income (\$1,000)	134.7	28.7	105.0	-1.4	68.8	-31.5	38.7	-61.7
Return on assets (%)	4.9	4.9	3.8	3.8	2.4	2.7	1.3	1.5
Profit margin (%)	24.4	24.4	18.6	18.6	13.4	14.6	7.0	8.2
Turnover ratio (%)	20.2	20.2	20.2	20.2	18.2	18.2	18.2	18.2
Return on equity (%)	4.4	-1.8	2.9	-5.7	1.3	-9.2	-0.1	-13.0
Operating expense ratio (%)	57.0	57.2	62.1	62.1	64.5	63.5	69.8	68.8
Net cash flow (\$1,000)	75.3	-134.5	-58.3	-159.0	-38.5	-189.5	-24.1	-219.7
Current ratio (%)	3.8	1.4	3.8	1.4	3.8	1.5	3.7	1.4
Term debt coverage ratio (%)	164.0	64.1	150.0	57.5	133.0	49.4	120.7	41.3
Net worth (\$1,000)	2176.0	873.0	2176.0	873.0	2176.0	873.0	2176.0	873.0
Debt-to-asset ratio (%)	20.0	68.0	20.0	69.0	19.7	69.0	17.8	69.0
Cost of debt (%)	6.4	7.6	6.4	8.4	6.4	7.6	6.4	7.8

*The specific combinations A through H follow the troubleshooting diagram in figure 1. A is the base analysis, B is a debt structure problem only, C is a scale problem only, and E is an efficiency problem only. The remaining branches are combinations of the three problems.

intuitive leaps of faith. The procedure outlined in this publication helps the analyst go from symptoms to cause to cure. The difficulty, however, is that poor financial performance can be caused by several interacting factors. And the resolution of the problems will, in most cases, reflect the unique situation of a given farm business. This suggests that effective troubleshooting involves more than simple rules or financial guidelines. Appropriate financial analysis can come only from careful attention to the resources and needs of the individual farm family.

Related publications

A Financial Profile of Iowa Farm Business 1993, Iowa State University Extension Publication, Pm-1576, August 1994.

Financial Performance Measures for Iowa Farms, Iowa State University Extension Publication, Fm-1845, May 1993.

Iowa Farm Costs and Returns, Iowa State University Extension Publication, Fm-1789, May 1995.

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