



Introducing Farm Business Analysis ¹

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Background

There is great emphasis today on record keeping on the farm. This emphasis is correct. Many farmers presently in financial difficulties could have avoided some of these difficulties if they had had records to consult. The purpose of keeping records is not just to accumulate masses of information. It is to use this information to compare and discern trends in the farm business. These trends help farmers make sensible managerial decisions: 'Is this enterprise profitable?' or 'Can I afford to purchase a new tractor?' or 'Should I change my enterprise mix?' Records are useful only if they are used. Simply keeping them is not sufficient.

This publication is one in a series about the financial statements used in business today. In this publication, records are used to analyze a farm business. Other publications in the series outline the balance sheet, the income statement, the cash flow, and the statement of change in financial position. A sixth publication shows how these statements are linked, and this one shows how to use the information provided by the statements. The reader should have a good grasp of the other publications in the series before tackling this one. They are listed in the reference section (2, 3, 4, 5, 6).

Analysis for the Future

Just as a doctor examines our symptoms to judge our overall health, we can look at the records of a business and assess its financial health, both now and to some extent, in the future. This financial assessment shows how the business has been doing and how we think it will do in the future. It is obviously too late to correct what has happened in the past. But we can make decisions on past trends and steer the business toward our financial objectives. This procedure is similar to a doctor telling us we have been gaining weight and suggesting a diet and exercise to steer us toward a better weight in the future.

Our business examination will use various ratios and indicators taken from the financial statements. The most useful function of these tools is to illustrate trends over time. One year's (or one time period's) figures by themselves have limited use. A series of these figures over time shows where the business is heading and helps us make decisions to alter course.

Four Main Categories of Analysis

There are four basic analysis categories. These are liquidity, solvency, profitability, and efficiency.

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Each category takes most of its information from the balance sheets and income statements of the operation.

The balance sheet uses two valuation columns, generally referred to as "modified cost" and "market value"(2). The modified cost column shows what we paid for our assets (including the depreciated value of any depreciable assets) and what debts we owe. The market value column approximates what our assets are worth in today's market (i.e., the date of the balance sheet). The market value of liabilities includes any income and capital gains taxes owed to the IRS if we sold the business on that date. Though we are probably not planning to sell the business, the market value of those liabilities should be included, because it shows the complete debt picture of the firm, including taxes, and will therefore help in intergeneration transfer plans and general tax management.

Most of the figures in the discussion will refer to cost rather than market value figures. However, it is often useful to use both valuations; the choice will depend on the circumstances. Which to select should become clearer as each of the four analysis categories are discussed.

Liquidity

Liquidity is a short-term concept and shows a firm's ability to meet debts when they become due. Many farms have liquidity problems today, meaning that they cannot pay all the principal and interest on loans due in the following year. There are four main indicators of liquidity: the current ratio, working capital, the debt structure ratio, and the quick ratio.

Current Ratio

Liquidity indicators are found in the balance sheet. One of the most useful is the current ratio, which is current assets over current liabilities, i.e., Equation 1 .

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

If, for example, a business has a current ratio of 2:1, it means that there are \$2 of current assets

covering every \$1 of current liabilities. Agricultural lenders generally like a current ratio of at least 2:1. If the ratio is 1:1, then the firm is barely liquid, and if the ratio is less than this, the firm has liquidity problems. It is always hard to generalize in farming because of the variation between different enterprises and different areas and practices. (Similar problems occur in the medical profession with our periodic checkups). Generally, any current ratio trends below 1.3:1 indicate danger. Conversely, a ratio above 5:1 strongly suggests that the firm is overly liquid and should be investing some of its current assets.

Working Capital

A second liquidity guide is working capital, that is, current assets minus current liabilities. Working capital shows what is available after meeting debts due. Obviously, we need a positive figure; otherwise the firm is illiquid. But the amount of working capital considered reasonable depends on the size and type of the individual firm. We would expect it to grow for an expanding business. However, as a rough guide working capital should be close to expected net farm income. Otherwise, we may not be making sufficient investment in the farm.

If there is insufficient working capital, a fall in total current asset values could wipe it all out. For example, if total current assets were \$60,000 and working capital \$40,000, it would take a 67 percent drop in asset values to eliminate the working capital. Whereas, if total current assets were \$150,000 and working capital still \$40,000, a 27 percent fall in the value of our assets would totally deplete all our working capital.

Debt Structure Ratio

A third liquidity guide, debt structure ratio, illustrates the debt structure of the firm. This ratio is calculated by dividing current liabilities by total liabilities, i.e., Equation 2 .

$$\text{debt structure ratio} = \frac{\text{current liabilities}}{\text{total liabilities}}$$

A ratio of 0.6:1 (often written as 0.6) means that 60 percent of the total farm debt is due the following year. If total debt is small, there is nothing to worry

about. But most farms have considerable debt loads, and a debt structure ratio of 0.6 shows that too much of the farm debt is current.

In general, a ratio of 0.2 or less is safe, and 0.5 or more is dangerous. Trends going in either direction may require some decisions. For example, we could increase borrowing in the former case and perhaps, by transferring some of the current debt into longterm liabilities, arrange for debt restructuring in the latter situation.

Quick Ratio

Our fourth, and final, liquidity ratio is the quick or acid test ratio. This essentially revamps the current ratio by taking out noncash current asset items, including inventory in crops, livestock and supplies, plus cash invested in growing crops, and dividing this numerator by current liabilities, i.e., Equation 3 .

$$\text{quick ratio} = \frac{\text{current assets} - \text{inventory, supplies, growing crops}}{\text{current liabilities}}$$

The remaining assets are cash, marketable securities, and accounts receivable. If these assets are sufficient to cover all current liabilities, the farm is decidedly liquid. However, on most farms which already have a healthy current ratio, a quick ratio around 0.5:1 is probably reasonable. A ratio of less than 0.3:1 usually means that the farmer has a lot of inventory and will have to take current market prices in any forced sale.

The quick ratio may have limited value on many American farms, where grain or livestock inventory dominates current assets. Unlike most nonfarm businesses, all this current inventory is expected to be sold in the following year. So the quick ratio should mainly be used on these farms for trend purposes.

These liquidity ratios give some idea of the firm's current position and short-term progress. They indicate potential trouble and should be calculated regularly. But in order to examine long-term effects we need to look at solvency.

Solvency

Solvency is a long-range concept which shows the firm's ability to meet all debts when assets are sold. Solvency indicators are found in the balance sheet. The main indicators are net worth, the leverage ratio, and the solvency ratio.

Net Worth

As assets minus debt equals net worth, we are obviously looking for a positive figure. A negative net worth shows insolvency. So the basic solvency indicator is net worth. Trends in net worth show trends in solvency. The two-column balance sheet provides a cost net worth and the market value net worth. The cost net worth shows what we paid for our assets, minus any depreciation. The market value net worth shows what we could get for our assets if we sold them at current market prices, minus any contingent taxes. (Contingent taxes are the income and capital gains taxes which we would have to pay if we sold these assets.) Understandably, market value net worth is generally greater than cost net worth. As most of the difference between the two can be attributed to inflation, we need to look at both net worths when examining the solvency of a business.

Leverage Ratio

The leverage ratio is another solvency indicator. This ratio is calculated by dividing total debt by net worth. Most lenders do not want to see leverage ratios over 1.5:1. This means there is \$1.50 of debt for every \$1 of net worth. The higher the ratio, the more risk the firm faces, and, conversely, the lower the ratio, the lower the risk. However, many young farmers need ratios over 4:1 if they are to obtain sufficient capital to farm. Trends are again important. Ratios above 2:1 must be watched carefully. Those below 1:1 may suggest acquiring additional debt to exploit current opportunities.

To understand the advantages and disadvantages of leverage, assume a firm is in the situation shown by the following balance sheet (Table 1).

The leverage ratio is 300,000 /100,000 or 3:1, which is fairly high for a farm. Now suppose our farmer gets a 20 percent return on his assets during the

following year. This return would alter his next balance sheet as follows: (Table 2)

His 20 percent increase in assets has resulted in an 80 percent growth in his net worth. This is why borrowing can be so attractive. Successfully using other people's money provides impressive gains in net worth. If the farmer had no debt, he would only be controlling \$100,000 of assets, and his assets would equal his net worth. So a 20 percent asset return means his net worth would also grow by 20 percent. However, by borrowing he was able to increase his return on net worth fourfold (and reduce his leverage to 1.67:1). This is the advantage of leverage.

Returning to the original 1984 balance sheet, suppose the following year provided a negative 20 percent return on assets. His balance sheet would then read as follows: (Table 3) .

Even though his assets only fell by 20 percent, his net worth has fallen to one fifth of its original value. At the same time, his leverage ratio has increased from 3:1 to 15:1, which is an extremely dangerous level. Hence, this ratio is an important indicator of solvency, and trends in leverage should be watched.

Solvency Ratio

A third guide to business solvency is the solvency ratio, found by dividing total debt by total assets, i.e., Equation 4 .

$$\text{solvency} = \frac{\text{total debt}}{\text{total assets}}$$

The higher the ratio, the more debt there is for each dollar of assets. In the three balance sheets used to illustrate the leverage ratio, the solvency ratios were 0.75, 0.63, and 0.94, respectively. The 0.75 ratio means that there is 75 of debt for every \$1 of assets. Any ratio approaching 1 shows imminent insolvency. In the conditions of the mid 1980s, any ratio above 0.5 looks dangerous, particularly for those businesses that expanded considerably in the mid 1970s. (Again, it must be emphasized that these figures are simply generalizations and we really need to look at debt

levels and trends on specific types of farms. A broiler operation will have different figures than a grapefruit grove.)

Solvency, therefore, covers the long-range aspects of the business. We now need to see how the business is performing throughout the year. This performance is indicated by profitability indicators taken from the income statement.

Profitability

Three Main Indicators

Three main indicators of profitability are shown directly in the income statement (3) . These are (1) net farm income, (2) off-farm income, and (3) net income. The following example shows how they differ.

1. Total farm revenue (\$200,000) minus total farm fixed (\$40,000) and variable costs (\$110,000) equals net farm income. Net farm income is therefore \$50,000.
2. Off-farm income comes from nonfarm jobs and custom work on other farms, e.g., spouse earning \$15,000, plus custom work paying \$5,000. Off-farm income is therefore \$20,000.
3. Net income is net farm income plus off-farm income, minus all income taxes and Social Security payments due on these income sources.

Net income shows what is available to pay for (1) principal on past debts, (2) new farm investments, (3) family off-farm investments such as retirement funds, stocks, mutual funds, etc, (Retirement fund investing may alter the income taxes due, which were calculated earlier) and (4) family living expenses. Net income is the real bottom line of a business and is the single most important indicator of profitability. It has increased in importance in recent years as more and more money gets to the farm from off-farm sources. (About 70 percent of the farm family income in 1984 came from off-farm jobs.)

Ratio Indicators

The remaining measures of profitability are all ratios. These are return on assets, return on equity, growth in net worth, and the profit margin ratio.

Return on Assets . Return on assets (ROA), sometimes known as the rate earned on capital investment, is calculated as follows: Equation 5 .

$$ROA = \frac{\text{net farm income} + \text{interest paid} - \text{family withdrawal}}{\text{beginning total assets}}$$

Interest paid is an accrued figure. It is the amount of interest that was paid during the year, adjusted for the difference between the opening and closing accrued interest shown on the beginning and ending balance sheets. The interest paid figure is calculated on an income statement schedule and then entered on the income statement.

The figure is included in this equation because we are looking for a return on all the assets in the firm. This is because assets are generally composed of equity capital and debt capital. Assets are usually purchased with a down payment of our own money (equity capital) and borrowed money (debt capital). For example, we might buy a \$60,000 tractor with \$20,000 equity and \$40,000 debt capital. What does all this have to do with "interest paid:" simply that we pay interest on debt capital but not on equity capital. And interest on debt has already been subtracted as part of our costs when we calculated net farm income. We now need to add it back in order to find a total return on assets.

Family withdrawals are simply a proxy for the farmer and farm-family unpaid labor. The figure includes family living expenses and retirement account investments. Family withdrawals are calculated in the statement of owner equity, found on the back of the balance sheet (1).

The denominator is beginning total assets. (Some people prefer to use an average of the opening and closing total assets as the denominator. Whichever you use, be consistent.) For example, if we are looking at the January 1 through December 31, 1985 income statement, our opening and closing balance sheets are December 31, 1984, and December 31, 1985, respectively. The beginning total assets are

therefore the total farm assets shown in the December 31, 1984 balance sheet. This figure is what we started with, and so we can use it to calculate the 1985 return on assets.

Return on Equity . Return on net worth or equity (ROE) is a second useful profitability ratio. It is calculated thusly:

Equation 6 .

$$ROE = \frac{\text{net farm income} - \text{family withdrawals}}{\text{beginning net worth}}$$

This figure shows us what we are getting from investing our own money in the farm business. If this return is less than the return we could obtain from an equal or less risky investment, then there is a good economic argument that we should leave farming and invest elsewhere. (It is probably just as well that most farmers use more than this economic logic in deciding where to invest.) A cost-based ROE greater than 4 percent is particularly good for the mid 1980s.

Growth in Net Worth . Rate of growth in net worth is another useful profitability ratio. This ratio may initially seem more of a solvency than a profitability ratio. But how does growth in net worth occur? Net income is the deciding factor, and net income is our basic profitability measure. Any principal payments or investments made during the year will raise net worth. Family withdrawals will deplete it.

Hence: Equation 7 .

$$\text{Growth in net worth} = \frac{\text{net income} - \text{family withdrawals}}{\text{beginning net worth}^*}$$

We obviously want a positive growth rate and, mostly, the higher the better. A good, continual and even growth in net worth shows a good business. Growth in net worth is a major indicator for a lender. (* Or, substitute the denominator of average net worth, similar to the alternative total asset denominator.)

Profit Margin Ratio . The last profitability ratio we will look at is the profit margin ratio: Equation 8 .

This ratio essentially shows the return to the family's management and farm capital for every dollar of farm production. The value of farm

$$\text{Profit margin ratio} = \frac{\text{net farm income} + \text{unpaid farm and family labor}}{\text{value of farm production}}$$

production (VFP) is gross sales plus inventory changes, minus feed purchases and purchases of livestock for fattening. VFP is simply the value added by the farm. The unpaid farm and family labor is an estimate of the salary that the people involved could earn in another available job. It is, in other words, the economic concept of opportunity cost. A figure of 11 cents shows that there is an 11 percent return to management and capital for each \$1 of farm production. Again, the higher the percentage, the greater the return.

All these profitability measurements provide information on how well the business is doing. But they do not show whether the resources are used efficiently. This is where the final set of indicators comes in.

Efficiency

These efficiency guides basically measure the relationship between inputs and outputs. They can be divided into physical and financial measurements. As some of the financial indices include market prices, the efficiency measurements cover the producing, marketing, and financing tasks of the business. We are therefore really looking at farm management indicators.

Physical Measures

Farmers feel familiar with most of the physical relationships of their business. The following items highlight some of the most common ones: yield per acre; yield per animal in terms of births, conceptions, outputs and herd life; pounds of feed per pound of live-weight gain and other conversion factors; and machinery measurements, including miles per gallon, units per time period, performances per labor hour, and similar efficiency factors. These figures come from the basic physical records of the business.

Financial Measures

The financial measures of efficiency are all ratios. These include the operation ratios, the debt service ratio, and the times interest earned ratio.

The Operation Ratios . The operation ratios are a set of five ratios, all using the same denominator, namely, the value of farm production, VFP. The ratios come from the income statement. Summing the numerators gives the VFP, so all the ratios collectively add to 1 or to 100 percent. They are as follows: Equation 9 .

- (1)
$$\frac{\text{total expenses minus depreciation and interest, as shown on the income statement}}{\text{VFP}}$$
- (2)
$$\frac{\text{depreciation}}{\text{VFP}}$$
- (3)
$$\frac{\text{interest, as shown in the income statement}}{\text{VFP}}$$
- (4)
$$\frac{\text{net farm income}}{\text{VFP}}$$
- (5)
$$\frac{\text{gain or loss on disposal of farm assets, as shown in income statement}}{\text{VFP}}$$

The fifth ratio is usually the residual. If there is a gain in selling farm assets, then this ratio must be subtracted from the sum of the previous four ratios in order to get 100 percent. Likewise, if there is a loss in sales, the ratio is added to the other four. In the former case, the gain has already been counted in the net farm income, so it must now be subtracted to avoid double counting. In the latter case, the depreciation reflects a higher book figure for those assets sold at a loss, so we add losses back to increase returns by decreasing costs.

For example, if the depreciated value of a machine is \$1,000 and we sold it for \$1,300, then we have a gain of \$300. Conversely, if the sale only brought \$600, then we have lost \$400.

Recent trends have shown that interest represents an increasing proportion of costs. Interest now rivals the depreciation proportion, while it was only about a quarter of depreciation in the early 1970s. Operating expenses will probably represent the lion's share of these ratio proportions. So farmers usually try to increase output to counter any cost increase.

Debt Service Ratio . The next two ratios are concerned with debt. The debt service ratio shows the proportion of the VFP that pays for annual principal and interest payments on intermediate and long-term assets: Equation 10 .

$$\text{Debt service ratio} = \frac{\text{principal} + \text{interest due on intermediate and long-term loans for capital assets}}{\text{VFP}}$$

Equation 10.

The recent trend has been for this proportion to grow as farmers attempt to service their past debt fueled expansions with lower commodity prices. This ratio is one of the most important for agricultural lenders. Many of them would be reluctant to lend anything but operating capital (ie., for current assets) to firms where the proportion is over 33 percent.

Times Interest Earned Ratio . The final ratio we will look at is the times interest earned ratio. (There are, unfortunately, several definitions of this ratio. The one used is probably the most useful for farmers.) It shows how much money is available to pay interest: Equation 11 .

$$\text{Times interest earned ratio} = \frac{\text{net income} + \text{interest paid} - \text{family withdrawals}}{\text{interest due}}$$

Recall that net income is the bottom line of the income statement. It shows what is available for family living expenses, for new investment, and for principal payments. Assuming that family withdrawals must continue, regardless of the firm's performance, we add back the interest paid to show the whole amount available to pay interest. Interest paid is the same as interest due if the manager meets all his interest bills.

If the ratio is 2:1, this means that there are \$2 available for every \$1 of interest due. If the ratio is less than 1, the farmer has insufficient money available to pay his interest. Hence, this ratio is sometimes called the "embarrassment ratio."

The Future of Ratio Analysis

Ratio analysis has been used by non-farm businesses for over 50 years. There are widely available recognized standards for many of these

ratios for many industries. Thus, an individual firm in one of these industries can compare its performance with the industry standards.

Ratio analysis is not widely used in farming, since most farmers do not keep records. But it is also true that farming is more diversified than industry. It is difficult (if not meaningless) to compare individual farms engaged in different enterprises. It may also be difficult to compare farms of different sizes, even if they produce the same products. However, farm industry standards can and should be produced, though that will take some time.

The main use of ratio analysis in farming will undoubtedly be examining the trends in each ratio over time on an individual farm business. They can serve as guides to decision making, particularly when trends are heading in the wrong direction.

These are four basic points to remember when using ratio analysis.

1. Compare only like with like. It is not very useful to contrast the ratios of a layer enterprise, which has rapid turnover, with a pedigree beef-breeding unit, which does not.
2. Do not use only one ratio for decision making. For example, the current ratio may be 0.5:1, which shows illiquidity. But other ratios may partly offset this situation, showing solid solvency.
3. Use ratios for trends and make decisions on the trends, rather than on an individual year's performance. Any one year may be unique. What matters is the direction of the trend in that particular ratio.
4. Be patient and learn. There are no standards yet available for the industry. It is only by starting now that we will get the necessary data to produce these standards.

Appendix Comments

The appendix runs through an analysis of a farm using very simple figures to illustrate the main points of this publication. Follow along and try the exercise recommended at the end of the appendix.

References

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APPENDIX: An Example for Analysis

This example farm is meant to show a typical farm in the early 1980s. The farm has liquidity problems but is solvent. Its net worth is growing, although this growth relies heavily on off-farm income. It appears to be managed efficiently and can pay its bills, despite a high annual interest payment. What would you do if this were your business? Look at the broad categories first and consider what you would do about liquidity. Think. It may not be easy, but it will be worthwhile. This section consists of seven tables: Balance Sheet 1 ; Income Statement ;

Liquidity ; Solvency ; Profitability ; Efficiency ; and a combined summary table of Balance Sheet 2, Statement of Owner Equity, and Summary of Changes During Period.

What Happened During Period

The \$12,000 shown in the summary below is the difference between the net income and family withdrawals for the year (i.e., \$30,000-\$18,000). It is equivalent to the business term "residual earnings" and shows what was available during the year for buying assets and reducing liabilities. This \$12,000 is also the increase in net worth, as shown earlier. Stated another way, net worth at the beginning of the period plus residual earnings equals the end of period net worth.

So the business generated \$12,000. But liabilities fell by \$47,000. How was this done? It was largely fueled by the \$35,000 decrease in assets, of which \$5,000 came from current and the remaining \$30,000 from intermediate assets. The current decrease probably stemmed from selling inventory, while the intermediate reduction was most likely due to depreciation. Depreciation adds cash by reducing taxes. This is why an after tax cash flow is more valuable than a pretax cash flow.

ANALYSIS

Start by examining the broad picture of the business, as shown by its assets, liabilities, net worth, and income. What happened in each category? Why did it happen? What do we do about it?

Then continue by looking at liquidity, solvency, profitability, and efficiency. See the liquidity ratios and particularly the trends in each ratio. What happened? Which way is the trend going? What action should we take?

Follow the same procedure with solvency and then combine the liquidity and solvency findings into a complete picture of the structure of the business. What does this picture tell us? Is the trend in structure meeting our objectives for this business? What do we need to do?

The next step is to see what this structure is producing in terms of profitability and efficiency. Run through each ratio and see what the trends show. It may be possible to find comparative figures for some of the efficiency ratios. Many of them are production oriented, and land-grant institutions tend to specialize in this area. Discussing your findings with other people will certainly help in acquiring expertise in this new and unfamiliar arena called farm business analysis.

Table 1.

Table 1	December 31, 1984	
Assets(\$, 000)	Liabilities and Net Worth(\$,000)	
400	Liabilities	300
_____	Net Worth	100
TOTAL 400	TOTAL	400

Table 2.

Table 2	December 31, 1985	
Assets(\$, 000)	Liabilities and Net Worth(\$,000)	
480	Liabilities	300
_____	Net Worth	180
TOTAL 480	TOTAL	480

Table 3.

Table 3	December 31, 1985	
Assets(\$, 000)	Liabilities and Net Worth(\$,000)	
320	Liabilities	300
_____	Net Worth	20
TOTAL 320	TOTAL	320

Table 4.

Net Farm Income	50,000
Off-Farm Income	+ 20,000

Table 4.

Income Taxes	- 10,000
Social Security	2,800
NET INCOME	= 57,200

Table 5.

ASSETS		LIABILITIES AND NET WORTH			
		Cost	Market Value	Cost	Market Value
Current	100	110	Current	100	105
Intermediate	200	210	Intermediate	120	130
Long-term	700	1000	Long-term	400	440
			Total liabilities	620	675
			Net worth	380	645
TOTAL	1000	1320	TOTAL	1000	1320

Table 6.

Table 2 Income Statement Jan. 1 - Dec. 31, 19__ (\$,000)		
Revenue	\$	
Sales	120	
Inventory Change (+)	15	
Other	5	
Gross Revenue	140	
Minus livestock for fattening and feed bought	16	
VALUE OF FARM PRODUCTION	124	(1)
Expenses		
Operating expenses	64	
Depreciation	13	
Interest	24	
(Gain) or loss on asset sales (+)	1	
TOTAL COSTS	102	(2)
Income		
Net farm income (1-2)	22	(3)
Off-farm income	14	
Minus income taxes and Social Security	6	
NET INCOME (3+4)	830	(4)

Table 7.

Table 3 Liquidity			Cost (\$,000)		Market Value (\$,000)	
Current Ratio	=	current assets / current liabilities	100 / 100	=	110 / 105	1.05
Working Capital	=	current assets - current liabilities	100 - 100	=	110 - 105	5
Debt Structure	=	current liabilities / total liabilities	100 / 620	=	105 / 675	0.15

Table 8.

Table 4 Solvency			Cost (\$,000)		Market Value (\$,000)	
Net Worth	=	assets - debt	1000 - 620	=	1320 - 675	645
Leverage Ratio	=	total liabilities / net worth	620 / 380	=	675 / 645	1.04
Solvency Ratio	=	total liabilities / total assets	620 / 1000	=	675 / 1320	0.68

Table 9.

Table 5 Profitability										
NFI = net farm income = \$22,000			OFI = off-farm income = \$14,000			NI = net income = \$30,000				
Ratio Indicators										
			Cost			Market Value				
			(\$,000)					(\$,000)		(%)
ROA (return on assets)	=	(NFI + interest paid - family withdrawals) / beginning total assets	=	(22 + 24 - 18) / 1000	=			(22 + 24 - 18) / 1320	=	2.1
ROE (return on equity)	=	(NFI - family withdrawals) / beginning net worth	=	(22 - 18) / 380	=			(22 - 18) / 645	=	0.6
Growth in Net Worth	=	(NI - family withdrawals) / beginning net worth	=	(30 - 18) / 380	=			(30 - 18) / 645	=	1.9
Profit Margin	=	(NFI + interest paid - unpaid labor*) / value of farm production (VFP)	=	(22 + 24 - 15) / 124	=				=	25
* estimated at \$15,000										

Table 10.

Table 6 Efficiency					
Operation Ratios				(\$,000)	(%)
1	(total expenses - depreciation - interest) / VFP	=		(102 - 13 - 24) / 124	= 52
2	depreciation / VFP	=		13 / 124	= 10
3	interest / VFP	=		24 / 124	= 18
4	NFI / VFP	=		22 / 124	= 19
5	(gain) or loss on asset sales / VFP	=		1 / 124	= 1
Debt Service Ratio		=		(20 + 22 + 12) / 124	= 0.43
Times Interest Earned Ratio		=		(30 + 24 - 18) / 24	= 1.5
* interest estimated at \$12,000; annual principal payments are \$20,000 for long-term debts and \$22,000 for intermediate debts					

Table 11.

BALANCE SHEET (2) Dec. 31, 199__ (\$,000)	
ASSETS	LIABILITIES AND NET WORTH

Table 11.

	Cost	Market Value		Cost	Market Value
Current	95	100	Current	95	98
Intermediate	170	180	Intermediate	98	104
Long-term	700	980	Long-term	380	420
			Total liabilities	573	622
			Net worth	392	638
TOTAL	965	1260	TOTAL	965	1260
Statement of Owner Equity (\$,000)					
Net worth at beginning of period (cost)					380
Net income for period					30
Gifts and inheritances					----
Additions to partnership or corporation capital					----
Total					410
Minus gifts for estate transfer					----
Minus net worth at end of period (cost)					392
			Therefore, family withdrawals for period		18
Summary of Changes During Period (\$,000)					

Table 11.

1	net worth at beginning	380
	+ net income	+30
	- family withdrawals	-18
	= net worth at end (cost)	392
2		
	assets decreased, or 1000-965 (cost)	35(-)
	liabilities decreased, or 620-573 (cost)	47 (+)
	therefore,	12
	net worth increased	