

Financial Performance Measures for Iowa Farms

Ag Decision Maker

File C3-55

Farmers who have a large investment in land, machinery, livestock, and equipment need to keep informed about the financial condition of their operations. Some useful measures of financial performance can be calculated from information found in most farm record books and accounting programs.

These measures can help farmers assess the profitability, debt capacity, and financial risk currently faced by their businesses. The measures presented in this publication are based on guidelines of the Farm Financial Standards Council.

Types of Measures

Five different areas of financial condition are measured. **Liquidity** refers to the degree to which debt obligations coming due in the next 12 months can be paid from cash or assets that will be turned into cash. This is measured by the current ratio and the amount of working capital. A more thorough analysis of liquidity can be made with a cash flow budget. Extension publication *FM 1792* or *AgDM File C3-15, Twelve Steps to Cash Flow Budgeting*, explains this in detail.

Solvency refers to the degree to which all debts are secured, and the relative mix of equity and debt capital used by the farm. The total debt-to-asset ratio is one of several ratios used to measure solvency, all of which are based on the same relationship of assets, liabilities and net worth.

Profitability refers to the difference between income and expenses. One important measure of profitability is net farm income. Annual rates of return on both equity capital and total assets also can be calculated and compared to interest rates for loans or rates of return from alternative investments.

Financial efficiency ratios show what percent of gross farm revenue went to pay interest, operating expenses, and depreciation, and how much was left for net farm income. The asset turnover ratio measures how much gross income was generated for each dollar invested in land, livestock, equipment and other assets.

Repayment capacity measures show the degree to which cash generated from the farm and other sources will be sufficient to pay principal and interest payments as they come due.

Using Performance Measures

Values for the farm financial measures should be calculated for several years to observe trends and to avoid making judgments based on an unusual year. Typical historical values for most of these measures can be found in the tables at the end of this publication. They are based on data obtained from the Iowa Farm Business Associations. Values will vary according to the major enterprises carried out, farm size, location and the type of land tenure. Other comparable data can be found in the annual **Farm Business Summaries for Iowa** (*FM 1781 through FM 1787*) and the annual **Iowa Farm Costs and Returns** (*FM 1789*).

Farms with good liquidity typically have **current ratios** of at least 2.0 or higher. Dairy farms or other farms that have continuous sales throughout the year can safely operate with a current ratio as low as 1.5, however. Operations that concentrate sales during several periods each year, such as cash grain farms, need to strive for a current ratio as high as 3.0, especially near the beginning of the year.

The amount of **working capital** needed depends on the size of the operation. Records show that working capital measured at the beginning of the year is typically equal to about one-fourth to one-third of the farm's annual gross revenue. For dairy farms, working capital can be as low as 20 percent of gross revenue, but cash grain farms may need as much as 50 percent.

Total **debt-to-asset ratios** tend to be higher for larger farms and for farms that specialize in livestock feeding. Ratios of 30 to 40 percent are common among Iowa farms, although many operate with little or no debt. A high debt load does not make farms less efficient, but principal and interest payments eat into cash flow. High efficiency farms are able to service a higher debt load safely.

Another guideline for controlling debt is to not let total liabilities exceed yearly gross income. High profit farms typically have total debts that are less than their gross income, while low profit farms have debt levels in excess of gross income.

Net farm income is highly variable from year to year, and is closely tied to the size and efficiency of the operation. It also depends on the amount of debt the farm is carrying. The **rate of return on farm assets** is quite variable, too, but average longterm rates of 6 to 8 percent have been common in Iowa. High profit farms may average more than 12 percent, however, while low profit farms often realize a return of only 2 percent or less. The average **rate of return on farm equity** measures how fast farm net worth is growing, excluding changes in land and machinery values. It is usually a little lower than the return on farm assets. Highly leveraged farms may earn little or no return on equity when interest rates are high. On the other hand, if the farm's overall return on assets is higher than the cost of borrowed money, the return on equity may be quite high and net worth will grow rapidly.

Operating profit margin ratios have averaged about 15 to 20 percent in the last decade. High profit farms have had ratios of 20 to 30 percent, while low profit farms have had ratios of less than 10 percent. Farms that hire or rent assets such as labor, land or machinery will have a lower operating profit margin because operating costs are higher. However, they will usually generate a larger gross and net income. Farms with owned or crop share rented land will have a higher operating profit margin because they have fewer operating expenses.

Asset turnover ratios for typical farms are about 30 to 35 percent, but they can range from 20 to 25 percent for low profit farms, up to 40 to 45 percent for high profit farms. The asset turnover ratio measures the efficient use of investment capital while the operating profit margin ratio measures the efficient use of operating capital. Since they are substitutes for each other (owned and rented land, for example), farms that are high in one measure may be low in the other.

Farms with mostly rented land should have higher ratios than farms with mostly owned land, generally around 50 percent. Rented farms also will have higher **operating expense ratios**, since rent paid is included in operating expenses. Likewise, rented farms will tend to have lower **depreciation** and **interest expense ratios** than owned farms. Typically, about 60 to 70 percent of gross revenue

goes for operating expenses, and 5 to 10 percent each for depreciation and interest.

The average **net farm income ratio** for Iowa farms has been in the 15 to 20 percent range in the last decade. High profit farms have averaged from 25 to 30 percent, and low profit farms less than 5 percent.

The farm record data that was available did not contain enough information to calculate historical repayment capacity measures. However, the **coverage ratio** should be at least greater than one, and the **repayment margin** should be large enough to cover any possible shortfalls in cash flow that cannot be paid from savings or other sources of short-term liquidity.

The maximum debt-to-asset ratio shows the highest debt load the farm could support given the current year's return on assets and average interest rate on all debt. This assumes that value of unpaid labor is equal to family living withdrawals, and capital asset replacement is equal to depreciation. If the ROA is negative, no debt can be supported.

If comparisons show that a farm's financial performance is below average, further analysis should be done to determine the sources of the problem. Areas of possible concern are production efficiency, marketing, purchasing of inputs, and the scale of the operation in relation to the size of the work force. Enterprise analysis and production records can help identify problems that contribute to poor financial performance.

Calculating these financial performance measures for several years will reveal a great deal about the financial health of a farm business. Particular attention should be paid to any trends that are developing. Any decisions about investments or borrowing, however, also should consider current and future economic conditions, availability of collateral, and the experience and character of the farm operator.

Information Needed

The worksheet at the end of this publication shows the basic information needed to compute the financial measures. **Asset** and **liability values** should be recorded as close to the beginning and ending of the accounting year as possible. Include only **farm** assets and liabilities. Farm assets include any property or investment that generates returns which are included in farm income.

Farm Financial Measures by Year

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007*	98 to 07 Average
Liquidity Measures (Dec. 31)											
Current ratio	2.45	2.14	2.60	2.46	3.91	2.94	2.95	4.39	2.92	3.92	3.07
Working capital	\$94,155	\$92,529	\$96,497	\$88,453	\$96,596	\$106,386	\$116,220	\$115,895	\$138,963	\$295,215	\$124,091
Solvency Measure (Dec. 31)											
Total debt to asset ratio	32%	29%	29%	30%	28%	28%	27%	25%	23%	24%	27%
Profitability Measures											
Net farm income	\$5,973	\$29,225	\$44,860	\$26,209	\$37,743	\$44,368	\$58,785	\$49,041	\$72,865	\$152,084	\$52,115
Rate of return on farm assets	-2.1%	1.7%	6.0%	2.3%	4.7%	4.7%	5.9%	4.8%	8.5%	13.9%	5.0%
Rate of return on farm equity	-8.9%	-2.5%	6.0%	-1.8%	4.2%	3.9%	4.7%	5.2%	8.1%	19.2%	3.8%
Operating profit margin ratio	-4%	6%	16%	6%	14%	14%	15%	17%	22%	34%	14.0%
Financial Efficiency Measures											
Asset turnover ratio	32%	35%	37%	38%	39%	37%	35%	33%	37%	42%	37%
Operating expense ratio	81%	70%	62%	69%	63%	67%	66%	69%	63%	53%	66%
Depreciation expense ratio	12%	10%	9%	11%	10%	9%	9%	9%	8%	7%	10%
Interest expense ratio	10%	8%	7%	8%	7%	6%	4%	4%	4%	5%	6%
Net farm income ratio	-3%	12%	22%	12%	20%	18%	21%	18%	25%	35%	18%

Source: *Iowa Farm Costs and Returns*, ISU Extension publication FM 1789/AgDM C1-10, Iowa Farm Business Association

* Due to changes in weighting procedures, 2007 is not directly comparable with previous years. Farms with a value of farm production less than \$100,000 are not included after 2006, due to low numbers.

Farm Financial Measures by Farm Type (1998-2007 Average)

	Cash Grain	Farrow to Finish	Beef Feeding	Beef Raising	Dairy
Liquidity Measures (Dec. 31)					
Current ratio	2.37	2.41	2.04	2.45	2.15
Working capital	\$118,216	\$198,611	\$233,298	\$159,659	\$119,119
Solvency Measure (Dec. 31)					
Total debt to asset ratio	27%	33%	36%	36%	40%
Profitability Measures					
Net farm income	\$66,766	\$99,059	\$78,694	\$55,491	\$89,800
Rate of return on farm assets	7.3%	7.4%	6.7%	5.3%	9.3%
Rate of return on farm equity	6.6%	7.0%	6.4%	6.3%	13.7%
Operating profit margin ratio	22%	22%	24%	18%	25%
Financial Efficiency Measures					
Asset turnover ratio	43%	40%	34%	36%	39%
Operating expense ratio	64%	64%	63%	64%	60%
Depreciation expense ratio	7%	6%	7%	8%	9%
Interest expense ratio	6%	7%	10%	8%	7%
Net farm income ratio	23%	23%	21%	20%	24%

Source: *Iowa Farm Costs and Returns*, ISU Extension publication FM 1789/AgDM C1-10, Iowa Farm Business Association

Farm Financial Measures by Profitability (1998-2007 Average)

	Total Value of Agricultural Production		
	Average of All Farms	High Profit Third	Low Profit Third
Liquidity Measures (Dec. 31)			
Current ratio	3.07		
Working capital	\$124,091		
Solvency Measure (Dec. 31)			
Total debt to asset ratio	27%	37%	29%
Profitability Measures			
Net farm income	\$52,115	\$162,930	\$24,592
Rate of return on farm assets	5.0%	13.7%	-0.5%
Rate of return on farm equity	3.8%	20.7%	-5.1%
Operating profit margin ratio	14.0%	31%	5%
Financial Efficiency Measures			
Asset turnover ratio	37%	48%	27%
Operating expense ratio	66%	56%	75%
Depreciation expense ratio	10%	7%	12%
Interest expense ratio	6%	5%	9%
Net farm income ratio	18%	32%	4%

Source: *Iowa Farm Costs and Returns*, ISU Extension publication FM 1789/AgDM C1-10, Iowa Farm Business Association

Farm Financial Measures Worksheet

Information needed

The following items can be taken from the farm's beginning and ending net worth statements (balance sheets), using the fair market value. For items C and D find the average of the beginning and ending values.

	Beginning	Ending	Average
A. Current farm assets	_____	_____	
B. Current farm liabilities	_____	_____	
C. Total farm assets	_____	_____	_____
D. Total farm liabilities	_____	_____	_____
E. Accrued Interest	_____	_____	
F. Scheduled principal and interest payments on term debt and capital leases during the next 12 months	_____		

The following items can be taken from the latest net income (profit and loss) statement and/or income tax records. If an accrual accounting net income statement is not available, one can be developed using publication FM 1824/AgDM C3-56, *Farm Financial Statements*.

G. Gross farm revenue (accrual)	_____
H. Net farm income from operations (accrual) (excluding capital gains and losses)	_____
I. Farm capital gains and losses	_____
J. Farm interest expense (cash interest paid - beginning E + ending E)	_____
K. Farm depreciation expense	_____
L. Non-farm income received	_____
M. Family living and income tax expenditures	_____
N. Value of operator and unpaid family labor and management	_____

Financial Performance Measures

Liquidity measures	Your farm	Comparison
1. Ending current ratio [A / B]	_____ %	_____ %
2. Ending working capital [A - B]	\$ _____	\$ _____
Solvency ratio		
3. Ending total debt to asset ratio [D / C]	_____ %	_____ %
Profitability measures		
4. Net farm income [H + I]	\$ _____	\$ _____
5. Rate of return on farm assets (ROA) [(H + J - N) / average C]	_____ %	_____ %
6. Rate of return on farm equity (ROE) [(H - N)/(average C - average D)]	_____ %	_____ %
7. Operating profit margin ratio [(H + J - N / G]	_____ %	_____ %
Financial efficiency ratios		
8. Asset turnover ratio [G / average C]	_____ %	_____ %
9. Operating expense ratio [(G - H - J - K) / G]	_____ %	_____ %
10. Depreciation expense ratio [K / G]	_____ %	_____ %
11. Interest expense ratio [J / G]	_____ %	_____ %
12. Net farm income ratio [H / G]	_____ %	_____ %
(Sum of lines 9, 10, 11, 12 should be 100%)		
Repayment capacity measures		
13. Term debt and capital lease coverage ratio [(H + J + K + L - M) / F]	_____ %	_____ %
14. Capital replacement and term debt repayment margin [(H + J + K + L - M) minus F]	\$ _____	\$ _____
15. Average interest rate on farm debt [J / average D]	_____ %	_____ %
16. Maximum debt to asset ratio supported [line 5/line 15]	_____ %	_____ %

Five-year trend worksheet for farm financial measures

Year	_____	_____	_____	_____	_____
Liquidity					
Ending current ratio	_____	_____	_____	_____	_____
Ending working capital	_____	_____	_____	_____	_____
Solvency					
Ending total debt-to-asset ratio	_____	_____	_____	_____	_____
Profitability					
Net farm income	_____	_____	_____	_____	_____
Rate of return on farm assets	_____	_____	_____	_____	_____
Rate of return on farm equity	_____	_____	_____	_____	_____
Operating profit margin ratio	_____	_____	_____	_____	_____
Financial efficiency					
Asset turnover ratio	_____	_____	_____	_____	_____
Operating expense ratio	_____	_____	_____	_____	_____
Depreciation expense ratio	_____	_____	_____	_____	_____
Interest expense ratio	_____	_____	_____	_____	_____
Net farm income ratio	_____	_____	_____	_____	_____
Repayment capacity					
Term debt and capital lease coverage ratio	_____	_____	_____	_____	_____
Capital replacement and term debt repayment margin	_____	_____	_____	_____	_____
Average interest rate on farm debt	_____	_____	_____	_____	_____
Maximum debt to asset ratio	_____	_____	_____	_____	_____

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