

# Analyzing the Efficiency of Your Operation by Todd A. Doehring

## Abstract

Understanding the efficiency of any business is vital for management decision-making and monitoring. This article explores the suggested measures of efficiency for a farm or ranch as recommended by the Farm Financial Standards Council and provides sample computations and interpretations of these financial measures.

Key Words: financial analysis, financial statements, accounting, profit, income, financial ratios, FFSC

## Introduction

Financial efficiency is a term used to describe a set of ratios that help understand why your business is making or losing money. While financial efficiency is related to profitability, it quite different. When looking at the profitability of an operation, we are concerned with whether a profit or loss resulted for a given year. In contrast, financial efficiency seeks to understand the components of sales and determine if an operation is spending excessive amounts on operating expenses, interest, depreciation, etc. Therefore, it is not only important to understand the components that come together to determine profitability, but also to understand why your business is or is not profitable.

## Efficiency Measures

The Farm Financial Standards Council (FFSC) defines financial efficiency as a way to measure the intensity with which a business uses its assets to generate gross revenues and the effectiveness of production, purchasing, pricing, financing, and marketing decisions (July 1995, page III-5).

This article will focus on the five specific measures of financial efficiency suggested by the FFSC.

- Asset turnover ratio
- Operating expense ratio
- Depreciation/amortization expense ratio
- Interest expense ratio
- Net farm income from operations ratio

Some basic financial information is presented for the sample operation. This information is used in the calculations of five financial efficiency measures.

The income statement shows that this operation is profitable. Let's use financial analysis specifically related to efficiency to determine why this sample operation is profitable.

<b>Assets</b>			
	Beginning	Ending	Average
Assets (market value)	1,083,000	1,119,000	1,101,000
Equity (market value)	795,000	884,000	839,500
<b>Income Statement</b>			
Gross revenues			309,000
Cash operating expenses		176,000	
+/- Accrual adjustments		1,000	
Depreciation expense		<u>29,000</u>	
Total operating expenses			206,000
Cash interest paid		24,000	
+/- Change in interest payable		<u>(1,000)</u>	
Total interest expense			<u>23,000</u>
Total expenses			229,000
Net farm income from operations			80,000
<b>Other Information</b>			
Withdrawals for Family Living			33,000

### Asset turnover ratio

Asset turnover (sometimes referred to as capital turnover) is a measure of how efficiently the assets of a business are being used to generate revenue, and is calculated as:

$$\frac{\text{Gross revenues}}{\text{Average farm assets}} = \frac{309,000}{(1,083,000 + 1,119,000) \div 2} = \frac{309,000}{1,101,000} = 0.28$$

The higher the asset turnover ratio the more rapidly the business is converting assets into revenue. A higher asset turnover most often implies a more efficient use of the operations asset base.

Another way to interpret the asset turnover ratio is that how many years does it take for gross revenue to equal assets. Most commercial businesses have an asset turnover of close to 1.0 or greater, implying that more than once a year they are producing enough revenue to equal their asset base. Because agriculture is so heavily capitalized, asset turnover ratios typically vary between 0.20 and 0.80, depending on the type and size of the operation—with grain operations being on the lower end and livestock operations being on the upper end.

### Operational ratios

The next four ratios are considered operational ratios. The denominator in all of these ratios is gross revenue, and they are simply measuring the relative size of operating related activities. In other words, they help us understand what happened to gross revenue. Each of the following ratios is graphically depicted with a pie chart showing the components of gross revenue.

### Operating expense ratio

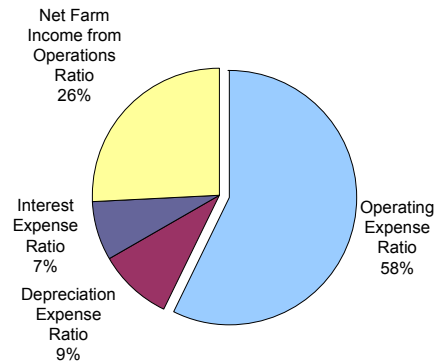
The operating expense ratio measures how efficiently the business controls its operating expenses and is calculated as:

$$\frac{\text{Total operating expenses} - \text{Depreciation expense}}{\text{Gross revenues}}$$

$$\frac{206,000 - 29,000}{309,000} = \frac{177,000}{309,000} = 57.3\%$$

A benchmark for the operating expense ratio is between 55-80%. The range of values is so wide for this ratio due to the differences in sizes and types of operations, as well as the capital structure and individual efficiencies of farm or ranch businesses. A ratio over 80% often indicates profitability problems, while under 55% indicates great efficiency.

If you think about what this measure is telling you it begins to make sense. For every dollar of sales, the sample operation has to spend 57.3¢ to cover its operating expenses, leaving 42.7¢ to cover depreciation, interest, and profit. As this ratio increases to say 80%, this only leaves 20¢ for every dollar of sales to cover these items.



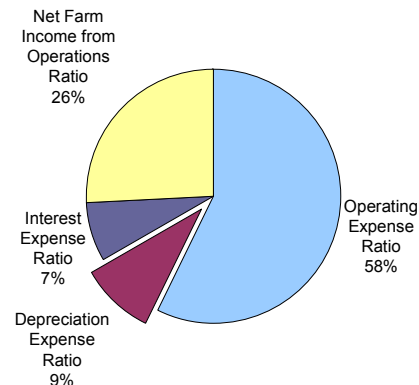
### Depreciation/amortization expense ratio

The depreciation expense ratio measures the amount of depreciation relative to the level of sales and is calculated as:

$$\frac{\text{Depreciation expense}}{\text{Gross revenues}}$$

$$\frac{29,000}{309,000} = 9.4\%$$

A benchmark for the depreciation expense ratio is between 10-15%. Things to watch for with this ratio are either upward or downward trends. A downward trend indicates that capital asset replacement might be lagging use, while an upward trend might indicate a very aggressive capital asset replacement policy.

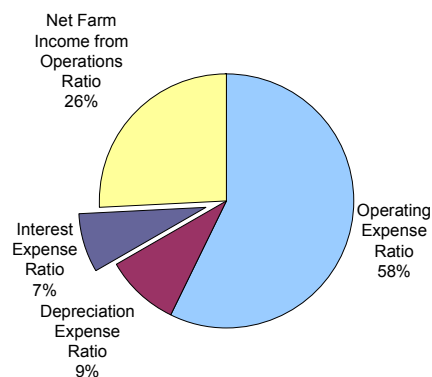


### Interest expense ratio

The interest expense ratio measures the amount of interest expense relative to the level of sales and is calculated as:

$$\frac{\text{Interest expense}}{\text{Gross revenues}}$$

$$\frac{23,000}{309,000} = 7.4\%$$

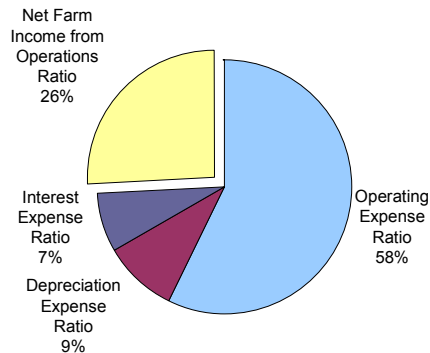


The interest expense ratio can range from 0% (for those operations with no debt) to over 20% (to those operations that are highly leveraged). This ratio is a good indicator of potential problems. As this ratio exceeds 15%, the chances that a farm or ranch business generates profit are very low. In the case where this ratio is 15%, then of every dollar of sales, 15¢ goes just to pay the interest on borrowed funds, therefore the margin left to cover profit, depreciation, and other expenses is squeezed.

### *Net farm income from operations ratio*

At this point, all that is left of gross revenues is net farm income from operations. The net farm income from operations ratio measures the amount of income relative to the level of sales and is calculated as:

$$\frac{\text{Net farm income from operations}}{\text{Gross revenues}} = \frac{80,000}{309,000} = 25.9\%$$



This ratio can also vary widely, including being less than zero. Obviously the higher this ratio, the better, but realistically 35% would be on the upper end.

How does all of this apply to your operation? Well, you make these decisions everyday in some way or another. For example, deciding whether or not to purchase a new tractor or repair an existing one is a decision between depreciation (purchase new tractor) and operating expense (repairs the existing tractor).

As you look at your own farm or ranch business you might see that depreciation is relatively high (e.g., more than 15%)—this might lead you to consider slowing down on capital asset replacement, but before you make any decisions consider the alternatives. If you continue to replace your machinery and equipment at your current level then your depreciation expense ratio will likely remain at 15%. If, however, you slow down those purchases, you might be able to lower your depreciation expense ratio to say, 12%. But, in doing so your operating expenses will most likely increase—you will probably need to spend more on maintenance and repairs on your aging machinery and equipment. Therefore, you must balance repair expense with the cost and potential efficiencies of a new piece of equipment.

The sample operation included in this article is profitable mainly because of their low operating expense. Depreciation and interest expense appear to be in line, therefore, net farm income from operations is quite strong. Obviously no two operations are alike and the efficiency ratios from your business may be quite different than any presented in this article. That is fine because this is just a sample operation and the ratios shown here should not be construed as target ratios. The key to financial efficiency is to look at and understand the components of gross revenues and how rapidly your farm business turns over its assets. Also, it's important to look at these financial ratios for more than current year. Changes in these ratios over time (or trends) can provide information about the direction of your business and can help to identify problems before they become disasters.

All of the financial measures discussed are only part of the tools necessary to analyze your operation. It is most important to understand where your particular operation stands up against other operations that are similar in size and type of production. You may want to consider becoming part of a producer group or farm management group that compares operations to each other in order to provide you with comparative financial ratios.

## **A word of caution about financial analysis!**

Finally one last thought about financial measures. It is important to understand that while financial measures help to analyze your business and compare to benchmarks of other businesses, it should not be confused with a thorough analysis of all financial statements. Financial measures can be very useful in identifying areas of strengths and weakness, but because they are so summary-level in nature, many facts can be buried if the analysis is taken no further.

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3 College Park Court  
Savoy, Illinois 61874  
Phone 217-352-1190  
Fax 217-352-1425  
Web [www.centrec.com](http://www.centrec.com)