

Describe and Measure Profitability

The third financial measurement is Profitability.

Profitability is reported on the income and expense statement. Basically, the accrued net income is the profit a farm has generated for the fiscal period being reported. As was mentioned earlier when discussing the income and expense statement, it is very important to use the accrued income and expense statement to calculate profit and not a cash statement.

In Figure A1-2 we see that the farm generated accrued revenue of \$ 320,000 and had accrued expenses of \$ 317,500 for an accrued net income, or profit, of \$2,500 before tax. The farm paid \$ 10,000 in income tax for the year, so the after tax profit was a negative - \$ 7,500. This is not good...or is it okay?

Profit is the dollar value obtained by calculating net farm income. Profitability measures the size of the profit relative to the gross, and net, capital invested in the business. Profitability ratios are used to compare the performance or efficiency of a business to a set of established standards (or benchmarks) for the industry or sector, or by comparing one business against others. The gross capital of a business is the total assets, and the net capital in a business is the total equity the farm owner has in his business.

Profitability risk is measured in ratios the same as solvency and liquidity risk. The profit generated by the business is compared to the total assets, and the total equity of the business. The ratios most commonly used to measure profitability are called Return on Assets, and Return on Equity. Return on Assets is calculated as:

$$\begin{aligned} &= \text{(NFI + Interest Expense - Unpaid Operator \& Family Labour) / Total Farm Assets} \\ &= \text{Return to Assets / Total Farm Assets} \end{aligned}$$

Return on Equity is calculated as:

$$\begin{aligned} &= \text{(NFI - Unpaid Operator \& Family Labour) / Total Farm Equity} \\ &= \text{Return to Farm Equity / Total Farm Equity} \end{aligned}$$

For the example farm we have been following the $\text{ROA} = 2,500 + 31,425$ (cash interest plus the accrued interest adjustment) / 4,245,000 = 0.008 and the $\text{ROE} = 2,500 / 3,667,500 = 0.0006$. Both are very low. ROA benchmarks for good profitability are > 0.05 - 5% (from Dr. Kohl), and good ROE is > 0.07 = 7%. Both examples had no Unpaid Operator &/or family labour.

By comparing to industry benchmarks, this farm has low profitability. Does this mean that this farm should not take on any additional debt?

To answer this question we must use a different profitability measure. All financial institutions, that are assessing credit applications, test for a profitability measure by doing a debt servicing analysis of the credit applicant. At the start of this document we talked about two important questions that arise when making a decision whether or not to apply for a loan. The first was "Can my farm repay this loan on schedule?" We answer this question by doing a debt servicing analysis of the farm's repayment ability.

Table A1-3

Debt Servicing Analysis		
Total Accrued Net Income:		2,500
Plus (+) Depreciation		110,000
Plus (+) Interest Expense		35,925
Plus (+) Off Farm Income		40,000
Minus (-) Living Costs		-30,000
Minus (-) Farm Income Taxes Paid		-10,000
Debt Servicing Capacity (DSC):		148,425
Debt Servicing Interest:	35,925	
Debt Servicing Principal:	60,000	
Debt Servicing Requirements (DSR):		95,925
Budget Surplus:		52,500
Debt Servicing Ratio: DSC / DSR:		1.55
Efficiency Ratio = (T.Exp. - Depr.- Int.)/Gross Revenue:		0.54

Table A1-3 illustrates a debt servicing analysis of the example farm that we have been following in this Document. Debt servicing analysis is broken down into two main sections. The first is debt servicing capacity or DSC and the second is debt servicing requirements or DSR.

DSC is calculated as follows:

Debt Servicing Capacity = Accrued Net Farm Income + Depreciation Expense + Interest Expense + Off-Farm Income – Family Withdrawals – Farm Income Tax Paid

Debt Servicing Requirements is calculated as follows:

DSR = Total Accrued Interest Expense + Total Term Loan Principal Payments (for a fiscal year).

In Table A1-3 the DSC = \$ 148,425 and the DSR = \$ 95,925. The difference between these numbers is the Budget Surplus, which in this case was \$ 52,500.

Is this good, medium, or bad? It is good that we have a positive budget surplus of \$ 52,500. This surplus has to cover depreciable asset replacement, future growth, retirement and the kids' education amongst other things. This surplus is relative. This may be okay for a small farm, but too low for a large farm. Again we must break this information down into a ratio to compare to industry benchmarks to evaluate the profitability (in this case measured by the debt servicing ratio) measure presented by this farm.

The debt-servicing ratio is calculated as follows:

$$\text{Debt Servicing Ratio} = \frac{\text{Debt Servicing Capacity}}{\text{Debt Servicing Requirements}}$$

In the example in Table A1-3 the DSC was \$ 148,425 and the DSR was \$ 95,925. These numbers result in a Debt Servicing Ratio of 1.55.

Industry benchmarks for this ratio vary from one financial institution to another, but generally the following benchmarks apply:

> 1.5 is low risk, 1.1 – 1.5 is medium risk, and < 1.1 represents high risk

Based on these benchmarks the farm in our example has good debt servicing ability. So we have answered the question. They probably can repay their credit on schedule. This farm would be able to take on a little more debt without getting into serious financial difficulty.

Table A1-3 displays another important ratio called the efficiency ratio. Financial efficiency is defined as the amount of expense money it takes to generate a dollar of revenue. It is calculated as follows:

$$\text{Efficiency Ratio} = \frac{(\text{Gross Accrued Farm Expenses} - \text{Depreciation} - \text{Interest Expense})}{\text{Gross Accrued Farm Revenue}}$$

The benchmarks suggested by Dr. Kohl for this ratio are:

< 0.65 is good, 0.80 – 0.65 is caution, and > 0.80 is not good

For more information on financial statements and analyzing financial statements please go to the following website:

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/econ2198](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ2198)

In our example in Table A1-3 the farm had an efficiency ratio of 0.54, which is excellent. The high depreciation amount, and high valued assets, resulted in the farms' profitability being very low. However, based on the three main financial measure tests that we calculated we are able to determine that this farm would be able to take on a little more long term debt.

What is the overall financial risk associated with this farming operation?

Authored by: Ron Lyons P. Ag.