



*Farm Business Management  
for the 21<sup>st</sup> Century*

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**Key Financial Performance  
Measures for Farm General  
Managers**

*Purdue Extension*

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# Key Financial Performance Measures for Farm General Managers

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## Introduction

Most farm business managers “wear the hats” of both general manager and plant manager (production process manager). The *Farm Business Management for the 21<sup>st</sup> Century* series explores the information needs, management skills, and management focus of farm business managers who must function in the critically important role of general manager. This publication focuses specifically on the key financial performance measures such farm business managers must understand and use. It includes three worksheets that farm business managers who function as general managers should copy and use annually to measure and assess the profitability, size, and growth characteristics of their farm businesses. To make it easier to use and reuse them, **an extra set of the worksheets** is included at the end of the publication.

General managers have overall responsibility for the financial performance of the firm. As such, they need to focus on performance measures that are indicative of the “big picture.” These measures must tie together resources and production, because effective use of resources is at least as critical a concern for the general manager as efficient production. These measures must also tell the general manager how the capital structure that has been established is performing. The key measures must cut to the very core of the cost-volume-profit relationship that is at the heart of every business, including the farm.

Businesses can be very complex, but the general manager’s task is to make that complexity manageable. In that context, fewer is definitely better when it comes to financial performance measures. If the general manager says, “Tell me the one or two things that I can do that will have the greatest impact on my farm’s financial performance and success.” What do you say in reply? “I have calculated twenty-five different financial performance measures, each of which tells you something slightly different about your farm, but none of which is particularly significant by itself.” Or do you say the following? “There are a few key measures that drive farm profitability and long-run financial success, and these are the ones for your farm that offer the most room for improvement.” Fortunately, the interrelatedness of financial performance measures allows us to distill financial performance to just a handful of key measures.

We shouldn’t conclude, however, that all other performance measures have no value. On the contrary, all manner of other measures (not just financial measures) may be quite valuable to the business analyst in terms of understanding and interpreting performance. But all the explanatory details won’t change the bottom-line results.

## Key Performance Measures

So what are these key performance measures? We believe the key measures are driven by three critical issues facing every farm general manager. These three issues are profitability, size of the business, and growth of the business over time. Consequently, financial performance measures that assess profitability, size, and growth rates are essential to monitor overall financial performance and progress. These financial performance measures should provide concrete answers to the following types of questions.

1. Profitability: Is the business profitable?  
How can operating performance and financial structure be changed to increase profitability?
2. Size: Is the business big enough to generate an acceptable level of income?  
What changes in operating performance, financing, or size can be made to increase the income generating capacity of the business?
3. Growth: Can the business grow to maintain or improve its long-term competitive position? What is a sustainable rate of growth for this business?

### *Is the Business Profitable?*

Three profitability measures that are universally accepted for their value to management are return on assets, return on equity, and operating profit margin. All three are going to be at the top of any list of key financial performance measures. All three measure the extent to which a business generates net income or profit from the use of its resources. Technically, all three are efficiency measures that measure the relationship between an output, in this case net farm income from operations, and an input. The inputs for return on assets, return on equity, and operating profit margin are total farm assets, total farm equity or net worth, and gross farm revenues, respectively.

Financial measures that don't include net income as the output in the relationship are labeled "financial efficiency measures" rather than profitability measures. Asset turnover, which measures the intensity with which a firm uses its assets to generate revenues, is a key financial efficiency ratio that also needs to be included in any general manager's list of critical performance measures. [Worksheet 1](#) presents a format for computing each of these measures.

## Worksheet 1. Computing Key Profitability Measures

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### Operating Profit Margin

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Farm Interest Expense	\$ _____
D. Return to Assets (A - B + C)	\$ _____
E. Gross Farm Revenues	\$ _____
F. Operating Profit Margin ( $D \div E \times 100$ )	_____ %

### Asset Turnover Ratio

A. Gross Farm Revenues	\$ _____
B. Average Total Farm Assets	\$ _____
C. Asset Turnover Ratio ( $A \div B \times 100$ )	_____ %

### Return on Assets

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Farm Interest Expense	\$ _____
D. Return to Assets (A - B + C)	\$ _____
E. Average Total Farm Assets	\$ _____
F. Return on Assets ( $D \div E \times 100$ )	_____ %

### Return on Equity

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Return to Equity (A - B)	\$ _____
D. Average Total Farm Equity (Farm Net Worth)	\$ _____
E. Return on Equity ( $C \div D \times 100$ )	_____ %

## Return on Assets (ROA)

General managers must make sure the capital they employ is used productively. Capital is relatively mobile. If it isn't used productively, it will eventually move on to where it can generate a competitive return. ROA provides a measure for assessing the overall efficiency with which farm assets are used to produce net income from operations. It also is indicative of management's effectiveness in deploying capital, because it is certainly possible to be efficient and yet poorly positioned in terms of how capital is being utilized.

Return on assets, as an absolute dollar amount, is calculated as net farm income plus farm interest expense minus the estimated value of any unpaid operator labor and management used in the farming operation. That absolute dollar amount is converted to a rate of return on assets (ROA) by dividing by the average total value of farm assets.

Return on assets is probably the single best overall measure of operating performance. It ties together the results of operations with the resources used to produce those results. It is also relatively easy to interpret. But what action should be taken to correct a poor return on assets? Everything the manager did both right and wrong in operating the business is reflected in the return on assets, which makes the appropriate corrective action difficult to determine without more information. The fact that financial measures are interrelated can help solve this dilemma.

## Operating Profit Margin (OPM) & Asset Turnover Ratio (ATR)

The rate of return on assets measure is itself the product of a measure of financial efficiency and a measure of profitability. The rate of return on assets may be calculated by multiplying the operating profit margin ratio (OPM) times the asset turnover ratio (ATR). The interrelatedness of these three performance measures emphasizes the fact that there are two primary ways to enhance the efficient use of farm resources to produce profit. One is to increase the profit per unit of output. Operating profit margin is a measure of profit per unit (dollar) of product produced or output. It is calculated by dividing the dollar amount of return on assets by gross farm revenues. A farm operation that has a high operating profit margin percentage is a low cost producer. Thus, the general manager may respond to a poor or small operating profit margin by instituting cost controls in order to increase profits per unit.

The other way to enhance performance is to increase the revenues generated per dollar of farm assets, as indicated by the asset turnover rate. For example, more higher value crops might be added to the crop mix to effect an increase in asset turnover. ATR is calculated by dividing gross farm revenues by the average value of total farm assets.

For a given set of farm resources or size of farm, operating profit margin and asset turnover are the two key determinants of profit that the general manager must try to influence in order to improve financial performance. An increase in either or both will increase ROA and is generally indicative of improved financial performance.

## Return on Equity (ROE)

Debt is an important component of the capital structure of many farm businesses. Debt provides needed resources to take advantage of profit opportunities. When used productively, debt can leverage equity capital in a way that is very beneficial financially. But financial leverage is impartial and unforgiving. Debt works just as well to the detriment of a farm business when it is used unproductively, as it works to benefit a farm that is managed wisely.

General managers need to know whether and to what extent financial leverage is working either for or against their farm business. The rate of return on equity (ROE) provides useful information about the performance of debt in the capital structure. ROE is calculated by dividing net farm income minus the estimated value of any unpaid operator labor and management by average total farm equity (net worth). ROE should exceed ROA for farms that borrow money. If ROE doesn't exceed ROA, it means that borrowed capital isn't earning enough to pay its cost. Alternatively, ROE may be well above ROA and may indicate potential to benefit from additional investments in the farm.

ROE is also a very useful measure of the performance of the farm owners' invested or equity capital. Farmers generally have other alternatives to investing in the farm operation and need a basis for comparing the likely performance of investments in the farm to their investment alternatives. ROE is not a risk-adjusted return measure. So ROE should be adjusted for differences in the perceived riskiness of alternative investments when making head-to-head comparisons. Because farming entails significant amounts of financial risk, ROE should be higher than a relatively less risky alternative such as a longer term certificate of deposit.

ROE is related to and heavily influenced by ROA. Increasing ROA by taking management action that will either increase operating profit margin and/or asset turnover should have a favorable impact on ROE.

### Accurate Measurement of Profitability

Consistency and accuracy are important for producing reliable measures of financial performance. Purdue Extension publication, *Measuring & Analyzing Farm Financial Performance* (EC-712), is one source of guidance. It includes worksheets for calculating profitability measures and other important financial measures. Another document written by the authors, "Is Your Farm Business Accurately Measuring Profitability?" discusses in detail these and other issues related to accurately calculating these four profitability measures. You can find both documents at:

<http://www.agecon.purdue.edu/ext/fbm21/>.

### Is the Business Big Enough?

#### Break-Even Volume

Farm general managers must manage size as well as profitability. Size and profitability are interdependent. Size can be measured in a variety of ways, but sales volume/gross farm revenues is the most closely related to profitability. The issue of size can actually be viewed as two separate but related issues: 1) Is farm sales volume sufficient to generate a profit (that is, revenues exceed the total costs of farming)? and 2) Is the profit sufficient to meet the farmer's needs?

Every farm business has a cost-volume-profit relationship that is unique. Figure 1 depicts this relationship. Volume is a measure of the activity level of a business, which is indicated by total sales or total revenues. Associated with a farm's cost-volume-profit relationship is a break-even volume of business. Break-even volume is the amount of total revenue required to cover total accounting expenses/costs.

Total economic costs generally include all accounting costs plus some additional costs that will not appear in the records or accounts of any farm business. These latter costs are called "opportunity costs." Opportunity costs are just as real and important as accounting costs. But they are not nearly so obvious as many accounting costs, which usually involve a direct outlay of cash. One opportunity cost is the income foregone annually by the farmer on his or her equity capital investment in the farm. If that capital had been invested elsewhere, it could have earned income for the farmer. Another opportunity cost is the value of the farmer's labor and management services that are not paid for directly by the farm business in the form of a salary, wages, or management fees. The opportunity cost in this instance is the income the farmer could have earned working off the farm.

Economic break-even requires enough additional revenue to cover these opportunity costs as well as the accounting costs. An estimate of the amount of income foregone as a result of these opportunity costs is made (imputed) and added to accounting costs in order to determine the total revenue that must be generated in order to achieve economic break-even. As a result, economic break-even generally requires more total revenue than accounting break-even.

The farm business manager's objective is to stay at or above the economic break-even volume. As total quantity produced increases, total revenues increase, as do variable costs. Because revenue per unit is greater than variable costs per unit, total revenue increases at a faster rate than variable costs with increases in volume or quantity produced. At some level of quantity produced, which is called the "break-even volume," total revenues will equal total costs. A volume of business that is greater than the break-even point will result in profits for the farm firm. As the quantity of output from the farm, as indicated by gross farm revenues, increases, the likelihood of breaking even improves because fixed costs decline on a per unit basis. A greater difference between per unit revenues and per unit variable costs reduces the volume required to break even.

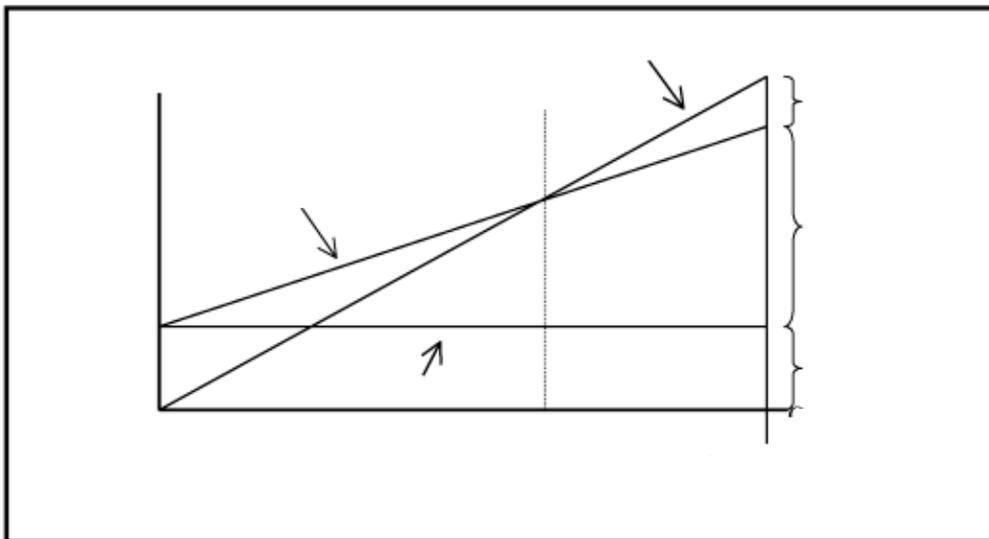


Figure 1. A Break-Even Diagram

Figuring the break-even economic volume for a farm business is not a particularly easy task. It is complicated by the difficulty in distinguishing between fixed and variable costs. Some costs, such as machinery repair and maintenance costs, are actually semi-variable costs. That is, part of the repair costs will vary with the quantity produced on the farm, and part of the repair costs will occur regardless of the quantity of production. It is further complicated by the need to impute (estimate) the costs of unpaid labor and management and owner's equity capital. Generally, these particular imputed costs are classified as fixed costs.

### Size, Efficiency, & Spendable Income

One method of determining whether business volume is sufficient is to do an income needs analysis. The purpose of this analysis is to determine the size of business needed to generate a level of income that will satisfy the farm family's needs. This kind of analysis is similar to repayment capacity analysis. But, generally, more net income is required with the needs analysis than with a repayment capacity analysis. This is because depreciation expense is not added back to net income when determining how much money is available to satisfy needs. [Worksheet 2](#) is designed to help producers work through their own needs analysis.

Let's consider an example of how to use [Worksheet 2](#). Sam Smith's needs for income are first estimated and then used to evaluate the sufficiency of farm revenues. Sam Smith has estimated the following needs:

- Family living expenses = \$39,000,
- Annual term debt principal payments = \$30,000,
- Annual average income and self-employment tax payments for Sam and his wife = \$12,000,
- Annual planned new investment in the farm = \$20,000,
- Annual additions to savings for children's education = \$5,000.

Thus, Sam Smith's estimated annual income needs total \$106,000.

He can count on \$36,000 of net non-farm income to help provide for these needs. The balance of \$70,000 must come from net farm income generated by the farm business. Over the past four years the farm has generated an average of \$67,000 of net farm income from \$335,000 of gross farm revenues. So net farm income has normally been about 20 percent of gross farm revenues. If we divide the \$70,000 of estimated needs that the farm must provide by the net farm income ratio of 20 percent, we find that the farm needs to generate \$350,000 of average annual gross revenues in order to generate the \$70,000 of income needed.

Sam has the farm producing nearly enough revenue to meet all of his estimated needs. He may have opportunities for increasing gross farm revenues. He might also consider ways to increase the net farm income for the farm, so that more of the farm revenue will be available to meet his expected needs.

A farm business manager's income needs will almost certainly increase over time, if for no other reason than inflation in the cost of living and the cost of doing business. With that in mind, farm business managers need to plan for and monitor growth in sales (revenues), so that earnings will have the potential to grow over time. It will also be important to monitor earnings growth in order to ensure that sales growth is having the desired effect on earnings.

## Worksheet 2. Income Needs Analysis

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### Part I. What Level of Annual Spendable Income Do You Want/Need?

#### Estimated/Expected Needs or Wants:

- |  |          |
|--|----------|
| A. Family Living Expense                                       | \$ _____ |
| B. Debt Service (principal due on term debts)                  | \$ _____ |
| C. Carryover Debts (principal due on carryover operating debt) | \$ _____ |
| D. Income and Self-Employment Social Security Taxes            | \$ _____ |
| E. New Investments in the Farm Business                        | \$ _____ |
| F. Savings for Children's Education                            | \$ _____ |
| G. Retirement Contributions                                    | \$ _____ |
| H. Family Living Capital Expenses                              | \$ _____ |
| I. Other Wants and Needs                                       | \$ _____ |
| <br>   |          |
| J. Total Need for Income (sum A through I)                     | \$ _____ |

#### Estimated/Expected Amount the Farm Must Provide:

- |   |          |
|---|----------|
| K. Expected Net Non-Farm Income Available to Meet Needs | \$ _____ |
| <br>  |          |
| L. Desired Spendable Income (J - K)                     | \$ _____ |

(Proceed to Part II)

### Part II. Gross Revenues Required to Produce Desired Spendable Income (L) Based on Actual Past Performance

(The two measures in italics should be based on your farm records for a typical year or for an average of recent previous years.)

M. Normal Ratio of Net Farm Income from Operations to Gross Farm Revenues for Your Farm

(*Net Farm Income* \$ \_\_\_\_\_  $\div$  *Gross Farm Revenues* \$ \_\_\_\_\_) = \$ \_\_\_\_\_

N. Gross Farm Revenues Required to Generate Needed Spendable Income

(Amount from L \$ \_\_\_\_\_  $\div$  Answer from M \$ \_\_\_\_\_) = \$ \_\_\_\_\_

## Capacity Constraints

Gross revenues are limited by the total amount of invested capital (total assets) and asset turnover. A corn-soybean farmer with \$1 million of assets invested shouldn't expect to gross \$400,000 from the farm operation in this or any future year if the best asset turnover ratio in the farm's history was 35 percent. But if the farmer takes action that significantly improves asset turnover, \$400,000 of sales may then become a realistic possibility. Even then, a point will be reached where no more revenue can be squeezed out of farm assets through more efficient capital usage.

Revenues, in turn, limit profits to the extent of the best possible operating profit margin for the farm. A corn-soybean farm with projected gross revenues of \$400,000 and a best-ever operating profit margin of 30 percent has very little likelihood of generating net farm income in excess of \$120,000. Significant changes in management of the farm may improve the farm business's operating profit margin, but there is some point beyond which even the best management cannot go further.

It may be helpful to think of the limitation on revenues and profitability associated with financial performance relationships as the maximum practical capacity of the farm business to produce revenues and profits given the farm business's invested capital. Normal (long-term) capacity or expected actual capacity this year generally will fall short of the maximum practical capacity, and generally these measures are better indicators of the likely intersection between investment, revenues, and profits.

The preceding discussion of firm capacity suggests that the total capitalization of the farm business should be important to farm business managers. Increases in total capital increase the capacity of the farm business to generate revenues and profits. Increases in the owner's invested capital either through additional capital contributions or through retained earnings are also important. Declines in equity capital will have to be offset with increased liabilities if a farm's asset base and revenues are to be maintained or increased.

## Cost-Volume-Profit Diagnostics

The flowchart in Figure 2 is a diagnostic tool designed to help managers think about the cost-volume-profit relationship for their farm and about how improvements in profitability can be made. It suggests a two-step process in which farm business managers first make sure that existing resources are used efficiently in the production of revenues and profits, and then, second, make sure that volume is increased, if necessary, to meet or exceed the needs for income.

The flowchart starts with a review and re-evaluation of the types of managerial concerns that affect asset turnover. Asset turnover is preferred as the starting point to operating profit margin, because several of the types of changes that might be considered could have a beneficial effect on both revenues generated per dollar of assets (turnover) and profit per dollar of revenue (operating profit margin). Any action that increases revenues without increasing costs will increase both asset turnover and operating profit margin. This might result, for example, from improved timeliness at planting due to a change in the scheduling of planting activities. Any action that restructures assets by eliminating nonperforming assets will also very likely have a beneficial effect on both asset turnover and operating profit margin through more efficient use of assets and reductions in cost.

Once asset turnover has been increased as much as possible, then farm business managers should focus on actions that will reduce cost without a corresponding decrease in revenue. One useful strategy involves targeting costs to come in under a predetermined percentage of revenues so as to result in an acceptable operating profit margin. Once asset turnover and operating profit margin have been pushed to their upper limits, the farm business manager should look at expanding the total volume of business. If asset turnover has really been pushed to the maximum, then the decision to expand will likely require additional capacity to produce, which may require additional investment. But farm business managers should not even consider this alternative until all of the potential to increase volume through more efficient use of existing resources has been exploited.

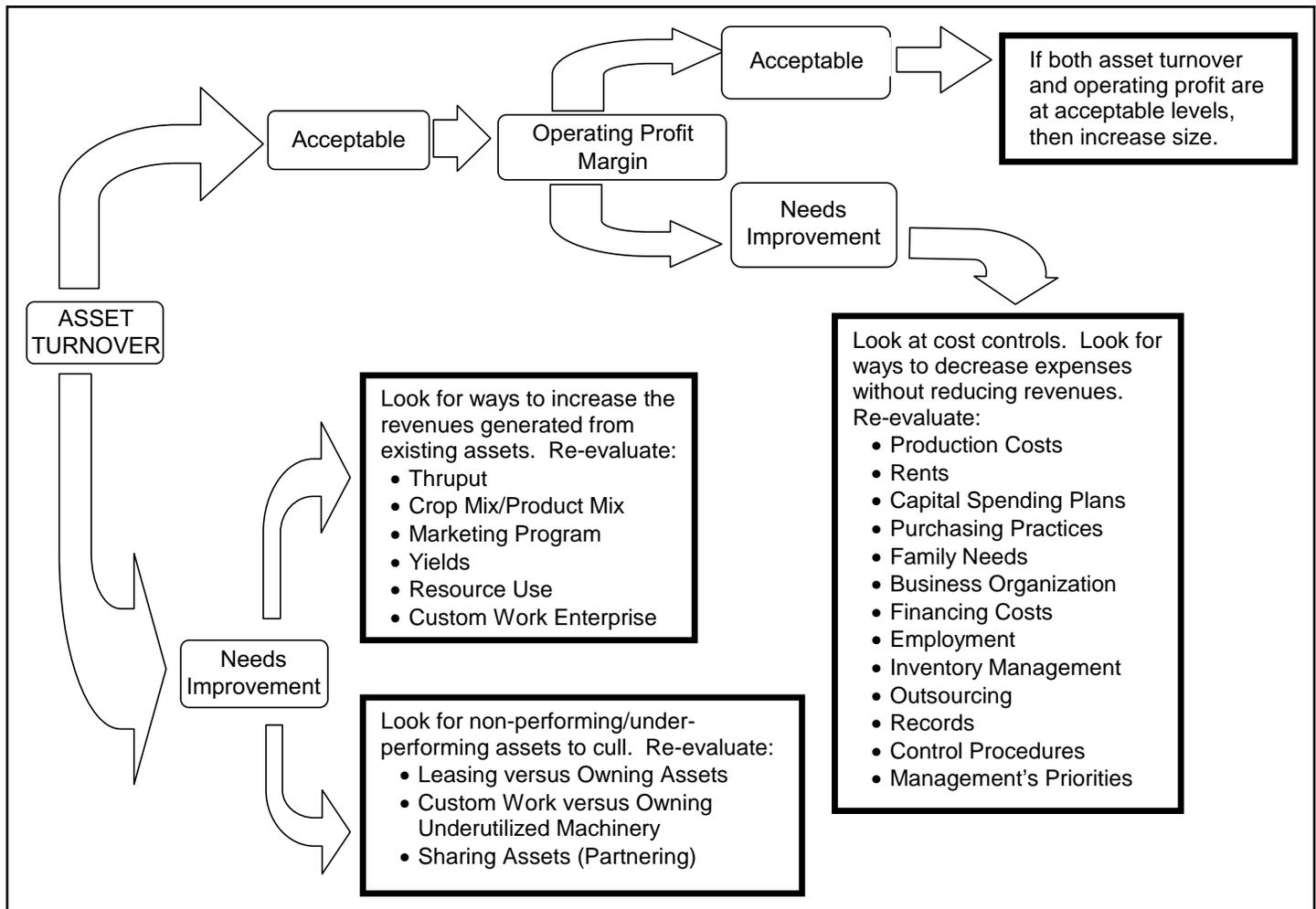


Figure 2. Flowchart for Assessing and Improving Farm Firm Profitability

## ***Can the Business Grow & Can That Growth Be Sustained?***

Finally, farm business managers must assess the long-term growth potential of the farm business and develop specific strategies for managing farm business growth over time. With the major structural changes occurring in both the grain and livestock industries in recent years, the key questions many producers should be asking are “How fast can I grow?” and “How can I finance that rate of growth?”

### **Managerial Resources**

From the farm business manager’s perspective, the keys to growth or expansion are identifying profitable expansion options and acquiring the resources to implement that expansion. The focus here will be on acquiring the resources, with a particular emphasis on managerial and financial resources.

A challenge in sustaining the rapid growth of any farm business is “outrunning” management capacity. As farm businesses increase in size, not only is it essential that farm business managers acquire the skills and capabilities of a general manager, but that they develop an organizational structure with the right set of middle-level and plant-level managers. Middle-level managers would have primary responsibility for key functional areas such as finance, marketing and procurement, operations, etc. Depending on the size of the farm business, these functions might be performed by the farm business manager with help from consultants and others outside the firm. But if that is the case, some mechanism for back-stopping the farm business manager and a logical management succession plan are important to sustain business growth over time.

### **Financial Resources**

From a financial perspective, the key factors in determining the sustainable growth rate are the generation of earnings and the retention of those earnings in the business. The ideas here are not complex — the keys to long-term financial success of any business are earnings behavior (i.e., the ability to generate income) and savings behavior (i.e., the ability to retain earned income and reinvest it in the business). Thus, the higher the income-generating capacity of the farm business, and the larger the proportion of that income that is reinvested back in the business, the higher the sustainable growth rate. Obviously, the growth rate of a business can also be increased through infusions of equity capital from outside the business. Our focus here is on growth funded by internal sources and the debt that can be supported by those sources.

In essence, farm businesses that make money and retain some of those earnings can finance part of their growth from those retained earnings and can also typically borrow additional funds to finance that expansion. For example, if a farm firm has a moderate debt level that is acceptable to the lender of 25 percent and the lender is willing to maintain that leverage position in the long run, for every \$3 the farmer reinvests in the business from earnings, he should be able to borrow \$1 from his lender. So, from this perspective, the long-term sustainable growth rate of the business depends on the amount of funds the farmer reinvests in his operation, which, in turn, depends on both his earnings success and his savings behavior.

The focus here is on growth fueled by earnings rather than any increase (or decrease) in the market value of farm business capital assets. Unrealized capital gains may increase total equity or net worth, but they do not increase debt repayment capacity. So, even though unrealized capital gains may provide security (collateral) for additional debt or increased leverage, they do not increase the ability to service that debt. Consequently, unrealized capital gains (or losses) should not be allowed to affect the computation of farm business sustainable growth rate.

## Worksheet 3. Computing Sustainable Growth Rate

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### Sustainable Growth Rate

A. Net Farm Income from Operations (NFIFO)	\$ _____
B. Owner Withdrawals for Family Living Expenses	\$ _____
C. Other Owner Withdrawals	\$ _____
D. NFIFO Retained by the Farm Business (A - B - C)	\$ _____
E. Average Total Cost Basis Equity	\$ _____
F. Sustainable Growth Rate ( $A \div B \times 100$ )	_____ %

Worksheet 3 provides a format for making the computations required to estimate sustainable growth rates. Consistent with this approach, unrealized capital gains or losses are excluded from net farm income when calculating retained earnings and the sustainable growth rate. Cost basis equity should be used in these computations, rather than market value equity/net worth. This means that valuation equity, which is the difference between the cost basis and the market value of the farm business's capital assets, is not included in the computation of sustainable growth rates.

Measuring, monitoring, and managing the growth rate of the farm business basically comes down to determining the sustainable growth rate, keeping farm business growth within that sustainable rate, and, if faster growth is desired, attempting to increase that sustainable growth rate. Farm business managers can increase that rate by increasing asset profitability (ROA). This, in turn, will generate a higher rate of equity accumulation as reflected by the return on equity (ROE) and thus a higher growth rate, as long as those equity funds are retained in the business and not siphoned off for other purposes. Thus, the sustainable growth rate is dramatically affected by how these additional equity funds are used. Are they retained in the business to support its growth, or are they withdrawn from the business to support a higher standard of living or other business ventures? The bottom line is that the sustainable growth rate is fundamentally a function of the rate of equity accumulation or the rate at which retained earnings grow over time.

A growth rate for the farm business that is higher than the sustainable growth rate can be achieved by increasing the leverage or proportion of debt compared to equity used in the farm business. Unless the farm business is using very little debt to begin with, this strategy over time will frequently result in debt servicing problems. A growth rate that does not exceed the sustainable growth rate will not guarantee that short-term cash flow problems cannot occur, but assuming long-term profitability has not fundamentally changed, the farm business manager can use debt reamortization or similar techniques to successfully resolve short-term cash flow/debt servicing problems. For farm businesses that have grown faster than their sustainable growth rate, reamortization or other techniques to extend loan terms are much less likely to be successful in resolving debt servicing and financial stress problems.

## Estimating Sustainable Growth Rates

How can the sustainable growth rate for a business be computed? Let's look at some numbers for Sam Smith. Assume that Sam's farm business has been generating an average net farm income over the last four years of \$67,000. Owner withdrawals for family living expenses, which must be subtracted from net farm income to determine retained earnings, have averaged \$39,000. He has also withdrawn capital from the business for other business ventures and extraordinary family living expenditures amounting to an average of \$5,000 per year during the last four years. Consequently, the earnings retained in the farm business have averaged \$23,000 (net farm income from operations of \$67,000 less family living withdrawals of \$39,000 and capital withdrawals of \$5,000) each year for the past four years. Sam had an average cost basis equity investment in the farm business over the four years valued at \$255,000. Therefore, the sustainable growth rate for this business during the last four years is 9 percent (\$23,000 average annual retained earnings divided by \$255,000 of total cost basis equity).

Sam can only grow his farm business at a faster average rate than 9 percent by increasing his leverage position (borrowing more capital) or by increasing retained earnings. One way Sam could increase retained earnings is to reduce capital withdrawals. If Sam had been able to forego the \$5,000 of capital withdrawals from the farm each year, retained earnings would have been \$28,000 instead of \$23,000 and the farm's sustainable growth rate would have been 11 percent rather than 9 percent. The sustainable growth rate could also be increased through a reduction in owner withdrawals for family living expenses or through management action that leads to increased net farm income. Alternatively, Sam could grow by making additional equity investments in the farm from equity sources outside the farm business. Additional equity investments in the farm business could dramatically increase its growth potential and could be a less risky way to grow the business than increasing the amount of leverage.

## Final Comments

The profitability measures, break-even estimation procedures, growth measures, and related concepts discussed here should be valuable additions to the farm business manager's toolkit. Farm business managers should use them to measure and assess the profitability, size, and growth characteristics of their farm businesses. They should use them to decide which buttons to push when profitability clearly needs improvement. They should use them to evaluate the impact of proposed changes in the size of their farm businesses and to manage growth of their farm businesses over time.

This publication is part of the Farm Business Management for the 21<sup>st</sup> Century series. Other publications in the series provide information about the evaluation of management skills, measuring and analyzing financial performance, and applying strategic management to the farm business. For the most current information about Farm Business Management for the 21<sup>st</sup> Century publications and other supporting materials, visit our Web site at [www.agecon.purdue.edu/ext/fbm21](http://www.agecon.purdue.edu/ext/fbm21).

## **Worksheet 1. Computing Key Profitability Measures**

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### **Operating Profit Margin**

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Farm Interest Expense	\$ _____
D. Return to Assets (A - B + C)	\$ _____
E. Gross Farm Revenues	\$ _____
F. Operating Profit Margin ( $D \div E \times 100$ )	_____ %

### **Asset Turnover Ratio**

A. Gross Farm Revenues	\$ _____
B. Average Total Farm Assets	\$ _____
C. Asset Turnover Ratio ( $A \div B \times 100$ )	_____ %

### **Return on Assets**

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Farm Interest Expense	\$ _____
D. Return to Assets (A - B + C)	\$ _____
E. Average Total Farm Assets	\$ _____
F. Return on Assets ( $D \div E \times 100$ )	_____ %

### **Return on Equity**

A. Net Farm Income from Operations	\$ _____
B. Estimated Value of Unpaid Operator Labor and Management	\$ _____
C. Return to Equity (A - B)	\$ _____
D. Average Total Farm Equity (Farm Net Worth)	\$ _____
E. Return on Equity ( $C \div D \times 100$ )	_____ %

## **Worksheet 2. Income Needs Analysis**

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### Part I. What Level of Annual Spendable Income Do You Want/Need?

#### Estimated/Expected Needs or Wants:

- |  |          |
|--|----------|
| A. Family Living Expense                                       | \$ _____ |
| B. Debt Service (principal due on term debts)                  | \$ _____ |
| C. Carryover Debts (principal due on carryover operating debt) | \$ _____ |
| D. Income and Self-Employment Social Security Taxes            | \$ _____ |
| E. New Investments in the Farm Business                        | \$ _____ |
| F. Savings for Children's Education                            | \$ _____ |
| G. Retirement Contributions                                    | \$ _____ |
| H. Family Living Capital Expenses                              | \$ _____ |
| I. Other Wants and Needs                                       | \$ _____ |
| <br>   |          |
| J. Total Need for Income (sum A through I)                     | \$ _____ |

#### Estimated/Expected Amount the Farm Must Provide:

- |   |          |
|---|----------|
| K. Expected Net Non-Farm Income Available to Meet Needs | \$ _____ |
| <br>  |          |
| L. Desired Spendable Income (J - K)                     | \$ _____ |

(Proceed to Part II)

### Part II. Gross Revenues Required to Produce Desired Spendable Income (L) Based on Actual Past Performance

(The two measures in italics should be based on your farm records for a typical year or for an average of recent previous years.)

- M. Normal Ratio of Net Farm Income from Operations to Gross Farm Revenues for Your Farm

(*Net Farm Income* \$ \_\_\_\_\_  $\div$  *Gross Farm Revenues* \$ \_\_\_\_\_) = \$ \_\_\_\_\_

- N. Gross Farm Revenues Required to Generate Needed Spendable Income

(Amount from L \$ \_\_\_\_\_  $\div$  Answer from M \$ \_\_\_\_\_) = \$ \_\_\_\_\_

## Worksheet 3. Computing Sustainable Growth Rate

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### Sustainable Growth Rate

A. Net Farm Income from Operations (NFIFO)	\$ _____
B. Owner Withdrawals for Family Living Expenses	\$ _____
C. Other Owner Withdrawals	\$ _____
D. NFIFO Retained by the Farm Business (A - B - C)	\$ _____
E. Average Total Cost Basis Equity	\$ _____
F. Sustainable Growth Rate ( $A \div B \times 100$ )	_____ %

*[Click here for printable copies of all three worksheets.](#)*



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