



Budgets: Their Use in Farm Management

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Questions of how to best organize and manage the farm business in a manner consistent with the goals and objectives of the farm family must be continually addressed. The decision as to whether the considered alternatives are consistent with established goals and objectives rests upon the farmer and the farm family acting as the manager if no outside management is hired. The technique and process for developing and analyzing alternatives for decision making is well established and is called budgeting. Budgeting is a management tool that can provide information to answer a multitude of questions if used properly. Combining inputs into products, allocating resources to alternative products, and choosing combinations of different products are choices whose consequences can be analyzed efficiently through the use of the budgeting tool.

The purpose of this OSU Extension Fact Sheet is to describe the different types of budgets that are available to farm managers. The basic economic principles involved will be introduced and related to the types of budgets.

Introduction

The agricultural producer or farm manager is challenged when organizing and managing farm resources to maximize economic returns to owned or controlled resources. Resources include land (owned and rented) and associated improvements, capital assets such as machinery and breeding livestock (borrowed and owned), and labor (hired, farm operator, and additional family). The manager is responsible for combining available resources and knowledge to best achieve the desired goals and objectives of the farm business.

With budgets, management can begin to answer such questions as:

- How may the available resources best be used?
- What enterprises (crops and/or livestock) can be produced and which will contribute most to returns to owned resources?
- How much of the controlled land should be devoted to each enterprise?
- What equipment and machinery will be needed to produce the potential enterprises?
- What production practices should be used to produce each of the enterprises?
- How much labor (both family and hired) will be needed on the farm?
- What are the capital requirements?

Farm management skills and knowledge are an integral part of financial success.

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://osufacts.okstate.edu>

Resource Allocation

The problems of resource use and allocation involve the application of five economic principles. These principles, in a simplified form, consist of:

- Adding units of an input as long as the value of the resulting output or added returns is greater than the added cost.
- Substituting one input for another as long as the cost of the added input is less than the cost of the input that is replaced and the output is maintained.
- Substituting one product for another as long as the value of the added output is greater than the value of the output that is replaced and the cost is constant.
- Using each unit of resource where it gives the greatest returns when resources are limited.
- Basing comparisons upon discounted values when considering different time periods and/or elements of risk.

The first three principles relate to situations where unlimited resources are available for use by the manager with perfect knowledge. The last two relate to situations where there are limited resources and when there is not perfect knowledge.

Most resource allocation management problems faced by farm managers can be addressed by applying the basic budgeting economic principles. Numerical calculations to assist in making management decisions. No one type of budget is tied to any particular principle. The type of budget relates to the intent of the analysis, while the principles relate to the farm resources and the resource relationships that exist.

Types of Budgets

There are three basic types of budgets that can be used in the farm business management process. Each type of budget provides different information to the manager for use in the decision-making process. The common thread in each type is that, if properly defined and used, the budget format permits the manager to use economic logic to answer questions of what, how much, and when resources should be used to achieve the goals and objectives as established by the farm family.

The three types of budgets are:

- 1) Whole-farm budget
- 2) Enterprise budget
- 3) Partial budget

The whole-farm budget is a classified and detailed summary of the major physical and financial features of the entire farm business. Whole-farm budgets identify the component parts of the total farm business and determine the relationships among the different parts, both individually and as a whole.

An enterprise budget is a statement of what generally is expected from a set of particular production practices when producing a specified amount of product. It consists of a statement of revenues from and the expenses incurred in the production of a particular product. An enterprise budget documents variable and fixed costs. It is useful in calculating profitability and break-even values.

The partial budget is useful in analyzing the effects of a change from an existing plan. This budget only considers revenue and expense items that will change with a defined change in the plan.

Whole-Farm Budgeting Process

To develop a whole-farm budget:

- 1) List the goals and objectives of the farm firm.
- 2) Inventory the resources available for use in production.
- 3) Determine physical production data that will be used in the input/output process.
- 4) Identify reliable input and output prices.
- 5) Calculate the expected variable and fixed costs and all returns.

Since it is a plan for the future use of farm resources and establishes the future direction of the farm organization, the whole-farm budget must conform to the farm family goals and objectives to be successful. Farm management that is goal-directed integrates the goals and objectives of the farm with those of the family and reduces pressure on competitive uses of family controlled resources. OSU Extension fact sheet AGEC-244, "Goal Setting for Farm and Ranch Families," can help develop a process for identifying farm and family goals, prioritizing them, and identifying management strategies that will achieve the identified goals (a worksheet is included). The **whole-farm budget** is the best tool to analyze the farm business and the impacts of the goals and objectives.

The whole-farm budget should start with the inputs the operator has available for use in the farm business. Often the amount of land and operating capital available are limiting factors. Other factors such as buildings, the farmer's managerial skills, and available markets can also be relatively fixed. It is important to start with those fixed elements in planning a whole-farm budget. The results of the whole-farm budget should combine the resources, constraints, technical information, and price data into a realistic whole-farm budget for the farm being considered. The outcome should be a plan that can provide direction for the farmer and family to follow in maximizing the returns to owned resources.

OSU specialists use a software tool, Integrated Farm Financial Statements (IFFS), in one-on-one work with producers to develop whole farm plans. Information about this tool is available at agecon.okstate.edu/iffs.

An Enterprise Budget

Although managers lack information needed to make perfect decisions, they are forced to make decisions using information available and then must accept the risk associated with that decision. An enterprise budget provides a format for the manager to use in classifying information so that the economics of alternative enterprises and alternative production systems can be consistently analyzed.

One problem in enterprise budgeting is the lack of information concerning the amount of products that will result from particular combinations of inputs for example, how much forage would be produced with a certain amount of seed and fertilizer. Seldom do managers have certainty regarding technical production information as producers never have complete information with regard to production conditions, such as weather and insects. Typically, more information is available regarding the prices of inputs than on products since inputs are purchased during one time period and products are sold in a later time period. The greater lag between planning and actual use of information on product prices relative to input prices adds uncertainty and product price risk that must be considered when planning.

An enterprise budget should contain several components. A detailed description should include a production goal, the production techniques to be employed, the land resource required, and even something about the capital and labor requirements. An enterprise budget should include all costs and all returns associated with the defined enterprise. All variable and fixed costs, both cash and non-cash items, should be included. The returns from products produced for sale (wheat grain crop) plus those that are produced for use in another enterprise (grazing) should be included in an enterprise budget.

Variable costs are the costs of such input items as seed, feed, fertilizer, normal repairs, custom operations, and machinery and equipment operating expenses. These costs also include labor whether associated with machinery or equipment or as hand labor operations. They are items that will be used during one year's operation or during one production period and would not be purchased if the enterprise was not produced. **Variable costs are always included in an enterprise budget.**

Fixed costs are the costs associated with buildings, machinery, and equipment which are prorated over a period of years. Included in this category are depreciation, interest, insurance, and taxes on individual buildings and pieces of machinery and equipment that can be allocated to an individual enterprise. **Fixed costs are always included in an enterprise budget.**

Some costs of production are difficult to allocate to a specific enterprise. The costs are generally classified as overhead costs and include costs usually associated with buildings, utilities, and other miscellaneous items (such as record keeping and budgeting) that are used in more than one enterprise and are not easily allocated to an individual enterprise. Overhead costs can include both variable and fixed costs. It is necessary to allocate all costs of producing an enterprise even if an arbitrary method of allocation must be used. The key to allocating costs is to develop a process that is consistent over time.

The OSU Agricultural Economics Department has developed software tools to assist producers in analyzing many

Oklahoma crop and livestock enterprises. Information and sample reports are available at agecon.okstate.edu/budgets.

The Partial Budget Concept

Partial budgeting is a procedure where receipts and expenses which increase/decrease with a change in organization or procedures are listed in a systematic order. It is a process to allow a total farm budget to be fine-tuned. It focuses the analysis of a defined change to see if it improves the total farm budget.

The steps in constructing a partial budget are to:

- 1) State the proposed alternative or change that will be analyzed.
- 2) Collect data on all aspects of the business that will be affected by the change.
- 3) Classify or group the types of impacts that will occur by including expenses increased or reduced and receipts increased or reduced.

The partial budget (example in Table 1) is based on the concept that a change in the organization of the business will have one or more of the following effects:

Positive Economic Effects

- The change will eliminate or reduce some costs.
- The change will increase returns.

Negative Economic Effects

- The change will cause some additional costs.
- The change will eliminate or reduce some returns.

The net change between positive and negative economic effects is an estimate of the net effect of making the proposed change in the total farm budget. A positive net change indicates a potential increase in income and a negative net change indicates a potential reduction in income due to the proposed change.

Sources of Budget Information

All budgets should be based upon the best information available. The reliability of the budgets is only as good as the quality of the data used in the process. Data needed for use in budgets includes quantity, price, method, and timing of the inputs used.

Some sources of information available for use in preparing budgets are:

- 1) Actual farm records
- 2) Area summary analysis
- 3) County production data
- 4) Typical budgets
- 5) Farm literature
- 6) Information from meetings
- 7) Neighbors

Any or all of these sources should be used in collecting and verifying data or information used in preparing budgets. Good managers verify the reliability of data collected from any source to see that it applies to their situation. Experience from one year is only an indicator and does not assure that same response will result in following years.

Budget Limitations

Careful evaluation of the resource situation must precede the drawing of inferences from budgets. Farms with different owned resource situations can have different management plans given the same basic budget information. Budget data for a 160 acre farm can be used in preparing a budget for a farm of 320 acres; however, differences in resources and organization must be considered and adequately accounted for if the end result is to be reliable and useful.

Budgets are generally constructed to reflect future actions and it is difficult to accurately predict future prices and yields. Historical data provide some basis for establishing initial levels of budget yield, price, and timing data. Several options are available in establishing future prices such as forward contracting and hedging techniques.

Table 1. Partial Budget, Wheat Grazeout versus Harvest for Grain.

Situation: Should I leave stockers on wheat pasture for 60 days rather than remove stockers and combine wheat?

Additional Costs ¹		Additional Returns	
Interest on investment	\$ 8.00	Steers: 790 lbs. x \$1.54/lb.	\$ 1,216.60
Additional vet., feed, etc.	3.00		
Reduced Returns		Reduced Costs	
Steers: 640 lbs. x \$1.61/lb.	\$ 1,030.40	Harvesting	
		\$21/a + (\$0.21/bu. x 15)	\$ 24.15
Wheat sales:		Hauling:	
35 bu. x \$7.50/bu.	262.50	\$0.22 x 35 bu./acre	7.70
Total annual additional costs and reduced returns	\$ 1,303.90 (A)	Total annual additional returns and reduced costs	\$ 1,248.45 (B)
			- 1,303.90 (A)
		Net change in income (B - A)	\$ -55.45

¹ Estimates are based on representative budgets from northwest Oklahoma.

Production and marketing risks will limit budget reliability. "Best estimates" should be used to develop budgets for use in farm business analysis. However, high degrees of variability create risk to the operator and put pressure on the reliability of the estimates used in the enterprise budgets. One alternative is to evaluate best and worst case scenarios in addition to the expected outcome. Probability distributions on weather events and prices can add valuable insights. Even under careful use, errors can compound themselves to the point where budgets can have little or no value. This element of risk should be considered and evaluated by the manager when determining the solutions that best meet the goals and objectives of the farm family.

Budget preparation is time consuming. It requires pencil and calculator activity as well as searching data sources for information to be used in preparing the budget. Software is also available to assist in budget calculations. As with all problems, this becomes an economic question such that the farmer faces the problem of allocating his/her time in a manner whereby the returns from budgeting are greater than the cost of gathering the information.

Why Budget?

Using budgets can provide the farm manager a method to:

- 1) Experiment through simulation with possible outcomes of a given organizational change before resources are actually committed to the change.
- 2) Uncover cost items that might otherwise be overlooked.
- 3) Refine the present organization.
- 4) Seek credit from lending agencies.
- 5) Learn to better organize and reorganize.

Aids to the Process

The Department of Agricultural Economics has decision aids and materials available to assist farmers in building an information system, using information to develop all types of budgets, and using budgets in management decisions. Meetings are held upon request throughout Oklahoma to provide the most current information available. Computer software has been developed to assist with the analysis and assimilation of data into the management framework.

Enterprise budgets developed by the Department of Agricultural Economics are available at www.agecon.okstate.edu/budgets. Those interested in obtaining enterprise

budgets may also contact their Extension Educators — Agriculture, Area Agricultural Economics Specialist, or State Agricultural Economics Specialist, Room 515, Agricultural Hall, OSU, Stillwater, OK 74078, (405) 744-9836 for more information.

Record keeping systems (both manual and electronic) as explained in OSU Extension Fact Sheet AGEC-302, "Information Systems for Oklahoma Farmers" are available to help organize historical data for use in business management. Machinery cost programs such as AGMACH\$ can help provide an estimate of the cost of operating a machinery item. They can help determine the length of ownership before replacement that would be considered best, given the available information entered into the model. AGMACH% is available for download at agmach.okstate.edu

Financial analysis can be performed in Integrated Farm Financial Statement (IFFS software) that uses historical and projected data to prepare multi-year financial statements (cash flow, income statement, and balance sheet) and calculates financial performance ratios (requires the Excel spreadsheet program). The program can be used to develop and analyze a whole farm budget. Contact your Area Agricultural Economics Specialist or State Agricultural Economics Specialist, Room 515 Agricultural Hall, OSU, Stillwater, OK 74078, (405) 744-9836 for more information on IFFS.

Summary

Budgets (whole-farm, enterprise, and partial) are management tools to help evaluate the farm business. Each type of budget has a different but related purpose and should be used by managers accordingly. The whole-farm budget becomes a starting point that can be used to analyze the farm business over time. Enterprise budgets can be used to analyze components of the farm business and also be a building block for the whole-farm. Once a whole-farm budget has been developed, a partial budget can be valuable in evaluating changes to the total-farm budget. Each type of budget offers useful information to support management decisions.

Other Fact Sheets that are available through your local Extension office:

- AGEC-213 Farm Family Decision-making
- AGEC-302 Information Systems for Oklahoma Farmers
- AGEC-751 Developing a Cash Flow Plan
- AGEC-752 Developing a Balance Sheet
- AGEC-753 Developing an Income Statement

Adapted from an earlier version by Raleigh Jobs former Associate Professor of Agricultural Economics.

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