

Table 1. Partial budget analysis of changing product mix from snow peas to salad greens¹.

Positive Effects		Negative Effects	
Increases in income (1)		Decreases in income (3)	
		Reduced income per bed	\$25
Decreases in costs (2)		Increases in costs (4)	
4.85 less hrs of labor @ \$10 per hr	\$48.50		
Reduced input & packaging costs	20.95		
Total positive effects (5)	\$69.45	Total negative effects (6)	\$25
Net change (7)	\$44.45		

¹ The base budget for snow peas and estimated costs and returns for salad greens are from Chase (2006a), "Iowa Vegetable Production Budgets".

The data for the partial budget analysis comes from Chase 2006(a), "Iowa Vegetable Production Budgets." It is assumed a producer would create the numbers for the snow peas in this example because it is currently grown on the farm. The proposed change estimates could come from an Extension publication or other trade resource, neighbor experiences, a trial plot on the farm, or other source deemed to be reasonable and accurate. Keep in mind if estimates are gathered from sources off the farm, adjustments should be made to accurately reflect the current production practices and abilities of the farm and farm operator. Comparisons also need to be made on similar units of land (beds to beds, acres to acres, etc.).

Substituting salad greens for snow peas reduces income by \$25 per bed. Labor requirements and input and packaging costs, however, would be lowered by \$69.45 per bed. Total positive effects outweigh total negative effects by \$44.45 per bed indicating the change from snow peas to salad greens would increase farm profitability. Non-economic considerations would be taken into account prior to implementation of the proposed change.

A second example of how a partial budget could be used is presented in Table 2. Let's assume the farm produces vegetables on 4 feet by 100 feet beds. The producer developed enterprise budgets for the four or five crops that provide a majority of the income on the farm. Once developed, the producer wondered if revenues could be increased through changing production practices with income rising faster than the associated costs. Currently, carrots are produced in two rows down the length of the bed. What would happen to income and costs if a third row of carrots was planted? The producer realized carrot sales would increase, but would the increase in revenues outpace the increase in seed, other input costs, and labor?

Table 2. Partial budget analysis of changing carrot production practices².

Positive Effects		Negative Effects	
Increases in income (1)		Decreases in income (3)	
Increase in production 75 lb @ \$0.80 \$60.00			
Decreases in costs (2)		Increases in costs (4)	
		Increase in labor and input costs \$21.50	
Total positive effects (5) \$60.00		Total negative effects (6) \$21.50	
Net change (7) \$38.50			

² The base budget for carrots is from Chase (2006a), "Iowa Vegetable Production Budgets". The positive and negative effects are estimates based on roughly a 50 percent increase in production and some crop expenses.

Adding a third row of carrots would increase production an estimated 75 pounds. Revenue would increase \$60 per bed using a price per pound of \$0.80. Seed, other crop inputs and labor are estimated to increase \$21.50 per bed. Total positive effects of \$60 per bed outweigh the increase in negative effects of \$21.50 per bed indicating that if the production change was implemented, it would increase profitability \$38.50 per bed.

A third and final example of how partial budgets can be used in decision making looks at comparing marketing outlets. Let's assume the farm sells most of its produce at a regional urban farmers' market. However, the question becomes: what marketing outlet should be used to sell its remaining production; smaller rural farmers' market or institutional market?

Let's assume the rural farmers' market occurs once per week, requires one person for six hours (\$60 at \$10 per hour), supplies expense of \$20 per week, and transportation cost of \$20 per week. Total costs for a 20 week season would be \$2,000. The comparison marketing outlet is selling to a local institutional buyer. Assume the mileage is the same at \$20 per

week, labor is four hours per week (\$40 at \$10 per hour), and supplies are \$10 per week. Total costs for this market over the same 20-week period would be \$1,400.

Not all the products taken to the farmers' market are sold. A five percent return is common. Assume the farms sales records indicate farmer's market sales are \$4,500 for the season (\$225 per day). It is estimated sales revenue would be 20 percent lower for the institutional market than farmers' market due to lower sales prices. This reduction takes into consideration the farmers' market returns (the institutional sales would be 100 percent of remaining production). Therefore, estimated sales for the institutional market would be \$3,600. These estimates would be transferred to the partial budget analysis as indicated by Table 3.

Table 3. Partial budget analysis of changing marketing outlets³.

Positive Effects		Negative Effects	
Increases in income (1)		Decreases in income (3)	
		Reduction in revenue	\$900
Decreases in costs (2)		Increases in costs (4)	
Reduction in labor and supplies	\$600		
Total positive effects (5)	\$600	Total negative effects (6)	\$900
Net change (7)	-\$300		

³ For a detailed discussion of the transaction costs associated with different marketing outlets, see Chase (2008), "Pricing for Profit". Remember to insert your own numbers in the marketing outlet comparison. An Excel spreadsheet titled "Comparison of Transaction Costs by Marketing Outlet" is available to compare your marketing outlet numbers at Agricultural Decision Maker (<http://www.extension.iastate.edu/agdm/authors/cchase.html>).

In this example, the reduction in negative effects (costs) of \$600 does not overcome the reduction in positive effects (revenue) of \$900. Depending on how important the non-economic and other factors are in comparing these two marketing outlets, it is unlikely the producer would shift sales from the current rural farmers' market to the proposed institutional market.

Summary

Partial budgeting is a simple method to evaluate a change to the business. Only those aspects of the business affected directly by the change are included in the analysis. In particular, how would the proposed change affect revenue (positively or negatively) and costs (positively or negatively)? Is the net change positive or negative? If positive, it is likely the change will be implemented. If negative, then non-economic factors need to be considered before the proposed change is discarded.

Partial budget examples were used to illustrate product mix, production changes and changes in marketing outlets. The numbers used in the examples came from research and estimates based on conversations with producers. To determine if changes make sense for a specific farming operation, that farm's production and financial numbers must be used for the base and credible estimates found for the proposed change. Remember, "garbage-in, garbage-out" does apply.

Although other examples, such as evaluating substituting enterprises, evaluating custom hire versus ownership, or livestock purchases were not evaluated, there are Extension bulletins and fact sheets that illustrate those uses (for an example, see Lessley, et al 1991 and Tigner, 2006) as well as others.

References

Chase, C. 2006a. "Iowa vegetable production budgets." Ames, Iowa: Iowa State University, University Extension Service, Bulletin PM-2017.

Chase, C. 2006b. "Using enterprise budgets to make decisions." Ames, Iowa: Iowa State University, University Extension Service, Bulletin FM-1875.

Chase, C. 2008. "Pricing for profit." Ames, Iowa: Iowa State University, Iowa State University Extension, Bulletin FM-1884.

Chase, C. 2010. "Evaluating marketing outlets using whole-farm records." Ames, Iowa: Iowa State University, Iowa State University Extension, Agricultural Decision Maker Bulletin C5-32.

Dalsted, N. and P. Gutierrez, 1992
"Partial budgeting." Fort Collins, Colorado: Colorado State University, Colorado State University Extension, Bulletin no 3.760.

Lessley, B., D. Johnson, and J. Hanson. 1991. "Using the partial budget to analyze farm change." College Park, Maryland: University of Maryland, University of Maryland Extension, Fact Sheet 547.

Tigner, R. 2006. "Partial budgeting: A tool to analyze farm business changes." Ames, Iowa: Iowa State University, Iowa State University Extension, Bulletin FM-1884.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.