



PRICING MANAGEMENT

Who pays the cost of advertising and what impact is advertising likely to have on your firm's "reservation price?" What is your definition of a "fair price" and how is it related to your firm's "return on invested capital?" How are "absorption and direct costing" related to your firm's pricing decisions?

No doubt the terms used in these introductory questions are foreign to many agribusiness managers. Yet the questions are quite relevant to their operations. Each question refers to a pricing practice and, directly or indirectly, to the relationship between costs and prices. Pricing management in the agribusiness industry has been the perplexing subject of many discussions in recent years. Moreover, as the full force of the so-called cost-price squeeze was exerted on the industry, managers began to question more and more the proper cost-price relationship. There are three principle sources of confusion that exist with respect to their questioning.

First of all, managers have failed to realize that all discussions of pricing will inevitably contain three vastly different, and sometimes conflicting, viewpoints. These three viewpoints are those of: (1) academic economists whose interests are mainly related to resource allocation and long-run prices, (2) individual businessmen whose interests are presumably long-run private profits, and (3) government officials whose interests are public welfare and compliance with costing legislation. No one can challenge the legitimacy of each viewpoint. Nor can anyone argue that all viewpoints are always mutually consistent.

A second source of confusion evolves from management's failure to recognize the disparity among different types of costs and the impact each has on pricing decisions. The costs of advertising, as will be shown later, may raise, lower, or leave unaffected a firm's reservation price. Only when the goals of management have been identified, can the observer predict the likely outcome.

The third source of confusion arises from management's failure to recognize that both costs and product demand are and should be factors in pricing, and that both are likely to change concurrently. Any attempt to separate costs, prices, and product demand are doomed to failure before it even begins. The three are inseparable and no amount of economic dialogue, industry strategy, or governmental regulation can ignore this fact for very long.

Any attempt to discuss pricing management in the agribusiness industry is thoroughly booby-trapped by these three major confusions. This paper may, perhaps, only provide a fourth source of confusion. However, its intent is to identify the booby traps, provide for a clearer understanding of the cost-price relationship, and briefly describe a few of the more common pricing policies which may prove useful to agribusiness managers.

The Reservation Price

When an agribusiness firm makes a cash outlay or its employees devote work effort to a particular task, it does so in its own business self-interest. While this practice is sometimes in conflict with social or political interests, it is, nevertheless, the basis upon which our free

enterprise system rests. Generally speaking, all business expenditures, under this system, are designed to increase sales, permit a higher price, reduce other costs, or produce some combination of the three. It should be obvious that if such benefits were not expected to result, the expenditures would not be warranted. However, the impact such expenditures will ultimately have on product price is not so obvious or predictable. For example, an analysis of the expenditures will likely reveal some basic differences among items that are uniformly classified as "costs." Therefore, such an analysis must focus on a more general management objective and then determine different ways in which the various types of costs contribute to the objective. A discussion of reservation price should clarify this idea.

The reservation price may be defined as that minimum price below which the agribusiness manager will refuse to sell his product. This should not be confused with "asking price," or that price actually charged at the time of the sale. Reservation price amply states the minimum below which asking price will never fall. Three frequently overlooked properties of a reservation price should be noted: (1) The base upon which the reservation price is established *is not* present or past operations, but management's expectation of conditions in some future period. (2) The reservation price is a means of comparing present operations with the expected results of a new program, e.g., a new promotional campaign. (3) Properly construed, reservation price is a per-unit measure.

Total costs typically increase when additional services (e.g., advertising) are added by the seller. To be warranted, the additional sales resulting from this additional service must create increased revenues at least as great as the rise in total cost. This simple economic fact dictates to management what his reservation price must be, i.e., it must be set at such a level that the increased sales will generate additional revenues which are just adequate to cover the cost of the services added. However, since reservation price is a per-unit measure, the addition of a service does not necessarily imply a rise in reservation

price. A simple illustration may clarify this *often confusing* phase of pricing management.

If management's objective is to increase sales volume through the initiation of an advertising campaign, and that objective is realized, then the firm's total costs will increase by the outlay for advertising plus increments in other costs that vary with volume. But of course, this increased total cost is now spread over a larger number of units. If the proportionate increase in units sold is greater than increase in total costs, management's reservation price may be lowered without harming the firm.

However, management may engage in an advertising campaign with the objective of raising his selling price without significantly reducing a sales volume. Depending on its impact on sales, this strategy may raise, lower, or leave unaffected the reservation price. This outcome, while it may be optimal to the firm, may offend the spokesman for the public who see no change in the product, but only a higher selling price to the consumer (herein lies a conflicting viewpoint as noted earlier).

The Fair Price

While accountants can neither set prices nor provide management with a simple formula to do so, they can provide much assistance to management in their search for a fair price. In the agribusiness industry, a fair price is generally understood to be that which generates for the firm a minimum acceptable return on its invested capital (R.O.I.C.). R.O.I.C. is a percentage calculated by dividing net operating profit by capital employed. It is a more meaningful measure of firm performance than annual net profit, gross sales, margin, etc., and provides a convenient starting point for the development of a fair price. Accountants can obtain the data needed to compute R.O.I.C. Moreover, once management has established what it considers to be its minimum acceptable R.O.I.C., an accountant can easily deduce fair price guidelines.

For example, let's assume that your firm specializes in the sale of bushings for irrigation

water pumps and is confronted with the following sales forecast for the calendar year 1972:

Net Sales Forecast, 1972	<u>\$590,000</u>	
Direct Costs:		
Cost of Goods	350,000	
Related Expenses	<u>50,000</u>	
Total Direct Costs	<u>400,000</u>	
Gross Profit((Margin)	190,000	(32%)
Allocated Overhead	<u>70,000</u>	
Net Profit (Margin)	120,000	(20%)
Capital Employed (R.O.I.C.)	410,000	(29%)

How are these figures arrived at and what do they mean! Your marketing people estimate the net sales volume to be \$590,000. An analysis of historical data by your accountant shows that cost of goods has averaged about 60 percent of net sales (\$350,000), while sales commissions and freight averaged 8.5 percent (\$50,000). These two direct costs total \$400,000 and will vary as volume varies. Your accountant has also determined that about \$70,000 worth of your firm's total overhead (those costs which do not alter with volume) should be allocated to the bushing operation. This leaves a net operating profit of \$120,000 or a net profit margin of about 20 percent on expected net sales. The total capital employed in the bushing operation includes accounts receivable, inventories, required cash, plant, property, and equipment totaling \$410,000. Dividing the net profit by the capital employed provides an R.O.I.C. of 29 percent. However, as the manager, you have decided that a fair price for bushings would be one which generates an R.O.I.C. of 20 percent. Does this mean that the current price of bushings should be reduced by 9 percent? Absolutely not!

To obtain the fair price, one must begin with the 20 percent of R.O.I.C. and work backwards as follows:

Capital Employed	\$410,000	
R.O.I.C.	x <u>20%</u>	
Net Profit	82,000	
Allocated Overhead	+ <u>70,000</u>	
Gross Profit	\$152,000	
Total Direct Costs	+ <u>400,000</u>	
Net Sales Required	\$552,000	
(Gross Profit Margin)		(26%)
(Net Profit Margin)		(15%)

Now subtracting the new net sales; figure (\$552,000) from the original net sales figure (\$590,000), one obtains a difference of \$38,000. Dividing this difference by the original net sales figure, one obtains 6.4 percent which is the percentage reduction in the original price of bushings that will establish a fair price consistent with an R.O.I.C. of 20 percent.

At this point some may argue that a price reduction would likely increase the number of bushings sold beyond that expected when the \$590,000 net sales forecast was made (and the non-reduced price existed). This may be true. However, your marketing people need only establish an estimated sliding scale between various prices and estimated number of units sold. For each price the projected net sales volume can thereby be determined and the above procedure followed to identify the R.O.I.C. and/or further fair price adjustments. Many managers who should be devoting more time to their pricing decisions will wail at the thought of going through this kind of arithmetic exercise. However, the procedure is really not that difficult and may prove highly enlightening.

Other Pricing Policies

Absorption costing and direct costing are two of the most common pricing policies currently found in industry. Each has its own following of academicians and practitioners. Each has a substantial number of advocates and resisters. In my own opinion, whether one policy is superior to the other is purely problematic. Management's choice of policy should depend on the situation with which the firm is faced. This can be shown in the following two illustrations:

Absorption Costing. Returning to our firm which manufactures irrigation pump bushings, let's assume that past experience has shown that each bushing produced requires two and one-half units of raw material and three hours of direct labor. The average purchase price of the raw material is \$2 per unit and the current wage rate is \$2.50 per hour. In addition, it has been determined that a variable overhead cost of \$1 is associated with each direct labor hour. Finally, the firm estimates that in 1972 it will employ 200,000 direct labor hours and incur \$300,000 of fixed overhead. When absorption costing is used as the pricing policy, some method of converting production costs into a per-unit price is required. A markup of 50 percent of total manufacturing cost will be used for this illustration. Computing a price under absorption costing now requires seven brief steps. First, the raw material usage for one unit of product is multiplied by its average cost (see Figure 1 below). Second, labor is treated similarly. Third, the same labor usage is multiplied by the variable overhead and thereby assigned to the finished product. Fourth, the fixed overhead incurred per hour of labor employed is multiplied by the labor usage. Fifth, the results are summed to determine unit manufacturing cost. Sixth, the markup rate is applied. In the seventh and final step, the manufacturing cost and markup are summed to set the unit selling price.

Figure 1
Pricing Policy--Absorptive Costing

Unit Cost of Manufacturing:	
	\$5.00
Direct Material (2 1/2 units x \$2/unit)	7.50
Direct Labor (3 hrs x \$2.50/hr)	3.00
Variable Overhead (3hrs. X \$1.00/hr)	<u>4.50</u>
Fixed Overhead (3hrs x \$300,000/ 200,000hrs)	
	20.00
Total Unit Manufacturing Cost	
Markup (\$20 x 50%)	<u>10.00</u>
Unit Selling Price	<u>\$30.00</u>

As described above, absorption costing is based on the conversion of all costs (including fixed overhead) to a per unit basis and results in the "setting" of a price. Hence, if your firm finds itself in a position to set or establish a price, absorptive costing appears suitable.

Direct Costing. If, however, your firm finds itself in a position whereby it must determine whether or not it will "accept" a price being offered, direct costing appears more suitable. Since the basis of direct costing is that fixed overhead costs are not unit costs, the only cost elements to be used are those which vary in total amount with the level of manufacturing activity. Hence the computations for direct costing are similar to those for absorptive costing except that fixed overhead is omitted and variable selling and administrative costs (\$2.50 per unit in Figure 2) are added.

In the case of our bushing manufacturer, the total variable unit cost of \$18 becomes the significant figure and is used to evaluate a price being offered. If, for example, a potential bushing buyer offers \$29 per unit of finished product, \$11 remains as a contribution to fixed overhead costs and profit (if any). In the short run, the manufacturer would be willing to sell at any bid price which equals or exceeds his total variable

unit cost as this will maximize short run income or minimize short run loss. If price received fails to cover all costs (variable and fixed) in the long run, the manufacturer must decide to either discontinue production or make the appropriate adjustments in his level of production or manufacturing costs.

Figure 2
Pricing Policy--Direct Costing

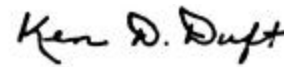
Unit Variable Manufacturing Cost:	
Direct Material (2 1/2 units x \$2/unit)	\$5.00
Direct Labor (3 hrs x \$2.50/hr)	7.50
Variable Overhead (3 hrs x \$1.00/hr)	<u>3.00</u>
Total Variable Manufacturing Cost Per Unit	\$15.50
Variable Selling and Admin. Cost Per Unit	<u>2.50</u>
Total Variable Unit Cost	\$18.00
Contribution to Fixed Overhead and Profit at Price Offering of \$29	<u>11.00</u>
Price Per Unit Offered	<u><u>\$29.00</u></u>

In summary, if you find yourself in the position of a price leader in your industry, you would be better served by absorptive costing. As a price follower, the question of whether to accept a price offered is better answered through a pricing policy of direct costing.

Summary

This paper is designed to clarify some of the most common sources, of confusion evolving from agribusiness managers' pricing activities. Reservation price is described and its reaction to expenditure increases is illustrated. Fair pricing strategy is discussed in light of its impact on a firm's return on invested capital. Finally, absorption and direct costing methodology is presented. Each is shown to be a suitable strategy for pricing management, depending on whether the firm operates as a price setter or a price taker.

Sincerely,



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