The New Math for Productivity: Opportunity Cost, Revisited

Donald Shadoan

Robert Sharp
Eastern Kentucky University
Richmond, Kentucky

Economists frequently state that opportunity costs are the only relevant costs one should use when making resource allocation decisions. However, a significant neglect or, at the minimum, an incomplete application of the opportunity cost concept to decision making is frequently observed. The basic thesis of this paper is that the efficiency of allocating resources could be significantly improved if somehow decision makers could be made more aware of the relevance of this concept.

Economic historians generally give Friedrich von Wieser, a professor of economics at the University of Prague, credit for initially developing the economic cost concept in his 1889 work, *Natural Value* [4]. Professor von Wieser pointed out that production not only creates value, but also destroys value in the process by using resources that could have been used to produce other goods. Professor von Wieser concluded that the potential value of all "cognate" products must, therefore be included as a cost of production when allocating economic factors of production ([4], p. 6).

Current day economists generally define opportunity cost as the value of the resource in its next best use. Joel Dean emphasized the distinction between opportunity costs and the accountants' outlay costs. Dean stated, "In business problems the message of opportunity costs is that it is dangerous to confine cost knowledge to what the firm is doing. What the firm is not doing but could do is frequently the critical cost consideration which it is perilous but easy to ignore" ([1], p. 260). Unfortunately, too many decision makers have been ignoring the risk implied by Dean by failing to consider what the firm could do.

Failure to Use Opportunity Cost

Ira Magaziner and Robert Reich identify current accounting systems as one of the underlying causes of failing to properly use the opportunity cost concept ([2], p. 191). They imply that accounting systems are more concerned with maintaining cost control and keeping financial records for tax purposes rather than developing information for efficient decision making. It is also likely that efforts to objectively quantify costs have distracted decision makers from considering the *relevant* costs. In effect, there are no precise sets of objective costs that are germane to business firms or other decision makers. Therefore, to assist in making efficient decisions, managers must become more familiar with the subjective processes associated with the opportunity cost

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concept and accept the responsibility for making informed determinations. Failure to do this is tantamount to denying the existence of implicit costs.

A special report in the June 6, 1988, issue of *Business Week* magazine, entitled *The Productivity Paradox*, dealt with many of the competitive and productivity problems existing in U. S. industry. The articles pointed out many paradoxes. While the text suggested a need to have the managerial skills to deal with these problems, not once did it explicitly refer to the opportunity cost concept. The failure of a major business publication to explicitly recognize the relevance of opportunity cost suggests that there is a dire need for resurrecting this concept.

The New Math?

Port, *et al.*, suggests that answers to many of the paradoxes of productivity may have been found by a "handful of companies that have developed a new math for productivity" ([3], p. 101). A careful examination of the "new math" reflects Dean's message: what the firm is not doing, *but could do*, is frequently the critical cost.

A review of the entire special issue of *Business Week* convincingly suggests the need for decision makers to become more accustomed to using the opportunity cost concept. Decision makers can be trained to artfully use this concept by constantly asking, "what do I give up to employ a resource in this manner?," or conversely, "what must be foregone by not taking a particular course of action?" Many of the so-called indices of efficiency or control used by business firms ignore these questions and therefore frequently lead to decisions based on irrelevant costs.[1]

Fortuitous Use of Opportunity Cost

The following two examples of decision making reported in the *Business Week* issue under, "How the New Math of Productivity Adds Up," correctly, although unknowingly, apply the opportunity cost concept. They also exemplify Dean's message to consider the costs of not taking a particular action *in addition to* what the firm gives up to take a particular course of action [1].

Cone Drive Operations, Inc. was experiencing eroding profits, increasing inventory costs and late deliveries of gears. It was reported that switching to a computer integrated management system costing $2 million could not be justified for a company with sales of $26 million. It was later determined that the company made the correct decision of switching when viewed with respect to the cost of not taking the action. With the switch came an increase in business (partially brought about be on-time deliveries), a sixty percent reduction in required inventories, and a sizable reduction in the time required to handle special orders and new products ([3], p. 103). When Cone management looked at the opportunity cost of not modernizing they had to subjectively evaluate such intangibles as better quality, greater flexibility, faster time

[1] An ironic twist may be pointed out at this juncture: managers are often evaluated on their conformance to these irrelevant cost structures; they continue to perform in this inconsistent manner only because the opportunity cost of not complying to these standards is high.

to market, and greater customer satisfaction. Apparently management correctly concluded that the opportunity cost of not modernizing was too high. In reality, failure to consider modernization would have reduced the efficiency of the firm. The correct application of the opportunity cost concept must consider the business gains from an investment *as well as* any savings associated with the investment decision.

In the second example, the financial staff of Rockwell turned down an investment proposal in 1982, involved with spending $80,000 to buy a laser to etch contract numbers on communications systems sold to the Pentagon. The rejection decision was based on the estimate that savings in direct labor costs would amount to only $4,000 per year. Three years later, the project was approved when it was pointed out that an additional $200,000 per year could be saved in inventory holding costs ([3], p. 104). It is obvious that those initially presenting the project did not ask the critical question of what the cost would be of *not* making the investment. Traditionally, many firms have concentrated their evaluation of investment projects with respect to savings in labor cost. Instead, they possibly should have been concerned with the evaluation of all costs encountered if the investment was not made.

Conclusions

If resources are to be allocated efficiently, decision makers must be cognizant of the opportunity cost concept and be willing and able to develop estimates of this cost. This is tantamount to saying that a greater effort must be made to develop data for the sole purpose of decision making, rather than trying to use the traditional accounting data usually associated with the financial history of the firm.

It appears that our management training programs, as well as our business publications, have been remiss in teaching decision makers a concept that is approximately 100 years old – the "new math" is simply the neglected concept of opportunity cost.

The need to develop objective data for control and tax purposes may serve as an impediment to the analysis of data necessary to estimate the opportunity costs of various decisions. The development of quantitatively-accurate computer applications may have been partially responsible for mangers attempting to make decisions based on objective data. However, although estimates of opportunity costs may be imprecise or non-objective, managers cannot be excused for ignoring applications of the concept – the costs are too high!

References

1. Dean, Joel. *Managerial Economics.* Englewood Cliffs, NJ: Prentice-Hall (1965), pp. 258-260.
2. Magaziner, Ira C. and Robert B. Reich. *Minding America's Business.* New York, NY: Harcourt, Brace, and Jovanovich (1982).
3. Port, Otis, Resa King, and William J. Hamptom. "The Productivity Paradox." *Business Week*, June 6, 1988, pp. 100-112.
4. von Wieser, Friedrich. *Natural Value.* New York, NY: Kelly and Millman (1956).