

resource markets. International comparisons implicitly address this constraint when comparing costs. If a primary health care project alters this infrastructure, costs will be affected to varying degrees. The functional analysis of cost measurement described above assumes that a primary health care project can be instituted or expanded and it will have no impact on the overall infrastructural constraint that underlies the ability to provide inputs, or affects the costs of these inputs.

One remaining aspect of functional analysis remains to be addressed, that of complementary activities. So far, our analysis has been confined to a "per function" level. But, inputs can complement each other; and create a positive synergism. This synergism (leading to economies of scale) has been ruled out of the functional analysis framework. Theoretically it could readily be incorporated by redefining functions and considering interaction between functions. What must be firstly determined are these various interactions and their final output.

The Measurement of Costs

In actual dollars and cents terms, what is to be included in our cost measurement? To date, there is no adequate internationally acceptable definition of what constitutes health care expenditures and an even less acceptable definition exists for primary health care expenditures. The money costs of care comprise the expenditures for prevention, detection, treatment, rehabilitation, research, training, and capital investment in facilities. In many systems, money cost represents a part of the true cost as other costs must be borne by the individual. The health care consumer must meet time costs (and possibly loss of income), inconvenience costs, transportation costs. In many cases a tradeoff exists between program money costs and costs imposed on the consumer.

Once again, the function of the project must be reviewed in light of the project impact on the general environment. Are there externalities or spillover costs created by the project that have not been included? Does the project impose costs on other sectors of the economy and thus disrupt the general equilibrium? Here the planner is required to exercise foresight and anticipate project outcomes and impacts. Such indirect costs must be included in the projects' money costs

While many inputs appear to be 'free' because they have been donated, an opportunity cost in terms of the best alternative use of the resource is implicit in their use. If such inputs are 'tied' to specific projects, then their opportunity cost is zero for they have no other best alternative. Volunteer labour and donated facilities carry this implicit opportunity cost with them.

Another hidden project cost is that incurred in infrastructure creation, expansion, or utilization. As stated in the previous section, an infrastructure is a constraint on the project. If the project seeks to extend this constraint, the cost of expansion must be borne by the program. For example, if project supervision taxes the Ministry of Health staff and more workers must be hired or the Ministry expanded, the project should bear those costs. Likewise with other aspects of the infrastructure.

Due to the variability in project function, accompanying infrastructure, and sectoral imperfections, it is impossible to completely list all cost categories to be considered. What can be considered, however, are the conceptual elements of cost change. Four main factors contribute to cost increases: increases in the number of people covered; more units of care for existing recipients, i.e., increased coverage per person; more resource intensive units of care; and more expensive resources. The dilemma most projects face is that more than one of the above factors is present at any given time.

In an article on the variance analysis of cost accounting, Bashan, et al, (1973), provide a simple tool for isolating cost increases from specific factors. The total variance for a product can be decomposed into its components: price variance, quantity variance, and joint variance. For example, the total cost of a project can increase because of an increase in the number of persons covered, an increase in the per person cost of coverage, and some increase due to both of these increases (20).

Economics or Diseconomies of Scale?

In a previous section mention was made of economies and diseconomies of scale. While most planners and economists "intuitively feel" that such economies and diseconomies exist, few empirical works have undertaken the testing of this intuition. Yeon (1979) by employing the techniques of regression analysis, presents one of the few cases of slight economies of scale in maintenance costs. Berry in two separate works systematically tackles this question with respect to the U.S. hospitals.

The statistical analysis does provide insight to the factors affecting hospital cost: hospital services are produced subject to economies of scale but the absolute magnitudes are rather insignificant. (21)

The value of Berry's works lies in raising the possibility of economies/diseconomies of scale and points to an area that requires further investigation and research. While many planners 'intuitively feel' that economies/diseconomies of scale exist with respect to their particular projects, there is no conclusive empirical evidence on this topic.

Problems in the Measurement of Costs

The previous section ended where this section begins -- by noting some of the problems in measuring the costs of primary health care. If one were less than selective, this entire paper could be devoted to stating the problems encountered in cost measurement. The focus of this paper is on both the non-obvious and yet fundamental problems.

Variance analysis was introduced above as a means to identify changes in cost. One shortcoming of this analysis is its inability to answer the question of why the factors in the initial cost model have changed. Thus, the analysis serves a descriptive role in explaining the how, but cannot explain why. One advantage of variance analysis is that it can be used to forecast changes. A problem encountered in cost measurement is that an estimate of predicted cost