



“Summary of article by Roefie Hueting: Correcting National Income for Environmental Losses: A Practical Solution for a Theoretical Dilemma” in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 246-250

Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being

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THE INTERACTION BETWEEN THE ENVIRONMENT AND PRODUCTION: THE URGENCY OF CORRECTION

With some exceptions, economists and policy makers the world over regard the expansion of physical output - i.e., production growth - as *the* measure of economic progress and success, and as an indicator of increasing welfare as well. Growth is therefore at the top of economic policy makers' agendas. However, growth is accompanied by the destruction of the most fundamental, scarce and valuable resource at man's disposal, and the very resource upon which growth depends: the environment. Yet the role of scarce environmental resources is virtually ignored in economics, and the systems of national accounts (SNAs) focus on growth alone, failing to account for the often irretrievable use of these resources in production processes. Three conclusions can be drawn from these observations: 1) society is sailing by the wrong compass at the expense of the environment; 2) this error is covered up by using terms incorrectly; and 3) the belief in continuous exponential growth, as measured in national income, is at the heart of the environmental problem. This paper examines the sorts of information that ought to be incorporated into SNAs to properly account for environmental losses due to damage or use, and discusses the practical problems associated with efforts aimed at valuation of environmental functions.

The current terminology regarding the concepts of growth and welfare reflects the strong belief that society is in good shape economically only when real production, as measured in GNP accounts, is increasing. The notion that growth is necessary to create support for financing the conservation of the environment - highly popular among economic and environmental policy makers - stems from this belief. This proposition is dubious, however, because environmental deterioration is in fact a consequence of the expansion of output. The growth that has occurred in the North has required a loss of scarce environmental goods that has not been taken into account. The minimum growth rate of 3% per annum globally advocated in official development policy is harmful to the environment in terms of both the resources it depletes and the waste it generates.

Reducing these burdens on society could be achieved in two ways: by introducing environment-saving measures into our current patterns of production and consumption, or by directly changing those patterns. The first method, which would involve changing the processes of production, results in higher prices and thus reduces the growth of national income. However,

technological measures often will not solve the problem, either because increases in total production override the beneficial effects of the measure, or because, due to the cumulative character of the burden, the measure may succeed only in slowing down the rate of deterioration. Thus technology alone will not be sufficient to address these problems; a shift in behavior patterns is needed as well. Like process changes, changes in production and consumption patterns will also result in slower GNP growth. For example, purchasing a bicycle instead of an automobile, or reducing one's energy use, will result in a decline in GNP. However, assuming that we value bicycles, etc., and the ensuing environmental quality and a sustainable future, more than cars, etc., and the subsequent destruction and depletion of environment and resources, such shifts in the patterns of production and consumption would increase our welfare.

Two conclusions can be drawn from the foregoing discussion: 1) stimulating GNP growth in industrialized countries will not solve the problems of the developing countries; and 2) GNP growth and safeguarding the environment and resources are conflicting ends. The extent of the environmental crisis we confront mandates a shift in our priorities from promoting growth to saving the environment. This reality does not necessitate a cessation of all growth; rather, it mandates a shift to patterns of production and consumption that are sustainable, and then to wait and see whether or not growth still occurs.

THE UNSOLVABLE PROBLEM OF SHADOW PRICES FOR ENVIRONMENTAL FUNCTIONS

It follows from the above discussion that the environment is constantly put at risk by these misperceptions regarding growth and welfare, which lead to economic policies that stress increasing production as measured in the SNA. Therefore a correction in the national accounting system to include resource use and environmental destruction is necessary; but two problems make this correction difficult. First, the environment needs to be defined in a manageable way, with the link explicitly made between the environment and economics. In an economic approach, the environment can best be described as the physical surroundings of humans on which they are entirely dependent for all economic activities. The environment serves a number of economic functions, and these functions may come into conflict with one another if the use of one function inhibits the use of another. The environment takes on an economic aspect when competition arises for the use of functions, since competing functions are then scarce goods, and losses of function are costs, irrespective of whether they are expressed in money terms or whether actual markets exist. Qualitative competition arises when additions (wastes) and subtractions (species and habitat extinction) occur that compromise other potential uses of the environmental resource. Quantitative or spatial competition arises when the quantity of matter or space fall short of satisfying existing wants.

The second problem concerns the construction of shadow prices for environmental functions. To address the problems of environmental losses, it is necessary to construct these shadow prices in terms that are comparable to the market prices used in national income accounts. For this, demand and supply curves must be constructed. The supply curve can, in principle, be constructed by estimating the costs of the measures necessary to prevent environmental damage; this curve is referred to as the elimination cost curve. Constructing a complete demand curve, however, is difficult because the intensity of individual preferences for environmental functions

cannot be expressed in market behavior or translated into market terms. This is further complicated by the fact that the consequences of today's actions will often only be manifest in future damage. Some efforts to resolve this difficulty have included asking people to estimate how much they would be willing to pay to conserve environmental functions, or how much function they are willing to lose over time. However, it is doubtful that this method will enable researchers to derive a complete demand curve. Therefore, the construction of theoretically sound shadow prices, necessary for the correction of national income accounts, is not really possible.

WHAT CAN BE DONE IMMEDIATELY

There are a number of objections to equating levels of production with measures of social welfare. One category of objections has to do with a series of technical and theoretical difficulties with estimating and identifying the variables used in the accounting process. A second category relates to a number of expenditures currently treated as final goods and services which are, in fact, intermediate costs. Simon Kuznets emphasizes three particular classes of such expenditures: 1) the numerous services designed to offset the disadvantages of intense urbanization; 2) the myriad services associated with living in a technologically and financially complex civilization (e.g., banks, unions, brokerage houses, etc.); and 3) a major part of government activity, including legislative, legal, and defense activities designed to facilitate the functioning of the system. A fourth class can also be added that includes expenditures designed to offset the losses of environmental functions. All of these should be made intermediate entries in the SNAs; doing so would lower estimates of GNP.

A third category of objections relates to those elements of our welfare that are not directly related to production, such as leisure, employment, working conditions, income distribution, the quality of the general environment, and future environmental security. All of these factors play a part in economic actions, and must be weighed against one another when one comes at the expense of one or more of the others. Thus there is no single common denominator for evaluating social welfare. From this perspective, policies that result in less output may actually enhance social welfare if, at the margin, the environment is given greater weight than output.

A PRACTICAL SOLUTION

While correcting for double-counting of intermediate services is conceptually straightforward, indicating environmental costs in money terms is more problematic. A practical solution depends on defining a physical standard for sustainable use of resources, and identifying the measures necessary to meet it. Estimates can then be made of both the deviation from this standard at current GNP levels, and of the cost of achieving the standard, through either remedial activity or direct shifts from burdening to environmentally benign activities. For example, soil erosion above replacement rates can be measured, and the cost of soil restoration efforts estimated. This gives a money figure for the necessary GNP adjustment. For nonrenewable resources, the appropriate figure would be an estimate of the costs of introducing an alternative source, such as solar energy. For irreversible losses such as extinctions, an arbitrary value must be assigned.

