



“Summary of article by Richard B. Norgaard: Three Dilemmas of Environmental Accounting” in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 243-246

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## **“Summary of article by Richard B. Norgaard: Three Dilemmas of Environmental Accounting”**

The present system of national accounts (SNAs) is an inconsistent measure of the values of environmental systems and their role in the economy. This paper argues that it is not possible to rectify these inconsistencies by strictly rational arguments because of three logically irresolvable dilemmas.

### **BACKGROUND**

For over three and a half decades it has been recognized that national income accounts do not capture the services of the environment and its resources. Over the years, many international organizations have attempted to build environmental data bases and to incorporate environmental variables into their analyses along with information provided by SNAs. Two broad groups emerged from this exercise. Economists (Keynesians and neoclassicists) argued that SNAs were basically sound and only needed to be improved. Others argued that economic and environmental accounting should be independent, with linkages to account for economic-environmental interactions. The former were interested in developing a measure of how economies perform, while the latter were interested in redirecting economies towards sustainable development.

### **INCONSISTENT SNA DILEMMA**

If SNAs were rationally designed from an understanding of a logically consistent economic theory, and the variables excluded from SNAs were independent from those that were included, then adding the excluded environmental variables to the present SNAs would solve the problem. However, two dilemmas can be identified with respect to this approach.

The first barrier is that SNAs are not consistent with economic theory, and this is true for two reasons. First, there is no consistent theory of economics applicable to SNA development; present SNAs are only a product of historical necessities to meet the tax collectors' needs. Aggregation of data is based on neoclassical market theory, while key indicators have been based on the Keynesian macro-model. A consistent set of extensions from this inconsistent basis is impossible. Secondly, neoclassical theory suggests rules rather than measures of welfare by adopting an "if-then" set of procedures. Such procedures are used in aggregation and in making adjustments for price changes. However, in reality the "ifs" are rarely met and often forgotten by

SNA users. Environmental accounting issues challenge many of the conventions adopted by SNA design.

### **VALUE-AGGREGATION DILEMMA**

The second barrier arises from the fact that the present aggregation of heterogeneous economic products is achieved by summing their market values in monetary terms. Economists have developed techniques for estimating the monetary value of resources and environmental services, and argue that these values can be obtained by knowing peoples' willingness to pay for environmental services; if people are not willing to pay, then the service has a low value. Environmentalists counter that ethical issues (e.g., the need to protect other species) should be considered; sustainability should therefore be a constraint, or at least an objective, in the development process. Thus two different philosophical views are in opposition, one contending that social values are the sum of individual values only, and the other claiming that society has its own values. Current economic indicators are based on the first view, and to a considerable extent public policy is based on the second. The problem is that if public policy seeks a more sustainable development framework, it cannot use environmental valuations based on choices of individuals within an economy that is less sustainable than desired. It has been argued that the difference in valuation with and without policy change will be very small, but if significant departure from the current path is called for this will not be true. The issue, therefore, is whether the required policy changes are small or significant. A similar problem exists with respect to using market values to estimate the value of non-market goods and services. If non-market goods and services are only a small portion of the total economy, then market valuations would suffice, but if not, market valuations would be inappropriate.

The problem of selecting weights for valuation and aggregation is called the value-aggregation dilemma. The point is that weights must be used regardless of which system of value aggregation is selected, so the dilemma cannot be avoided.

### **BOUNDED KNOWLEDGE-SYNTHESIS DILEMMA**

Policy makers want to know how an economy has performed, where it is headed, and how it can be improved, and for this they need a model of cause and effect. However, SNAs only give current indications, they do not indicate where economies are headed. Moreover, the selection of indicators is based on the economic models being used. This selection should be based on models of economic-environmental interaction.

The third dilemma arises, however, from the fact that there is not and can not be one single model of economic-environmental interactions to provide planners with a consistent set of indicators. Each specific model simplifies reality by bounding the field of inquiry, and science does not have a single "meta" model for synthesizing the many bounded-knowledge models that exist. Moreover, the preferred methodology for synthesizing will often depend on one's understanding of a particular problem or familiarity with a particular methodology. Thus, while a synthesis is necessary to provide consistent, useful information to planners, we must conclude that, based on the bounded knowledge-synthesis dilemma, there can be no single correct way to improve SNAs.

## **POSITIVELY REINTERPRETING THE THREE DILEMMAS**

The above dilemmas suggest that something must be done to make economic and environmental systems compatible. It is best that economists and environmentalists acknowledge, rather than ignore, the differences in their models and lay out as many scenarios as possible for policy makers. From these differences, theory and measurement must co-evolve. A pluralistic approach using multiple methodologies is more likely to represent differing interests and indicate Pareto optimal solutions. By a process of learning by doing and sharing experiences, best methods - which themselves will change over time - can be obtained.