



“Summary of article by Henry M. Peskin: National Income Accounts and the Environment” in Frontier Issues in Economic Thought, Volume 3: Human Well-Being and Economic Goals. Island Press: Washington DC, 1997. pp. 361-365

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

“Summary of article by Henry M. Peskin: National Income Accounts and the Environment”

The debate about how accurately GNP indicates what people really care about continues, especially with respect to the effects of environmental regulation on GNP and on wellbeing. "The issue is whether the gains to society expected from the regulation -- gains which generally do not show up in GNP -- are being more than offset by losses in GNP precipitated by the regulations." (511) This paper considers how well present GNP accounts measure changes in environmental quality, and proposes modifications that more accurately account for these changes.

PRESENT GNP ACCOUNTING OF ENVIRONMENTAL CHANGES

Changes in both the physical environment and in environmental policies affect investment, consumption, and government activity, and should be reflected by changes in GNP, but the size and direction of the changes to be expected may not be obvious. Industrialization and rising GNP have historically been associated with environmental degradation, but this may not always be the case. We need to examine the composition of goods and services produced, the pollutants generated, and the impacts on labor and capital productivity, before drawing conclusions about what changes to expect. For example, if rising GNP is propelled by an expanding service sector, additional degradation may be minor, while increases in one type of pollution or degradation may be more than offset by decreases in another. In addition, declining air and water quality may inhibit the ability to produce certain goods, thus decreasing GNP. There is therefore no straightforward relationship between GNP and environmental quality.

The situation is complicated still further when environmental policies aimed at reducing pollution are factored into the equation. Expenditures arising from environmental regulation have different impacts on GNP depending on whether they are made by businesses, government or consumers, and on whether they are spent on investment goods, labor, or other goods and services. Business expenditures on pollution control equipment count as intermediate costs, showing up as reductions in GNP. "In effect, these expenditures divert labor and material away from items counted in the GNP and toward the production of a cleaner environment, which is not counted in GNP." (513) Government and consumer expenditures on such equipment, however, show up as changes in the composition, but not necessarily the level, of GNP. Meanwhile, any environmental expenditures that increase employment may yield short-run increases in GNP, while the long-term effects may be in the opposite direction. Clearly the present GNP accounts do not adequately reflect the effects of environmental changes on GNP or on social wellbeing.

Several modifications of the GNP have been proposed to make it a better measure of production and/or social wellbeing and to account more adequately for environmental changes. One alternative is the measure of economic welfare (MEW), which basically rearranges the items presently included in the national accounts, and adds imputed values for several items not included in the conventional measure, including household work, leisure, and the services of durable goods such as cars. Environmental impacts are included in a correction for the "disamenities of urbanization", but this variable includes more than just the effects of pollution, so it does not help much in accounting for environmental changes.

Another alternative is the net national welfare (NNW) measure developed in Japan, which treats the environment separately via an "environmental maintenance cost" and a variable that accounts for remaining uncontrolled pollution. However, the direction of change of the NNW in response to environmental changes can still be ambiguous, so it is not a satisfactory alternative. The environmental adjustment calculated by the NNW is, however, fairly substantial, in contrast to the relatively small value calculated for urban disamenity by the MEW model.

A MODIFIED ACCOUNTING STRUCTURE

The concept of environmental capital as a depreciable stock that contributes to income generation provides a framework for more effective modifications of GNP accounts. "This framework is based on the view that the environment, like the capital embodied in ordinary plant and equipment, generates useful services." (517) Clean air, for example, supports life, provides oxygen for combustion, and absorbs waste products -- services which are just as necessary to business as those of labor and ordinary capital. Environmental capital, like ordinary capital, has a finite supply and hence a scarcity value, but the services it provides are not exchanged in markets, so scarcity values are difficult to observe and must be imputed. Some object to this approach on the grounds that access to clean air is a right, not a good to be bought and sold, but it is essential to impute some price in order to implement the alternative accounting system.

Incorporating the services of environmental capital into the national accounting structures requires the addition of three accounting entries. The first is the value of productive services provided by the environment to businesses and other consumers, entered on the input side of the accounts. On the output side, the second entry values the resulting environmental damages caused by use of these services. In addition, since these two entries usually are not equal, a balancing entry, "net environmental benefit", equal to environmental services less environmental damages, will also appear on the input side of the accounts. These entries are not captured in the present accounts because they are not priced. Policy changes, such as imposition of effluent charges that would cause the value of environmental services to appear in firms' ordinary accounts, could rectify this without adding new entries, and would also promote efficient allocations, but no full coverage schemes of this type currently exist.

The modified accounts are quite similar to those in the existing accounting structure, except that the accounts for industry, government and households each include these three new entries. In addition, the most significant difference is the addition of a new account for the environment as a producing sector that provides environmental services and consumes environmental damages.

These four sector accounts are consolidated to produce the modified GNP account, which in this form will equal conventional GNP less environmental damage. We could, however, rearrange the placement of the new entries in the input and output accounts to generate other versions of modified GNP, since the particular accounting arrangements are arbitrary. Modified GNP can therefore equal conventional GNP: 1) less environmental damage; 2) plus environmental services; or 3) plus net environmental benefit.

There are advantages and disadvantages associated with each of these modifications. The first modification performs much better as an indicator of wellbeing than conventional GNP, and moves in the correct direction in response to environmental changes. The second does take direct account of environmental services, but it may be prone to double counting, since some of the value of these services may already be reflected in firm profits. It also has the disadvantage that it always declines with increasing pollution control expenditures. The third modification only moves in the "correct" direction (increasing environmental services and decreasing environmental damage both increase GNP) if there is technological change. Otherwise, decreasing environmental damage must always be accompanied by equivalent decreases in the use of environmental services, and the GNP measure remains unchanged, making this variation an ineffective indicator of wellbeing.

IMPLEMENTATION OF THE MODIFIED ACCOUNTS

Preliminary efforts to implement this modified framework have been undertaken. These efforts relied on existing data and could at best make only crude estimates of environmental services and damage, and many categories of environmental services (e.g., recreational and aesthetic services) could not be included at all. The estimates of environmental services proved to be relatively small compared to other major components of GNP, so the differences between conventional and modified GNP were not substantial. While this may reflect the relative scale of the "environmental problem", more comprehensive estimates of environmental services might have produced much different results.

One advantage of the modified accounts is that they do not destroy the existing accounts system, which has been used for many years, and which does usefully serve certain analytical and policy purposes. However, gathering the data to produce better estimates within the modified system would entail diverting substantial resources, and we must ask whether this investment is worth the benefits. Some argue that conventional accounts are effective as they are, and that efforts to collect and use additional data should be carried out independently. However, this assumes that only serving traditional economic concerns within the existing system is adequate, even as we are becoming increasingly aware of new economic concerns that are only imperfectly revealed in markets. In addition, independent efforts might have difficulty drawing attention away from familiar -- and official -- GNP accounts. It is therefore better to expand the existing national accounting system than to try to create an independent system, but we should aim to do this without weakening the current system, and draw as much as possible on the vast array of existing data sources that are already available.