

Green Accounting

TI: Incorporation of Risk in Regional Forest Resource Accounts

AU: Haener, -Michel-K.; Adamowicz, -Victor-L.

SO: Ecological-Economics; 33(3), June 2000, pages 439-55.

AB: To be an appropriate indicator of sustainability, a net income measure projected into the future should consider risk. Several authors have demonstrated how risk can be formally incorporated into welfare measures like Green Net National Product (NNP), however, the resulting measure can be considerably more complex than its deterministic counterpart. A practical alternative to formally incorporating risk is to use simulations of the type outlined in this paper to provide information about the expected impact of risk. This information can be used to apply a stochastic version of a sustainability rule that requires that the expected value of net income be Non-declining. This paper discusses the importance of risk and uncertainty to welfare measurement and more specifically the measurement of net income from forest services in a region of northern Alberta. Two different approaches to valuing resource extraction are compared. The depreciation approach and the wealth-based approach provide very different projections of net income. We demonstrate that when a renewable resource is subject to risk, the wealth-based approach provides a more appropriate measure of the influence of resource use on future consumption possibilities and the sustainability of net income.

TI: Estimating Timber Depreciation in the Brazilian Amazon

AU: Seroa-da-Motta, -Ronaldo; Ferraz-do-Amaral, -Claudio-A.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 129-42.

AB: This study estimates depreciation values for timber extraction activities in the Brazilian Amazon for 1990 and 1995. A generalized approach following Vincent and Hartwick (1997) is applied enabling us to calculate depreciation based on all three methods proposed in the literature. We also calculate Hotelling rents for timber as a whole and for mahogany alone. Apart from the expected differences in the results for each method, the results show substantially low depreciation estimates as a direct consequence of the high timber stocks and scarcity perception by economic agents due to the lack of property rights in the region. For mahogany alone we obtain substantially higher values. We conclude that if scarcity rents are not fully perceived, or they really do not exist in such huge supply conditions as our estimates may suggest, charges related to other forest services are fundamental to make environmental accounting a useful tool for planning in the Amazonian context.

TI: Integrating Forest Resources into the System of National Accounts in Maharashtra, India

AU: Haripriya, -G.-S.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 143-56.

AB: The objective of the study is to construct forest resource accounts for the state of Maharashtra in India and incorporate the value of depletion and degradation of forest resources into the system of national accounts (SNA). The net state domestic product (NSDP) is adjusted for the depletion of the forest resources to obtain

Environmentally adjusted net state domestic product (ESDP). The results show that the value added by forests is 3.56 percent of NSDP and the value of depletion is 19.8 percent of the estimated value added. The ESDP of Maharashtra is found to be 99.3 percent of the estimated NSDP. The study has demonstrated that, although the existing database needs further improvement, forest resource accounting is feasible for the state of Maharashtra in India and can serve as an indicator of the economy's performance.

TI: Improved Measure of the Contribution of Cultivated Forests to National Income and Wealth in South Africa

AU: Hassan,-Rashid-M.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 157-76.

AB: An environmental accounting approach is adopted to adjust current measures of national income and net savings in SA for the value of net accumulation in timber and carbon stocks as well as for the value of water abstraction externality of cultivated forests. Results indicated that the said values missing from current measures of income and capital formation are substantial, amounting to about 0.6 per cent of NNP, on average over the study period. Potential VAD lost to agriculture due to water abstraction by cultivated forests was estimated at R104 million per annum, on average since 1981. This estimate, however, did not account for the social costs associated with potential losses of environmental services from affected ecosystems.

TI: Accounting for the Impact of Agriculture and Forestry on Environmental Quality

AU: Adger,-Neil; Whitby,-Martin

SO: European-Economic-Review; 35(2-3), April 1991, pages 629-41.

AB: A framework for modifying sectoral accounts for environmental externalities is assembled as a basis for estimating the National Income Accounts for U.K. agriculture and forestry. Valuation of positive and negative environmental impacts draws on revealed and expressed preference evaluations. The approach taken seeks to modify the national accounts for agriculture and forestry by first assessing the physical significance of the relevant externalities (in terms of land use designations and physical pollutants) and then valuing them using existing studies.

TI: Constructing a Social Accounting Matrix to Address Distributive Economic Impacts of Forest Management

AU: Marcouiller,-David-W.; Schreiner,-Dean-F.; Lewis,-David-K.

SO: Regional-Science-Perspectives; 23(2), 1993, pages 60-90.

TI: Deforestation and National Accounting

AU: Hartwick,-J.-M.

SO: Environmental-and-Resource-Economics; 2(5), 1992, pages 513-21.

TI: Non-market Environmental Values in Forest Management Accounting

AU: Merlo,-Maurizio

SO: Liiketaloudellinen-Aikakauskirja; 45(1), 1996, pages 29-47.

TI: Deforestation and Ownership: Evidence from Historical Accounts and Contemporary Data

AU: Deacon,-Robert-T.

SO: Land-Economics; 75(3), August 1999, pages 341-59.

AB: Historical accounts of forest cover changes over the last three millennia are compared to contemporaneous human history, to shed light on factors contributing to large scale changes in forest stocks. Insecure ownership, for example, during wartime and periods of unrest, tends to accompany deforestation, as does population growth, and as does declining agricultural yields. A simple model of forest stocks and agricultural yields that captures these relationships is formulated to guide empirical analysis. Estimates based on cross-country data support the proposition that agricultural yields tend to be low and deforestation rates rapid where ownership is insecure.

TI: Net Accumulation of Timber Resources

AU: Vincent,-Jeffrey-R.

SO: Review-of-Income-and-Wealth; 45(2), June 1999, pages 251-62.

AB: National accounting issues related to forest resources have attracted much attention recently. The net-depletion method, the most popular method for estimating aggregate changes in the value of timber stocks, tends to overstate both the depreciation of mature forests due to harvests and the appreciation of immature forests due to growth. Alternative, correct methods, which the author terms the net-price and El Serafy variations, can be derived from an asset valuation model that takes forest age into account. An empirical example indicates that estimates from the net-depletion method can deviate from actual values by up to 40 percent for some age classes.

TI: Adjusted Forest Accounts for China

AU: Liu,-Xuelin

SO: Ecological-Economics; 27(3), December 1998, pages 283-98.

AB: So far there is no unified rule on the incorporation of degradation of environmental capital into national income accounting procedure. Net national product is currently derived by deducting from gross product the depreciation of man-made capital only. Deducting depreciation of natural capital in national income can provide a better indicator of the 'green' net national product. The contribution of this paper is to show how one can use two methodologies in deriving 'green' net national product. This paper estimates the depreciation of forest resources in national accounts for China from 1976 to 1992. The procedure of calculation is described in the paper by valuing the changes of forest resources. Two alternative approaches are used: the net price approach and the user cost approach. By using the net price approach both physical and monetary accounts are computed to derive forest depreciation. In the user cost approach 0, 5 and 10% discount rates are used to derive the depreciation. Measuring sustainability is proceeded by the level of net investment. Both approaches show that the development of the forest sector is not sustainable due to the negative net investment.

TI: Beitrage der IUFRO zur Entwicklung des forstlichen Rechnungswesens. (IUFRO Contributions to the Development of the Forest Accounting. With English summary.)

AU: Brabander,-H.-D.

SO: Liiketaloudellinen-Aikakauskirja; 45(1), 1996, pages 19-28.

TI: National Account of Timber and Forest Environmental Resources in Sweden

AU: Hultkrantz,-Lars

SO: Environmental-and-Resource-Economics; 2(3), 1992, pages 283-305.

TI: Natural Resources Accounting for Sustainable Development

AU: Zohir,-Sajjad

SO: Asia-Pacific-Development-Journal; 3(2), December 1996, pages 11-29.

AB: The practical task of identifying appropriate resources and valuing them are often quite tedious. This paper reviews current approaches to natural resources accounting and draws upon studies in five countries of the region to discuss selected issues on accounting forest resources, agricultural land and agricultural residues. The relevance of an impact account is also probed. It is argued that natural resources accounting, as framed in terms of physical, value and non-environmental impact accounts, serves limited purpose for reassessing economic growth. It is recommended that studies on physical accounts interlinkages between resources and environmental variables be given priority for meaningful inputs to policy-making.

TI: Accounting for the Impact of Agriculture and Forestry on Environmental Quality

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TI: Resource Accounting in Measures of Unsustainability: Challenging the World Bank's Conclusions

AU: Neumayer,-Eric

SO: Environmental-and-Resource-Economics; 15(3), March 2000, pages 257-78.

AB: The World Bank has recently published a comprehensive study of environmental and resource accounting, covering 103 countries (World Bank 1997). The study concludes that many Sub-Saharan, Northern African and Middle East countries have had negative "genuine" saving rates over the last 20 years and therefore fail to pass the test of weak sustainability. This paper argues that the Bank's conclusions depend on a method for computing user costs from resource exploitation that is challenged by two competing ones (the "El Serafy"-method and the method of Repetto et al.) and is inferior to one of its rivals. Resource rents are re-computed using the "El Serafy"-method for 14 countries and the Sub-Saharan and Northern African and Middle East regions. The results are that both regions and almost all countries either stop exhibiting signs of unsustainability or their unsustainability can be explained without having recourse to resource accounting. However, for Congo, Ecuador, Gabon, Nigeria, Mauritania and Trinidad and Tobago there is a lesson: these countries did not adequately use the opportunities they were given through their natural resource endowments and should learn from their mistake for the future depletion of their remaining reserves of natural resources.

TI: Valuing Fisheries Depreciation in Natural Resource Accounting: The Pelagic Fisheries in Northeast Peninsular Malaysia

AU: Tai,-Shzee-Yew; Noh,-Kusairi-M.; Abdullah,-Nik-Mustapha-Raja

SO: Environmental-and-Resource-Economics; 15(3), March 2000, pages 227-41.

AB: In this paper, an approach based on the net present value method is used to account for the changes in the value of fisheries resources. Changes in the value of fisheries resources can occur between successive years' catch as well as between current and optimal levels of catch. These changes need to be accounted for in the national accounting system to reflect the "true" net national income that is sustainable. The approach outlined in this paper is desirable as it allows the estimation of the depreciation value of fisheries resource with limited biological information. The application of the approach to the pelagic fisheries in Northeast Peninsular Malaysia (NEPM) showed that the resource depreciated in value over most years from 1982 to 1993. These depreciations correspond to increased fishing effort. In addition, pelagic catches in NEPM from 1982 to 1993 were lower than the optimal levels of catch due to overfishing. Thus policies aimed at reducing fishing effort can provide improvement in both the potentially higher capital values of the fishery resource and the earning potentials of the fishing industry in NEPM.

TI: Green Accounting: From Theory to Practice

AU: Vincent,-Jeffrey-R.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 13-24.

TI: Sustainability Accounting and Green Accounting

AU: Cairns,-Robert-D.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 49-54.

AB: Theoretical issues arising in maximin and utilitarian programs are considered in order to shed light on the merits of various concepts of income and types of environmental accounting as guides for environmental policy. The accounting prices for sustaining an economy obey Hartwick's rule but are inconsistent with the principles of national accounting. Moreover, they would be formidably difficult to calculate. Green net national product is an approximate index of welfare in a utilitarian economy which maximises future discounted utility flows. These conclusions hold even if underlying conditions are non-autonomous.

TI: Accounting for the Distributional Impacts of Policy in the Green Accounts

AU: Horan,-Richard-D., et-al.

SO: Environment-and-Development-Economics; 5(1-2), Feb.-May 2000, pages 95-108.

AB: Green income accounting models are designed to appropriately value changes in a country's natural resource (natural capital) base. However, green NNP is useful as a guide for domestic and international policy only to the extent that it accurately reflects the economic goals and policy options of policy makers. For example, international policy designed to slow natural capital depletion in a developing

country is more effective if policy makers recognize the developing country's perceived income effects of the policy. Traditional green accounting models do not satisfy this criterion because they are based on the assumption that policy makers are either not concerned with the distributional consequences of policies, and/or are not limited in the instruments available to them. We present an alternative green NNP measure that reflects distributional goals and policy implementation. Using this measure, the depletion (accumulation) of natural capital stocks in excess of economically efficient rates may increase income.

TI: Green Accounting and the Welfare Gap

AU: Turner, -Paul; Tschirhart, -John

SO: Ecological-Economics; 30(1), July 1999, pages 161-75.

AB: Although gross domestic product (GDP) is not intended to be a measure of societal welfare, it is often used as such. One shortcoming as a welfare measure is that it fails to account for the non-marketed value of natural resource flows. The difference between societal welfare and GDP is labelled the "welfare gap." A model that accounts for both market and non-market income flows from natural capital is used to examine this gap. Societal welfare depends on private goods and the stock of natural capital. The latter is subject to a logistic growth relationship common to many non-human species. Private goods are produced using human capital and flows of natural capital. An exogenously growing human population either harvests the natural resource, produces human capital or produces the private good. Optimal control theory and dynamic simulations provide steady-state harvest and human capital growth rates which determine the steady-state natural resource stock, GDP and societal welfare growth rates. The model illustrates the feasibility of explicitly accounting for ecological relationships in economic growth models and shows that, depending on one's preferences and the growth rate of human population and the intrinsic growth rate of natural resources, GDP may diverge substantially from the growth rate of societal welfare, leaving a large welfare gap.

TI: Green Accounting for a Sustainable Economy: Policy Use and Analysis of Environmental Accounts in the Philippines

AU: Bartelmus, -Peter

SO: Ecological-Economics; 29(1), April 1999, pages 155-70.

AB: Statisticians avoid getting involved in data analysis, leaving data users on their own in interpreting the results of their work. This is particularly unfortunate in a new area of applied statistics such as environmental accounting with which few are really familiar. Earlier this year data producers and users explored, in a national seminar, possible policy applications of the results of a 'green accounting' project in the Philippines. The main findings of the author's contribution to the seminar, on which the present paper is based, are that environmental accounts: (1) present evidence of sustainable economic performance in the country during the relatively short-time period of 1988-1994; (2) provide information for environmental cost internalization; (3) may guide investment to environmentally sound production processes; (4) help to specify and monitor policies of natural wealth conservation, distribution and management; and (5) reveal major data gaps. The paper concludes that environmental accounts help to assess the sustainability of economic growth in terms of broadly defined capital maintenance. The sustainability of development, however, would have to be measured by alternative or

supplementary physical indicators linked to quantifiable standards or targets.

TI: Resources accounting in China

AU: Lanza, -Alessandro, ed.

SO: Fondazione Eni Enrico Mattei Series on Economics, Energy and Environment, vol. 12. Dordrecht; Boston and London: Kluwer Academic, 1999, pages viii, 189.

AB: Eleven papers from a seminar organized by the Fondazione Eni Enrico Mattei in collaboration with the State Science and Technology Commission on Natural Resource Accounting of the People's Republic of China, held in Beijing in March 1996, focus on resource accounting in China and facilitate a comparison of the approaches and areas of knowledge of the Chinese and Western seminar participants. Papers discuss alternative resource and environmental accounting approaches and their contribution to policy; green accounting in China and the role of damage estimation; economic valuation of environmental and natural resource assets; resource accounting, sustainable development, and well-being; mineral resource accounting in Xinjiang, China; China's Agenda 21 and natural resource accounting; some points of asset administration and natural resources accounting in China; resource accounting in China; land resource accounting in urbanization areas; a case study of marine resources accounting and management of coastal zone resources as property in China; and a forest resources evaluation study in China. Lanza is with the Fondazione Eni Enrico Mattei, Milan. Index.

TI: Green accounting in Europe--Four case studies

AU: Markandya, -Anil; Pavan, -Marcella, eds.

SO: Fondazione Eni Enrico Mattei Series on Economics, Energy and Environment, vol. 11. Dordrecht; Boston and London: Kluwer Academic, 1999, pages viii, 369.

AB: Undertakes a monetary valuation of the environmental damages caused by economic activities in four countries: Germany, Italy, the Netherlands, and the United Kingdom. Focuses on various types of air pollution. Uses data that is spatially disaggregated within each country, dose-response functions, and willingness-to-pay methodology to assess the cost to humans by way of damage to health, materials, crops, forests, amenities, and ecosystems. Adopts a pristine environment as a baseline for defining background levels of various types of pollutants and reports results based on a range of plausible background levels. Markandya is at the University of Bath. Pavan is at Fondazione Eni Enrico Mattei, Milan. Index.

TI: Resource Values, Green Accounting, and Sustainable Growth

AU: Newcomb, -Richard

SO: Pacific-and-Asian-Journal-of-Energy; 8(2), December 1998, pages 159-72.

AB: This paper revisits geological survey practices and the Hotelling theory for valuation of natural resource deposits and sinks in light of the growing concerns over global unbiased 'green accounting'. The issues are exemplified in the case of integrated economic and environmental satellite accounting (IEESA) proposed by the United States Department of Commerce. IEESA employs resource valuations to correct gross national product accounts for the impacts of depletion and environmental degradation on the measure of sustainable growth. The principal resource value function invoked employs the theory of optimal

resource exhaustion as a function of interest rates r . The paper extends the Hotelling theory to show that the conventional 'r-Rule' applications bias resource rents, royalties, and trade, while commending 'sustainable growth' paths that are decidedly suboptimal. Implications are drawn for empirical small-scale (micro-economic) as well as large-scale (welfare-economic) integrations. Results indicate that options on futures pricing offer a low-cost alternative that minimizes accounting distortions.

TI: Welfare Measurement, Green Accounting and Distortionary Taxes

AU: Aronsson, -Thomas

SO: Journal-of-Public-Economics; 70(2), November 1998, pages 273-95.

AB: This paper concerns welfare measurement in the presence of distortionary taxes. One purpose is to explain why the traditional green net national product (NNP) measure fails as a welfare indicator when distortionary taxes are present. Another is to derive a green NNP analogue in a second best environment. In the second best optimum, the efficiency cost of taxation will affect both the form of the national welfare measure and the proper principles of accounting for pollution.

TI: Green Accounting for Sustainable Development

AU: Bartelmus, -Peter

SO: May, -Peter-H.; da-Motta, -Ronaldo-Seroa, eds. Pricing the planet: Economic analysis for sustainable development. New York: Columbia University Press, 1996, pages 180-96.

TI: Green Accounting in Imperfect Market Economies: A Summary of Recent Research

AU: Aronsson, -Thomas; Lofgren, -Karl-Gustaf

SO: Environmental-and-Resource-Economics; 11(3-4), April-June 1998, pages 273-87.

AB: The idea of measuring the national welfare level by using the green NNP (net national product) has gained much attention lately. This paper summarizes the research on social accounting in imperfect market economies by putting the results into a unified framework. The main contribution of the paper is to relate the form of the national welfare measure to the functioning of the economic system and, therefore, to explicitly address the informational requirements implicit in social accounting.

TI: Ecotaxation

AU: O'Riordan, -Timothy, ed.

SO: New York: St. Martin's Press, 1997, pages xiv, 338.

AB: Sixteen papers explore issues related to taxation of activities that result in environmental damage and depletion of nonrenewable resources. Papers focus on ecotaxation and the sustainability transition; environmental tax design; the U.K. Treasury's view of hypothecation; functional hypothecation as a potential solution to the disconnection between taxing and spending in current environmental tax policies; monitoring and policy implications of green accounting; economic tax reform in Europe; whether environmental taxation leads to a "double dividend"; dividends from environmental taxation; ecological tax reform in the United Kingdom; reflections on the double dividend debate; environmental taxation in OECD countries; environmental taxation in the Netherlands; pricing water properly; barriers to approaching economically "ideal" market instruments in the water-supply sector; the U.K. landfill tax; and the British Columbia sustainability

fund. Contributors are economists and environmentalists. O'Riordan is Associate Director of CSERGE, School of Environmental Sciences, University of East Anglia. Index.

TI: Green Accounting and Economic Policy

AU: El-Serafy, -Salah

SO: Ecological-Economics; 21(3), June 1997, pages 217-29.

AB: Through the lens of conventional national accounting, resource depletion and natural environment degradation often appear misleadingly as desirable economic growth. The old System of National Accounts (SNA) has been revised and a set of environmental 'satellite accounts' proposed. Certain weaknesses, however, pervade the new proposals. The conventional measurements remain largely unaltered, and the satellite accounts are of unclear purpose and unnecessarily complex. As proposed, they rely on the valuation of environmental stocks, while the economically more important flow accounts, to their detriment, are to be derived indirectly from changes in stock values. The SNA, the paper stresses, is primarily an economic framework, incapable of capturing all environmental change, and the national accounts are far more useful economically than environmentally. Greening the accounts would be optional for most affluent countries, whose overriding environmental concern is pollution. This can be addressed directly through taxation and regulation. Pollution information in satellite accounts can indeed be valuable, but revised and fully integrated resource accounting is a priority concern for those developing countries that are running down natural resources, and for which conventional accounting distorts macroeconomic measurement, analysis and policy. The paper argues that green accounting can only ensure income (sometimes called weak) sustainability, which should be considered as a step leading ultimately to an ecological (or stronger) sustainability.