Comments to
”REVISION OF THE SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTS (SEEA) Draft version for Second Round of Global Consultation October 2011”
Submitted by Statistics Norway

Chapter 4.4 Accounting for other environmentally related transactions

Measuring environmental tax revenues is one of a set of considered indicators of environmentally related transactions. According to economic theory and the polluter pay principle, environmental taxes should correct the marginal effects of environmental externalities, and the optimal environmental tax rate equals the marginal damage cost (Pigou 1920). The tax revenue then equals the product of the environmental tax and the tax base.

Inconsistencies in the definition

The definition of “Environmental taxes” suggested by SEEA is inconsistent with its original definition. The report suggests in paragraph 1.147 that
“an environmental tax is a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment.”

The definition includes all taxes on tax bases with a negative impact on the environment, regardless if the taxes are environmental taxes or fiscally motivated. The departure from the theoretical definition leaves such statistics unsuitable as reliable indicators of environmental taxes. Principally, the definition covers any form of economic activity. All price changes influence all activities through interactions and general equilibrium effects throughout the economy, and higher taxes basically reduce economic activity and related emissions. The principal problems are also underlined in paragraph 1.147: “In practice, this definition is applied by looking at all of the various taxes levied in a country and making an assessment as to whether the tax base in each circumstance is something that has a negative environmental impact.”

The suggested categories for these statistics are

- *Energy taxes*
- *Transport taxes*
- *Pollution taxes* and
- *Resource taxes*.

Most of these tax bases are not related to environmental taxes. For example, electricity taxes are part of *energy taxes*. Electricity consumption does not bring about environmental externalities; only taxes levied to internalize the damages from the different forms of energy production should be included. Tax on electricity consumption reduces demand for both more and less pollution intensive production technologies.

Transport taxes are partly related to the ownership of motor vehicles. Ownership does not imply emissions; only pollution taxes related to the use of transport oils should be included.

Some of the *resource taxes* are included (“water extraction, extraction of raw materials and other resources”), while other are excluded (“use of land or natural resources”, paragraph 4.151). It is unclear whether taxes on extraction of petroleum resources and hydro power are included. These taxes are excluded in the Eurostat (2001) framework, but are clearly consistent with the included taxes in the SEEA suggestion. The reason given for the exclusion of some resource tax bases is that such taxes are treated as rent. But this is exactly the definition of resource taxes. This is an argument that no resource taxes at all should be included in a measure of environmental taxes. Overall, neither the inclusion of resource taxes, nor the rules for exclusion, is theoretically consistent.

Neither would a set of taxes including more or less all tax bases as suggested in the definition, make sense. Consequently, the proposal relies on a range of exceptions from the principal definition. While this may imply closing some of the gap to theory, the reasons for the exceptions seem arbitrary and not principally founded. For example, exceptions are made for the VATs by excluding them from the definition, not because they are fiscal taxes as would follow theory, but “because they are considered to have no influence on relative prices in the

same way as other taxes on environmental tax bases" (paragraph 4.153). This is not a valid argument for excluding VAT. First, the legitimacy of environmental taxes does not rely on their influence on relative prices. Following the polluter pay principle, they should reflect the marginal external damage costs, regardless of their impact on economic adjustment. Second, in practice, the effect on relative prices varies highly between VAT bases, dependent on their own price elasticities. Hence, there is no principal justification for arguing that VAT generally influences relative prices less than environmental taxes. Finally, some VAT rates are also designed to influence environmental behavior. For instance, in Austria and Spain VAT it is higher on motor vehicles than other goods.

It is also debatable what information these environmental tax revenue statistics can offer, even if they are correctly calculated. The tax revenue is the product of the tax rate and the emission. Revenue growth could result from increasing awareness of the value of the environment (i.e., more or higher taxes), or from growth in emissions due to less stringency in environmental regulations. Also, if the elasticity of the emission with respect to the environmental tax is higher than one, the environmental tax revenue will increase as a result of *lower* environmental taxes. If the taxes on environmental externalities actually works, the tax base will fall, which again will decrease the revenues. It is hence an open question how to interpret changes in revenues and whether e.g. revenue growth indicates a more or less environmentally friendly policy stance. Changes in the formulation of the tax systems may also give misleading signals. E.g. a switch from taxation to a quota system and emission permit trading will reduce the revenue from taxes, without having any practical impact on emissions or climate policy priorities.

Another problem is the interpretation of the tax revenues presented as share of total taxes (cf. paragraph 6.92) or as percentages of gross domestic product. Falling tax shares could simply result from an increase in GDP without indicating any changes in political priorities. The revenue could also be influenced by adjustments in other parts of the tax system or structural changes in the economy, while keeping environmental policy unchanged. Rather, the variation in overall tax levels across countries partly expresses distributive policy priorities and the size of the public sector.

It is fundamental for the reliability that the underlying principles for the official data are based on robust and consistent theory. The SEEA definition clearly includes other elements than environmental taxes, such as fiscal taxes and resource rents. Such statistics would form the public opinion on the ranking of the environmentally friendly policies across countries on a faulty basis. Failures in the statistical foundation may lead scientists and politicians to draw misleading conclusions on the causes and effects of environmental policy. In the end, such information failures can bring along wrong advice to the decision makers and a less efficient environmental policy. In a SEEA context, which precisely should address official international environmental statistics, this is a very severe objection.

The need for consistent and comparable international statistics becomes more important by increasing use of complex instruments to combat environmental externalities, cf. the emission permit markets, green certificates, white certificates etc.

The solution

International environmental tax statistics could potentially serve as valuable inputs in research and political decisions, and be important indicators for the use of economic instruments in the environmental policy and the environmental protection over time and across countries. The intention and planned application of the SEEA proposal for measuring environmental tax revenues is however somewhat unclear. The following reasons are mentioned

a. "there is interest in whether various incentives or penalties can be effectively used to influence economic and human behaviour in relation to the environment" (paragraph 4.124)
b. "These data can be compared to the levels of emissions and hence assess the effectiveness of industry, household and government responses to air emissions" (paragraph 6.141).
c. "to allow comparisons over time and across countries" (paragraph 4.125).

To be able to analyse the environmental effects of economic incentives (a. and b.), the relevant data is detailed tax rates on firm or sector level. This is needed to assess relative price changes on factor inputs and then to estimate the effects on emission statistics. In the economic literature, numerous such analyses have been performed on micro level data. However, there is a lack of comparable and consistent data in and across countries.

We propose the following framework for environmental tax statistics:

1) Environmental tax statistics should be based on a consistent theoretical basis with the Pigouvian definition as a point of departure.
2) The statistics should focus on tax rates, and additional tax bases. Tax rate statistics offer following information:
    2.1 data for econometric analyses of the relationship between economic instruments and environmental adjustment (cf. a. and b. above)
    2.2 information to identify implicit subsidies given to different tax bases with exemptions or lower rates than estimated damage costs
    2.3 information to identify the potential fiscal element in taxes when the tax is set above the estimated damage costs (cf. Bruvoll 2009)
3) The environmental tax revenues (as suggested measured by the SEEA) then equals the tax rates multiplied by the tax bases. The tax rates should be corrected for the fiscal element (cf. Sandmo 1973, Ramsey 1927, and 2.3).
4) The (corrected) revenues may be aggregated over tax bases / pollutants in order to gain comparable statistics (jf c.). Environmental tax revenues should be measured in percent of "optimal tax revenues", defining "optimal tax revenues" as the potential revenues at taxes equal to the Pigouvian tax. This makes comparable statistics without disturbing the indicator by using other total taxes or GDP as denominator.
5) Taxes rates and revenues should be produced on a detailed firm (for micro-level analysis) or industry (ISIC) level, to be applicable in econometric analyses.

Any statistical definition of environmentally taxes would be inherently problematic, first of all due to the entanglement with fiscal and other taxes. However, a less aggregated information base is preferable to the SEEA suggestion. We suggest a data set with transparent information which can be aggregated and interpreted at a level that is meaningful to the users.

References:

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