STUDY: HOW CO_2 TAXES FIND FAVOR

CO_2 levies and other green taxes are seen as an effective means of achieving environmental and climatic objectives. However, part of the public can be skeptical of the benefits of such taxes. An investigation commissioned by the Swiss Federal Office of Energy now identifies factors that can influence the public acceptance of such taxes.

Fossil fuel carriers – the photo shows tank storage – make an important contribution to the Swiss energy supply, but are at the same time responsible for CO_2 emissions and thus for climate change. Photo: Erdölvereinigung Schweiz

A technical report about the results of a research project in the field of energy-economy-society, which is financially supported by the Swiss Federal Office of Energy. The report has been published on the web platform ee-news.ch (January 2017).

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Oil transport on the Rhine: Petroleum products flow from the ship into the tank. Photo: Erdölvereinigung Schweiz

STEERING TAX VERSUS ECOLOGICAL TAX

In political discussions, it is common to distinguish conceptually between 'steering taxes' and 'environmental taxes': steering taxes are levied on the consumption of a resource and the income is then redistributed back to the population per capita with the idea to encourage environmentally friendly behavior. The income from environmental taxes, however, remains with the state and is used for government tasks.

In Public Economics, the two terms are used differently. Their use has nothing to do with the recycling of revenues, but with the purpose of the levy, as SEPIA project partner and EPFL professor Philippe Thalmann says: "A ´steering levy´ or tax incentive is set so as to reach an environmental target, for example, a certain reduction in CO_2 emissions. The revenue is a side effect. In the case of an environmental tax, the revenue is the purpose. In both cases, the tax revenue can flow into the public budge, finance specific expenditure or be used to reduce an existing tax. In the latter case, it is considered an ecological tax reform." BV

The idea of ecological taxes dates back to the early 20th century ('Pigouvian tax'). In the 1990s the idea was taken up by the environmental movement and has been widely discussed since then. At that time, various concepts were developed on how environmentally sound behavior could be financially rewarded. The various approaches shared in common this basic principle: while well meaning appeals are mostly ignored, environmentally-friendly behavior could be effectively induced "through the wallet." The concept of an environmental tax is simple: a tax is levied on the consumption of energy or natural resources. The yields are then distributed back to the population in equal parts per capita. The steering effect is self-evident: people who use little energy / resources profit financially; Those who, on the other hand, use above-average energy / resources, suffer a financial disadvantage from their behavior. Individual are thus financially rewarded for environmentally friendly behavior.

After Scandinavian countries adopted such a system in the early 1990s, Switzerland followed suit in establishing this simple and fascinating concept as an environmental policy instrument. In 1999, the City of Basel introduced the first ecological tax on electricity in Switzerland. On the basis of the tax, every electricity consumer today pays (with standard tariff) 4.9 Rp. more per kilowatt-hour of electricity. The income is then equally reimbursed to electricity customers and companies - in 2016 it was about 65 francs per capita. At the national level, too, the green tax is now a reality. A tax on volatile organic compounds (VOC) has been levied since the year 2000, and since 2008 a CO_2 tax has been levied on fossil fuels such as heating oil and natural gas. Two-thirds of the revenue is reimbursed to the population (mostly via health insurance bills). The remaining third is used for building refurbishments; with this money, energy requirements are reduced and thus CO_2 emissions as well.

Examination in Two Steps

The two examples show that environmental taxes to incentivize emission reductions are now a recognized instrument of environmental and energy policy. On the other hand, ecologic tax reforms with the aim to reduce other distorting taxes have been unpopular in recent times. This became apparent

Co-Authors of the SEPIA-Study (from left to right): Dr. Frank Vöhringer (consultancy firm Econability), Dr. Stefano Carattini (Haute École de Gestion de Genève), Prof. Andrea Baranzini (Haute École de Gestion de Genève), Prof. Frédéric Varone (University of Geneva) und Prof. Philippe Thalmann (EPFL). Photos: private

in March 2015: The referendum 'Energy tax instead of VAT' of the Green Liberal Party shipwrecked in the public vote. The initiative promoted an environmental tax, the revenues of which were to replace the revenues from the VAT. The reasons for the public rejection were many: some critics doubted the environmental impact; others feared damage to the economy and the public budget. Another criticisim was that the reform would be unfair to the poor as poorer people spend a greater proportion of their household expenses on energy than wealthy people.

So while an ecological tax reform in Switzerland remains in its early stages, environmental tax incentives are a recognized instrument of environmental and climate policy. Against this backdrop, an economic study commissioned by the Swiss Federal Office of Energy has examined, amongst other things, which forms of CO_2 levies have the greatest public approval. Involved in the study 'Social Cushioning of Energy Price Increases and Public Acceptability' (SEPIA) were Econability, a consultancy firm from Mühlethurnen, the Haute École de Gestion de Genève, the University of Geneva (Prof. Frédéric Varone) and the Ecole Polytechnique Fédérale de Lausanne/EPFL (Prof. Philippe Thalmann). In the first step, the scientists used economic modeling to simulate and study various designs of CO_2 taxes including several variants of revenue recycling. In this way, they assessed the environmental benefits of the revenue recycling variants, calculated their impact on income distribution and national income. In a second step, the researchers designed a representative survey, interviewing 1,200 people. The scientists wanted specifically to know whether the respondents would judge a CO_2 tax differently if they were informed of the simulation results before being questioned (for example, the simulated impacts of a CO_2 tax on the environment, income distribution and national income).

Factors Influencing Acceptance

The researchers learned that prior information on the impact of a CO_2 tax significantly affected the respondents´ acceptance of the tax. The most important findings:

– A majority of the respondents wished that at least some of the revenue from a CO_2 tax would not be refunded but spent on environmental issues. When the environmental benefit of a CO_2 tax is clearly communicated, the desire for earmarking of the revenues for an environmental purpose is reduced.

– An important role for the acceptance of an ecological tax is the way in which the tax revenue is recycled. If one informs about the effects on income distribution, recycling through a per capita lump sum payment increases the acceptability of the tax, because it is deemed more equitable than a recycling through the income tax or VAT. "Our calculations show that a CO_2 tax can be designed in a very equitable manner by choosing a publicly preferred method of income redistribution," says EPFL researcher Prof. Philippe Thalmann.

– A good compromise is a mixed system whereby a part of the tax revenue is redistributed and a part is used for environmental purposes, as is already the case with the existing CO_2 tax on heating fuels. HEG researcher Prof. Andrea Baranzini says: "A combination of earmarking of revenues for environmental purposes and per capita lump sum recycling has advantages in terms of public acceptance as well as from an environmental and distributional policy perspective."

– The SEPIA researchers point to the earlier finding of economists that from a macroeconomic perspective, the revenues of environmental taxes should be used to lower the tax rates of the most distorting of the already existing taxes. "As an

economist, I supported this position for many years," says the environmental economist Dr. Frank Vöhringer, owner of the consulting firm Econability and head of the SEPIA project. "However, this argument is more than difficult to convey to the general public. The environmental argument creates much more support for a CO_2 levy."

– "The researchers note that many Swiss people do not know that the CO_2 tax on fuels implemented about nine years ago is being reimbursed through annual health insurance accounting. "Reimbursement via a personal check, for example, would have a better signaling effect and could increase the acceptance of such a levy," says HEG researcher Dr. Stefano Carattini, adding, "the Government should more actively communicate the functioning and the reimbursement of the CO_2 levy."

- The **final report** on the SEPIA (Social Cushioning of Energy Price Increases and Public Acceptability) project can be found at: www.bit.ly/SEPIAcarbonpricing

- Further **information** on the project is given by Dr. Boris Krey (boris.krey [at] bfe.admin.ch), expert in the SFOE Energy Economy Division.

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