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Water Discharges Tax for Buenos Aires: design and simulations

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Outline of the Exposition

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Argentine Environmental Challenges
Emergence of the Issue

- ✓ Pulp Mill conflict in the Uruguay River.
- ✓ Frequent protest of the neighbors due to environmental problems.
- ✓ Decision passed by the Supreme Court in the case of the Matanza River - Riachuelo Fluvial Basin.

Argentine Environmental Challenges - Matanza - Riachuelo Fluvial Basin as a Policy "Trigger"

Argentine Environmental Challenges - Matanza - Riachuelo Fluvial Basin as a Policy "Trigger"

The “Green” Tax Tool - Strengths

- ✓ Payment of the tax puts a pressure on the pollution emitter so that it studies and assesses the option of not having to pay it.
- ✓ The emitters know their plants, they know which are more suitable without the State telling them to adopt a particular technology or option.
- ✓ Flexibility makes the cost of improving the quality of the environment the lowest possible and, as a consequence, that the tax policy be more effective than the order and control policy.

The “Green” Tax Tool - Strengths

- ✓ Help to encourage the decontamination.
- ✓ They allow for the introduction of improvements in productivity as a means to try to pay less taxes.
- ✓ They generate funds that can be used in environmental infrastructure works or to solve other significant matters such as distribution policies or poverty alleviation.

The "Green" Tax Tool - International Experience

- They were analyzed the seven most important experiences as regards water pollution. These includes three experiences in Europe (France, Germany and Holland), three in Latin America (Colombia, Brazil and Mexico) and the case of China.
- Those that fulfills certain requirements have been successful. These conditions can be resumed in three premises: Acceptability, Simplicity and Signaling.

The "Green" Tax Tool - International Experience

- Acceptability
  - The community must understand what this is about. Environmental supporters, including officers, usually object these taxes because they do not understand the logics behind them.
  - The community must not only accept but help as well. The authorities in charge of tax collection must have administrative capacity to make the necessary follow-up and control.
- Simplicity
  - The design of the tax formula must be simple in order to facilitate its payment and also the understanding of the taxable source of income.
  - Payment is made for polluting water, but several formulae such as the one of France and Paraiba do Sul in Brazil, include a tax component based on the use of such resource.
  - In most countries, the pollutants that give raise to the payment of taxes are numerous. But there are also cases where the taxable base is determined according to a few pollutants (Colombia, Brazil).

The “Green” Tax Tool - International Experience

- Signaling of decontamination incentives
  - The optimum tax rate should be fixed based on the marginal damages that pollution causes over a level established as “tolerable for the society”.
  - Since this information is many times unavailable, a certain environmental target is usually fixed with a tax rate that makes such a target to be achieved in the less expensive manner. As a second best, a tax rate is fixed based on the marginal costs of reducing pollution.
  - The experiences revised also include under-optimum designs which purpose in determining a tax rate is to achieve sufficient income to fund certain works (Holland, Colombia).
  - But not only must pollution emitters perceive the tax as an incentive to decontaminate, but the authorities must also have an incentive to collect them.

Institutional Issues - Legal Framework

- According to the definition given by the National Court, the tax finances indivisible state services and functions. The rate, however, finances divisible services (there is connection between the rate and the service). In this project, it is a tax that has no direct relationship with the cost of environmental services.

- The tax must abide the minimum requirements for the protection of the environment as set forth in section 41 of the National Constitution. It can not contradict also different regulations that arise from specific rules as Industrial Waste and Services, Hazardous Waste, Residential Waste Management and so on.

Institutional Issues - Legal Framework

- ✓ The projected Bill includes a scheme for the dissemination of environmental information that would guarantee access to the same by all citizens of the Province, which is completely new when dealing with environmental matters.

- ✓ The project also contains a scheme of budgetary control of the specific funds that the regulation provides. This includes affected individuals, non-governmental organizations dedicated to environmental matters and the Ombudsman.

Institutional Issues - Allocation of Funds

- The Project sets up specific allocation of part of the funds collected as a result of green taxes.

- The regulation Project provides for the creation of two funds: the Provincial Fund for the Development and Improvement of Primary Health Centers of the Matanza - Riachuelo Fluvial Basin and the Trust Fund for financing Environmental Investments (under this provision, part of the funds collected could be allocated to the obligation of the Province of Buenos Aires with respect to the Environmental Compensation Fund recently created).

Preliminary Simulations and Future Research
Tax Formula

- ✓ Unit tax rates shall be fixed per pollutant, in order to reflect the different damages caused by each pollutant, as well as the dissimilar marginal costs of controlling its discharge.

$$IA_{LiquidEffluents} = f_c \sum_{f=1}^{NF} \left\{ \sum_{j=1}^{NB} \tau_j^B M_{jf} + \sum_{i=1}^{NE} \tau_i^E M_{if} \right\}$$

- ✓ Due to difficulties to estimate marginal damage for each pollutant, it will be applied a unit tax rate it has implicit some relationship between pollutants.

$$IA_{Efluentes\,L'quidos} = \sum_{k} (\alpha_k \cdot \tau) \cdot \left(\sum_{f} M_{kf} \right)$$

Preliminary Simulations and Future Research Dumped Mass Loads

- In order to determine the total load of pollutants dumped by a certain industrial facility, one must know the concentrations of the basic and specific pollutants and the flow rate dumped in the effluent,
- There shall be two different schemes according to pollutants subject to continuous measurement and pollutants subject to periodical measurement.

$$M_{Kf} = \int_{t_0}^{t_p} \left[C_{Kf}(t) + C_K^0 \right] Q_f(t)\, dt$$

$$M_{Kf} = \sum_{n=1}^{NP} \left[C_{Kfn} + C_K^0 \right] Q_{fn}\, \Delta t_n$$

- In the case of Tannery, Meat and Meat Products, Electroplating and Petrochemical Industries; there is good data collection available for the Matanza - Riachuelo Fluvial Basin.

Preliminary Simulations and Future Research Tax Rates and Estimated Revenue

- ✓ In order to have a magnitud order, rates ranges from the examined international experiences were used, which European were corroborated based on Ramos (2002). This means a minimum rate, a medium rate and a maximum rate for pollutants, among basic and specific pollutants for which explicit and updated rates were found,

- ✓ The estimated collection of the “Green” Tax for the province of Buenos Aires varies over the range of 3% and 10% of its total revenue. In terms of the actual Product Gross Value, the estimated collection represents around 1% and 3% of that value.

- ✓ In relation to future research, it is necessary to deepen the study of european and latin american experiences about the application of these taxes; not only the know-how related to its definition but also the administrative procedures linked to its management.

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Thanks for your attention!

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