The efficiency of the green taxes as instruments for Environmental protection

Dracea, Raluca and Cristea, Mirela and Ciupeanu, Daniela

University of Craiova, Faculty of Economics and Business Administration, University of Craiova, Faculty of Economics and Business Administration, University of Craiova, faculty of Horticulture

2008

THE EFFICIENCY OF THE GREEN TAXES AS INSTRUMENTS FOR ENVIRONMENTAL PROTECTION

Raluca Drăcea
Assoc. Prof. PhD, University of Craiova, Finance Department
Mirela Cristea
Assoc. Prof. PhD, University of Craiova, Finance Department
Daniela Ciupeanu
PhD Lecturer, University of Craiova, Biology Department

Abstract
This paper focused on the green taxes, great actuality issue in the contemporary world. As research method, the paper is based on economical theory of externalities, their presence making the company to take decisions with different social effects. Starting from social cost and private cost of human activity, it is a debate regarding the internalization of external costs by applying the corrective taxes.
The purpose of this paper it is the establishing of an optimal tax level which has as effect the decreasing of the overall cost of a negative externality (for example, the pollution) through controlling the external effects. Deriving from the analysis it has been disclosed that ideally the environmental taxes should be introduced over externalities source, meaning that taxes should report directly over emissions or environment services.

Key words: green taxes, pigouvian taxes, negative externalities, internalization of the polluting costs

INTRODUCTION

The development of the world wide economy from the past century led to the increase of the living standard at the world level concomitantly with the development of the production and offer diversification, as well to an irrational consumption of natural and human resources and to the environment deterioration. The Club of Rome, through it is famous report on the natural resources, has been the first that call attention on the fact that a continuation of the irrational exploitation of the resources will lead to their exhaustion and environment deterioration, with negative effects on the next generations [Platon, V., 2004].

In the traditional economical theory, the environment issues are connected with externalities and their presence make the economical agent to take decisions that are socially optional. The externalities reflect the totality of the side effects – positive or negative – of the human activity besides it is main purpose.

The environment taxes include in their structure two categories [Vuță, M., 2004]:
- the pigouvian taxes, destined to the prices correction by take it into account of the external costs; this category have as purpose the optimal allocation of the resources through optimal internalization of the externalities;
- the financial taxes that have as objective financing the environmental protection activity;

In this paper we analyze the pigouvian taxes starting from the traditional economical theory. The purpose of this paper it is the determination of an optimal level of the tax which have as effect the minimization of the overall cost of an negative externality (pollution for

example), starting from the social cost and private cost of the human activity.

MATERIAL AND METHODS

The paper starts from the economical theory of externalities, in the literature being well known the difference between „ private cost" and „ social cost" of an activity [Apgar, W.,Brown, J., 2003]. Taking into consideration the fact that the main function of State is o optimally allocate the attracted resources, the State could impose a tax (if an negative externality appears) or to grant a subsidy to internalize the externalities.

The main function of the state it is the optimal allocation of the attracted resources and for this reason the state can either to impose a tax (in the case of negative externality), either to accord a subvention capable to internalize the externalities. Indifferently the situation, the analyze of the environment taxes level and establishing an optima for these ones must start analyzing of the social and private cost of the human activity. There is a contradiction between the marginal private cost and the marginal social cost that is the Pareto optimal it will be not attained – that assume the production level ensure the equality between the marginal social cost and the level of the market price. This contradiction it is watched, in the traditional way like a deficiency that result from the rarity of the resources, and does not have a correspondent in the cost terms. From the theoretically point of view this problem can be resolve through the existence of an property right – public or private – through what it will be paid the right for using the rare resources.

For example, in the pollution case, „the property right" can be public, and from „the pollution rent" the state can ensure the restoration of the environment (or maintaining this one) in the normal limits of existence. In the conditions of this property right absence the difference between the marginal social cost and the marginal private cost it is looked like an „external cost", that is external for the private cost of the considered industrial unit. The introduction of this property right will „internalize" the external cost, that is including in the private sphere cost associated to the economically agent. Graphically, the problem can be resumed like this:

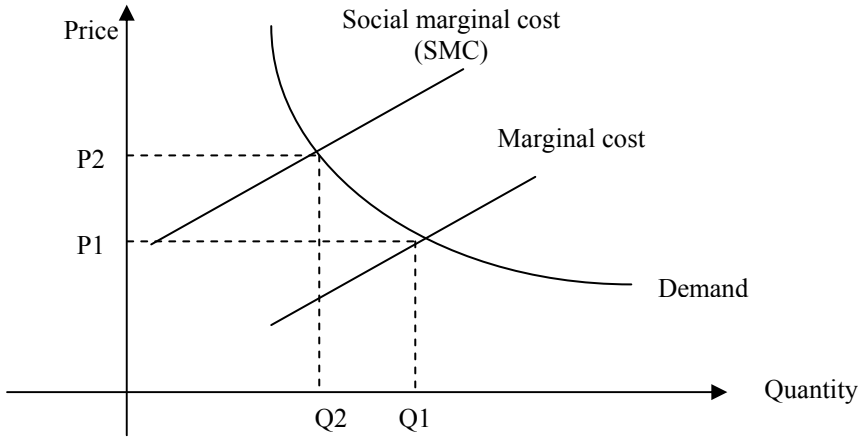

Fig. 1. The private marginal cost and the social marginal cost

Through "the externalities internalization" it can be obtain the social optimal like been equal to the private one. In the figure 2 it is represented the curve of the demanding for a normal product (this having the negative ramp – that is concomitantly with the price raising

the sold quantity will decrease) and the offer curves that are presented in a traditional way through the marginal cost curves. We can observe that in the conditions when we do not take into account the components that include the external effects, the manufacturer balance it is fixed in the E_p point where the production will be Q_p and the product price - p_1.

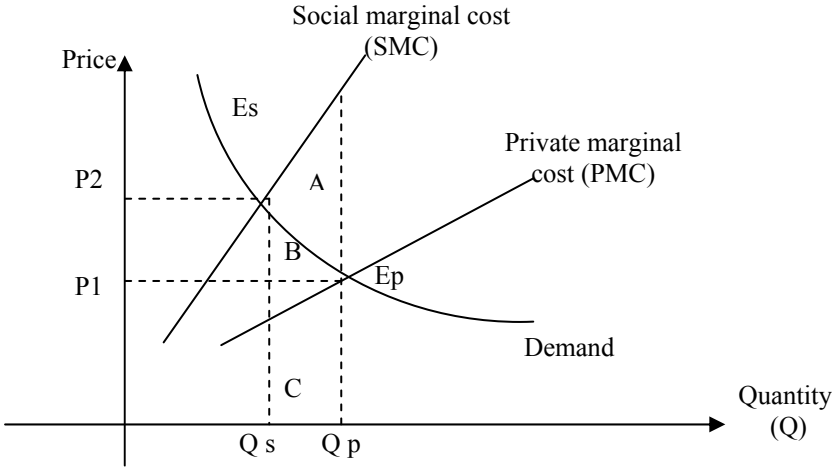

Fig. 2. The analyze cost – benefit of the externalities internalization

In exchange, if we take into account the influence of the externalities – which will be included in the marginal social cost – then the balance it will move to E_s, where the produced quantity it will be Q_s, lower than Q_p, and the price will be P_2, higher than P_1.

It is obviously, that in these conditions we can't expect that a competitive market to lead to a level of the efficient output from the social point of view (The Pareto optimal). Though, in the terms of cost – benefits, in the figure 2 it is represented the achievement of the optimal. Thus, through the moving to E_s point, that can be obtained through the creation of market for pollution rights – for example – it is achieved the social optima. The moving from E_p to E_s imply a series of costs and benefits. *The costs* that appear due to the production decreasing from Q_p to Q_s are comprised in the surface B + C which appear due to the consumption decreasing, respectively to the satisfaction that drift from a higher consumption. *The benefits* appear due to the decreasing of the resources consumption – which include the decreasing of private cost, on the one hand (surface C), and on the other hand the decreasing of the external cost (surface B). Moreover, it is gained the surface A – which derive from the increasing of the consumer's satisfaction following the decreasing of the external effects. Therefore, while the costs are represented by the surface (B + C), the benefits appear through the surfaces *(A + B + C)*, the difference from them - surface A – being the net social benefit, which result from the moving from E_p to E_s.

Obviously, if will look from the producer point of view, these one will have more to lose than to gain (for these one the costs surpass the benefits), however the income appear at social level, the consumers loosing a part due to the increasing of the price, but gaining a much larger part through the decreasing of the negative external effects.

As a consequence, if at first look the internalization of the externalities appear as a source to increase the prices and decreasing the produced and consummated quantities, the benefits which appear surpass the costs, and it is long-expected the move from the point that describe the private optimal into the social one.

RESULTS AND DISCUTIONS

To a certain extend, the external effects show an antagonism between the collective welfare and the private interest, the tax constitute a mean to resolve this conflict for the collective benefit. An important issue, which appear connected with economically and financial instruments, it is the one referring to the external costs special, why to tax those costs.

In order to internalize the pollution cost there are used all different instruments: administrative, economical and financial, juridical, informational, educational. The correction of the free market mechanism through including the prejudice on the environment or human health into the decision regarding the production [P., Kageson, 1993] can be achieved through economical and judicial mechanisms. The criteria on the base that should be appreciated the compatibility of the economical instruments with „The polluter pays" principle are: the cost level that come to the polluter and the existence of the proportionality between the level of the polluting waste and the penalties paid by the polluter. The previous analyze reveal that the damages for the environment can be translated into external costs, that is through a difference between the private costs and the social cost of an activity. A mean to cover this difference, in other words to internalize these externalities, it is to make the polluters to pay external costs through a tax inter-mediation [Bureau, D, 2000].

In the figure 3, we consider that the AB line represent the marginal profit of a firm. In the absence of the externalities, the production level it will fix in the B point, point where the profit maximize. If the line CME represent the marginal external optimal cost corresponding to the firm activity (for example a river pollution), the level of the production optimal from the social point of view it is placed in the Q point. In the case of imposing a tax of level to the firm, equal with the marginal external cost corresponding to the optimal activity level, the marginal profit line it is moved down (PM-t) and the maximum profit it will be obtained for a Q level of production.

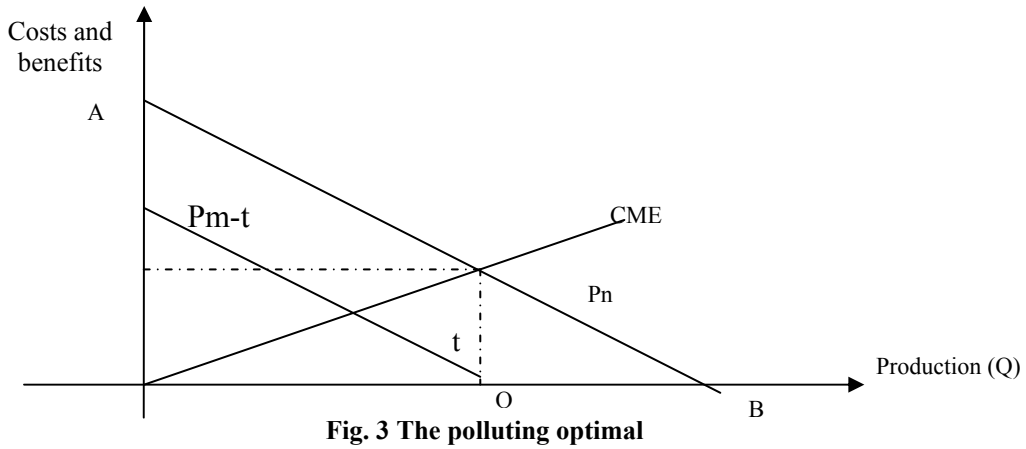

Fig. 3 The polluting optimal

The tax it is considered optimal tax because it is equal with the optimal level of the external cost. Therefore, we find again the notion of polluting optimal.

In the specialty literature [JP., Pearce D,1992; Bureau, D.,2000; Maire, J, 2002] there is a series of controversy referring at the optimal tax level, authors using two notions for establishing the level of the polluting taxes: efficient taxes and optimal taxes. As we shown previously, the internalization of the environment costs it is made affecting the price of the resources regarding the environment and having in mind that the market does not spontaneous

fix such a price, it is imposed an administrated price, the intensity of using the environment depending of this price level.

Certainly, the decisions of the polluters can be influenced besides the pigouvian taxes and others indirect taxes on merchandise or services, such as: the tax on the added value or excises. These are related with the environment deterioration, however due to the weak connection with the polluting source are in general less efficient than the taxes perceived on direct emission. The advantage consists in the lower administrative costs, related to the prime matters consumed and that are found in the invoice and account not currently used. This system can use very easily the existing collecting system of the taxes. For example, excises on the fuel or the road tax are found in the by detail price of the fuel and are evidenced in the invoice emitted at the buy/sell.

The integration of the taxation in the environment politics imply the re-projection of the existent taxes (indirect) in order to reflect the interests regarding the environment and/or the introduction of the direct environment taxes (pigouvian taxes) destined to the correction of the external negative aspects.

Practically, for the produced waste or for the pollution of the environment, a public authority must establish a price in two ways:

- taxation direct proportionally with the produced pollution;
- establishing of a maximal limits for the quantity of waste/pollution in the environment.

The utilization of the green taxes in order to protect the environment has two possible objectives: to offer a stimulus to the polluters in order to decrease the pollution, the incomes are expected to decrease along the time and obtaining profits, in this case it is desirable a continuous collecting flux, which imply a continuation of the pollution.

If in order to internalize the social costs of the pollution it is introduced a green tax on the pollution than we'll have a moving of the balance point from the A point in the B point (fig. 4), because the selling price will rise from P1 to P2. Thus, the production of polluting products will decrease from Q1 to Q2.

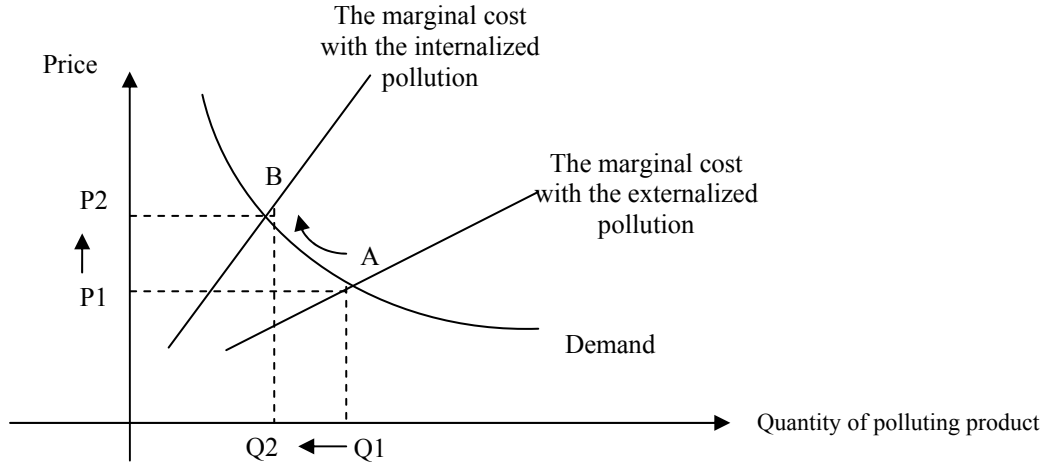

Fig. 4 The decreasing of the polluting products quantity through the internalization of the pollution costs

CONCLUSIONS

Deriving from the analysis it has been disclosed that ideally the environmental taxes should be introduced over externalities source, meaning that taxes should report directly over emissions or environment services. From the practical point of view these are applicable over the products and services related to emissions. We consider that environment taxes are not leading only to a reduction of pollutant emissions on long term, but to an amelioration of companies' competition or considered sectors. We are considering this because on short term it is proven that a company could react to the introduction of an environment tax thru the offer reduction or thru the modification of utilized raw materials structure, the result being the reorientation of consumers toward imported products.

The advantage that can be obtained in the activity for pollution prevention through introducing the economical instruments (tax on emissions and effluence, utilization taxes, taxes on product, differentiation taxes, negotiable permits, subventions, collecting-guarantee systems, and administrative fines) are multiple. This consist in the fact that: promote a favorable behavior for environment protection within the polluter, through decreasing to an acceptable pollution level; permanently stimulate the introduction of new anti-polluting technologies, as they become available on the market; create conditions for developing new technologies more efficient and less polluting. Also, the utilization of the economically instruments have as effect the introduction of the environment resources into the market mechanism at prices reflecting their rarity, as well the opportunity cost of their utilization. In order to use the environment resources the users has to pay, which will have as effect the internalization of the external costs and pollution decreasing.

Regarding the green taxes, there can be notified some elements that have to be taken into account:

The plants from a certain activity sector will not be affected in the same way by the green taxes, because they use different combinations of production factors and have different profiles of polluting emissions;

It has to be take it into account the market conditions and the structure of the markets, because at a certain moment an green tax can be transmitted and multiply the economical effects on many elements from that market, without necessarily inducing an environment positive effect on them;

More over, to prevent the degradation of the environment, the economically instruments, the administrative ones (ambient standards and environmental quality, emission standards, technological standards, product and processing standards, permits or licenses) and the judicial ones (ensuring contracts against the polluting risk, responsibility for the environment pollution) must be utilized in a harmonious way. From the use of the standards and economically instruments can be notified certain advantages. In order to establish with clarity the responsibility for the damages of the environment or human being it is possible the combined used of the standards and economically instruments only on certain segments of the productive process as well the use of the judicial instruments.

REFERENCES

[1] Apgar, W.,J. Brown, 2003, *Microeconomics and public Policy*, Scott, Foresman and Company, Illinois

[2] Barde JP., D.Pearce, 1991, *Valuing the Environment*, Six case studies, Londra, Earthcan

[3] Bureau, D., 2000, *Perspectives pour la fiscalité environnementale: l'exemple de l'énergie*, Les réformes fiscales vertes en Europe, Actes du Colloque des 10 et 11 octobre 2000.

[4] Kageson, P., 1993, *Economic Instruments in Environmental Policy*, European Environmental Bureau, Stockholm

[5] Maire, J., 2002, *Environnement: les noveaux champ de la responsabilité*, Notre État – Le livre vérité de la function publique, Robert Laffont, Paris

[6] Platon,V., 2004, *Finanţarea activităţilor de protecţie a mediului*, Editura Economică, Bucureşti

[7] Vuţă, Mariana, 2004, *Politici si strategii financiare de protectia mediului*, Editura ASE, Bucureşti