

available at www.sciencedirect.comjournal homepage: www.elsevier.com/locate/envsci

Review

Policy effectiveness and acceptance in the taxation of environmentally damaging chemical compounds

Patrik Söderholm*, Anna Christiernsson

Luleå University of Technology, Division of Social Science, SE-971 87 Luleå, Sweden

ARTICLE INFO

Published on line 20 February 2008

Keywords:

Environmental taxes
Product taxes
Chemicals
Fertilizers
Western Europe
Earmarking
Cost effectiveness
Policy acceptance

ABSTRACT

Taxes on chemical compounds still constitute a fairly small share of the total environmental tax base in Europe, but proposals for new chemical tax schemes have become common. The overall purposes of this paper are to analyze: (a) the economics and politics of taxing chemical compounds; and (b) the future potential for increased implementation of such taxation policies in Europe. While much of the discussion is general in scope, the empirical part focuses on the case of fertilizer taxation in Austria, Denmark, the Netherlands, Norway and Sweden. There exists an inevitable trade-off between costly monitoring on the one hand and the achievement of a cost-effective allocation of nitrate leaching abatement measures on the other. This is true for many types of chemicals and our analysis of the fertilizer case provides a number of general lessons for future implementation of environmental taxes in the chemicals field. The choice of tax scheme design matters not only for the cost effectiveness of the policy, but can also be an important mean of reducing any political opposition towards environmental taxes. The European experience in fertilizer taxation indicates that some kind of earmarking of tax revenues can be effective in increasing the legitimacy of the tax policy, and taxes which achieve a close proportionality to damage done will often be perceived as fair. The latter implies that taxation close to environmental damages and the reduction of the associated transaction costs should be policy priorities. Finally, an important feature of many legal provisions – including the EC Nitrate Directive – is the weight given to goal fulfilment, and although taxes are in no way prohibited they may be abandoned since their impacts on environmental quality (and ultimately on goal fulfilment) can be hard to predict.

© 2007 Elsevier Ltd. All rights reserved.

1. Introduction

Although the use of market-based environmental policy instruments such as taxes and charges has become more prevalent in recent years, the role of environmental taxes and charges in the OECD area is still limited. About 6–7% of the total tax revenues are environmentally related and over 90% of the environmentally related taxes are applied within the

energy and transport sectors (EEA, 2000). Within the OECD countries less than 5% of total environmental tax revenues are in turn taxes on chemical substances, products, waste, emissions and virgin natural resources. There exists however a growing interest among analysts and policymakers towards extending the environmental tax base, and many of the proposed schemes include taxes on chemical compounds. One example includes the *OECD Environmental Outlook Study*

* Corresponding author. Tel.: +46 920 492078; fax: +46 920 492078.

E-mail address: patrik.soderholm@tu.se (P. Söderholm).

1462-9011/\$ – see front matter © 2007 Elsevier Ltd. All rights reserved.
doi:10.1016/j.envsci.2007.10.003

(OECD, 2001) which investigates a policy mix that would include taxes on chemical use, and that shows that the chosen policy mix could deliver important environmental benefits (e.g., significantly reduced nitrogen loadings) at relatively low economic costs. Proposals for the introduction of environmental taxes on chemicals have also been put forward by, for instance, the European Commission (CEC, 2002) and organizations and government authorities in Canada (Green Budget Coalition, 2005), Denmark (DEPA, 2005), and New Zealand (ERMA, 2004). In some countries the political interest in finding new environmental tax bases is spurred by the presence of a general green tax shift policy.

Before new taxes on chemical compounds are introduced one needs to raise – and attempt to answer – a number of critical questions. One concerns naturally the efficiency of a tax scheme compared to alternative environmental policies (e.g., emissions or technology standards), and this issue is well covered in the existing literature (e.g., Helming, 1997; Kleinhanss et al., 1997). In this paper, however, our starting point is a situation where a tax policy on chemicals is planned to be implemented. At this stage two questions are worth addressing. What is the current use of chemical taxes, and what can we learn from these experiences for future policy designs? Finally, what are the legal and political obstacles towards the implementation of taxes on chemicals? The overall objectives of this paper are therefore to analyze: (a) the economics and politics of taxing chemical compounds; and (b) the future potential for increased implementation of such taxation policies in Europe. While much of the discussion is general in scope, the empirical part focuses on the case of fertilizer taxation in five European countries: Austria, Denmark, the Netherlands, Norway and Sweden.

The choice of fertilizer taxation as an interesting case is motivated for a number of reasons. Although the use of environmentally motivated fertilizer taxes is not very widespread in Europe a few interesting and among them different tax schemes have been implemented over the last two decades. Among these we find tax policies which supposedly have proved to be effective, but also those that have been less effective and even abandoned due to political reasons. This permits a comparative analysis of both the cost effectiveness – i.e., the extent to which given reductions in nitrogen leakages are met at minimum costs to society – as well as the political acceptance of fertilizer taxes in developed countries. The study of national policy choices for fertilizer reduction is also interesting since a European Community (EC) Directive (Council Directive 91/676/EEC) sets EC standards for nitrates in groundwater and surface water. The Directive is a typical example of a traditional command-and-control approach in environmental policy, and it includes, for instance, regulations on how to handle manure in zones particularly vulnerable to nitrate leaching. The discretion of member states to adopt and implement environmental taxes on fertilizers is subject to measures taken at the community level (their legal bases and their contents), and the Nitrate Directive is particularly important in this case (see also Section 2.2). Although this Directive and other community measures do not prevent the implementation of environmental taxes *per se*, they can provide important hurdles that need to be addressed in the policy design and implementation processes.

The taxation of chemical use is typically motivated by the desire to target downstream external costs in the form of harmful exposure to nature. These non-point source emissions may be difficult and costly to control in those cases where environmental damages vary by location. Therefore, it is often easier to tax the production or the use of chemical compounds upstream. This is a typical situation for most chemicals, and the taxation of fertilizers is a very representative example of this policy dilemma. A number of theoretical studies on fertilizer taxation clearly illustrate the trade-offs involved in either achieving a cost-effective reduction in nitrogen leakage by taxing close to the damage caused on the one hand, or employing a simple tax system with low administrative and monitoring costs by taxing inputs on the other (Section 2.1). The practical experiences reviewed in this paper show that these features of many fertilizer taxes matter for both the cost and the environmental effectiveness of the taxes, but also for the prospects of marketing them as desirable policy instruments in the political arena.

While previous studies on chemical taxation in general and fertilizer taxation in particular tend to focus on either the cost effectiveness of such taxes (see Table 1 and Rougoor et al., 2001) or on the political legitimacy of such taxation policies (e.g., Daugbjerg, 1998, 2000; Vatn et al., 2002), we attempt in this paper to also focus on the interaction between the cost-effective design of fertilizer taxation and the prospects for implementing these tax schemes in practice. The fertilizer case illustrates a number of general policy implementation and design issues, which in turn provide important lessons for increasing the effectiveness and the legitimacy of future tax policies in the chemicals field.

Before proceeding some important limitations of the paper and a number of definitions used should be emphasized. First, we focus solely on fertilizer taxes which aim at influencing environmentally damaging behaviour. This implies, for instance, that we do not discuss the Finnish fertilizer tax that was in place between 1976 and 1994. The objective of this tax was solely to lower production levels of cereals for export and to provide funds to finance export subsidies (Rougoor et al., 2001). Given the difficulties in distinguishing between environmental and revenue-raising (fiscal) taxes, taxes for which fiscal and environmental objectives are combined (e.g., Austria) or inseparable are included in the analysis. Second, a distinction is often made between taxes and fees. Taxes are essentially compulsory unrequited payments to the state budget, while fees are earmarked in the sense that the revenues are spent on related (typically environmental) purposes and often recycled back to the sector on which the fees were levied. In the paper, the term tax is used regardless of whether the revenues are earmarked or simply channelled to the national budget.

In Section 2 we briefly review some theoretical considerations concerning the cost-effectiveness aspects of chemical taxation as well as the policy process involved when implementing such taxes. Section 3 reviews some of the most relevant economic and political experiences of fertilizer taxes in Austria, Denmark, the Netherlands, Norway, and Sweden. In Section 4 we discuss the prospects for increased use of fertilizer taxes in Europe, not the least by drawing from the experiences gained in the above countries. Finally, Section 5

Download English Version:

<https://daneshyari.com/en/article/1054268>

Download Persian Version:

<https://daneshyari.com/article/1054268>

[Daneshyari.com](https://daneshyari.com)