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Marginal tax reform, externalities and income distribution

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Abstract

The paper examines welfare improving revenue neutral marginal policy reforms for an economy with non-identical individuals and an externality with a feedback on the consumption of taxed commodities. The instruments considered are: indirect taxes, the uniform poll transfer and public abatement. This extends the framework of Ahmad and Stern [Journal of Public Economics, 25 (1984) 259–298], Bovenberg and de Mooij [American Economic Review, 84 (1994) 1085–1089] and Schöb [Oxford Economic Papers 48 (1996) 537–555]. The theory is illustrated for congestion caused by peak car transport. The desirability of a higher externality tax is shown to depend on: the efficiency effect of the revenue recycling, the externality benefit, the distributional characteristic of the commodities and the externality and the feedback effect.

Keywords: Marginal tax reform; Externalities; Equity; Public goods; Double dividend

JEL classification: H2; H23; H41; R41

1. Introduction

In recent years, it has been argued that a shift in taxes towards externality-generating commodities and away from labour can be justified given the greening

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of preferences. Bovenberg and de Mooij (1994) and Bovenberg and van der Ploeg (1994) have studied analytically the effects of marginal shifts between labour taxes and externality taxes. These insights have been illustrated numerically, using applied general equilibrium models, by Bovenberg and Goulder (1996) and others. However, these contributions fail to include income distribution concerns in their models while this is an important element of the policy problem. First of all, new environmental taxes will be accepted more easily if they constitute an improvement for most agents. This will depend on their respective shares in the consumption of dirty commodities, on their share in the consumption of commodities for which taxes are cut and finally on their relative valuation of the improved environmental quality. Secondly, the income distribution dimension is at the heart of the existing distortionary tax structure. Indeed, in models with identical individuals the optimal tax structure consists of a head tax combined with a Pigouvian tax. Consequently, determining the direction of marginal tax reform becomes trivial.

This paper wants to bridge this gap and studies the marginal green tax reform question for an economy with non-identical individuals. Two other extensions are made. These consist of the introduction of externalities that are non-separable from the consumption of private commodities, and of the introduction of a poll tax and public abatement as extra policy instruments. The model used is an extension of the Ahmad and Stern (1984) model, widely employed for the study of the equity-efficiency trade-off in an economy without externalities. Schöb (1996) has extended this model to include environmental quality. He concentrates on the separable case and does not focus on income distribution issues.

The structure of the paper is as follows. Section 2 briefly presents the model. We assume throughout our analysis that the simplifying assumptions of the Ahmad and Stern framework (a Walrasian economy with fixed producer prices and untaxed factor incomes) continue to hold.[1] Section 3 discusses a methodology for evaluating revenue neutral marginal tax reforms. It is shown how the total welfare cost of a marginal tax change can be decomposed into a direct welfare cost and an externality impact and that distributional considerations play an important role in both components. Next, we make the link with the double dividend literature and extend the analysis to policy reforms involving a change in public abatement investments. Section 4 presents a numerical illustration of the theory to the congestion externality caused by road passenger transport. The section tries to assess whether the externality component, the feedback effect and the degree of inequality aversion are important empirically for the welfare ranking of the marginal tax reforms and the marginal changes in public abatement. Section 5 presents the conclusions.

[1] Wibaut (1989) and Van de gaer et al. (1992) applied the approach in a non-Walrasian setting.