Environmental quality, debt stabilization constraint and economic development

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Abstract

The growing environmental concerns have forced several countries to introduce new taxes on pollutants. The revenues of these green taxes are used to limit the economic distortions of the reform by reducing other taxes, or alternatively, are allocated to pollution abatement programs. However, whatever the government’s decision about distribution of the tax revenues, public engagement in the environmental protection is often constrained by long-term fiscal objectives which impose to control public debt evolution. This long-term constraint has obviously significant consequences for the developed countries, but these consequences are above all important when the constraint bears on developed countries, since public expenditures are fundamental for their economic growth and private financing is often missing.

This article analyzes the consequences of environmental policy under public debt stabilization constraint. Our objective is to study the consequences of the financing scheme of the environmental policy on capital accumulation, environmental quality and welfare.

We extend the overlapping generations model developed by Diamond\(^2\) (1965) to take into account pollution and public abatement. We assume that life expectancy of households is determined by the evolution of environmental quality. A public sector of pollution abatement is financed by a tax on pollutant emissions and/or by public debt. This means that a share of public pollution abatement is financed by future generations. Basically, we assume that generations who will benefit from the public environmental protection should pay for it. This assumption corresponds to a beneficiary-payer principle, enhancing the willingness to implement the environmental policy. Indeed, previous literature shows that environmental taxation implies such a welfare loss for present generations that its implementation cannot be wished: one of the generations who would decide it would also bear the heaviest burden.

When the environmental policy is characterized by environmental taxation and public pollution abatement sector, does it still respect the debt stabilization constraints?

Depending on the values of some crucial parameters of our model, we show that the economy may be characterized by an environmental-poverty trap if debt is too large or public abatement is not sufficiently efficient. However, there exists a level of public abatement and debt for a stable steady state to be optimal.

By using the World Development Indicators database (World Bank), we finally calibrate the model in order to classify countries according to their potential to finance environmental policy by issuing public debt. The threshold values of some parameters help to discriminate between countries.