An analysis of tax competition through VAR models

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Tax competition between countries has long been studied. On empirical grounds, most of the evidence is based on a panel-approach and supports the tax competition hypothesis (e.g. Devereux et al., 2008), with tax rates that are estimated to be, on average, strategic complements.

Unfortunately, for a given group of countries that compete with each other, the panel data approach estimates only the effect of a change in the average taxation of competitors on the taxation of each country. In doing so, the approach imposes restrictive conditions on tax interactions, mainly that: (i) each country reacts to a weighted average of other countries' tax rates, (ii) the weights are exogenously given, and (iii) the reaction to the tax competition variables is homogeneous across countries. Such restrictions do not fit with the theoretical literature that, starting from Bucovetsky (1991), has stressed that the response functions may be asymmetric so that a tax rate can be at the same time a strategic complement with respect to the tax rate of a competing economy, and a strategic substitute with respect to a third country, where we have strategic complements whenever the increase in one country tax rate leads another country to move its rate in the same direction, and strategic substitutes otherwise (see Vrijburg and de Mooij, 2012). Therefore, given this heterogeneity, the weighted average of the tax rates can hardly be considered a sufficient statistics to describe tax competition.

We argue that these theoretical considerations are directly related to the appropriateness of the panel models to empirically evaluate the presence of tax competition. The first aim of our paper is to unveil the implications intrinsic in a dynamic panel model comparing it with a more flexible framework, i.e., a structural vector autoregressive model. This analytical exercise shows that, in the panel framework, the heterogeneity in the systematic reaction of tax rates to the contemporaneous and lagged tax rates of other countries is solely determined by the choice of the exogenous weights, which also determine the impulse response functions implied by the model.

The advantage of using panel models is that key parameters can be recovered even when the time series dimension of the datasets is short, provided that there is sufficient cross sectional variability.

However, recent Bayesian econometric techniques allow to obtain robust inference in VAR models with relatively few observations with respect to the number of variables. Therefore, we compare estimates obtained from a panel model with those of a large Bayesian VAR model for a group of countries. Preliminary results show that, in contrast to the findings in most of the previous empirical literature, the reactions to exogenous shocks to other countries' tax rates are heterogeneous.

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