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Modeling Fiscal Policy in the European Union

**Polish
Studies in
Economics**

Edited by Ryszard Kokoszczyński

Volume 5

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Introduction

The idea for this book has originated in the light of the ongoing debate on whether taxes should be harmonized in the European Union and, if so, to what degree. The discussion has been sparked further because of two reasons: firstly, because of the economic crisis and secondly, because of the impact of countries indebtedness. Debt crises in the European Union countries raise a question: what is the transfer mechanism between various economic phenomena – tax revenues, spending and debt. In all European Union countries public borrowing is necessary to supplement inefficient public revenue in order to provide the level of public goods and services required by its citizens. This need arises also when tax revenues decrease while the level of public goods and services remains roughly constant. Furthermore, obtaining the tax revenues from capital, labor and consumption a government can optimize the tax mix, in order to obtain the maximum budget revenue. However, in practice the tax mix is a result of not only economic optimization but also of public bargaining. This is why the analysis presented in this book has to include public debt with the tax mix optimization.

The purpose of this study is to derive some analytical economic models that will allow for the assessment of the consequences implied by various forms of fiscal integration in the short and long term. We especially focus on propositions postulated to implementation in European Union. It is our hope that undertaken study helps to explain the causes of existing discrepancies in the literature about the desired direction of fiscal policy integration at European Union level, including the impact of international tax competition specificity. While the earlier models of international tax competition theory pointed out the need for close harmonization of direct taxation – unifying their structure and rates (according to the previously conducted harmonization of indirect taxes) – the new ones, especially generated by new economic geography and extended models of traditional tax competition, undermine legitimacy of such a integration and even question it. It should be stressed that both mentioned streams of economic theory are relatively new and have not been unified yet, which indicates the potential benefits from the synergy of combining these two ideas into one new model. Therefore the conducted research could be useful for the further development of the tax competition theory as well as for altering the existing fiscal policy.

Considering the reviewed contemporary theories of the tax system design and existing empirical research (presented in Chapter 1), the tax competition static model with three tax rates and bonds issuance will be developed (in Chapter 2). The constructed

analytical model, involving the equilibrium of tax rates between two countries, helps to investigate the impact of some important augmentations, such as the inclusion of agglomeration effect and the concept of fiscal solvency to the fiscal policy under international tax competition pressure. The fiscal solvency hypothesis is an extension of the theory of international tax competition related to the issue of sovereign debt and to the long-term credibility, whereas the agglomeration effect consists of the increasing productivity of capital gathered in neighboring localization. The basic static model analyses the direct economic impact of such policies as the harmonization of capital income tax base with formula apportionment and the imposition of transaction tax on income from financial transaction with government (bonds issuance).

We also strive to develop (in Chapter 3) the dynamic model of fiscal policy including three tax rates and bond issuance but with a slightly different objective function. It should allow for prediction of tax rates behavior in the long term when the purpose of government is to maximize fiscal revenues instead of maximization of representative consumer utility. These two models together shed some light on the confusion about the desired scope of fiscal integration in European Union.

Subsequently in Chapter 4, the relation between taxation and debt will be verified econometrically using regression of panel data and spatial econometrics methods. The data used should cover a longer period from 2002 to 2011. In addition, we are going to verify the predictions of derived models with econometric methods. The final result of the study is to identify the best options for fiscal reform at the EU level that could be recommended for political implementation in Chapter 5. Finally we will try to formulate some possible consequences of various kinds of fiscal integration, taking into account the predictions of our model. Special emphasis will be put on the proposals of tax and fiscal policy reform at European Union level.

Reliable models of fiscal competition can improve analysis of fiscal reform performed in the European Union. Eventually, it should prevent the recurrence of similar crisis in the future. The last statement seems very important for Europe's development and the well-being of its residents. Recommendation formulated on the basis of the model can be used indirectly by the EU authorities and fiscal policy makers. These conclusions may be very important for Poland which is now considering an entry into the Eurozone. This entry will inevitably change the mechanisms Poland can use to adjust to economic shocks. It should be stressed that general structure of analysis does not preclude its usefulness in determining the assumptions and details of fiscal reforms in countries not intending to participate in monetary union. Formulating such a model can surely help to understand the transmission mechanism of debt crisis in applying it to recent debt crisis of southern European countries, while also helping to avoid future mistakes of public policy.

Chapter 1

Taxation and debt in European countries

1. Tax systems in theory

In general, a government can raise revenues by taxation, borrowing or printing money, or charging for goods and services it provides. If we exclude the latter two options from consideration, the first two government financing alternatives¹ are equivalent as long as they do not make an individual's behavior dependent on the form of finance used. Economic agents are not, however, indifferent to the means by which a government covers its expenditure because various types of taxes affect the two, statically separate to each other, allocation decisions – how much to work (or spend time for leisure) and consume (or save). Instead, then, of draining any specific market (for labor, capital or consumption goods) 'to the bottom', a government diversifies funding sources. By doing this it achieves two goals simultaneously: it minimizes the welfare loss as a tax rate on a broader tax base can be lower, and prevents tax avoidance by substituting taxed by untaxed activities. If government spending is given, raising revenues from one source makes it possible to lower receipts from another. In this sense, the forms of finance a government uses are interrelated, or, in other words, they compose together a tax structure or a tax-mix – a system of related components, each measured by its share in total revenues.

The problem of the design of the tax structure is differently viewed in economic theory, depending on the perspective taken.

1.1. Optimal taxation

Since the pioneering works of Mirrlees (1971), Judd (1985) and Chamley (1986) the traditional models of optimal taxation, that assume social welfare to be maximized subject to some constraints, basically suggest that, in an open economy, consumption and labor income should be taxed instead of capital income (see

¹ It is unrealistic for a government to rely solely on the borrowing. Due to scarce productive resources and their diminishing marginal productivity it would ultimately end up with taxing people. We might then think of government debt as a specific form of taxation. As Rosen (2008, p. 473) puts it aptly, 'the choice between tax and debt finance is just a choice between the timing of the taxes'.

Chari and Kehoe, 1999; Gordon, 2000; Auerbach and Hines, 2002; or Mankiw, Weinzierl and Yagan, 2009 for reviews of the literature). The reason is that the supply of capital is very responsive to capital taxes which discourage saving and, in the result, negatively affect future output of an economy. Incidentally, by the similar reasoning it is claimed that intermediate goods, which are input to production, should be exempted from taxes (Diamond and Mirrlees, 1971). Consistently with these propositions, value-added and labor taxes constitute main sources of government revenues in the developed countries². And if, instead of economic efficiency, equity is a primary policy concern, governments should particularly use income taxes (Atkinson and Stiglitz, 1980).

There are, however, few exceptions to the principle of zero capital taxation. If individuals face idiosyncratic, uninsured income shocks, they may precautionarily over-save, and a tax on capital income would be preventive (Aiyagari, 1994). Or, alternatively, a government may use it for redistribution purposes when agents are heterogeneous in their abilities to earn income (Conesa, Kitao and Krueger, 2009). Using a capital tax as a corrective device is also advisable when various labor market imperfections exist. Richter and Schneider (2001) find that a positive tax on capital is optimal when:

- there are institutional constraints limiting taxation of profits earned by households (see also Eggert and Goerke, 2004);
- the labor market is a monopsony (labor and capital are not substitutable);
- the labor market is oligopolistic and the unions set wages above the equilibrium level (see also Koskela and Schöb, 2002);
- there are unemployment benefits tied to gross salaries.

This strand of optimal taxation literature highly stresses the optimal tax-mix depends critically on the level of substitutability between capital and labor. The high substitutability promotes capital taxation whereas the complementarity favors a tax on labor.

The latest works on optimal taxation (e.g. Golosov, Kocherlakota and Tsyvinsky, 2003; Albanesi and Sleet, 2006; Golosov, Tsyvinsky and Werning, 2006) consider another link between labor and capital that affect interactions between the two types of taxes. The basic idea is that individuals respond to taxes not only in the time they are imposed but also in preceding and succeeding periods. In a hypothetical world with no taxes they would tend to smooth their consumption over the lifetime by saving when they earn more and dis-saving otherwise. Labor

2 The next subsection discusses this in more detail.

taxes may distort the intertemporal choice by providing incentives to work less or accumulate more. Hence, there is a place for a capital tax to correct these distortions.

Finally, Piketty and Saez (2013) show that, under capital market imperfections and uncertainty, the question whether the optimal tax-mix between labor and capital taxation includes a positive capital income tax is a matter of the intertemporal elasticity of substitution. They generally conclude that the traditional models of optimal taxation are built on too restrictive assumptions and might therefore be misleading. One way for further research is to expand the models with the possibility that countries fiscally compete/cooperate with others.

1.2. International tax competition

The standard tax competition literature points out primarily negative aspects of tax competition among closely connected nation-states, leading to the so-called race-to-the-bottom that lowers revenues collected for national budgets (Zodrow and Mieszkowski, 1986). The mechanism is as follows: by lowering capital taxes, countries reduce tax burden on the most mobile factor of production, i.e. one which can easily be attracted from other countries. However, since tax rates decline, revenues also decrease and so does the provision of public goods. In order to avoid this spiraling effect, countries may agree to harmonize taxes at the level accurate to secure the supply of public goods. Such models were developed both theoretically and then empirically tested in the late 1990s and early 2000s (e.g. Bucovetsky and Wilson, 1991; Wilson, 1999; Wilson and Wildasin, 2004; Krogstrup, 2004). Although the basic assumptions of the model were modified by introducing: heterogeneous economies (Bucovetsky, 1991; Wilson, 1991), more complex tax structures (Gordon and Wilson, 2001; Gordon and Hines, 2002), or maximization of tax revenues as the government's objective (Edwards and Keen, 1996), the general conclusion that labor should be taxed heavier than capital has not changed (see Genschel and Schwarz, 2011 for a survey of the literature). Empirical studies have not given a clear-cut answer, confirming (Winner, 2005; Bénassy-Quéré, Goyalraja & Trannoy, 2007) or denying (Garrett & Mitchell, 2001; Swank, 1998) the theoretical proposition. Further developments of the basic model have led to the formulation of a number of alternative hypotheses answering the challenges of empirical research:

- easing fiscal instability in a result of opening of economies and globalization of business activity, with an increase in public spending and consequently – in order to cover them – an increase in taxes (Swank, 1998; Garrett & Mitchell, 2001);