

Tax Competition and Economic Growth

A thesis presented

by

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to

Institute of Economic Studies, Faculty of Social Sciences

in partial fulfillment of the requirements

for the degree of

Bachelor (Bc.)

in the subject of

Economics

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Charles University

Prague, Czech Republic

Academic Year 2004/2005

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Abstract

This paper deals with the relationship between tax competition and economic growth. After proposing a very general and theoretical discussion of the nature of taxation, we review the introduction of taxation into various models of economic growth, both exogenous and endogenous. In the simplest version of endogenous growth models we show how taxation affects growth rates. We examine the results of different empirical studies and simulations and compare effects of various modes of taxation. We study various arguments addressed in favour and against tax competition. We pay attention to definitional matters of tax rates and bases, reviews empirical evidence concerning development of corporate taxes in the EU and the OECD countries over the last decades and investigate whether anything suggests that there has been interdependence in corporate tax rate setting across countries. Furthermore, we recapitulate effort done by both the OECD and the EU to stop tax competition. Finally, we argue that tax competition is not harmful and that it emerges as a means of constraining governments to discipline.

Keywords: Taxation, Growth Models, Consumption Taxation, Income Taxation, Effective tax rates, Tax competition, European Union

JEL: E62, H11, H21, H25, H73

Abstrakt

Táto práca sa zaoberá vzťahom medzi daňovou konkurenciou a hospodárskym rastom. Po tom, ako predstavíme všeobecnú a teoretickú diskusiu povahy zdanenia, zaoberáme sa zavedením zdanenia do rozličných modelov ekonomického rastu, ako exogénnych, tak i endogénnych. V najjednoduchšom vyhotovení endogénneho rastového modelu ukazujeme, ako zdanenie vplýva na hospodársky rast. Ďalej študujeme rôzne argumenty používané v prospech a neprospech daňovej konkurencie. Dôraz kladieme na definičné otázky daňových sadzieb a daňového základu, skúmame empirickú evidenciu týkajúcu sa vývoja korporátnych daní v Európskej únii a v OECD v priebehu posledných dekád a zistíme, či niečo nenasvedčuje existencii interdependentného stanovovania daňových sadzieb. Následne rekapitulujeme snahy ako OECD, tak aj Európskej únie smerujúce k zastaveniu daňovej konkurencie. V závere argumentujeme, že daňová konkurencia nie je škodlivá a že predstavuje účinný nástroj podriadenia vlád disciplíne.

Kľúčové slová: Zdanenie, modely rastu, zdanenie spotreby, zdanenie príjmu, efektívne daňové sadzby, daňová konkurencia, Európska únia

JEL Klasifikácia: E62, H11, H21, H25, H73

Acknowledgments

A slightly modified Chapter 1 of the present work was awarded Grand prix de l'Institut de recherche économique et fiscale and is forthcoming in *Journal des économistes et des études humaines*.

The author wishes to express his gratitude to Ondřej Schneider, Pierre Garelo, Ivo Koubek, Miroslav Zelený and one anonymous referee for their valuable comments, suggestions and criticism. The usual caveat applies.

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Preface

This work studies how fiscal interactions among governments influence economic growth. This is obviously a topical subject, particularly in this part of the world, marked by foreign direct investment and by relocations of businesses from the West. And from our perspective, it is an important subject, too, for it lies in a sense in the very centre of economic theory of public finance.

Even at this early moment, the title of this work itself might provoke some uneasiness. What do we aim at when trying to depict the relationship between tax competition and economic growth? The uneasiness stems from the fact that economic growth has become an issue that we cannot separate from normative connotations. That is, more growth is better and less growth is worse, one might be tempted to say. Yet, it needs not to be the case. If we assume for instance that the growth rate depends on capital accumulation and that, on the other hand, the capital accumulation depends on savings, then the only conclusion one could infer would be that the “optimal” growth rate is related to the “optimal” rate of savings. The latter, in turn will depend largely on time preference of individuals concerned. And as we know, time preference might be subject to change across individuals and over time. Hence, the “optimal” growth rate of a nation or a region is a variable that might be derived from the time preference of individuals in question. It can be higher or lower, it can change, and it is simply untrue to state that “more growth is better.”

It is therefore advisable to treat the subject in utmost cautious manner. As far as our approach is concerned, we are more interested in studying how this “optimal” – i.e. preferable from the point of view of individuals in question – growth rate can be attained. Which policies allow attainment of this growth rate? What hamper it? In other words, we are not interested in economic growth *per se*, but rather in economic growth as individuals’ means to attain certain ends, namely their preferred consumption path over time.

The purpose of this work is mainly that of reviewing current state of knowledge and offering a cogent deduction from analytical work of others. We nevertheless attempt to support our claims by existing empirical evidence where possible and by offering a critical reflection of phenomena studied. Our position is very humble indeed, for our conclusions are largely due to research work of others. Yet we believe that in our times sound, albeit not completely original reflections about topical issues are badly needed.

Were we to be excused for a brief *détour*, we would briefly comment on methodology of this work. In constructing and discussing economic models, we tried not to deviate in an important manner from style and methods of mainstream economic analysis. This was problematic in itself, as there is not truly a unique approach to-

wards the phenomenon of tax competition, in the same manner as in economic theory there is scarcely consensus over a number of other issues.

What is more, our use of mainstream reasoning can be viewed as criticisable, particularly by some of our colleagues working in the Austrian tradition. They might argue that our reasoning does not bring *a priori* truths about fiscal issues and its conclusions leave a large space for further research and analysis. This observation would be correct, yet it would not hold as an objection against our work. We are persuaded that the issue of fiscal competition does not allow anyone to use a purely aprioristic deductive approach and yet to arrive at meaningful conclusions.

We have strong reservations about the predominant Austrian belief that *a priori* truths solely hold as scientific assertions in the field of economic theory. We view such opinion as unjustifiably restrictive and denying the status of science to a large part of economics. We think that in social sciences there is considerable amount of facts that are worth investigating even though our conclusions about these facts will never have the character of eternal *a priori* truths. These facts include phenomena such as tax competition, political cycle, and many others. In every case, in order to arrive at conclusions of any kind, we are obliged to make different assumptions about the behaviour of agents in question and these assumptions should be, in our eyes, subject to empirical verification – in the same manner as the assertions we make.

Neither we share the opposite extreme view, which can be summarized by the saying “science is prediction.” To be able to predict is of course the major part of the knowledge human beings dispose of, yet it is not the sole part. Particularly, the ability to predict quantitative features of phenomena is not what would be of specific interest for us in this paper. We focus more on understanding the qualitative nature of relationship between the subjects studied – taxation, competition and economic growth. Our aim is to clarify the debate on tax competition by getting the basic notions right and by shedding some light on the causation that exists between taxes and economic performance.

We do not claim that we are infallible and that our conclusions cannot be contested. Yet this is not something which would distinguish us from the position of our Austrian colleagues, for every one errs and every one revisits his thoughts from time to time, or at least should do so. We diverge from the Austrian position by our belief that not everything that is worth investigating in the field of social sciences can be studied in aprioristic manner. A lot of phenomena do not have many inherent features that would enable us to say anything relevant about them with the sole use of our unaided reasoning. Yet one can imagine hypotheses – or alternative explanations of phenomena if you will – which are concurrent and cannot be true all at the same time. What we propose from our methodological perspective is to find, choose, or – eventually – to imagine explanations that (1) spread from a realistic economic reasoning and (2) con-

form to facts. As we will see, given the relative specificity of the subject studied, there will not be too many alternative explanations to the evidence the world gives us. Yet the explanations we choose and defend are not self-evident; as for instance the law of decreasing marginal utility is self-evident and undeniable. Many of our explanations are open to criticism and to falsification by further empirical evidence.

Hence we are in a position far different from that of a pure theoretician. We do not derive eternal truths in this work, as we do not think that many eternal and relevant (or even interesting) truths can be derived from the subject chosen. Yet we think that limited and falsifiable knowledge is better than no knowledge at all and this was one of our motives throughout the work we propose here.

It is true that a large part of contemporary economists use concepts which are constructed with formal rigour and yet lack conceptual rigour. From an orthodoxly Austrian perspective, one should avoid arguments based on notions which result from an "ivory tower" reasoning and are detached of reality. From this perspective, one could easily reject the idea of utility function, production function, Nash game and so forth. Nevertheless, all of these concepts can be found in this work. Hence, it can be argued that our position is somewhat incoherent.

To defend ourselves, we would like to stress that the notions mentioned above are used as tools that do not describe reality accurately. Formalisations of the problems that we present in this work are used merely as approximations of reality, or as

weberian ideal types if you wish. We have no intention to substitute models for reality. Yet the formalisations we used have proven to be useful, precisely for their value as rigorous tools of explanation.

From a different perspective, we personally perceive our work as not being entirely satisfactory. When we have embarked on the research of the issue of relationship between tax competition and economic growth, we did not have an entirely lucid idea of what form should our results have. To be sure, we approximately knew that tax competition might lead to an increase in overall economic performance, but we did not know under which form this assertion will be made evident in this work. Finally, it seems that this claim is made apparent here in a weaker manner than we might have wished. To be concrete, it is not a result of one coherent reasoning which would flow from the first page to the very last one. It is more a set of independent assertions and sub-models than a coherent treatise which would directly prove that intensifying tax competition leads to an increase in economic growth.

The obvious question is why this is the case. Why have we not proposed a generalised model of tax competition, lying on a number of acceptable assumptions, in which we would have disclosed the relationship beyond any doubt? To this question we cannot give but two humble answers. First of all, being a beginner in the field of economic theory of tax competition, we took a fair amount of time in gaining basic orientation in the field and understanding both the technical and the economic side

of the arguments in question. Second, the issue that seemed to us clear at least at an intuitive level, opened a Pandora's box of perplexities and problems that we could not always answer entirely.

Being aware of limits this work has, we see its importance mainly in helping us to grasp economic theory of tax competition more thoroughly and in helping us in progressing in our quest for knowledge. Beyond that, we would be happy if this paper helped to bridge cleavages between mainstream public finance theory and the Austrian insights, as we hope that fiscal behaviour of governments and the need of restraining irresponsibility of elected officials is a theme that should be appealing to economists endorsing a number of different methodological positions.

Main findings of this work are not original - we argue that taxation in general reduces rates of economic growth, that income taxation and capital taxation in particular are specifically detrimental to economic performance. Furthermore we attempt to show that tax competition emerges as a commendable phenomenon and we conclude that, insofar as tax competition reduces capital taxation and subject governments to fiscal discipline, tax competition might well be favourable to economic growth.

Organisation of this work is the following - in Chapter 1, we offer a general evaluation of relationship between taxes and growth. In Chapter 2, we focus our attention to features of tax competition and in Chapter 3 we try to examine effects of increased tax competition on economic growth.

Chapter 1

Taxes and Economic Growth

1.1 Introduction

Before jumping directly on investigating the issue of tax competition, we find it useful to examine the relationship between taxation and economic growth. In the context of this work, the rationale for doing it is straightforward. If tax competition truly leads to a "race to the bottom" of tax rates, one should perhaps ask himself at the very beginning what relation can be established between taxes themselves and economic performance.

Taxation is essentially a feature of governments, as the defining characteristics of government involve taxation and spending. Taxes represent coercive transfers of property from individuals to the government that is charged to spend them¹. However interesting and relevant the spending issue may be, we do not devote much time in this part to study government expenditures and their effects. We limit ourselves to developing the claim that public spending diverts resources from private use into public and thus changes the pattern which would otherwise be followed by market participants.

¹ See, e.g., Herbener (1988, p. 100), Mises (1996, p. 737) or Rothbard (1977, p. 83).

As we have already stated, the purpose of this work is to study the impact of taxation on economic activity, and particularly on economic growth. In other words, we attempt to say what effects taxes have on economic growth rates. To evaluate this, we use a broad theory of taxation, which is common to the vast majority of economists, some features of the growth models, and results of a number of empirical studies.

The opposite direction of the relationship between economic growth and taxation, i.e. the question whether economic growth leads or not to higher tax burden deserves to be discussed as well. In public finance theory we can find the famous Wagner's Law which states that countries on a higher level of economic development tend to increase the scope of activities of their governments and therefore experience higher tax rates². Interesting as this might be, we do not intend to embark on investigating the issue in this chapter. Yet, as far as our opinion is concerned, we do not believe that there can be a direct and simple causation in this direction. We believe that the fact that the tremendous growth of the world economy in the past century was accompanied by growth of governments is due to a number of reasons of very high complexity. To state that an increase in wealth brings about an increase in the size of government is rather simplifying and obfuscates the real causes of high tax burden nations face in these days.

² For an empirical examination of this tendency see e.g. Oates (1985) or Ram (1987).

As far as organization of this chapter is concerned, in Section 2 we attempt to explain the basic features of taxation, such as the redistribution effect and the impossibility of tax neutrality. In Section 3 we review some interesting approaches toward the effects of fiscal policy on economic growth in contemporary literature. Section 4 consists of a model showing in an extremely simple setting how growth rate can be affected by taxation. This is followed by a review of empirical works studying the quantitative impact of taxation on growth rates in Section 5. In addition, in Section 6 we compare income and consumption taxation as to evaluate which one might have a smaller effect on economic activity and thus, on economic growth. And finally, in the Section 7 we offer a critical examination of the fiscal role of the government.

1.2 General Characteristics of Taxation

As we have already stated, taxation represents a coercive transfer of property from one group of individuals (taxpayers) to another (government). As such, taxation is not and cannot conceivably be made neutral to the market.

By neutrality to the market we understand the situation when an individual or a firm functions as part of the market. This can be the case only insofar as the individual or the firm in question works within the framework of private property rights and freedom of contract. And as we just said, taxation by its definition is a

coercive interference with private property rights. Thus the very attempt to reconcile taxation with neutrality *vis-à-vis* the market is doomed to fail.

It is true that mainstream economists define tax neutrality in a different manner – they call neutral those taxes that do not change behaviour of agents that are affected by them. Yet the very purpose of taxation is to transfer property from an individual to someone else and to make possible a different use of resources than that which would otherwise take place. Thus taxation could not be conceivably made neutral even if we adopted the mainstream approach to tax neutrality. However, as we will repeat later on in this paper, it is of interest to study how different modes of taxation influence behaviour of individuals affected and to distinguish between taxes that distort the actions of individuals to different degrees.

At this point a trivial observation must be made. Although there exists what we call corporate taxation, each and every penny of each and every tax levied is paid by individuals. Corporations and all other legal entities exist only as special contractual arrangements that involve different groups of individuals. And as we know, no written or oral contract can pay taxes. In the same manner, what we call government is but a set of individuals bound by certain contractual arrangement that gives to these individuals – among other things – the power to tax.

Different modes of taxation affect individuals in different manners and, in addition, different levels of taxation distort market activities to greater or lesser degree.

Whether we call the latter neutrality or not, the impact of different types of taxes on the welfare and actions of individuals is definitely worth investigating.

As far as the quantitative aspect of taxation is concerned, one can conclude rather easily, the more heavily an activity or a good is taxed, the greater the effects of this tax are. If the tax rate on wage income was hundred percent, no one would exercise any work at all. In contrast, if the tax rate tends towards zero percent, its influence on the decisions taken by persons affected tends to be negligible. Following the same logic, if the tax rate is high enough, individuals will adjust their behaviour accordingly, e.g. by working more or less, by consuming more or less of a given good, or by avoiding taxes.

1.2.1 Effects of Taxes

But how do specific kinds of taxation affect individuals' behaviour? If we consider the example of wage income tax, how does the tax rate influence one's decision to work more or less? And how does the corporate income tax change a firm's decision to produce more or less? Or how does a consumption tax influence a firm's decision to produce more or less and/or consumers' decision to buy more or less of a given product?

To treat these issues separately, let us begin with the effects of the labour income tax. What happens if an individual who works for a given wage has to pay a tax of X percent of his wage? Will he work more or less? The answer given by con-

ventional microeconomic analysis is that one cannot say. On the one hand, as the relative price of leisure in terms of other goods decreases, the individual will tend to consume more of leisure and thus work less. On the other hand, the fact that he is actually impoverished by the tax might force him to work more so as to try to keep up with his precedent level of utility. As a result, one cannot *a priori* claim that a given individual will or will not work more. Yet, empirical investigations seem to indicate a strong relationship between marginal tax rates on labour income and labour supply. Particularly Prescott (2004) shows how differences in this marginal tax rate account for changes in labour supply across countries and over time, which are due primarily to high elasticity of labour supply. And what of importance for us here, one can say for sure that the individual in question is left worse-off than he would otherwise have been³.

What happens if corporate income is taxed? As we have seen, the tax will be paid by private individuals and will therefore affect their decisions. If we consider a firm facing a traditional profit-maximizing problem, we will see that the existence of a corporate income tax will decrease the firm's production. Moreover, as for in-

³ The effects of income tax and particularly the existence of income effect have been widely discussed in the Austrian literature. Some authors, particularly Salin (1996) went on denying the latter. In our eyes, this view is highly problematic and might have many disturbing implications. In addition, we think it is possible to derive the income effect directly from the misesian preference scale theory. In this context, meditate the example offered by Karlsson (2004): "If a cheetah is "taxed" by a lion, that is, has her prey taken away from her by the lion, she will have to go hunting again immediately or else she will die. The cheetah in this case will work more as a result of the income effect. And of course, for humans too who want to achieve certain things more than anything else, the income effect will in some cases be more powerful than the substitution effect. A family who wanted to go on vacation but who loses their money because of taxation or other forms of theft will clearly be forced to work instead of going on a vacation."

stance Lintner (1954) argued, corporate taxation significantly reduces the volume of investment which would otherwise have been undertaken.

From a different perspective, one could argue that corporate taxation might indeed be beneficial, if it taxes away monopoly profit. While this can be true in the setting of traditional microeconomic theory of monopoly, this assertion is of little or no use in the real world. More precisely, traditional theory of monopoly does not give us any non-arbitrary criterion of distinguishing a monopoly of a non-monopoly, when applied to reality.⁴

What about consumption taxes? Basic economic theory tells us that there is little difference between a corporate income tax and a consumption tax. However, economic textbooks emphasize the possibility of shifting the tax burden forward (to consumers) or backward (to owners of factors of production), according to elasticities of their respective demand and supply curves. The simple rule of “the one who is inelastic shall pay” applies. Nonetheless, there has been much ado about the possibility of tax shifts, particularly in Austrian literature. Rothbard (1977), for instance, goes on saying that “no tax can be shifted from seller to buyer and on to the ultimate consumer.” He puts his argument in this way:

To most people, it seems obvious that the business will simply add 20% to their selling prices and merely serve as unpaid collection agencies for the government. The problem is hardly that simple, however. In fact, as we have seen, there is no reason whatever to believe that prices can be raised at all. Prices are already at the point of maximum net revenue, the stock has not been decreased, and demand schedules have not changed. Therefore, prices cannot be

⁴ For an elaborate critique of neoclassical theory of competition and monopoly, see Salin (2001).

increased. (Rothbard 1977, p.89)

This is stated, mildly said, in a misleading way. As a matter of fact, the equilibrium price would of course in this case remain the same, but the tax burden would exist nonetheless. And this burden would be distributed among the loss of net income for the seller and a higher price for the customer. The result would be a lower quantity of the good in question at a higher price for the consumer and a lower “price” collected by the seller. We can hardly buy Rothbard’s claim that the price can’t be raised at all, for it holds only in the particular – and in the real world hardly imaginable – situation of a perfectly elastic consumer demand.

In this respect, we could lead a similar reflection about shifting the corporate income tax to see that the effects of the two are about the same. In the setting of traditional firm theory, the firm in question faces the same profit maximizing problem, irrespectively of whether it pays a corporate income tax or an ad valorem consumption tax. Both can indeed be shifted forward and backward, accordingly to elasticities concerned and produce much the same effects.

There exists one difference between income and consumption taxation and it is not a negligible one. Whereas income taxes in general lead to a heavier taxation of deferred consumption relative to present consumption, a time-uniform consumption tax imposes the same burden on both current and future consumption. Thus, by intuition, one would say that consumption taxation eliminates distortions of intertemporal

decisions taken by individuals. This is particularly true for capital income taxation that taxes earnings from income that has already been taxed.

However this may be, it should be underlined that taxation cannot, by its very definition, be neutral to the market in the sense in which we employ this term. In other words, no matter what form taxation takes, there will always be distortions of the market activities. In this sense, once we introduce taxation into the world of market activities, these will follow a different pattern than they would otherwise have followed and the final allocation of resources will be different. In addition, taxation induces the deadweight losses, i.e. losses in overall welfare that would otherwise have been collected by taxpayers.

1.2.2 Taxes and Expenditures

Though taxation is the subject of the present chapter, one is compelled not to omit the other side of fiscal activities of governments: expenditures. Government expenditures divert resources from private uses into the production of goods and services requested by the government. As a consequence, there will be less of privately demanded goods produced and more of the ones that are demanded by public authority. One of the justifications that is given to this diversion of resources into public use is that of existence of externalities that disable market participants to produce certain desired goods in adequate quantities. It is assumed that there exists a need for government intervention and supply of those goods can bring about a Pareto improvement.

It is not purpose of the present work to analyse the concept of public goods, though we find it highly questionable. In particular, we think that the concept is not meaningful to describe phenomena of the real world, and, in addition, that there are serious logical fallacies in the usual normative inferences. In other words, we have serious doubts about the possibility of bringing about a Pareto improvement by using coercive means⁵.

At this point of time, suffice it to say that the vast majority of government expenditures have little to do with the production of public goods, as defined by traditional economic theory. This assertion, as we will show later in this work, follows from a realistic theory of political processes and decision-making. In this regard, we suppose it is wise to treat government activities and spending cautiously and not to assume their necessity *per se*.

1.3 Taxes in Models of Economic Growth

The precedent, rather general, treatise of taxation and fiscal activities of government was not done for its own sake. On the contrary, we think it is advisable not to approach the problem of relationship of taxation and economic growth without a thorough theoretical background. We find it useful to examine diverse approaches to this relationship having a clear idea of what taxation stands for and what are its consequences.

⁵ For a critique of the theory of public goods, see Block (1983), and for a critical examination of ways of producing them, Holcombe (1997).

Turning to the very subject of the present work, what should be the relationship between taxation and economic growth? Although it may sound obvious that “high taxes are bad for growth,” this relationship has not been entirely trivial, neither in theory, nor in data.

It is, for instance, conceivable, that taxation and government spending lead to higher growth rates. Government redistribution can stimulate savings and investment by redistributing wealth to individuals with a higher marginal propensity to save (MPS). It is easy, however, to realize that such redistribution is not feasible for a number of reasons, political and ethical ones in particular. Generally speaking, higher MPS can be found among people with higher incomes and redistribution stimulating economic growth would thus in reality be a redistribution from the poor to the rich.

Before jumping to different models describing this relationship or to results of empirical investigation, one should perhaps ask: in what precise ways do taxes influence economic performance? In the setting of neoclassical economics, Engen and Skinner (1996) mention five ways in which this is done. In their eyes, referring to Solow (1956), the output of a given economy y is determined by its resources. Those include the size and skills of the workforce m and the size and productivity of its capital stock. Thus the change in the output shall depend on the change in the capital stock and workforce. Formally, growth rate of an economy can be decomposed as follows

$$\dot{y}_i = \alpha_i \dot{k}_i + \beta_i \dot{m}_i + \mu_i \quad (1.1)$$

where the term on the left hand side denotes the change in output as fraction of GDP. In the same manner, \dot{k}_i and \dot{m}_i represent the change in the capital stock as a fraction of GDP and the percentage change in workforce over time, whereas μ_i (known as the Solow residual) stands for the overall change in economic productivity. The coefficients α_i and β_i measure respectively the marginal productivity of capital and the output elasticity of labour.

Engen and Skinner (1996) put their argument in the following way. First of all, taxes can discourage the investment (the \dot{k}_i in the equation above) by taxing away corporate and individual income and capital gains. Second, taxes may discourage work force participation or distort individual choices of acquiring education and skills. Third, taxation can impact negatively the productivity growth μ by attenuating research and development (R&D) and the venture capital investments to “hi-tech” industries.

Fourth, taxes can influence the marginal productivity of capital by channelling investments from more heavily taxed to those that are taxed less. And finally, taxation can decrease marginal productivity of labour by discouraging workers from working in sectors with high productivity but a heavy tax burden.

Alesina, Ardagna, Perotti and Schiantarelli (1999) show in their model how increases in various kinds of taxes reduce profits and therefore, investments. Perhaps

more interestingly, they reach the conclusion that the impact of increases in public spending has even more substantial negative impact on investment than changes in tax rates. This can be explained by the fact that government expenditures, particularly those on government wages, transfers and welfare increase real wage, as public employment or staying on welfare are alternatives to being employed in the private sector. Hence, if government wages or welfare benefits increase, an individual's reservation utility increases, driving up the real wage. Other things being equal, a forced increase in real wages reduces marginal profits and hence investment.

It should be noted that the traditional Solow growth model allows for no changes in the long-term growth rates. In a suitably long period, there is but one equilibrium rate of growth. Yet preceding remarks hold even in the light of this, for they distinguish between GDP growth rate on the one hand and GDP level on the other hand. Even though the growth rate in itself is not affected by tax policy, the level on which this or that steady state is reached is indeed influenced. Assume for instance that the growth rate at any steady state of an economy is 5 percent. Suppose, in addition, that a heavily distortionary tax policy is undertaken by the government. As a result, the growth rates will decline during the transition period, until a new, worse, steady state is reached.

Nevertheless, as King and Rebelo (1989) point out, transitional dynamics in itself cannot account for variations in growth rates – neither across countries nor over time. Thus a different approach could perhaps be more appropriate. Moreover, it

is not hard to imagine arguments criticising the relevance of a model of economic growth in which for instance the technological change is considered to be given. In past decades, a different approach to modelling economic growth has been adopted by a vast majority of mainstream economists. We think of growth models which endogenise technological changes and the overall productivity growth (the Solow residual). These models do not attain the highest degree of realism either, mainly because they part from a common idea of a representative individual or household with a given utility function. Yet they can be considered as a common denominator for a large part of contemporary economists.

In the setting of endogenous growth model that allows for changes in long-term growth rates, the argument about effects of taxation is put forward by Milesi-Ferretti and Roubini (1998). Their models include leisure as a consumer good with a special technology of production and they distinguish between different forms of its production. If leisure is modelled as “raw time⁶,” then there is a negative impact of taxation of labour and capital income on growth rates. If we assume leisure to be a “home-produced” good, then the balanced growth rate depends negatively on both factor income taxes and only in two particular cases the balanced growth rate is independent on tax rates on capital and labour income⁷. Furthermore, they show

⁶ Milesi-Ferretti and Roubini (1998) distinguish between a “raw time” model of leisure, a “home production” model and a “quality time” model. If leisure is only “raw time,” then it is only the part of the total time that is not spent working or studying. If leisure is produced in a “home production” model, then we assume a constant returns to scale technology which uses human and physical capital as inputs. In the third case, leisure is produced using human capital and time. For technical details, see *ibid.*, p. 726.

⁷ More specifically, the balanced growth rate is independent of the tax rate on capital income if

that when leisure is either “raw time” or “quality time” with decreasing returns from human capital, then consumption taxation reduces long-term growth. Only if we were to consider a “home production” model, then the consumption tax rate would have no effect on the long-term growth rate. This result is hardly surprising. In fact, in the framework of endogenous growth models, effects of changes in tax rates are amplified when compared to basic neoclassical growth models. King and Rebelo (1990) estimated that the welfare cost of a 10 percent increase in the rate of income tax can be 40 times higher than in the basic neoclassical growth model.

In the endogenous growth models, the emphasis is put more on R&D distortions, negative impact on human capital, and on the overall productivity growth μ than on traditional misallocation of capital and labour. Among others, Trostel (1993) finds a strong negative effect of proportional income tax on investment in human capital in a model that is more general than the ones presented by his predecessors. As a matter of fact, taxation affects investment in human capital in several ways. The principal input in human capital accumulation is time; thus the principal opportunity costs of this investment are foregone wages. If wage income is taxed, then both the returns and costs of investment in human capital are reduced in the same proportion and the rate of return is therefore unaffected.

we assume that the formation of human capital is independent on physical capital. Under the same condition, we have independence of the balanced growth rate on labor income tax only if the sector of human capital formation is untaxed. For more details and intuition as well technical aspects of this results, see Milesi-Ferretti, Roubini (1998, p. 734).

Yet, as Trostel (1993) asserts, there are more inputs in investment in human capital than just time. The costs of other inputs are not reduced by taxation. As a result, the total cost is reduced less than the return and, consequently, investment in human capital is discouraged. Taxation may impact human capital accumulation negatively also through price changes. Capital income taxation leads to a fall in savings, reducing physical capital and wage rates (through fall in productivity). The decrease in real wages lowers the return and cost of investment in human capital, while leaving goods prices unchanged. Thus the real return falls more than the total cost and discourages human capital accumulation.⁸

Several models of taxation and growth take into account the expenditure side of government budget as well. In particular, some authors put emphasis on the distinction between productive and unproductive government spending⁹. The difference emphasized is that the productive government spending (in form of infrastructure, for instance) serve as input for producers. Thus the production function can take the Cobb-Douglas form,

$$y = Ak^\alpha g^{1-\alpha}. \quad (1.2)$$

where g indicates the quantity of government purchases allocated to each producer. As a result of such an approach, one can infer that there actually might be a

⁸ For a thorough treatise of this result, see Lord (1989).

⁹ See Aschauer (1998), Barro (1990), Barro and Sala-i-Martin (1992) and Petrucci (2001).

lack of “productive” government spending and that taxes destined to finance such a spending are beneficial to growth.

In itself, the distinction seems plausible. Producers do indeed use existing infrastructure, which can be publicly constructed and owned. Yet, there are major difficulties in applying this distinction *ex ante* on diverse government spending. For every government purchase or transfer is in a sense “productive,” i.e., increases someone’s utility. Some make even possible existence of businesses and productive activities that would otherwise have not existed. It should be noted, however, that those who make decisions concerning government expenditures lack the knowledge of all effects of this or that spending decision. At the same time, every government purchase or transfer is “unproductive” in the sense that it has to be funded, in some way or another, by productive activities of private individuals. At this moment, we feel compelled to raise the name of Frédéric Bastiat and his famous essay¹⁰ in which he ridicules the common fallacy that the government spending alone can bring about an increase in the overall wealth of a society. For, as Bastiat points out, the results yielded are only that what is seen. What is not seen is that every expenditure has to be financed by extracting private means and by disabling alternative uses of resources. Here too, government decision-makers lack the knowledge of precise effects of a particular way of funding and extracting property from private hands. To put it simply, politicians do not know exactly how many and which productive activities will take

¹⁰ See Bastiat (1863).

place thanks to a given form of government purchase or transfer and they do not know how many and which productive activities will disappear due to a particular form of financing it. Thus the distinction between productive and unproductive government expenditures is one that cannot be held in making decisions in the real world.

1.4 A Simple Model

To organize one's thinking about impact of taxation on growth rates, we find it useful to present the simplest possible model of endogenous growth, which is inspired particularly by Barro and Sala-i-Martin (1992). In their article, they give a review of various endogenous models of growth which differ by their assumptions. The starting point of these models is a closed economy with constant population and infinite-lived representative households which maximize the overall utility given by:

$$u = \frac{1}{1-\theta} \int_0^{\infty} (c^{1-\theta} - 1) e^{-\rho t} dt \quad (1.3)$$

where c is consumption per person, t time, $\frac{1}{\theta}$ being constant intertemporal elasticity of consumption, and $\rho > 0$ represents the rate of time preference. Households hold their wealth in assets in the form of claims to physical or human capital or internal loans. The assets are denoted by a and are denominated in units of consumable goods. The real return of assets is $r(t)$. We modify the basic version of model so as to introduce taxation of households' assets. We assume this return to be taxed by tax rate τ , which gives us the budget constraint

$$\dot{a} + c = (1 - \tau)ra. \quad (1.4)$$

The first order conditions for the maximization of utility under the constraint above provide us with the following condition on the real rate of return:

$$\gamma_c = \frac{\dot{c}}{c} = \frac{1}{\theta}[(1 - \tau)r - \rho] \quad (1.5)$$

$$r = \frac{\rho + \theta\gamma_c}{1 - \tau} \quad (1.6)$$

Hence, it is trivial to note that γ_c (the rate of growth of consumption) is decreasing in the tax rate. We choose the simplest way to describe producers, that is, by a linear production function

$$y = Ak. \quad (1.7)$$

By assumption, $k = a$. It should be noted that k denotes a composite capital good, including physical as well as human capital. We do not use the Cobb-Douglas production function presented above¹¹ for the reasons we have explained in the previous part. Thus, this model does not account for the effects of government expenditures into infrastructure and into so called “public goods” on quantity of the output.

Producers borrow and lend at the rate $r(t)$ and maximize the present value of their net revenues,

¹¹ The one using government expenditure as one of the inputs.

$$NR = \int_0^{\infty} [(Ak - \eta i)e^{-\int_0^t r(s)ds}] dt \quad (1.8)$$

where η is the constant cost of capital in terms of consumption goods and i is investment. The depreciation is nil and the change in the capital stock is equal to i . According to Barro and Sala-i-Martin (1992) the F.O.C. imply

$$r = \frac{A}{\eta}. \quad (1.9)$$

Combining this equality with the condition on the real rate of return yields the solution for the growth rate of per capita consumption

$$\gamma_c = \frac{1}{\theta} \left[\frac{(1 - \tau)A}{\eta} - \rho \right]. \quad (1.10)$$

The comparative statics of this model are straightforward. The growth rate increases in intertemporal elasticity of substitution $\frac{1}{\theta}$ and in the marginal productivity of capital A . On the contrary, γ_c decreases in the degree of time preference ρ , in the cost of capital η , and in the tax rate τ .

Here, a simple model yields a simple result, i.e., taxation decreases economic growth. Far from having the ambition to calibrate this model and apply it to the real world, we are persuaded that its value is more in the fact that it illustrates the intuitive – and theoretically justified – idea of impact of taxation on economic performance. This idea is of particular relevance, because the empirical evidence itself is not easy to establish. As for instance Atkinson (1995) notes, the relationship between fiscal

policies and economic growth is a complex one and it is appropriate to fear that aggregation and standard econometric techniques will not shed too much light on the issues.

We are aware of limitations that our approach has, be it limitations of economic modelling in general, or of oversimplified assumptions we use. There are of course much more sophisticated approaches one could use – we think particularly of models by Razin and Yuen (1995) or Milesi-Ferretti and Roubini (1998). However, we suppose that such models would rather obfuscate than illuminate what we see as important for the purpose of the present work, unless used to fit a set of data, which we presently do not possess.

1.5 Empirical Results

Though we do not attempt to confront our views with data, we cannot avoid mentioning those who did so. For it is of interest to ask what exactly is – quantitatively speaking – the impact of taxation on growth. In this respect, simulations and empirical studies are as ambiguous as numerous.

Lucas (1990), for instance, claims that a tax reform involving a fiscally neutral change eliminating capital taxes would increase growth rates negligibly. On the contrary, Jones, Manuelli, and Rossi (1993a) estimated the effect of eliminating all distortionary taxes to increase the growth rate by 4 to 8 percentage points. In addition, Razin and Yuen (1995) in their endogenous model calibrated for the long-run

(1965-1987) data of G-7 countries discover a relatively large effect of capital income taxes under free capital mobility. However, the range of results of simulation models of endogenous growth is too large to provide a satisfying answer as to what quantitative impact do taxes have on growth rates.

It should be noted, however, that neither empirical investigation provides us with a clear-cut answer. As Engen and Skinner (1996) show, some decades in modern U.S. history give us a positive correlation between tax rates and growth, whereas other suggest a negative one. On the whole, we have quite a mixed picture and one is compelled to emphasize that the task of isolating the influence of one sole variable, namely the tax rate, on economic growth is indeed impossible, provided all the turmoil of the 20th Century. It would simply mean to demand too much from the data. Even to measure the level of taxation is less unambiguous than one might expect. For fiscal policies can differ equally in their qualitative characteristics as in the overall tax burden, the former being at least as important as the latter for the effects of taxation on economic performance.

Yet, an earlier study by Engen and Skinner (1992) which uses data from 107 countries during the period 1970-1985 shows a strong and negative relationship between balanced-budget increases in government spending and tax rates. A balanced-budget increase in government spending and taxation by 10 percentage points was predicted to decrease long-term growth rates by 1.4 percentage points.

As far as the effects of taxation on profits and investment are concerned, one can mention the econometric study by Alesina, Ardagna, Perotti and Schiantarelli (1999). They find, for example, that an increase of one percentage point of GDP of taxes on labour leads to a reduction of the investment over GDP ratio by 0.17 and a cumulative effect of about 0.7 in five years. As we noted in Section 2, they underline that the effect of public spending is even heavier. According to their findings, a reduction of one percentage point in the ratio of government spending over GDP leads to an increase in investment by 0.16 percentage points of GDP on impact and a cumulative increase of 0.8 percentage points of GDP after five years. The impact is particularly strong when the cut falls on government wages.

1.6 Income or Consumption Taxation?

On the whole, though sometimes yielding conflicting results, empirical studies enable us to assert that smaller tax burdens creates lesser distortions in the economy and lead to smaller losses in growth rates. This view illustrates the intuitive theoretical statements presented in the Section 2.1. However, hardly could such results be satisfying for anyone who desires to comprehend the tricky matters of taxation and fiscal policies. What is needed to know are the effects of the particular forms of taxation on the economic growth. In other words, it is highly interesting to find out what forms of taxation are less distorting than others.

We have already asserted that consumption taxation does not lead to distortions in intertemporal decisions taken by individuals, because it places the same burden on present and on future consumption. On the contrary, placing a tax on capital income makes deferred consumption more expensive in terms of present consumption. Yet one should not infer from this that a reduction in capital income tax would automatically lead to an increase in savings rate, which is due to the income effect.¹²

As a matter of fact, if we were to assume the existence of three goods: leisure, present consumption and future consumption, the only tax that would not lead to distortions in decisions made between these goods would be a compensated lump-sum tax¹³. If we realize, however, that the lump-sum taxation is not available for political reasons, then a second-best choice is needed. In this respect, one is compelled to say that consumption taxation might represent this choice.

Nevertheless, it is not generally true that uniform consumption taxation would create the smallest amount of distortions. This was recognized first by Frank Ramsey (1927) in his famous article in which he argued that in order to leave the production unaltered, tax rates should be set according to elasticities of demand and supply for each commodity. Says Ramsey (1927):

If a commodity is produced by several different methods or in several different places between which there is no mobility of resources, it is shown that it will be advantageous to discriminate between them and tax most the source of supply which is least elastic. For this will be necessary if we are to maintain unchanged

¹² This was stated, though in a slightly different way, by Feldstein (1978).

¹³ By compensation we understand that the last monetary unit taxed brings back the same marginal utility (by means of public goods consumption) as the last monetary units used on purchase of private goods.

the proportion of production between the two sources. (p.58)

(...)

If several commodities which are independent for demand require precisely the same resources for their production, that should be taxed most for which the elasticity of demand is least. (p. 59)

The contemporary optimal taxation principles imply that the consumption tax rates should be set on the basis of the complementarity or substitutability of concerned commodities with leisure, for leisure in itself cannot be taxed. Hence goods complementary with leisure should be taxed more heavily than those which are substitutes to it¹⁴.

There are of course serious arguments about the administrative unfeasibility of a complex commodity taxation system that cannot be ignored. Nonetheless, we suppose there might be quite a general agreement concerning the superiority of consumption taxation over income taxation. Among others, Feldstein (1978) argued that large efficiency gains could be obtained by eliminating particularly the capital income tax and replacing it with a wage income tax or a consumption tax.

1.7 Policy Implications

The purpose of this chapter was to evaluate impact of taxation on economic growth. We analyzed the nature of taxation from a very broad theoretical perspective, without having recourse to mathematical modelling. A simple use of unaided reasoning told us that taxation always influences economic activity and distorts smooth functioning

¹⁴ For an analysis of this principle, see Auerbach (1985).

of market economy. As a result, intuition compels us to assert that taxation affects negatively growth rates. This claim holds in standard economic theory as well. For instance, taxation lowers steady state level of output in the Solow model. Moreover, as many previously cited scholars demonstrated, taxation in vast majority of cases depresses long-run growth rates in endogenous growth models. We find that there is a large consensus about the superiority of consumption taxation over income taxation.

What should one conclude from such an investigation? On a reasonably large interval, lower the taxes are, better it is for the economic growth. Less distortionary the taxes are, better it is for the economic growth. In particular, a tax reform consisting of eliminating distortionary capital income taxation and lowering the tax burden can have important effects as far as economic growth is concerned. These are simple and verifiable positive statements.

However, if the study of public finance has a purpose, then it is to give normative guidelines for action. We have not done so yet.

The immediate normative consequence one might be tempted to infer from previous reflections is that less taxation, and, in addition, less distortionary taxation is desirable. Several studies even demonstrate that, from the point of view of maximizing economic growth, the long-run optimal taxation is zero. Milesi-Ferretti and Roubini (1994), for instance, show that under very general assumptions the optimal tax burden on labour and capital income is zero. Jones, Manuelli and Rossi (1993b) and Bull (1993) add that even consumption taxes ought to be equal to zero in the long

run. Government should thus tax more heavily in the short run to accumulate assets from which would it fund its expenditures in the long run. This solution to the optimal taxation problem assumes of course that there are no constraints on government borrowing and is problematic from other points of view, too¹⁵. Nonetheless, it provides us with a clear message about what size of the tax burden leads to high growth rates. In addition, as the optimal tax system would be one of lump-sum taxation and the second best choice is that of consumption taxation, taxes should not have redistribution effects. As a result, no such thing as a progressive tax system should be allowed to exist. More precisely, as Sir Mirrlees (1971) showed, the marginal tax rate at the highest level of income should be zero¹⁶. And finally, in our eyes, there should be no capital income tax.

Certainly, there is more to the subject of taxation and fiscal policy than just its negative relationship to economic growth. Particularly, to formulate any normative statement concerning the desirable level of tax burden and about the appropriate tax structure, one has to go beyond the traditional positive economic analysis. For one

¹⁵ Milesi-Ferretti and Roubini (1994) summarize the major difficulties of this solution as follows: “[G]overnment is unable to commit to a given path of taxes from now on to foreseeable future. Therefore, this optimal taxation scheme will be subject to time consistency problems. In particular, in every period the government will have incentive to tax more heavily existing capital, while refraining from taxing investment. A second problem is that in practice government expenditure is not exogenous, and high short-run rates of taxation may lead to more spending, rather than to the accumulation of assets to finance long-run expenditure. A third problem is that in practice the ability of government to borrow and lend is likely to be restricted.”

¹⁶ Slemrod (1990) comments on Mirrlees’ conclusions as follows: “[A] utilitarian social objective function, even one that places a large weight on the welfare of the poor, is not necessarily maximized through high marginal tax rates on the rich. In fact, the poor can only be made less well-off by a non-zero marginal tax rate at the very top.”

has to make value judgements concerning the optimal size of government and scope of government activities. What should government do?

Richard Musgrave (1997) claims that “[public finance] are needed to provide goods where externalities cause market failure, to address issues of distribution, and to share in the conduct of macroeconomic policy.” Given these ends, “downsizing as the ultimate policy goal makes no sense.”(p.156)

What could we possibly reply to that? First and the most simple answer is that downsizing and constraining governments does definitely make sense, because a large part of their activities have little to do with remedying externalities (thus producing public goods), reducing inequality and securing macroeconomic stabilization. By its nature, government allocation of resources is less efficient than private one. As far as measures of government inefficiency are concerned, Palda (1997) offers an interesting estimate of 15.2-49.2 percent of Canadian government spending that could well be “churned”¹⁷. Provided that Canada lie in the mean of OECD countries, it is not utterly implausible that this estimate could be easily applied to European countries and to the United States as well. Hence, hardly can one contest that large sums are lost in inefficient programs destined to serve pressure groups and in expenditures that increase the chance of politicians’ re-election. In this regard, public-choice analyses have proven to be of particular relevance and it should be stated that its

¹⁷ That means a simultaneous cut of both transfers and taxes leaving citizens net fiscal positions unchanged.

“Hobbesian image of Leviathan with an ever-growing and abusive government,” as derided by Musgrave (1997) is realistic indeed.

A second objection might be raised against the ends themselves. As we stated previously, it is not our objective here to criticize either the standard theory of public goods, or the usual approaches to inequality in wealth distribution, nor the macro-economic stabilization. It is sufficient for us to say that all of these goals are highly questionable.

As an illustration, take the issue of wealth distribution. The underlying assumption is that there is a “national wealth” somewhat produced independently of its distribution and that government action is needed to address the issue of its distribution. This assumption is wrong, however. The “national wealth” is nothing more and nothing less than a result of productive activities, cooperation and exchange of private individuals and its distribution cannot be separated from its production any more than daylight can be separated from the sun. Inevitably, the problem of “distribution” is the problem of coercive transfer of property from those that have acquired it through productive and peaceful way to those who have not. And, of course, there is an ethical problem: Why should this be done? What justifies it?

From our perspective, the answer to this problem is not at all straightforward. But even if we did not contest the underlying justification of redistribution, we had to note that the choice of criteria, upon which redistribution is done, is arbitrary.

Hence, it can be shown that an important part of what is perceived as justification for government spending and taxation is contestable. In our view, there is a large space left to downsize governments without much further discussions. It is needed because of wastefulness that many government expenditures represent and – as we attempted to show in this chapter – distortions of economic activity that taxation brings about. Thus, whoever prefers abundance and wealth to poverty and starvation should prefer less distortionary tax systems and lower tax rates.

Our reflection leads to another interesting question that cannot be fully addressed in this part, neither entirely in this work. By what means should governments be forced to lower tax rates and relax the distortions that current tax systems represent? For hardly anyone could expect politicians to respond affirmatively to economic theory and install an optimal tax system by their own decision. Underlining again the contribution of public choice economists, we think it highly unrealistic to perceive the government as a benevolent institution which responds to citizens' preferences and needs.

This being said, should governments be constrained by a fiscal constitution? Or, would tax competition lead to the desired end? Why would politicians refrain from creating fiscal harmonising taxes upwards? Or, in other words: What are citizens' means of protection against fiscal arbitrariness and irresponsibility? As we will try to show in what follows, tax competition can indeed be a good means to attain this end.

Chapter 2

What is Tax Competition?

2.1 Introduction

Knowing roughly the relationship between taxes and economic growth, it becomes rather clear why one should be interested in tax competition. The immediate reason is that tax competition is a phenomenon of utmost relevance in present days and a political issue, most markedly at the EU level. And a related reason is that tax competition is subject to a number of misunderstandings that pervade the debate about its merits and demerits.

In our eyes, answer to the questions how tax competition influences economic performance and whether tax competition is harmful or not depends mostly on the assumptions one makes about the behaviour of government. If one assumes that governments are largely benevolent and efficient institutions, one will probably conclude that tax competition – as the process of uncooperative setting of tax rates in order to attract mobile tax bases – leads to inefficiently low amounts of public goods.¹⁸ Yet, as we will try to show, this indispensable assumption cannot, for a number of reasons, be satisfied. However caricaturing it might sound, present day governments behave

¹⁸ Yet Kehoe (1989) provides an elegant demonstration that such competition can be efficient in the long run.

more like Leviathans and constraining them to fiscal discipline – whether it should be by means of a fiscal constitution or otherwise – is needed.

This chapter is an attempt to define cogently the phenomenon of fiscal competition and to review and critically analyze the current state of knowledge of the issue. In the same spirit, we will offer some basic facts about the forms that tax competition might take.

We will show what has been the development of tax rates and tax bases during the past decades and examine whether one can infer that there is an interdependence in tax setting.

Furthermore, we will focus on the question if tax competition decreases welfare, and we will briefly discuss the alleged problem posed by tax havens. Hence the goal of this paper is to demonstrate that tax competition emerges as a praiseworthy phenomenon and that many of the accusations that are being brought against it do not hold.

With these aims, in Section 2 we will propose a definition of tax competition and discuss definitional problems of related terms, in Section 3 we offer a model of tax competition in which government as a revenue maximiser. The purpose is to show various forms that fiscal interactions among governments might take. In Section 4 we discuss some more or less known facts about tax competition and review existing empirical evidence and in Section 5 we try to answer the question whether

tax competition is a harmful thing or whether it should be rather cherished. Section 6 concludes.

2.2 Definitions and basic characteristics

It might seem that there is little or no controversy when it comes to the definition of tax competition. Yet the issue can become, as we will show, a bit perplexing.

The needed requirement for tax competition is a high mobility of capital and/or labour. Mobility of capital can be increased for instance by technological changes which allow individuals to move their funds electronically across continents or by relaxation of exchange controls. Yet high capital mobility does not mean that capital have to move across borders. The sufficient condition for capital mobility is that capital can move across borders at low costs.

The result of an increase in capital mobility is that jurisdictions can tax capital with more difficulties. The process of tax competition is thus a process of attracting mobile tax bases to jurisdictions by lowering tax rates. By its nature, the process of tax competition is a process of interdependent setting of tax rates and tax bases.

If we narrowed the definition of tax competition, we would require that tax policies influence the allocation of tax revenues across government treasuries. This excludes a broad subgroup of government interactions known as “yardstick competition.” In yardstick competition, voters compare tax system in their own and neighbouring jurisdictions to assess their performances and to vote accordingly. Yet there is

no interdependence between government budgets as such, as the competition actually take place within jurisdictions among different political candidates. On the whole, it is clear that yardstick competition is a fairly different phenomenon than tax competition in the strict sense, although in reality difficult to distinguish from the latter, for the two models of government interaction predict much the same results.

As a matter of fact, fiscal interactions among nations entered on the scene of economic theory with Tiebout (1956) who presented a model of competition for mobile households, showing that, under certain assumptions including personal mobility, a diversity of competing jurisdictions can bring about an efficient output of public goods – each jurisdiction offering a different bundle of both public goods and tax burden appealing to individuals with different tastes. In economic literature, tax competition is usually associated with the taxation of mobile capital¹⁹.

Yet it should be stressed that the mobility of labour is a phenomenon that deserves our attention as well. OECD (2001b) finds that there has been a substantial rise in migration for economic reasons. Some of these reasons are personal income taxes which vary between countries, in particular for the high-income individuals.²⁰

Thus, from a realistic perspective, it is not utterly acceptable to distinguish between

¹⁹ The Tiebout model was applied, almost inalterd, to competition for mobile firms by White (1975) and Fischel (1975).

²⁰ Numerous factors seem to have increased the mobility of labour. As Edwards and de Rugy (2002) put it: “First, the Internet has increased information about foreign opportunities and allowed firms to broaden international job searches. Second, falling travel and communication costs have made it easier for workers to take employment in foreign countries and maintain close contact with their relatives. Third, emigration restrictions in many formerly repressive regimes have been eliminated. A fourth trend is the increased technological ability to performs work in foreign countries while residing elsewhere (...) Fifth, regional trading pacts have allowed increased worker mobility. (...) Sixth, a number of countries have raised immigration limits for highly skilled workers.”

“mobile capital” and “immobile labour.” There are a number of factors of production with greater or lesser degree of mobility, including various forms of capital and labour. Yet for analytical purposes it is useful to simplify the situation by considering just two factors of production – the mobile one and the immobile one – and by assuming that capital is the mobile factor. This allows us to consider just one tax as susceptible to be the subject of competition for mobile bases – the corporate income tax. Nevertheless, when speaking of tax competition later on in this paper, we will provide at least anecdotal evidence on “brain drain” caused by tax differentials.

2.2.1 Measures of Capital Taxation

To observe whether there is a competition among states to attract mobile tax bases one needs to make explicit the ways how we can measure taxation of corporate income. The traditional way to measure the impact of corporate taxation is through the cost of capital – the latter being equal to the pre-tax rate of return of an investment project. To do so, one is obliged to use the tax rates and tax bases delimited by legislation. The simplest measure of corporate taxation is the statutory rate, i.e. the rate defined by legislation. This is 19 per cent in the case of Slovakia, 12.5 per cent in the case of Ireland and so forth. However widely this measure might be used to compare various tax systems, its applications are limited. To infer that low statutory rates mean low actual tax payments would be grossly erroneous, for these depend equally on the tax base.

The definition of the tax base varies across countries and is usually extremely complex. It covers almost everything from investment allowances to deductibility of pension contributions, the extent to which expenses can be deducted and so on. Hence it is almost impossible to establish a single measure which would stand for tax base. Empirical literature has so far greatly simplified the matters by focusing on one aspect of tax bases – on capital allowances. If a firm invests a sum of money, this usually cannot be fully deducted from the tax base, but is usually spread over the expected life of the asset. The intuitive measure of such allowances is their present discounted value as a percentage of the initial cost of the asset. This is equal to zero if the tax system has no allowances at all and 100 per cent if the legislation permits the deduction of costs immediately. Now it should be clear that the rate of inflation has an impact on the value of allowances, for it changes the nominal interest rate. Thus an increase in inflation would decrease the present discounted value of allowances.

By effective tax rates we understand uniquely measures based on tax legislation, be it effective marginal or average tax rates. As Devereux, Griffith and Klemm (2002) assert, the usual approach to summarise the combined effect of tax rate and tax base is to analyse a hypothetical investment that just breaks even (a marginal investment). In this case, the proportionate difference between the pre-tax and post-tax required rate of return is known as the effective marginal tax rate (EMTR).

It should be noted that the EMTR discerns solely the effect of taxation on marginal investment and permits saying what will be incentives to carry out marginal

investments. Thus this measure does not tell us what will be incentives to perform particular investment projects within the set of profitable investments. The impact of taxation on choice between them depends mainly on the proportion of total profit paid in tax. This proportion defines the effective average tax rate (EATR). If a firm has to choose between two investment decisions, one with a higher pre-tax profit, but also with a higher EATR, then the tax might lead the firm to choose a the option with a lower pre-tax rate of return.

Apart from this, one could use alternative measures of corporate taxation, particularly those based on corporate income tax revenue. The virtue of this measure is that it is simple to calculate across a wide range of tax systems and allows to make time series or comparisons easily across countries using the proportion of corporate income tax revenues to GDP or to total tax revenues. This is the method used for instance by Mendoza *et al.* (1994), and with few minor changes by Eurostat (1998) or Carey and Tchilinguirian (2000). Mendoza *et al.* introduce measure called "effective tax rates".²¹ In the case of capital, these are basically the rates found by dividing total tax revenue from capital taxes by an estimate of the operating surplus of the economy.²² The substantial problem with this measure is that it would be equivalent to the effective tax rates as described above only if the tax base used by the fiscal legislation was equal to the profit defined by economic criteria; which is not the case in vast

²¹ As we will see below, we understand by "effective tax rates" a different measure, based on tax legislation and we prefer rather to call the "effective tax rates", used by Mendoza, Razin and Tesar (1994) implicit tax rates.

²² This is a particular definition of pre-tax capital income.

majority of empirically relevant cases. As Devereux, Griffith and Klemm (2002) put it, by using aggregate data and data on tax revenue, this measure says nothing about actual incentives individuals face. This should justify, at least in our eyes, certain preference we give to measures based on tax legislation, particularly for the purposes of this work, i.e., for purposes of establishing sound empirical evidence that there actually exists such thing as tax competition.

2.3 A Simple Model

What do we mean when we say that there is interdependence in tax setting? What exactly should we observe when jurisdictions compete for tax bases? To answer these questions in terms of standard microeconomic theory, one could consider the following simple model of tax competition, inspired by Deheija and Genschel (1998). We use their model as a starting point and elaborate it for instance by studying the properties of capital allocation and by introducing other forms of fiscal interaction than just a simple Nash game of simultaneous rate setting.

In this model, revenue maximising governments compete for mobile capital which is the only source of tax revenue. There are two distinct countries indexed by $i=1,2$. Each country uses a production function with decreasing returns to scale

$$Y_i = F_i(K_i), F_i' > 0, F_i'' < 0, \lim_{K_i \rightarrow 0} F_i'(K_i) = +\infty. \quad (2.1)$$

Different production functions for different countries reflect not so much the differences in technology, but rather differences in population. In the Cobb-Douglas case of $Y_i = A_i \sqrt{K_i}$ the constant A_i could stand for these differences. The total stock of capital is fixed and is distributed among the two countries so that

$$K_1 + K_2 = \bar{K} \quad (2.2)$$

where \bar{K} is a constant. Government uses one tax instrument solely, a capital tax defined by

$$r_i = (1 - t_i)F_i(K_i) \quad (2.3)$$

where r_i is the after-tax return from capital and the price of output is normalised to unity. In other words, the tax puts a wedge between the real return from capital and the after-tax return. The government is assumed to behave as revenue maximiser and faces the following problem.

$$\max_{t_i} R_i(K_i) = t_i F_i(K_i), i = 1, 2 \quad (2.4)$$

The revenue-maximising assumption corresponds well to the Niskanen's (1971) characterisation of public servants as budget maximisers. This assumption seems to us as good approximation of a Leviathan-like government without complicating the matters by introducing a model of government decision-making process or a model of voting as in Besley and Smart (2001) or in Janeba and Schjelderup (2004). However

interesting their models might be, we find it advisable at this moment to introduce a more simple model showing uniquely the fundamental features of the process of tax competition.

The maximisation problem is trivial if there is no capital mobility, that is, if K_1 and K_2 are constant. In this case, the function maximised is a monotonic transformation of t_i , as the total output $F_i(K_i)$ is constant. In that case both governments will choose t_i equal to one and extract the whole of the output. This situation, however, is not of particular interest for us.

We focus our attention more on the opposite polar case – situation in which there is perfect capital mobility across countries. Common sense compels us to say that the real world situations are somewhere in between, yet what is of interest to us is that they seem to be closer to the situation of capital mobility.

Under perfect capital mobility, capital moves from one country to another until the after-tax return is equalised:

$$(1 - t_1)F'_1(K_1) = (1 - t_2)F'_2(K_2) \quad (2.5)$$

Now, provided that

$$K_2 = \bar{K} - K_1 \quad (2.6)$$

the arbitrage condition can be restated as

$$(1 - t_1)F'_1(K_1) = (1 - t_2)F'_2(\bar{K} - K_1). \quad (2.7)$$

Hence K_i is a function of t_1, t_2 .

Lemma 1 K_i is strictly decreasing in t_i and strictly increasing in t_j for $i, j \in \{1, 2\}, i \neq j$.

Proof. According to (17):

$$\frac{F'_1(K_1)}{F'_2(\bar{K} - K_1)} = \frac{1 - t_2}{1 - t_1}. \quad (2.8)$$

From (2.1) it follows that $F'_1(K_1)$ is decreasing in K_1 and $F'_2(\bar{K} - K_1)$ is increasing in K_1 . Hence the term on the left hand side of (2.8) is a decreasing function of K_1 . Moreover, the term on the right-hand side is increasing in t_1 . Thus if t_1 increases by a Δt_1 , the right hand side of (18) increases. As a result, K_1 must decrease accordingly. In the same way, an increase in t_2 decreases the left-hand side of (2.8) and K_1 must then increase as well. The proof for K_2 can be done analogously.

■

Now, (2.4) can be put in the following way:

$$\max_{t_i} F_i(K_i(t_1, t_2)), i = 1, 2 \quad (2.9)$$

It is important for further analysis to say how governments perceive each other's tax rates. If each government considers the tax rate of its counterpart as a constant, then tax competition will be a Nash game of simultaneous tax rate setting and the outcome can be characterised as a Nash-Cournot equilibrium. This can be the case when the competing jurisdictions are of much the same size.

In a Nash game, both governments face the problem laid in (19). The first order conditions are

$$\frac{\partial R_1}{\partial t_1}(t_1, t_2) = 0 \Leftrightarrow F_1(K_1(t_1, t_2)) + t_1 F_1'(K_1(t_1, t_2)) \frac{\partial K_1}{\partial t_1}(t_1, t_2) = 0 \quad (2.10)$$

$$\frac{\partial R_2}{\partial t_2}(t_1, t_2) = 0 \Leftrightarrow F_2(K_2(t_1, t_2)) + t_2 F_2'(K_2(t_1, t_2)) \frac{\partial K_2}{\partial t_2}(t_1, t_2) = 0 \quad (2.11)$$

Solving (2.10) and (2.11) gives us reaction functions of both governments

$$t_1 = \varphi_1(t_2), t_2 = \varphi_2(t_1). \quad (2.12)$$

The solution of (2.12) yields the uncooperative Nash-Cournot equilibrium tax rates t_1^*, t_2^* . Existence of the equilibrium follows from theorem 4.1.1 of Ichiishi (1983, p.57), as the function of government revenue $R_i(K_i(t_1, t_2))$ is concave.²³

One can imagine a situation when one of the countries behave as Stackelberg leader. This is the situation described by Altshuler and Goodspeed (2002) who noticed that European countries might well be behaving as Stackelberg followers with respect to the United States, while behaving as Nash players with respect to each other. Formally, the situation when one of our governments is a Stackelberg leader could be formally described as follows.

²³ It is not difficult to realise that the function $R_i(K_i(t_1, t_2))$ is concave. It is sufficient to observe the first order conditions given by (20) or (21) and to notice that the first derivative of $R_i(K_i(t_1, t_2))$ is decreasing in t_i .

Without loss of generality, the country 1 is the Stackelberg leader. Hence, his maximisation problem is

$$\max_{t_1} t_1 F_1(K_1(t_1, \varphi_2(t_1))), \quad (2.13)$$

as he would expect the follower to act according to its reaction function. The solution of (2.13) yields the Stackelberg equilibrium tax rate \tilde{t}_1 . Then \tilde{t}_2 can be obtained directly by realising that $\tilde{t}_2 = \varphi_2(\tilde{t}_1)$.

The third situation we would like to depict here is the one in which the governments cooperate in order to maximise the total of their revenues. The equilibrium tax rates \hat{t}_1, \hat{t}_2 would be

$$\arg \max_{t_1, t_2} R_{total}(t_1, t_2) = \arg \max_{t_1, t_2} \{t_1 F_1(K_1(t_1, t_2)) + t_2 F_2(K_2(t_1, t_2))\} \quad (2.14)$$

It is not straightforward to find the equilibrium tax rates of the maximisation problem governments face when engaged in cooperation. The intuition tells us that government will cooperate to drive tax rates up to one. Moreover, the formulation of the problem might suggest that the governments should simply choose some revenue maximising vector of tax rates \hat{t}_1, \hat{t}_2 .

From an algebraic perspective, it is not true that $(1, 1)$ is the revenue-maximising vector of tax rates. The reason for that is that K_i is not defined for $t_j = 1$ and the allocation of capital between the two countries is in that case a bit perplexing. Common-sense compels us to say that if $t_i = 1$ and $t_j \neq 1$ then $K_i = 0$ and $K_j = \bar{K}$, which

can be considered to be a sort of corner-solution. Yet if both tax rates are equal to one, then the the allocation of capital between the two countries would be arbitrary. A conceivable - and the simplest - way of understanding it would be to assume that if tax rates are equal to one, then the allocation of capital would remain the same as in *previous* tax setting. The nature of a cooperative equilibrium could be better understood using the following remark.

Remark 2.1 *Under cooperation, $(t_1, t_2) \rightarrow (1, 1)$ and $\frac{1-t_2}{1-t_1}$ is constant.*

The function maximised in (2.14) can restricted from above as

$$t_1 F_1(K_1(t_1, t_2)) + t_2 F_2(K_2(t_1, t_2)) \leq F_1(K_1(t_1, t_2)) + F_2(K_2(t_1, t_2)) \leq M \quad (2.15)$$

where M is the maximum of $F_1(K_1) + F_2(K_2)$ for $K_1, K_2 \in \langle 0, \bar{K} \rangle \times \langle 0, \bar{K} \rangle$. Let us denote (K_1^*, K_2^*) the vector of capital allocation maximising $F_1(K_1) + F_2(K_2)$. Furthermore, let us put

$$\frac{F_1'(K_1^*)}{F_2'(K_2^*)} = \alpha. \quad (2.16)$$

Hence from the arbitrage condition (2.5) it follows that to attain the maximum of $t_1 F_1(K_1) + t_2 F_2(K_2)$, governments should set tax rates so that

$$\frac{F_1'(K_1^*)}{F_2'(K_2^*)} = \frac{1-t_2}{1-t_1} = \alpha. \quad (2.17)$$

As we stated previously, for the vector of tax rates $(1, 1)$ the arbitrage condition and subsequently the equation (2.16) give no information about allocation of capital between the two countries. As a matter of fact, governments always face an initial vector of tax rates (t_1^1, t_2^1) for which it is not necessarily true that $\frac{1-t_2^1}{1-t_1^1} = \alpha$. Hence if both governments immediately chose $t_1 = t_2 = 1$, the outcome would retain the same characteristics as to allocation of capital between the two countries as the previous state. Hence if this allocation was not (K_1^*, K_2^*) , the revenue collected will be inferior to M . To collect maximal revenue, governments will have to ensure that $\frac{1-t_2}{1-t_1} = \alpha$.

Once this condition is satisfied, nothing restrains the governments from driving up their tax rates to one simultaneously and collecting at the limit the whole of the capital returns.

It is of course unrealistic to suppose that the vector $(1, 1)$ can in reality be attained. The reason is that if government taxed away the whole of the return from any investment, no one would embark on any investment activity and, in a longer run, the capital stock \bar{K} would have to change accordingly. Yet this longer-term effect is not depicted in our model.

2.4 Some Evidence

It is true that since the late 19th century modern welfare states have been funded primarily by levying progressive income taxes, both on corporate and personal income.

As a result of increased mobility of capital, one is tempted to assert that taxing mobile factors has become increasingly difficult.

What is the empirical evidence for such claim? To begin, it might be interesting to raise some anecdotal evidence for the effects of taxation on the movement of mobile labour. As Edwards and de Rugy (2002) put it, there are many indications that migration motivated by fiscal reasons has been on the rise. John Roth, the former CEO of top Canadian high tech firm, Nortel, warned the Canadian government on several occasions that high tax rates have lead to an outflow of his best managers and engineers to the United States. In the same manner, one can recall the persistent outflow of young Irish to the United Kingdom and United States. This trend seems to have been reversed by corporate tax cuts in 1981, followed by personal income tax cuts. During the last decade, Ireland has experienced a marked increase in immigration and a fall in emigration.²⁴

In the same spirit, one could talk about increased mobility of capital. Relocations of industries between countries for fiscal reasons are abundant and obvious to perceive. More importantly, there is evidence for a markedly high capital mobility that has increased over time, as Leibfritz et al. (1997) argue. Alfano (2001) extends their analysis to sensitivity to tax differentials. Yet evidence for capital mobility is not easy to obtain. As Griffith and Klemm (2003) point out, high degree of capital mobility should be translated into rates of return being equalised across countries.

²⁴ See Ireland Central Statistical Office (2001).

However, the rates of return differ for a number of reasons, including country-specific risks or bias to investment, hence testing capital mobility is a non-trivial task.

Nevertheless, the evidence in favour of increased capital mobility is persuasive. And the intuitive reasoning tells us that when taxing mobile factors becomes increasingly difficult, the tax burden is shifted on immobile ones and on consumption. At this moment it should be emphasised that it is problematic to assume that labour behaves as an immobile factor and that personal income tax is a tax on this immobile factor. However, for the purposes of simplicity and keeping this discussion manageable we are forced to distinguish between capital and labour as between mobile and immobile factors. Avi-Yonah (2000) points out that the two fastest growing taxes in OECD countries in last decades have been consumption taxes (from 12 per cent of total revenue in 1965 to 18 per cent in 1995) and payroll taxes (18 per cent to 25 per cent).²⁵ Even though the personal income taxes have not risen over that period (from 26 per cent of total revenue to 27), the total tax burden has grown from 28 per cent to almost 40 per cent, which is due mainly to the increase in consumption and payroll taxes, which seems to support our claims.

Devereux, Griffith and Klemm (2002) observe data on tax revenue on corporate income as a proportion of GDP for the OECD countries during 1965-1999 and find

²⁵ It can be of course argued that the increase of payroll taxes has been needed to keep on financing the PAYG pension systems in time of unfavourable demographic changes. Yet for the purpose of this work it is immaterial to study which of the two phenomena had more important impact on the rise of payroll taxes – whether it was the need to finance the PAYG systems or the increased mobility of capital. Suffice it to say that the two factors worked in the same direction – towards an increase in payroll taxes.

that they have remained fairly stable, yet varied strongly across countries. In the same way, Carey and Tchilinguirian (2000) observe a small rise in the implicit tax rates on capital for OECD average during 1980s and 1990s. These data are a bit difficult to interpret reasonably, for they are not entirely consistent with the development of the statutory tax rates and the EATR, as presented below. One explanation might be found in the Laffer curve – lower rates might have boosted profitable investment, rising corporate income tax revenues as a portion of the GDP (or other variable, such as the operating surplus). If we consider data on corporate tax revenues as a portion of total tax revenues, we see a marked decrease. This suggests that governments may rely less on corporate taxation as a source of revenue and are shifting the tax burden to other sources of revenue.

Let us turn to measures based on tax legislation. The data for OECD countries are rather clear – statutory tax rates were falling between 1982 and 2001, the un-weighted mean statutory rate going from around 48 per cent to around 35 per cent.²⁶ Equally important, however, was the development of corporate tax bases. Throughout 1980s and 1990s the weighted mean of rates of allowance fell from 83 per cent to 74 per cent, which means that the tax bases broadened during that period. Nevertheless, the expansion of tax bases was partly compensated by lower rates of inflation.²⁷ At this moment, the development of the tax burden in recent decades might seem rather unclear. With rates decreased and bases broadened, one cannot conclude un-

²⁶ See Devereux, Griffith and Klemm (2002, p.11).

²⁷ Ibid, p.12.

equivocally. But what is the evidence provided by Devereux, Griffith and Klemm (2002) for the EMTR and EATR? The weighted mean of EMTR has remained stable over the 1980s and 1990s. The picture is relatively mixed, with more than half of the countries having decreased their EMTR and some countries having increased it. The weighted mean EATR fell over the period from around 41 per cent to around 34 per cent. For very low rates of profit (investments close to the marginal), it has remained almost unchanged, but for highly profitable investments the rate converges to the statutory rate which has fallen substantially.

On the whole, one can conclude that there has been a decrease in corporate taxation over the recent past. Governments do tax capital less than they did before. This does not mean that the overall tax burden has decreased over the past decades, only that the tax structure has changed, taxing more heavily labour and consumption than capital.

This conclusion in itself, however, is not sufficient to affirm that there has been any form of fiscal competition. To do so, we need to present evidence that tax rates have been changing in a mutually dependent way. Fortunately enough, empirical studies suggest that such evidence exists. Since the pioneering study by Case, Rosen and Hines (1993) who estimate fiscal reaction function for the US states, there has been a growing empirical literature on the subject, basically finding that the EU and the OECD nations have been setting taxes interdependently. Altshuler and Goodspeed (2002) investigate fiscal interdependencies among a subset of EU Countries

and find that European countries interact strategically in setting their capital taxes. Devereux, Lockwood and Redoano (2002) study data from 21 OECD countries between 1983-1999 to conclude that countries actually compete not only over the statutory tax rates, but also over the EMTR and the EATR. More recently, Redoano (2003) has confirmed previous findings concerning fiscal interaction within the EU. The evidence is aptly summarised by Altshuler and Grubert (2003):

The evolution of country effective tax rates between 1992 and 1998 seems to be driven by tax competition. Countries that had lost shares of U.S. manufacturing affiliate real capital cut their rates the most over the period. Further, smaller countries and those with high initial average tax rates experienced larger declines in effective tax rates relative to the average.

In a nutshell, there appears to be sufficiently robust evidence to claim that there actually exists such thing as tax competition.²⁸

2.4.1 Multilateral Initiatives

Not only tax competition exists, but it has been an issue at the international level. There have been several initiatives by international bodies to subject tax competition to control and regulation and our account of development of tax systems would hardly be complete without mentioning at least two major international organizations that have attempted to tackle tax competition – the OECD and the EU institutions.

One of the best known initiatives against tax competition was the one started by the OECD in 1998 after publishing OECD (1998). The report focuses on allegedly

²⁸ Though for instance Desai (1999) argues that the "race to the bottom" feature of tax competition seems to be attenuated by foreign tax credit systems

harmful tax practices in member states and in so-called tax havens. The report was followed by another one, OECD (2000) which monitors the progress accomplished and somewhat elaborates the arguments against what it calls “harmful tax competition.” The report divided harmful tax practices into two categories – “preferential tax regimes in member countries” and practices used by jurisdictions outside the OECD, deemed to be “tax havens.”

Both categories were defined by roughly the same criteria – by corporate taxes that allowed a significantly lower effective level of taxation than those that applied in member states and a lack of transparency and exchange of information (otherwise known as financial privacy). To qualify as a tax haven, the OECD used the criterion of a “lack of substantial activities” from the part of companies incorporated in the jurisdiction. However, the criterion turned out to be quite impossible to interpret and was eliminated later on.²⁹ OECD (2000) contained a list of 47 “harmful” practices within member states and 34 jurisdictions meeting the criteria of “tax havens.” Any of these that would have been considered uncooperative – not agreeing to abandon the aspects of their tax systems that were considered harmful – were threatened with “defensive measures.” It is important to note that these were not limited to simple enforcement of existing tax regimes, but went largely beyond that, introducing penalties for dealing with such jurisdictions.³⁰

²⁹ See OECD (2001), p.10.

³⁰ According to OECD (2000), member states should:

- Disallow deductions, exemptions and credits that would have otherwise been applied to transactions with uncooperative tax havens.
- Adopt controlled foreign corporation legislation and/or apply them in a consistent manner

The report recommended to member states deemed to have harmful tax regimes to eliminate features considered harmful which basically meant to raise tax rates and/or restrain financial privacy. A similar advice was given to non-member jurisdictions, deemed to behave as tax havens.

By 2001, 5 jurisdictions had pledged to eliminate their “harmful tax practices.” These were Aruba, Bahrain, the Isle of Man, the Netherlands Antilles and the Seychelles.³¹ According to OECD (2004b), all of the 47 “harmful” tax practices within member states, which were mentioned in the 2000 report, have been either abolished or amended so as not to be “harmful” any more. Likewise, the overwhelming majority of non-member jurisdictions identified in 2000 as “tax havens” are now “committed to transparency and effective exchange of information.” The remaining unco-operative tax havens were Andorra, the Principality of Liechtenstein, Liberia, the Principality of Monaco and the Republic of the Marshall Islands. With the intention of having competition based on economic rather than on fiscal considerations, the OECD has introduced the concept of “global level playing field.” The campaign aims at stopping business migration to jurisdictions where transparency and effec-

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- Deny any exceptions to the application of regular penalties in the case of transactions involving entities operating in uncooperative tax havens.
 - Impose withholding taxes on certain payments to residents of uncooperative tax havens.
 - Enhance audit and enforcement activities with respect to transactions with uncooperative tax havens.
 - Not enter into tax conventions with uncooperative tax havens and consider terminating such conventions.
 - Impose charges or levies on certain transactions involving uncooperative tax havens.

³¹ OECD (2001), p.9.

tive exchange of information is not at OECD-required level, that is, where financial privacy is respected.³²

In like manner, there were several initiatives at the EU level to regulate tax competition, although the issue of direct taxation is not covered by powers of EU bodies. Furthermore, any decisions the EU might take in the area of direct taxation must be taken at unanimity. Nevertheless, member states are constrained to some degree by provisions of existing treaties that define properties of the single market. According to the Community Law, member states must not:

- Hamper the freedom of movement of persons, businesses and capital and the freedom to provide the cross-border services.
- Distort conditions of competition through the provision of tax breaks and relief in the form of state aid.
- Discriminate on grounds of nationality in areas falling within the scope of the EC Treaty.³³

The first attempt to deal with issues of corporate taxation can be found in the Neumark report of 1962 which concluded that a harmonisation of tax bases was desirable in order to simplify existing European tax systems. The proposal was repeated in the European Commission memorandum of 26 June 1967. More recent attempts to harmonise tax bases include the European Commission (2001).

³² See OECD (2004a).

³³ See Chetcuti (2001).

More interestingly, in March 1969 the European Commission published a memorandum demanding harmonisation not only of tax bases, but also of tax rates³⁴, followed by the 1975 Action Programme, which received, however, little attention from the Council. Raising the problem again, a 1992 review done for the European Commission suggested a harmonisation of corporate tax rates at a minimum of 30 per cent, which was perceived as relatively acceptable at the time, yet hardly conceivable nowadays.³⁵

In 1997, the Council of the EU adopted a code of conduct on corporate taxation, which was marked by a new, voluntary approach. The member states were called to avoid behaviour considered as harmful. By harmful it considered “those business tax measures which affect, in a significant way the location of business activity within the Community.”³⁶ That is, the code banned tax measures that were giving preferential treatment to a group of firms and offering a significantly lower tax rates than those usually applied in the Community. On 1st December 1998 a joint statement by France and Germany called for “a rapid progress towards tax harmonisation in Europe.” As the code itself contained no mode of its enforcement and was meant as voluntary, it remains unclear what real effects it might have and whether the wishes of French and German politicians can come true.³⁷

³⁴ It should be underlined that the 1969 memorandum contained a proposal to abolish the withholding tax on bond interest, yet it was stated that this proposal could be tackled with less urgency. See *ibid.*

³⁵ See European Commission (1992).

³⁶ See Council of the EU (1998).

³⁷ See Chetcuti (2001).

Gammie (2003) points out that the European Court of Justice (ECJ) played a important role in forming national tax policies, basically by ruling against certain practices, considered unacceptable under European law, particularly under the European Community Treaty. It is questionable, however, to what degree the ECJ decisions are relevant for the purposes of the present work. Scarcely has the ECJ tackled a lawsuit concerning tax rate differentials as such, more often it has happened that corporations were taking member states to court for limiting the possibility of reporting profits according to their wishes.³⁸ In *Hurd v Jones* the ECJ ruled that a member state was justified in levying a tax on remuneration paid to its own nationals where remuneration paid to nationals of other member states were exempt of tax, provided that the situation was wholly internal to the member state. The same reasoning has been used by the ECJ in situation where nationals of a member state were subject to higher rate because they did not reside in that state yet kept most of their assets or worked there. Nevertheless, this does not mean that member states are free in discriminating against their own nationals if they are seeking to exercise one of the freedoms guaranteed by the EC Treaty. To complicate the matters, the ECJ position on this particular point has not been entirely equivocal – in *Bachmann v Belgian State* it ruled that a business may be required to be established in the host state, if this is deemed to be necessary for attainment of an objective of public interest. On the other hand, in *Asscher v Staatssecretaris van Financiën*, the ECJ held that it was unjustifiable for

³⁸ Most national tax systems discriminate against transactions with foreign countries by using transfer pricing legislation or controlled foreign corporation regimes. All these should be, strictly interpreting the EC Treaty, considered illegal.

Netherlands tax authorities to apply a higher rate to a non-resident on the basis that no social security contributions had been levied on the income of the non-resident in Netherlands. On the whole, the history of the ECJ rulings does not give us much information on the core of what interests us in this work – competition in taxing mobile factors of production. More generally speaking, scepticism about the possibility of tax rate harmonisation in Europe under consensual mode of decision-making is in our eyes appropriate. On the other hand, the current status quo is far from being the definitive one. Particularly, if the Constitution for Europe is adopted, a possibility of transferring the issue of direct taxation under majority rule will arise with the famous “flexibility clause.”³⁹ In this case, the Council of the EU might unanimously decide to take majority rule decision powers about any issue deemed necessary.⁴⁰

2.5 Is Tax Competition Harmful?

Given the concerns tax competition raises worldwide, it is appropriate to ask whether it really is something that should be feared, or whether it is a rather harmless or even praiseworthy phenomenon. Before discussing the pros and cons of tax competition, one should clearly say what the alternative to tax competition is - it is tax harmonisation and abolition of preferential regimes. This raises the question whether - once

³⁹ See Treaty Establishing a Constitution for Europe, Art. I-18.

⁴⁰ We subject the EU Constitution to criticism elsewhere, particularly in Roháč(2004).

tax competition is abolished - governments do not compete in different, less efficient manners, such as subsidising foreign investments, etc.⁴¹

There are many arguments opponents of tax competition put forward. If we skip equity matters for the moment, we can find two main categories of objections raised against fiscal competition. First, it is argued that tax competition changes international allocation of capital in an inefficient manner, with capital as a mobile factor flowing to areas where it is taxed less, regardless of genuine economic considerations. Second, it is asserted that tax competition leads to a deterioration of tax bases, ultimately causing underprovision of public goods. The first argument can be found in a number of publications. Says OECD (2000):

[T]he project (the OECD Project on Harmful Tax Practices) is about ensuring that the burden of taxation is fairly shared and that *tax should not be the dominant factor in making capital allocation decisions*. (OECD 2000, p.5, emphasis added)

The same argument is developed in OECD (2004a). It is claimed that when investment decision are influenced by tax considerations, this results into an inefficient allocation of capital across countries. Peggy Musgrave makes this point this way:

Resources and capital in particular will flow to locations where taxes (or more precisely, net fiscal residuals) are lower, thereby distorting the regional allocation of factor use and thereby impairing the efficiency of the private sector.

(...)

Each jurisdiction taxing on a source basis will tax income accruing to foreigners so as to maximize the advantages it can derive therefrom. Lower rates

⁴¹ Janeba (1998) combines competition over strategic trade policies with tax competition and shows - perhaps surprisingly - that competition leads to elimination of wasteful subsidies. Likewise, Janeba and Smart (2002) finds that a restriction on tax preferences can induce governments to behaviour leading to inefficient outcomes.

of tax rates will attract foreign capital and raise the base, while higher rates will increase revenue from a given level of foreign capital. The outcome will depend on the elasticities of capital inflow responses, but there is no reason to expect that they will match the domestic share called for by the rules of international equity. (Musgrave 1991, p.286)

One is compelled to admit that, if capital taxation was coordinated so as to equalise EMTR and EATR across countries, mobile factors would be allocated geographically in an efficient manner. Hence, a coordinated action might seem to be needed to harmonise capital taxes and to bring out the latter outcome. As the European Commission states,

[S]ome harmonisation of business taxation (both corporation tax and the personal taxation of dividends) may be required to prevent distortions of competition, particularly of investment decisions. Where tax systems are non-neutral – i.e. where relative post-tax rates of return do not correspond to relative pre-tax rates of return – resources will be misallocated. (European Commission, cited in: Mitchell (2004, p.14))

The argument has some internal logic. It sees the core of the problem in the existence of tax differentials and it proposes is tax rate harmonisation as remedy. Now the harmonisation is to be achieved by introducing a minimal rate, as in European Commission (1992). But if the problem of capital misallocation is caused by differences in tax rates among countries, than introducing a maximal rate is a solution that would be equally appropriate. Yet we are not aware that anyone who subscribes to the argument against tax competition presented above would ever propose such maximal tax rate. It should be admitted that distortions capital allocation are caused not only by capital tax differentials, but also by the absolute value of tax rates. Capital

taxation in itself discourage investment by taxing away corporate profits and individual capital gains, as for instance Alesina *et al.* (1999) demonstrate in their model. In the same manner, capital taxes distort intertemporal allocation of resources by taxing deferred consumption more heavily. As a result, one should underline that in order to reduce distortions caused by capital taxation, it is crucial above all to decrease the tax rates and not to equalise them at an arbitrary level.

In our eyes, tax competition might well offer a solution to the alleged problem of misallocation of capital caused by tax differentials. If tax competition was a “race to the bottom,” then the final outcome would actually be a tax rate harmonised across countries and harmonised at a rate of zero per cent, thus eliminating capital tax distortions altogether.

The second argument used in favour of tax harmonisation is the argument closely related to the idea of a “race to the bottom.” It is argued that if tax competition is unconstrained, competing nations would set lower and lower rates on mobile factors, endangering their own tax revenues and ultimately supplying an inefficiently low level of public goods. Furthermore, if public goods manifest positive externalities across borders, inhabitants of low tax jurisdiction areas bordering with high tax jurisdictions will tend to behave as free riders and elect representatives that will supply them a lower amount of public goods, as they will benefit from cross-border spill-overs. This is an especially strong argument, pervasive in literature on tax com-

petition since Oates (1972) and the pioneering article by Zodrow and Mieszkowski (1986). In this spirit, Avi-Yonah (2000) states:

Tax competition, in turn, threatens to undermine the individual and corporate income taxes, which traditionally have been the main source of revenue (in terms of percentage of total revenue collected) for modern welfare states. The response of developed countries has been first, to shift the tax burden from (mobile) capital to (less mobile) labour, and second, when further increased taxation of labour becomes politically and economically difficult, to cut the social safety net. (Avi-Yonah 2000, p.1)

It is true that competition forces government to increasingly switch from taxation of capital to of taxation of labour income and consumption taxes. But is it something that should be denounced? We do not think so. As we argue in Chapter 1, capital income taxes are especially harmful for intertemporal allocation of resources and affect significantly growth rates. A transfer of tax burden from taxation of capital for instance to generalised consumption taxation would then be most welcome. But what if tax competition truly endangers the amount of social security services, or public goods in general? Razin and Sadka (1989) find in their model:

If (...) there is not sufficient coordination with the rest of the world to allow each country to tax its residents on their income from capital in the rest of the world, then tax competition leads to no tax whatsoever on capital income (...) Naturally (*sic*) the outcome of tax competition in the case in which the countries cannot their residents on capital income from the rest of the world is welfare inferior to the case where they can. Thus there are gains for competing countries from tax coordination. (Razin and Sadka 1989, p.4)

Peggy Musgrave (1991) puts it this way:

Movement, in particular of capital, to low-tax locations permits the owner who resides in a high tax location to act a free rider enjoying a high level of public services without contributing to their cost. As a result, voting patterns will be distorted, burdens will be shifted, and an inefficient level of public provision

will result. (Musgrave 1991, p.286)

To arrive at such conclusion, the above mentioned authors must make one important assumption. They must presume that governments behave as benevolent welfare maximizing agents which were initially supplying the efficient amount of public goods. If this was the case, then tax competition would really lead to a welfare-deficient situation.

Yet these assumptions are completely detached from reality. First of all, it should be clear that the vast majority of government activities have little to do with providing public goods and that we are witnessing an important expansion of government spending, which is due mainly to inefficiencies inherent in government operation.

These may include a lack of knowledge on the part of the voters and government officials and lack of incentives to acquire relevant knowledge (rational ignorance). In addition, voting procedures are unstable and competition on the political markets is imperfect (public goods are “sold” in bundles). Furthermore, one should mention the existence of rents and incentives for rent seeking and discretion on the part of public servants and politicians. What is more, interest groups may and do exercise pressure in order to attain state of affairs that is desired by them, usually to the detriment of the general public. It should be noted that judiciary and public servants themselves represent extremely powerful interest groups, mainly by their

agenda setting power. Their activities may often be described as behaviour of budget maximising bureaus.

Moreover, government behaviour through time is a source of inefficiency. Governments change periodically, which induces a myopic behaviour like deliberate redistributive manipulations in order to acquire votes and so forth.⁴²

It is for all of these reasons that democratic governments tend to grow, resembling often to the well known Leviathan. At the current point of time, no reduction in the scope of their activities can possibly affect the quantity of public goods provided and, indeed, each and every reform aiming at this reduction is badly needed. Thus, if tax competition restricts governments in their taxing powers, it is something that should be hailed and not feared.

Another set of arguments raised against fiscal competition is of normative nature. It is unfair, it is alleged, for one group of individuals to be able to switch their income-earning assets to low tax jurisdictions, while the majority of the general public has to pay high taxes in the jurisdiction of residence. It is utmost problematic to refute an argument based on normative assumptions concerning distribution of wealth in a society, for it often boils down to argument about what one believes or not to be morally right and wrong. Nevertheless, several remarks deserve to be pronounced about the above presented normative position.

⁴² Rogoff (1990) describes in detail systematic distortions in public expenditures as a function of elections. Block (2003) provides evidence for this model of government behaviour, using data for a large number for developing countries. In the same spirit, Drazen and Eslava (2005) offer both a model of the Political Budget Cycle and evidence using data from Colombian municipalities.

First, with the increased mobility of capital, it is not that difficult even for the general public to invest abroad and to avoid paying taxes in high-tax jurisdictions. What once was privilege of a few is now a common practice, and thus this argument loses much of its initial appeal.

Second, if we assumed that tax avoidance is practiced mainly by a high-income minority, it is still difficult to say that it would be something morally unacceptable. High income individuals pay a lot more in taxes than low income people do though they consume basically the same public goods. Is this fair? One might respond affirmatively by pointing at a need of solidarity within a society, yet this response would be completely arbitrary. It is equally defensible to say that everyone should pay exactly the same amount in taxes and that a higher taxation of rich people is morally wrong; the latter being the normative position to which we adhere. In that case, tax avoidance is a most justifiable act.

What is of interest for us is that in the real world, tax competition emerges as a means of subjecting governments to more discipline and allows individuals to escape the burden of prohibitively high taxation. That is the commonsense argument we try to put forward in this work. This idea emerges from a particular vision of the government, notably the one presented in Buchanan and Brennan (2000). This vision does not take the benevolence and the efficiency of government for granted and attempts to provide economic insights into the political processes. As a matter of fact, economic theory of tax competition which overlooks the role of political processes misses what

is crucial in the whole issue. There have been several attempts to model effects of tax competition on welfare, taking into consideration the existence and nature of politics. Besley and Smart (2001) for instance consider both yardstick competition and tax competition in the strict sense. The latter is modelled as an increase in marginal costs of public goods. The authors represent the political process as a game with imperfect information from the part of voters, who cannot *a priori* distinguish “bad” (those maximising their own rents) from “good” (those maximising voters’ welfare) politicians. They find that tax competition may enhance welfare if it leads to an increase in the ability of voters to detect bad political incumbents. Yet if there are other means available to discipline officials, tax competition can conceivably decrease welfare.

Among other attempts to represent tax competition within a more general framework of a model of political processes, Janeba and Schjelderup (2004) deserve mentioning. Their paper present a comparative public finance model of both European-style parliamentary democracies and US-like presidential-congressional systems and show that increasing tax competition is likely to improve voter welfare. The main merit of their work is that they speak in the language of standard tax competition theoreticians, uniting in their models both the distorting effects of tax competition and distorting effects of political process itself and they show that increased competition can indeed improve utility.

In this chapter, we attempted at several things. First, we tried to define cogently the subject of tax competition and to show empirical evidence for its existence. Second, we reviewed major reactions to tax competition on the part of international policy-making organisations. We then argued that much of the rationale for restraining tax competition – as proposed by the OECD or the EU – does not hold if one takes into account knowledge of how governments work.

The literature on tax competition which takes into account the Leviathan aspect of tax competition is still scarce, yet growing. Needless to say that we find this research path particularly appealing.

Chapter 3

Does Tax Competition Lead to Higher Rates of Economic Growth?

It is true that this work might raise more question than it is able to answer. It has not even provided a definite answer to the question whether increased tax competition is beneficial for economic growth or not. To be sure, we tried to depict the relationship between taxation as such and economic performance in Chapter 1 and consequences of tax competition in Chapter 2, yet we have not made evident the relation between the two.

With this purpose in mind, we will now try to answer satisfactorily the question whether tax competition can lead or not to higher growth rates and by what means this causation can be exercised. At this moment we can think of two ways how tax competition impacts economic growth.

The first way how increased tax competition can positively influence growth rate is through the cost of capital. As we argued in Chapter 1, capital taxes are especially harmful for a number of reasons. These include the fact that it taxes deferred consumption more heavily and distorts intertemporal allocation of resources. And it is precisely this intertemporal allocation of resources which is the source of economic growth. In other words, there is no growth without capital accumulation and there is no capital allocation without deferring one's consumption. Hence if this allocation is

misguided by capital taxation, economic growth is in peril. Hence, intuitively speaking, if tax competition leads to a "race *to* the bottom" or a "race *towards* the bottom" in capital taxes (replacing them with a consumption tax for example), then one could affirm that tax competition enhance tax structure favourable to economic growth.

The evidence favour of such result is not terribly robust, however. Nevertheless, at this point we are at least able to cite persuasive anecdotal evidence in favour of it. The Irish Miracle is perhaps the best piece of evidence one can use in favour of tax competition. What was less than 20 years ago a "sick man of Europe" with a double-digit unemployment and anemic growth is now the most rapidly growing economy among all industrialised nations.⁴³ This tremendous change took place almost instantaneously after a substantial reduction of what was then an onerous tax burden. Other anecdotal evidence might include the Baltic states and Russia and of course Slovakia and Romania.

A different way of showing that increased tax competition is favourable to economic growth can be found when analysing its impact on government's fiscal discipline. As outlined in Section 3.5, the mobility of tax bases severely limits government's ability to tax and spend. We argued that the public sector inherently possesses features that lead to ever-increasing size government and inefficiencies in its behaviour, which can be, at least partially, remedied by tax competition.

⁴³ See Mitchel (2004), p.12-13.

One can for instance mention rent-seeking, i.e. diversion of public funds into uses destined to serve public servants and pressure groups. Rent-seeking can be considered, in the public choice tradition, as a major source of government waste. The above mentioned paper by Janeba and Schjelderup (2004) shows how the diversion of rents can be decreased by tax competition. In the setting of their model, the reasons for that are twofold. First, maximized tax revenue falls when more countries compete to attract capital. Second, holding tax rates constant, an increase in the number of countries competing lowers the capital stock in a given country as long as its tax rate is above tax rates applied in other countries. Likewise, Besley and Smart (2001) demonstrate that, by increasing marginal costs of public goods provision, tax competition decreases rents to politicians. Paradoxically perhaps, they find that this might be ambiguous as far as the welfare effects are concerned, for their model works with a trade-off between effects on politician discipline and selection.

3.1 Concluding Remarks

We are tempted to answer affirmatively the question raised by title of the present work and to say that - given the Leviathan nature of governments - tax competition can indeed lead to high growth rates. At this point, our conclusion can raise a number of reasonable objections, the most important being perhaps that our working, in spite of presenting such a claim, does not bring virtually any empirical evidence in its support. As far as we are aware, however, there has not been an extensive empirical

study showing the exact relationship between economic growth and degree of tax competition.⁴⁴ Yet this lack might represent a good incentive to further research using advanced econometric techniques to deal with data from countries engaged in substantial tax reforms, to which we invite the reader. There are of course other paths of research that this work opens. One could for instance attempt to develop the model of tax competition presented in Section 3.3 by finding conditions under which Leviathan government will choose to cooperate, behave as a Stackelberg leader or follower, or simply play an uncooperative Nash game of simultaneous tax rate setting. More ambitious tasks would aim at including tax competition into a more general framework of economic growth, such as that presented in Section 2.3.

⁴⁴ This is quite paradoxical, as the empirical literature on tax competition is huge.

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