Tax Competition and Tax
Co-operation in the EU:
the case of savings taxation

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ABSTRACT

It took the EU 35 years to achieve a co-operative agreement on co-ordinated measures of savings taxation in a world with mobile capital. Political science has offered two explanations for this co-operation problem. First, co-operation is difficult as a result of the heterogeneity of governments' interests. Countries with a small domestic tax base favour tax competition, while countries with a large tax base prefer tax co-operation. Second, co-operation is difficult as a consequence of specific characteristics of the collective action problem involved. The actors face a prisoners' dilemma. Both explanations have their limits. The first approach is not very good in predicting actual policy preferences of governments, and the second approach dismisses the fact that the EU offers co-operative institutions that should be able to resolve a dilemma. The paper proposes a model which refines these explanations and fits better the positions of EU governments and their problems of finding an agreement.

INTRODUCTION

The growing importance of international tax competition has two sources. As Dehejia and Genschel (1999, 403) put it: "As the level of taxation reaches 30, 40, or even 50 percent in welfare states, the premium on tax avoidance and tax evasion rises. At the same time, the costs of doing so go down." The level of economic integration and the liberalisation of markets, especially of trade and capital markets, achieved in recent decades, have made it much easier for taxpayers to avoid domestic taxes by shifting the tax base to a foreign country. In the case of capital income taxation, the mobile tax base implies a double danger and a double temptation for national governments. A high-tax government may lose not only some of its tax revenue through capital flight, but also the economic and political benefits associated with a large domestic capital stock and capital market. With low tax rates, however, governments can attract capital from high-tax countries and thus improve economic figures and political benefits, and sometimes also tax revenue. As a consequence of this strategic situation, tax competition may lead to a "race to the bottom" of tax rates (cf. Frey 1990; Sinn 1997).

For the EU there are even suspicions that this could mean that it would turn into a "single (large) tax haven" (Giovannini and Hines 1991, 172). However, as low tax rates might also lead to a loss of revenue, the European governments should be interested in co-operation in matters of taxation of savings or other mobile capital. Harmonisation of tax rates or other co-ordination mechanisms in EU member states can help to prevent tax evasion and capital flight. Such a solution should be possible because the EU has the potential of enforcing a co-operative agreement.

However, until very recently, the co-ordination of capital income taxation in the European Union has not been very successful. Over the last 35 years, several attempts of the European Commission and EU member states to harmonise national policies on savings taxation have failed. Finally, a preliminary agreement was reached in June 2000, which was – after some changes – confirmed by the European Council in January 2003. Although this agreement is surely a great achievement in preventing capital movements induced by tax differentials, it still mirrors the conflict between two groups of member states: those who want to prevent tax evasion and capital flight from their countries, and those who have a strong interest in attracting foreign capital. As a consequence of this agreement two systems of handling transboundary interest payments, automatic information exchange and minimum withholding taxes, might co-exist in the long run.

Why has European co-operation in the area of capital income taxes proved so difficult? In an attempt to answer this question, the paper offers an analysis of these co-operation problems based on public good theory and on matrix game analysis. It builds on explanations of the European co-operation failure provided by Genschel and Plümper 1997, Kanbur and Keen 1993, and Dehejia and Genschel 1999, but in some respects goes beyond these explanations.

Section two refers to the literature on tax competition. In section three an overview of the history of the attempts to harmonise savings taxation in the EU is presented. Section four provides a game-theoretic analysis of the tax co-operation problem. In section five it will be shown that the models presented here can rationalise most of the actual positions of EU member states, the difficulties of reaching an agreement, as well as some distinctive features of the European Council's final solution.

LITERATURE ON CAPITAL INCOME TAX COMPETITION

It is generally accepted that in the presence of capital mobility and in the absence of international co-ordination taxes on capital tend to be too low and that tax competition may lead to a downward spiral of tax rates and fiscal revenues (Frey 1990; Sinn 1997, Huber and Fuest 1999). Most of the literature, however, presents anecdotal rather than systematic evidence. Thomas (2002, 272) provides some OECD data that shows that the corporate income tax share of total tax revenue has decreased sharply in a number of large countries since the 1950s. A study by Devereux, Griffith and Klemm (2002) provides systematic evidence on the development of corporate income taxes since the 1960s. Their finding is that effective tax rates on corporate income have declined but that the revenue from these taxes has remained stable or even increased. Thus, there was obviously tax competition among governments at work. For the taxation of interest income, Dehejia and Genschel (1999, 415f.) show that there was also a decline of tax rates employed in EU member states. Thus, tax competition exists, even though its effect on tax revenues remains unclear.

In economic theories of tax competition, two contrasting views can be found on the desirability of tax competition (Keen 1993). In the literature on public finance, tax competition is considered to have negative effects on public welfare. Tax competition leads to underprovision of common goods, and tax harmonisation in the EU would therefore increase overall welfare (Bucovetsky and Wilson 1991). The public choice literature, on the other hand, emphasises the fact that governments are not benevolent actors and that their interests do not coincide with those of taxpayers, which gives rise to "political distortions" (Frey and Eichenberger 1996) and waste of tax money. Tax co-ordination is considered to be a cartel of governments at the cost of the taxpayer, while tax competi-

tion is a welfare-increasing check on governments. Constitutional rules that forbid tax co-ordination are thus, according to this view, desirable (Brennan and Buchanan 1980). Finally, there are economic models that use an objective function for governments that includes two variables: the welfare of the citizens and a "waste" variable that accounts for imperfections in the political process and inefficiency of government spending (Edwards and Keen 1996; Eggert 1999; Fuest 2000; Huber and Fuest 2000; Myles 2000). Not surprisingly, in these models, the effects of tax co-ordination on welfare are ambiguous.

In this paper no such normative questions are posed. I am not concerned with welfare or with the taxpayer's benefit. Here I am interested in the rational reconstruction of co-operation among governments who compete for a mobile tax base. How can it be explained that co-operation of governments in order to avoid "harmful tax competition" emerged so slowly? Political science research has offered some elements of explanation of the European failure to co-operate. Two main arguments have been put forward: First, co-operation in the case of capital tax harmonisation is difficult as a result of the heterogeneity of governments' interests. Second, co-operation is difficult as a consequence of specific characteristics of the collective action problem involved.

Prominent representatives of the first approach relate heterogeneity of interests to the fact that member states differ in size (Kanbur and Keen 1993; Dehejia and Genschel 1999). Countries are heterogeneous with respect to the size of their tax base. Dehejia and Genschel (1999) have argued convincingly that it pays more for small-tax-base countries to prey on their neighbours' capital by applying lower taxes than it does for large-tax-base countries. The reason for this is the fact that, in an open economy, tax revenue is not linear in the tax rate. Capital income tax revenue increases with the tax rate for some time but, with very high tax rates, the revenue strongly decreases, because the tax base moves to another country with lower tax rates. It pays for a country to prey on the other countries' capital as long as the tax-base effect from the attracted foreign capital (increase of revenue) is greater than the tax-rate effect (decrease of revenue) from domestic capital. The smaller the domestic tax base and the more capital can be attracted - that is, the larger the foreign capital base - and the higher the tax differential, the more it pays to follow a low-tax strategy. Therefore, small countries are in a much better position in tax competition than large ones. Large countries, however, can try to limit the small countries' prey by keeping the tax differential small, which may lead to a downward spiral of tax rates (Dehejia and Genschel 1999, 410). This is valid, as long as only tax revenues are considered as elements of the governments' utility functions.

The model of asymmetric tax competition shows that small states are the winners and large states the losers of unconstrained tax competition. As Dehejia

and Genschel (1999, 418) admit, however, the model is less good in predicting policy preferences for tax co-operation in the EU. A number of small countries consistently favoured tax co-operation, while a large country, the United Kingdom, strongly opposed it for a long time. Thus, asymmetry in size and the governments' interest in tax revenue do not seem to be sufficient explanatory factors. I will introduce a complementary factor in order to explain the positions of European governments better.

Genschel and Plümper (1997, 635-639) explained the difficulty of achieving co-operation in savings taxation by two specific features of this collective action problem. They too start from the assumption of heterogeneous preferences of governments. In their interpretation, one characteristic of the situation is that the minimum-sized coalition for self-sustaining co-operation is very large in the case of capital income taxes. Co-operation has to include tax havens within and without the EU to become effective. The second distinctive feature is that non-cooperators' gains from defection increase with the number of co-operators: "being a tax haven in a world where every other state is also a tax haven is not very profitable, but being the sole tax haven in an otherwise tax haven-free world is potentially very profitable" (p. 637). Both observations are surely correct as empirical descriptions.

However, if it is true that the gains increase for defectors with the number of co-operators, the potential co-operators gain nothing but rather experience losses from co-operation, as long as the "minimum-sized coalition" is not reached. Each co-operator suffers from capital flight to remaining tax havens. Thus, no countries will form coalitions as this would place them in the role of the "sucker", no matter how large the coalition is. Defection is a dominant strategy. If gains from defections increase stronger than gains from co-operation, the game is a dilemma game over the whole number of potential co-operators. Thus, the idea of a minimum-sized coalition contributes nothing to the explanation here: There will never be voluntary co-operation, as we face a true prisoners' dilemma. On the other hand, the idea of a large minimum-sized coalition is very plausible in the context of savings taxation. However, such a constellation typically does not correspond to a dilemma but to a co-ordination game, such as assurance, chicken or battle of the sexes.

The implicit presence of two different games in the paper by Genschel and Plümper (1997) is reflected in the wider literature. Problems of tax co-ordination have been characterised as a prisoners' dilemma (Hallerberg 1996), as a co-ordination game (Radaelli 1998), or as a pure conflict game (Dehejia and Genschel 1999).

In my analysis I will give a more precise characterisation of the relationship between the two characteristics emphasised by Genschel and Plümper, and I will clarify which kind of strategic constellation is the most adequate model of the capital income taxation problem. Modelling the strategic constellation is a worthwhile experiment, as these models reveal not only information about the chances for voluntary co-operation and co-ordination in anarchic environments, but also about problems of finding agreement when co-operative institutions are present. It will be shown that the EU's savings tax problem does not solely arise from the problem of potential defection; it is rather a problem of finding agreement, and a problem of a global collective good.

HISTORY OF CAPITAL INCOME TAX CO-ORDINATION IN THE EU[1]

The European Commission set up the first expert committee with the aim of analysing the effects of different capital income taxation policies of the member states upon the functioning of the common market as early as 1960 (Hahn 1988). However, the first programme on the harmonisation of direct taxes was not published until 1967, after a French initiative aimed at concerted measures with respect to direct taxes. Among the problems addressed in this programme was taxation of private capital income (European Commission 1967).

The Commission proposal of 1967

Capital income is basically to be taxed by the country of residence at the marginal rate of personal income tax, irrespective of the country of origin of the capital income. All residents of a country shall be subject to the same taxation whether the income is earned domestically or abroad. However, on the basis of OECD rules, states may also levy withholding taxes on all capital income produced by domestic sources. Most EU member states did in fact do so in the 1960s. Withholding tax rates differed, but were in general much lower than personal income tax rates. While residents could deduct domestic withholding taxes from personal income taxes, this was not possible for withholding taxes paid abroad for income from foreign investments (Genschel 2002, 133).

The Commission identified three problems of different taxation policies among the member states (European Commission 1967, 10-11). First, double taxation of capital income from foreign investment led to barriers to the free movement of capital. Second, double taxation implied an incentive to invest more capital in countries with no withholding taxes or with low withholding tax rates. Thus, different tax rates led to distortion of capital allocation. Third, as capital investment in foreign countries is difficult to monitor, tax evasion is

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1 An excellent case study is provided in Genschel (2002).

easier with foreign than with domestic investments. The lower the foreign withholding tax rate, the greater is the benefit from tax evasion. Therefore, for tax evaders, the incentive to invest more capital in low-tax countries is even stronger. This again leads to distortion of capital allocation.

The Commission discussed two solutions to these problems (European Commission 1967, 12-13). The first solution combined the abolition of withholding taxes with the development of a transboundary system of information exchange. In such a system, banks in the countries of investment would inform the fiscal authorities in the countries of residence of capital owners about their earnings from interest or dividends. An information exchange system is an optimal solution, since it both avoids distortion of capital allocation and prevents tax evasion. Moreover, no harmonisation of national taxes is needed. Still, the Commission rejected this idea for two reasons. First, this practice would collide with the principle of bank secrecy. Second, the Commission expected massive capital flight from the common market to the outside world.

The Commission's preferred solution was therefore complete harmonisation of withholding taxes combined with full deductibility in the country of residence. This way double taxation as well as distortion of competition for capital is avoided. However, the incentive for tax evasion remains. The higher the harmonised withholding tax rate (the smaller the difference to personal income tax), the lower is the incentive for tax evasion. On the other hand, the higher the common withholding tax rate, the greater is the incentive to invest capital outside the European market.

The member states reacted differently to the proposal (Genschel 2002, 138f.). Conflict centred mainly on the level of the withholding tax rate. France, Belgium, and Italy preferred a higher level than the proposed 10%, as they wanted to avoid tax evasion and a decrease of tax revenues. The Netherlands and Luxembourg rejected the rate as too high, because they were interested in efficient capital markets, and the free movement of capital within and outside the member states. The Council of Finance Ministers did not come to an agreement. Thus, the first attempt at harmonising capital income taxes ended in failure.

The Commission proposal of 1989

The next initiative to harmonise capital income taxation was launched by the Commission in 1989 within the framework of the internal market programme (European Commission 1988). At that time, double taxation was no longer a problem within the Community, as practically all member states had introduced some kind of deduction of foreign withholding taxes from domestic personal in-

come taxes (Genschel 2002, 142). The Commission focussed therefore on the problem of distortion of capital allocation as a result of tax evasion.

From the beginning, the proposal was not very ambitious (European Commission 1989). Again, the idea of an information exchange system was rejected by the Commission. At the heart of the proposal was a minimum withholding tax on interests of 15%, where some exceptions were possible. As the tax rate was low, compared to income tax rates, there was still a considerable incentive for tax evasion. As a consequence, distortion of capital allocation was only slightly reduced, but not avoided.

The reaction of the member states to this proposal was again divided (Genschel 2002, 147f.). France and Italy requested a higher tax rate and the inclusion of dividends; Belgium and Portugal criticised the exception of Eurobonds; Denmark and the Netherlands preferred an information exchange system. On the other hand, the UK and Luxembourg were completely against a common withholding tax, as they feared massive capital flight from the internal market. This time, the position of Germany turned out to be pivotal. Germany had introduced a national withholding tax on interests in January 1989, and then surprisingly decided to abolish it in April 1989. There were several reasons for this. First, there was an immediate response of the capital markets: Massive capital flight took place and as a consequence, interest rates increased, bonds turnover decreased, and the exchange rate for the German mark decreased (Genschel and Plümper 1997, 632). Second, as a result of a relatively flourishing economy there were no budgetary problems in Germany at that time. Finally, voters had reacted negatively to the tax and the new Minister of Finance, Theo Waigel, used this opportunity to start in office with a popular measure. As a consequence of this change of German policy, the proposal for a harmonised withholding tax rate at the European level failed again.

The Commission proposal of 1998

During the 1990s conditions changed. In 1992 Germany re-introduced its withholding tax. This led to massive capital export to Luxembourg and considerably lower tax revenues than expected (Genschel and Plümper 1997, 633). Luxembourg's neighbours, especially Belgium, France and Germany, felt disadvantaged by its refusal to introduce any kind of taxation of foreign capital income (Genschel and Plümper 1997, 632). As a result of the economic recession, most EU member states faced serious budgetary problems, which were aggravated by the fact that the governments were required to meet the rigid criteria for the European Monetary Union. Additionally, international liberalisation of capital markets had made the problem of capital flight more severe. In this situation a memorandum of the Commission warned that tax evasion, tax revenue losses,

and distortion of competition in the European capital markets required a common policy against capital flight (European Commission 1996). In 1997, the Commission proposed the so-called tax-package, a number of measures in the areas of corporate and interest taxation (Bernauer 2000; Thomas 2002; Radaelli 2003). The Council of Ministers charged the Commission to develop another proposal for a directive on interest taxation.

The European Commission's proposal of 1998 relied on the harmonisation of withholding taxes on *transboundary* capital income only, while taxes on domestic interests from capital could still be different (European Commission 1998). Second, the proposal was based on the so-called co-existence model: Member states should be allowed to opt between a harmonised withholding tax and a European information exchange system. Third, the proposal included an obligation for the EU to negotiate guarantees with third countries that capital income of EU citizens would be taxed at the same level as it would be within the EU.

During the negotiations that followed within the Council, these provisions were further watered down. The member states' positions differed on the tax rate and the division of the withholding tax revenue between countries. Luxembourg, Austria and the UK argued that the co-operation of all relevant third countries should be a precondition for the European solution. Negotiations again failed at the 1999 summit of Helsinki.

In June 2000, the agreement of Feira was made possible by a change of position by the British government (Genschel 2002, 143). Britain introduced a national system of information exchange for banks and fiscal authorities, and now argued at the European level that only such a system could secure sufficient protection against tax evasion. With the exception of Luxembourg and Austria, all member states now agreed on a European system of information exchange. Austria and Luxembourg declared that they would not sacrifice their bank secrecy policy, because the relevant third countries would also not do so.

The compromise found at the Feira summit mirrors this divergence of positions. The ultimate solution was to be based on a system of information exchange, while the co-existence model should apply only for a transitional period of about 10 years. In the meantime, negotiations not only with Switzerland, Liechtenstein, Monaco, Andorra, and San Marino, but also with the United States, were to guarantee that these countries introduce equivalent measures (European Council 2000). The countries mentioned in the conditionality of the Feira agreement are European tax havens or they are otherwise rewarding places for capital investment (the US). Transaction costs, currency and credit risks of investment for European citizens are relatively low in these states.

The Commission proposal of 2001

In the event the Commission revised its proposal (European Commission 2001). From 2011 onward all countries were obliged to use an automatic reporting system. For a transitional period three countries were permitted to apply a minimum withholding tax of 15 % during the first three years and 20 % during the remaining four years on non-residents' interest income. The three countries were Luxembourg, Austria, as well as Belgium which now also opted for the withholding tax.

At the end of 2001 the Commission started to negotiate with the third states. It reported to the Council on the results of these negotiations in November 2002 (European Commission 2002). Although the US refused to conclude a formal contract with the EU, it caused no major problem, as it is a proponent of the automatic reporting system. There are already a number of bilateral agreements on information exchange with EU member states. The US is prepared to further develop the system of information exchange, to conclude further agreements with other EU member states, and it showed interest in also developing reporting systems with Austria, Belgium, and Luxembourg.

Negotiations proved more difficult with Switzerland. It is not prepared to introduce an automatic reporting system, and it is not even willing to apply "information exchange upon request", as is foreseen in the OECD's model agreement on exchange of information on tax matters (OECD 2002). Instead, Switzerland proposed applying a withholding tax on the interest income of non-residents of up to 35 %, if Austria, Belgium and Luxembourg also applied such a rate. Switzerland's willingness to conclude such an agreement, however, depends on the condition that the EU negotiates "equivalent measures" with a number of other states, namely Hong Kong, Singapore, Canada, and Japan.

The positions of Andorra, Liechtenstein, Monaco, and San Marino are similar. All seem prepared to levy a withholding tax on non-residents of about 15 % to 20 %. They are unwilling to introduce an automatic reporting system, and – with the exception of San Marino - they are unwilling to agree to information exchange upon request. These countries can be expected to change their position if Switzerland does so.

On the basis of these results, the EU Council negotiated the proposed directive again in December 2002 and January 2003. The agreement of 21 January 2003 again includes the co-existence of the two systems. Twelve member states will introduce an automatic system of information exchange in January 2004. Belgium, Luxembourg, and Austria must apply a withholding tax. The rate will be 15 % from 2004, 20 % from 2007, and 35 % from 2010 onward. The three

states will change to an automatic reporting system only after Switzerland and the other tax havens agree on systems of information exchange upon request (OECD rules). Table 1 gives an overview of the current and future rules for taxation of interest income in EU member states and the relevant third states.

The revised proposal of the directive was to be adopted on 19 March 2003. Reservations of some member states remain with respect to the offers made to European third countries, and in particular to Switzerland, to compensate them for their co-operation. It was not for this reason, however, that the Council again failed to formally adopt the directive. It was because Italy linked its consent to the tax package with an issue of agricultural policy, the milk quotas. On 13 May 2003 the Council was still not able to adopt the directive for the same reasons, and the decision was postponed until 3 June 2003 (Neue Zürcher Zeitung, 14.05.03).

Again, this agreement mirrors the conflicts and divergence of governments' interests within and beyond the EU. There are still two groups of countries: those which prefer automatic information exchange,[2] and those which prefer tax competition and are prepared to accept only minimum withholding taxes[3]. The agreement allows for the permanent co-existence of these two systems, as the general introduction of information exchange within the EU depends on Switzerland's and the other third states' willingness to accept OECD rules on information exchange upon request, as well as on negotiations with further non-EU countries, which Switzerland wants to have included in the co-operative arrangement.

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[2] Denmark and the Netherlands proposed an automatic information exchange system already in 1989; all others, including the UK and Germany, had accepted it in 2000.

[3] Austria, Belgium, and Luxembourg,

Table 1 Taxation of Interest Income, 2003

	Tax rates / system for residents			Tax rates / system for non-residents		
	with-holding tax (WHT) definitive (%)	WHT part of general income tax (%)	Automatic reporting system (ARS)	Actual withholding tax (WHT)	EU agreement 2003	
					2003 - 2009	beyond 2010
Austria	25	-	-	-	WHT 15–20	WHT 35
Belgium	15	-	-	-	WHT 15–20	WHT 35
Denmark	-	-	ARS	-	ARS	ARS
Finland	29	-	-	-	ARS	ARS
France	25 (55)	25	ARS	-	ARS	ARS
Germany	25[c]	25–35[d]	-	-	ARS	ARS
Greece	15	-	-	WHT 15[a]	ARS	ARS
Ireland	-	22	-	WHT 22[a]	ARS	ARS
Italy	12,5–27	-	-	WHT 12,5-27	ARS	ARS
Luxembourg	-	-	-	-	WHT 15-20	WHT 35
Netherlands	-	-	ARS	-	ARS	ARS
Portugal	20	-	ARS	WHT 20[a]	ARS	ARS
Spain	-	18	ARS	-	ARS	ARS
Sweden	30	-	-	-	ARS	ARS
UK	-	20	ARS	WHT 20[a]	ARS	ARS
US	-	-	ARS	WHT 30[a]	ARS[b]	ARS[b]
Switzerland	-	35	-	WHT up to35[a]	?	?

a exceptions possible   b based on bilateral agreements
c from 2004 onward   d until 2003

Source: CESifo-DICE; European Commission 2002; Frankfurter Allgemeine Zeitung 23.01.03

ANALYSIS OF THE STRATEGIC CONSTELLATION

This section provides an analysis of the co-operation problem based on public goods theory and matrix games. First, harmonisation of savings tax policies is analysed as a problem of providing a common good. Second, the basic model of tax co-ordination among homogeneous states is presented. Two forms of hetero-geneity are then introduced into the model: heterogeneity of the utility functions of governments, and heterogeneity of states with respect to their size.

Tax Harmonisation as a Common Good

The problem of the collection of taxes on capital income by several governments in a common market where capital is perfectly mobile can be seen as a common pool resource problem (see also Koelliker 2001).[4] Consumption is rival, as the tax base can only be taxed up to 100%, and exclusion is difficult, as the capital is mobile. The resource is the tax base, that is, the invested capital, or more pre-cisely, the income from it. The states exploit the resource, tax revenue is their payoff, and the tax rate is equivalent to the rate of extraction. If there were only one user of the resource (one government would tax the complete capital in-come) the problem would reduce to an optimisation problem comparable to those in cases of renewable resources (Perman, Ma, and McGilvray 1998). If there are more users of a common resource a strategic dimension is added and a collective action problem arises.

Capital income taxation is distinct from the problem of common use of the village green where all inhabitants can graze their sheep. In the tax case the us-ers are confined to their territories while the resource is mobile. It can best be compared to fishing problems, where the fishermen are assigned to a certain ter-ritory, whereas the fish is mobile. If there is too much harvesting pressure in one territory, the resource moves to another. The fish, so to speak, is attracted by low taxation and leaves the country in the case of high taxation. Taxpayers can move their capital to another territory where the tax rate is lower or where there is no tax at all.

The possibility of out-migration reveals another property of the capital in-come tax case: As long as there is only one single country with lower or no taxes, the capital can move there. Co-ordinated capital income taxation is a so-called *weakest-link* common good. Hirshleifer (1983) distinguishes public goods according to their aggregation technology, i.e. he asks whether the contributions to the good are additive and substitutive. There are three basic types of goods: standard additive "summation" goods, where the amount of the good grows with each contribution; "best-shot" goods where one contribution is sufficient to pro-vide the good; and "weakest-link" goods, where each contribution is needed to achieve the good. In the latter case, the "weakest link" determines which level of the good can be achieved. The contributions are not additive and they cannot be substituted for each other.

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[4] Common pool resources are a sub-category of common goods. The term common goods includes all goods that are not purely private, i.e. that cause some positive or negative ex-ternalities. Other sub-categories of common goods are pure public goods, club goods, or network goods.

Capital income taxation clearly belongs to the weakest-link type: The common good is the ability to effectively collect tax from capital owners in the common capital market. The governments will only achieve this goal to the extent that they co-ordinate their taxes and tax rates. If there is a weakest link, that is, a country with no or low tax rates, capital will move into this country. This model is stylised as capital transfer is not costless, capital is not perfectly mobile for other reasons, and as tax havens need to build up capacities to attract capital. For some countries these hurdles may be low (cf. Genschel and Plümper 1997, 636), especially in Europe and the developed world. Nevertheless, not all countries qualify as tax havens. Thus, if not all countries, at least all potential tax havens have to be included into the chain of co-operation. The weakest-link character of the problem is represented in all of the following models.

Different aggregation technologies result in different strategic constellations. In terms of matrix games, summation technology in general leads to a prisoner's dilemma, weakest-link technology to an assurance game, and best-shot technology to a chicken game (cf. Sandler 1997, 46-59; Holzinger 2001). Thus, in the case of capital income taxation, the strategic constellation can be expected to be a co-ordination game, or, more specifically, an assurance game.

Tax Competition: Co-ordination Game or Dilemma?

In this section a model of tax co-ordination will be introduced where two governments compete for a mobile tax base. They have the choice to levy a capital income withholding tax (T) or not to do so ($\sim T$). Countries A and B are identical with respect to size of capital stock and to the preferences of governments. Capital is perfectly mobile between the two countries, capital owners are perfectly rational, and there are no transaction costs. This implies that there is complete capital flight from country A to country B, if A levies the tax, while B does not.

The payoff function for the government includes two elements. The first element is the revenue, r, from the tax, which is determined by the tax rate and the tax base. The second element is political benefits, b, which are associated with the domestic capital market: A flourishing banking and finance sector, sufficient capital supply, low interest rates, investment, innovation, growth, and employment are (partly) a consequence of a large and sound capital market.[5] Since the state of the economy plays a great part in voters' evaluations of a government's performance, these benefits are not only economic but also political.

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[5] In her writings against a EU "tax cartel", Veronique de Rugy, an analyst at the Cato Institute, argues: "That inflow [of foreign investment] is a key source of American prosperity because that money is put to work for the nation and produces more jobs, higher standards of living and general prosperity" (http://www.cato.org/ dailys/01-10-02.html).

For the model, it is assumed that both elements of the payoff function are non-negative ($r \geq 0,\ b \geq 0$). For the tax revenue, this is evident. The political benefits can be negative in reality; however, the assumption made here is just a simplification that does not affect the result. There is no problem in setting a lower limit on the payoff function, as it is the relative size of payoffs that determines the strategic constellation. A "political loss" is equivalent to no political benefit in the model.

A second assumption concerns the relative weight of r and b in the payoff function. Initially, it is assumed that r is greater than b ($r > b$). This assumption has to be justified. The revenue from the withholding tax for each outcome can, in principle, be measured and calculated in advance, even if empirically this might prove difficult. The political benefits of capital stock for the governments are not easy to estimate, however. Even if it is possible to estimate the tax base effect of a certain tax rate, its effects on interests, investment, growth, and employment are difficult to measure, as there are many other factors that influence these figures. Predictions are even more problematic. Finally, the political benefits for governments are not necessarily identical to the economic benefits, as it is no simple task to determine how the economic effects turn into public and voter support. Still, it can be assumed that there is some positive correlation of a well-functioning capital market, its positive economic effects, and political benefits.

From this discussion it should have become evident that there is also a subjective factor in the values of the political benefits. The same applies to the tax revenues. The payoffs depend on the governments' relative *valuations* of r and b. To be precise we should talk about the values of r and b for the government and denote $u(r)$ and $u(b)$. Governments will not in any case value the tax revenue more than the political benefits or vice versa. This will depend on the actual circumstances. For example, if the overall budgetary situation is positive, a government may be much more interested in the political benefits of a large capital market, whereas in a situation of high budget deficit, the revenue may become more important. A government that is susceptible to the interests of the financial sector might prefer to keep the domestic capital stock as large as possible and sacrifice tax revenue. This could be a consequence of the hard lobbying by the financial sector or of the fact that it is a relatively big sector within this country's economy. Thus, sometimes a government may be revenue-oriented ($u(r) > u(b)$), and sometimes political benefits-oriented ($u(b) > u(r)$). To keep the notation simple, this can be approximated by assuming $r > b$ or $b > r$. If we could measure r and b, and if the governments' utilities were a linear transformation of r and b, it would in any case be equivalent.

The first model assumes revenue-oriented governments. Table 2 gives the payoffs for the two identical countries *A* and *B* for each strategy combination. The benefit from tax revenue can only be realised when both governments levy the tax. If a government itself levies no tax, there is no tax revenue; if the other government applies no tax the capital moves out. There are political benefits, *b*, from domestic capital, when both governments have a tax, or when both do not. A government that levies no tax gains the political benefit of both domestic and foreign capital (*2b*), as foreign capital migrates in. A government that introduces the tax has no political benefits at all, because the domestic capital moves out. The first preference of the governments is thus that both have a tax, the second that only the other government has a tax, the third that both have no tax, and the least preferred situation is that they themselves levy the tax, while the other government does not.

The game in table 2 belongs to the class of co-ordination games. More precisely, it is an assurance game, which has both a Pareto-optimal and a sub-optimal Nash equilibrium. This confirms the expectation for weakest-link goods. Only if there is no weakest link, will the common good (tax revenue for both states) be provided. If there is a weakest link, one single tax haven in this case, the good will not be achieved. There is no tax revenue, although one government enjoys double political benefits. In the case of two tax havens, the good will not be provided, but there are equally distributed political benefits: There is no capital flight, but no tax revenue, either.

It should be easy to find a solution to this collective action problem. Communication of the two governments should be sufficient. They should agree on the strategies to levy the withholding tax, as this is the optimal equilibrium. Thus, tax co-ordination should be easy to achieve. This does not at all correspond to the above observations of attempts to harmonise tax policies in the EU. The assumptions of the model are not yet sufficiently realistic.

Table 2 Capital Income Tax Co-ordination with Revenue-oriented Governments

Assumption $r > b \geq 0$

	Strategy Combination		Tax Revenue	Political Benefits	Payoff	Ordinal
Government A	A: T	B: T	r	b	r + b	4
	A: T	B: ~T	0	0	0	1
	A: ~T	B: T	0	2b	2b	3
	A: ~T	B: ~T	0	b	b	2
All factors are identical for government *B*.						

Game Matrix

		Government B	
		Tax	*No tax*
Government A	*Tax*	r + b, r + b / 4, 4	0, 2b / 1, 3
	No tax	2b, 0 / 3, 1	b, b / 2, 2

In the following model, benefits-oriented governments are assumed. This is captured by the assumption that benefits are greater than revenue (b > r). The payoffs in table 3 are constructed as in table 2; however, their value, and thus the preference order, changes. The game is now a prisoners' dilemma. The Nash equilibrium implies tax competition and no tax at all, or a "race to the bottom" of tax rates. Even if the players agree on a contract to play Pareto-optimal outcome strategies (*T, T*), they both have an incentive to defect afterwards.

The sub-optimality of this strategic constellation should be obvious to the EU member states. For a relatively small number of states, which are in a permanent relationship in their capacity as EU members, it should thus not be too difficult to find a negotiated agreement. The EU institutions have both the authority to decide on a co-operative outcome and the power to secure compliance. Furthermore, reactions and retaliation by other member states must be expected. Thus member states should agree on the co-ordinated solution, since this

would guarantee all states a higher payoff than the tax competition equilibrium. Why was there not even a negotiated agreement for such a long time? One possible explanation is that not all member states consider tax co-ordination to be individually better than tax competition. The background for this is the heterogeneity of preferences among EU member states.

Table 3	Capital Income Tax Competition with Benefits-oriented Governments					
	Assumption $b > r \geq 0$					
	Strategy Combination		Tax Revenue	Political Benefits	Payoff	Ordinal
Government A	A: T	B: T	r	b	r + b	3
	A: T	B: ~T	0	0	0	1
	A: ~T	B: T	0	2b	2b	4
	A: ~T	B: ~T	0	b	b	2
All factors are identical for government B.						

Game Matrix

Government B

		Tax	No tax
Government A	Tax	r + b, r + b 3, 3	0, 2b 1, 4
	No tax	2b, 0 4, 1	b, b 2, 2

Tax Competition of Heterogeneous Member States

Not all European states are in the same situation with respect to political benefits and tax revenue. Governments may have heterogeneous preferences for many reasons. Their financial sectors and capital markets are different in size and development; their economies may do well or may suffer from a recession; budget deficits may be more or less severe; capital income may account for more or less of overall personal income, and thus capital income tax would have a correspondingly larger or smaller share of the states revenue; taxpayers may be more

or less prone to tax evasion. This variance in circumstantial factors will lead to different relative valuations of tax revenue and political benefits.

The next step is to introduce heterogeneity. It is sufficient to distinguish two types of governments: those which are revenue-oriented ($r > b$) and those who are benefits-oriented $(b > r)$. As long as we are only concerned with the effect of heterogeneity on the strategic constellation, it is not necessary to know why the governments have these preferences. The payoffs are as in tables 2 and 3 above. Let government A be revenue-oriented and government B be benefits-oriented. The game matrix is given in table 4.

The game in table 4 is an asymmetric dilemma or unilateral defection game. There is a unique and sub-optimal Nash equilibrium as in the prisoners' dilemma. The game is different from the prisoners' dilemma, however, because only the benefits-oriented government, B, has a dominant strategy not to tax; the revenue-oriented government prefers to levy the tax, if B does as well; but it prefers not to tax, if B does not.

This game combines a defection problem with a distributional problem. If the governments agree to tax co-ordination (T, T), only government B has an incentive to defect afterwards. However, there is a distributional problem, as the Pareto-optimal tax co-ordination outcome represents the first preference for government A, but only the second preference for government B. The latter would prefer the second Pareto-optimal outcome (T, ~T).

Table 4   Capital Income Tax Competition with Heterogeneous Governments

Assumptions Government A: $r > b$
Government B: $b > r$

Game Matrix

		Government B	
		Tax	*No tax*
Government A	*Tax*	r + b, r + b <u>4</u>, 3	0, <u>2b</u> 1, <u>4</u>
	No tax	2b, 0 3, 1	b, b <u>2, 2</u>

This model is based on the subjective preferences of governments, i.e. on their heterogeneous valuations of r and b, which implies a methodological problem. On the one hand, governments' preferences are what count in an explanation of strategic interaction of governments in the EU. On the other hand, the subjectivity of preferences makes their use as explanatory factors problematic. Preferences cannot be observed directly, although the reasons governments give as justifications for their positions and their behaviour in negotiations can serve as a hint. There is no guarantee, however, that the reasons given are the "true" reasons. Still, there are indicators that can be measured: the size of the tax base, for instance, or the size of the financial sector. These indicators can be used as explanatory variables if the theoretical assumption is valid that governments' utility functions consist of monotone functions of r and b, where b is a measurable indicator, such as the size of the financial sector. The outcome of the strategic interaction can then be explained as a result of heterogeneous conditions.

Next, a model is developed that relies on a single objective factor, namely, the size of a country's tax base. Countries are assumed to be heterogeneous with respect to this factor. Heterogeneity, in this case, is not heterogeneity of preferences but of capabilities. Both countries have the same preference for tax revenue, but their endowments, i.e. the size of their tax base, are different. This model is based on the argument by Kanbur and Keen (1993) and Dehejia and Genschel (1999).

The size argument will be translated into the matrix game language used here. Country A has a large tax base (c_A), while country B has only a small one (c_B), thus $c_A > c_B$. Both governments have two strategies: They can apply a high tax rate (t_H), or a low tax rate (t_L), with $0 < t_L < t_H < 1$. Capital is again perfectly mobile and there are no transaction costs. This implies complete capital flight from the high-tax country to the low-tax country, if there is no tax co-ordination. We further assume that for the small country, B, the positive foreign tax-base effect ($c_A t_L$) of low taxes is greater than the negative domestic tax-rate effect ($c_B t_H - c_B t_L$); and that for the large country, A, the negative domestic tax-rate effect ($c_A t_H - c_A t_L$) of low taxes is greater than the positive foreign tax-base effect ($c_B t_L$). Therefore, in the case of tax competition, government B prefers low taxes, while government A prefers high taxes. Given these conditions, government B may benefit from undercutting A's tax rate. Table 5 gives the payoffs for each strategy combination, as well as the preference order for both countries.

If both governments choose high tax rates, they earn the high-rate revenue from their domestic tax base. If one government chooses the high tax rate and the other the low one, the high-tax government loses its tax base completely and has a tax revenue of zero; in this case the low-tax government gains the low-rate revenue of its domestic and the foreign capital stock. If both governments decide in favour of the low rate, both get the low-rate revenue from their domestic tax base. The preference orderings of the outcomes given in the last column are different for the small and the large country.

The game has the same strategic structure as the game in table 4. It is an asymmetric dilemma, combining the defection and the distributional problem. For government B the low tax rate is a dominant strategy. Its first preference is the outcome where country A chooses the high tax while B applies the low tax. If there were a negotiated agreement on the outcome, where both countries levy the high tax, government B could be expected to defect afterwards. Thus the low tax rate is the equilibrium.

	Strategy Combination		Payoff Government A	Payoff Government B	Ordinal Government A	Ordinal Government B
Table 5	**Capital Income Tax Competition of Small and Large Member States**					
Governments A and B	A: t_H	B: t_H	$c_A t_H$	$c_B t_H$	4	3
	A: t_H	B: t_L	0	$(c_B + c_A)t_L$	1	4
	A: t_L	B: t_H	$(c_A + c_B)t_L$	0	3	1
	A: t_L	B: t_L	$c_A t_L$	$c_B t_L$	2	2

Game Matrix

		Government B	
		High tax	Low tax
Government A	High tax	$\underline{c_A t_H}$, $c_B t_H$ $\underline{4}$, 3	0, $\underline{(c_B + c_A)t_L}$ 1, $\underline{4}$
	Low tax	$(c_A + c_B)t_L$, 0 3, 1	$\underline{c_A t_L}$, $\underline{c_B t_L}$ $\underline{2, 2}$

In fact, government *B* may not lose much, if the tax competition equilibrium is played instead of the tax co-ordination Pareto-optimal outcome. The smaller the tax differential, the closer government *B* will be to indifference between the co-ordinated (t_H, t_H) and the competition (t_L, t_L) outcome. Therefore, it will not be easy to convince government *B* that co-ordination of taxes is to the benefit of both governments. Although the combined tax revenues would be much higher under tax co-ordination, the gain is distributed unevenly. If this result is valid for the tax revenue component of the governments' utility function alone, it will be reinforced if political benefits from capital stock increases are taken into account.

The models are stylised insofar as they make some rigid assumptions. The effects of tax competition will shrink if the assumptions of perfect capital mobility and perfect rationality of capital owners are given up. It is reasonable to assume that capital owners consider transaction costs, and the risks of trans-boundary capital investment are considered higher than those of domestic investment. Moreover, a certain percentage of the taxpayers may be honest and

may not seek to evade taxes. This does not change the general results of the models but it does diminish the effects.

Results of the analysis

What have we gained by this analysis? There are four elements which are distinct from earlier approaches. First, the character of capital income co-operation as a weakest-link common good tells us that there is no "large minimum-sized coalition", such that voluntary co-operation can be expected after the minimum-sized coalition has been achieved. In an anarchic world of *n* countries, no coalition of *m* countries, given *m < n*, can provide the good. There will be no voluntary co-operation of sub-coalitions, as long as not *all* potential tax havens join the coalition. If the game among governments were only about tax revenue it would be a mere co-ordination problem.

Second, the strategic constellation is, however, of the dilemma type. This is because it is not only tax revenue that is important for governments, but also, and for some governments even more so, the political benefits from a large capital market and a flourishing financial sector. The dilemma and the weakest-link character imply that co-operative institutions or binding treaties among all potential tax havens are necessary to resolve the problem.

Third, heterogeneity is an important feature of the game, as has been assumed by Kanbur and Keen (1993), Genschel and Plümper (1997), and Dehejia and Genschel (1999). However, not only does the different size of the tax base account for the heterogeneity, but also the different values governments place on the two objectives in their utility function: tax revenue and political benefits. Governments of large countries and/or those which value tax revenue more highly than political benefits prefer tax co-operation; governments of small countries and/or those which value political benefits more highly prefer tax competition.

Fourth, the strategic constellation is an asymmetric dilemma. This does not only tell us that we need co-operative institutions and binding contracts, but also that we face a negotiation problem in trying to find a co-operative agreement. In an anarchic environment, there is not much difference between symmetric and asymmetric dilemmas. Players end up at the sub-optimal equilibrium in both cases. However, finding a solution in a co-operative environment is different in the two games.

In the symmetric prisoners' dilemma, both players would prefer a common tax to the Nash equilibrium of no tax. In the asymmetric dilemma it is more difficult to find an agreement in the first place. Some governments have a strong

incentive to negotiate a fully co-ordinated solution based on a harmonised system, for example, that all apply a withholding tax, all use the same tax rate, or all use an information exchange system. Other governments have an incentive to resist full co-ordination. Even if they prefer full co-ordination over tax competition, their most preferred solution is non-coordination, namely that the "co-operative" governments apply a tax, but they themselves do not; or that the "co-operatives" use a high tax rate, while they themselves use a low rate; etc. The latter governments have less to gain from a harmonised solution than the "co-operative" ones.

Thus, a negotiated solution to an asymmetric dilemma can take three forms: The first is full co-ordination of strategies (T, T). This requires compensation for those countries which prefer tax competition. The second solution is non-coordination of strategies ($T, \sim T$). This requires compensation for those countries which prefer co-operation. The third might be a compromise which is neither full co-ordination, nor clearly non-coordination.

GOVERNMENTS' POSITIONS AND NEGOTIATION PROBLEMS

Which elements of the attempts to co-ordinate capital income taxes in the EU can these models explain? There are two distinct levels to be explained in the process of searching for a solution. First, how can the policy positions of EU member states in the various rounds of negotiation be rationalised? Second, how can the failure to co-operate over a long period and the final outcome be explained? Dehejia and Genschel (1999) are concerned with the first question, Genschel and Plümper (1997) focus on the second. The above analysis offers explanatory factors in both respects.

The positions of national governments

In the models, the utility function of governments consists of two factors: tax revenue and political benefits from a flourishing financial sector. To which extent can these factors explain the policy preferences of governments, namely their support for tax co-operation at EU level, respectively their preference for tax competition? The models tell us that governments will support co-operation if their tax base is large compared to other countries or if they do not believe their financial sector to be very important for the economy and their voter turnout. Governments will prefer competition if their domestic tax base is small compared to other countries or if they believe their financial sector to be very important for the economy. The model leaves open whether both conditions have to be met or whether one of the two conditions is sufficient, as well as which of the two factors is more important.

The tax revenue factor can be approximated by indicators for the size of the domestic tax base. Even if the political benefit factor depends on subjective valuations of the government, it can be approximated by indicators for the importance of the financial sector within an economy. Thus, countries with a small domestic tax base and with an important financial sector will resist tax co-operation, while countries with a large domestic tax base and with a less important financial sector will favour tax co-operation. Some indicators for the EU member states, the United States and Switzerland are given in table 6.

The best indicator for the size of the tax base is population size. Data on the capital invested by residents of a country would be more to the point, but this data does not exist. The data on financial assets regularly includes the investment of non-residents and is thus not a good approximation for a domestic tax base. Thus, population data is best, which leaves us with the common assessment that there are five large member states in the EU: France, Germany, Italy, Spain, and the UK. All the others are small tax base countries and should thus prefer tax competition.

Table 6 gives three indicators for the relative importance of the financial sector within an economy: the number of employees in the banking industry as a percentage of total employees, the balance sheet total, and the value added in the banking industry, both as a percentage of the gross domestic product. Among the EU member states, only Luxembourg has an outstanding value for each of the indicators. Next follows non-EU Switzerland, while the US has the lowest values with all indicators. Within the EU some other governments may believe that their banking industry is very important: Belgium, Germany, the UK, and Austria. Although, compared to Luxembourg, the objective size of their banking industry in relation to other sectors is still small, it is nevertheless above the EU average. Thus, we can assume that these five countries might be interested in tax competition as a result of the political benefit factor.

Table 6   Size of tax base and importance of the financial sector

	Size of tax base	Importance of banking sector		
	Population 1999 millions	Employees in banking industry % of all employees	Balance sheet total in banking industry % of GDP	Value added in banking industry % of GDP
Austria	8.083	2.0	262	3.8
Belgium	10.213	1.9	313	4.6
Denmark	5.313	1.8	233	3.2
Finland	5.159	1.1	106	-
France	58.977	1.7	213	3.1
Germany	82.037	2.1	328	4.1
Greece	10.521	1.4	114	4.9
Ireland	3.735	-	-	-
Italy	57.617	1.7	155	3.4
Luxembourg	0.429	12.0	3299	29.3
Netherlands	15.760	1.7	242	3.7
Portugal	9.979	1.3	283	4.4
Spain	39.394	1.8	179	3.8
Sweden	8.854	1.2	174	3.1
UK	59.391	1.8	313	4.3
US	271.626	1.2	61	2.3
Switzerland	7.124	3.2	593	12.2
- no data available				
Source: Eurostat 2001; CESifo-DICE;				

How well do predictions made on the basis of these indicators fit the factual policy preferences of the EU member states? Which explanation of positions, by tax base (TB) or by financial sector (FS), fits the data better? In order to count the policy positions of member states I distinguished four phases of attempts to co-operate: the end of negotiations over the Commission proposals in 1967, in 1989, before the Feira agreement, in 1999, and the final agreement, in 2003. For each phase I counted which member states' positions are correctly predicted ("fit") and which are not correctly predicted ("misfit") for each of the two factors separately. The number of "positions" is different for each phase, as the number of member states has changed. The results are given in table 7. The table shows that overall the political benefit objective (importance of the financial sector) fits the data much better than the tax revenue objective (size of tax base), although this is not true for all phases: in the 1967 negotiation phase the tax revenue factor clearly works better. This confirms the observation of Dehejia and Genschel

(1999) that their model of asymmetric tax competition does not predict policy positions very well.

Table 7   Explanation of governments positions by size of tax base and by importance of financial sector

Phase	1967		1989		1999		2003		total	
Factor	TB	FS	TB	FS	TB	FS	TB	FS	TB	FS
fit	5	3	4	11	6	13	8	13	23	40
misfit	1	3	8	1	9	2	7	2	25	8
total	6	6	12	12	15	15	15	15	48	48

It is plausible that both elements of the utility function, tax revenue and political benefits, factually play a role in preference formation. How do these factors interact? The combination of the two factors may be such that both push the policy preferences into the same direction, either tax competition or co-operation. However, they may also constrain each other in the utility function. Looking at the interaction reveals that there are three open questions with respect to the positions of some governments.

Whenever the values for both factors are such that they point in the same direction, the model predicts very well. France, Italy, and Spain have large tax bases and their banking sector is not very important for the economy; thus they should support co-operation. In fact, they have done so throughout. Luxembourg, Belgium, and Austria are small tax base countries and their financial sector is important, so they can be expected to resist tax co-operation. This is true for Luxembourg and Austria, but not for Belgium, which only in the last phase left the phalanx of co-operation supporters. Why did Belgium not line up with Luxembourg and the UK earlier?

In cases where the two factors point in different directions, the policy preferences are more difficult to explain. Germany and the UK have both large tax bases and important financial sectors. It is therefore not surprising that these countries have changed positions over time. However, why did Germany mostly side with the co-operation supporters, while the UK sided mostly with the opponents? Obviously, both governments valued tax revenue and political benefits differently, although their objective situation is very similar (cf. table 6).

All other EU members are small tax base states but they do not have important financial sectors. These countries consistently supported tax co-

operation,[6] which is the main reason why the "financial sector" hypothesis fits better. This suggests that the political benefit factor is more important than tax revenue. However, we should be careful with such an interpretation, as there might be alternative explanations. Even if the financial sectors were not significant in the beginning, why did these states never try to build up their banking capacities such that they would become competitive players in savings tax competition?

Some *ad hoc* and alternative explanations to these questions will be briefly discussed here. For Belgium the argument might hold that its neighbour Luxembourg is even smaller and, moreover, it was very easy for Belgians to transfer their money to Luxembourg, because Luxembourg and Belgium had monetary union. Indeed, Belgium lowered its domestic withholding tax on interests from 25% to 15% in 1990 as a reaction to capital flight to Luxembourg (Dehejia and Genschel 1999, 419, 416).

What about Germany and the UK? Germany supported the idea of a common withholding tax most of the time. However, it was responsible for the failure of the 1989 Commission proposal, when it took a stance against the common tax. At that time, the introduction of a national withholding tax had caused massive capital flight to Luxembourg and was very unpopular with German voters. The government's reaction (which was to abolish the tax) shows that political benefits were more important than tax revenue at that time. Later on, Germany reversed its course and again supported a European solution. This historical "explanation" is consistent with the models.

Why was the UK against tax co-operation for such a long time? Several factors could explain this position. First, the UK was less threatened by capital flight to neighbouring European countries than France or Germany. The tax differential and hence the gain from tax evasion was smaller for British citizens, because the UK had the lowest personal income taxes in Europe. Second, even if the financial sector is objectively much less important for the UK than for Luxembourg, the "City", London's financial market, is a sort of national symbol and thus politically important. During the 1998-1999 negotiations, the UK government argued that the demise of the City would be imminent if a common tax were introduced. As the political benefits factor is a subjective concept, this might in fact explain the UK's position.

Why did the other small countries support tax co-operation, and why did they never try to prey on their larger neighbours? There are two possible expla-

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[6] An exception was the Netherlands opposition against a harmonised withholding tax rate in 1967.

nations. First, their banking sectors may not be competitive, in the sense that they may not be attractive to foreign capital even if taxes are low or non-existent. As long as tax evaders can choose among several potential tax havens, other factors influence the choice of the country. Second, some of the small member states, especially Belgium, the Netherlands, and Ireland, are very well involved in tax competition in the field of corporate taxes. As the EU's attempts to combat harmful tax competition include both corporate and savings taxation, these countries may not have wanted to play the role of the "bad guys" in more than one field.

Finally, there is an alternative explanation which is not based on rational choice of governments but on historical institutionalism: the significance of the bank secrecy principle in some EU member states may account for their opposition to an information exchange system. This explanation, however, makes sense only for the last two phases, because previously, the attempt to co-operate aimed at a harmonised withholding tax. CESifo provides a ranking of 18 countries according to the strictness of the bank secrecy principle in their laws.[7] Bank secrecy is least strict in the US (18). It is strictest in Switzerland (1), followed by Austria (2) and Luxembourg (3), Greece (4), Portugal (5), the UK (6) and Germany (7). Belgium ranks only 12th, however. Thus, bank secrecy can explain the positions of Luxembourg and Austria, but surely not the position of Belgium. Greece and Portugal did in fact briefly consider opting for the withholding tax (Krause 2001). However, they then decided to participate in the information exchange and they have always supported tax co-operation.

The best explanation is the one that links both tax revenue and political benefits: If the hypothesis is that a state will prefer tax competition and thus oppose co-operation only if it is small *and* has a significant financial sector, then only the behaviour of Belgium and the UK in the phases before the final agreement remains unexplained.

Co-operation and the negotiated agreement

What is the contribution of the models to the explanation of the various failures and the final outcome of the process of capital income tax co-operation in the EU? Two elements are relevant: the weakest-link character of the collective good to be achieved and the strategic constellation of an asymmetric dilemma.

The weakest-link characteristic can explain several elements in the whole process. First, the fact that the Commission in its proposal of 1967 chose a mod-

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[7] http://www.cesifo.de/pls/diceguest/download/F4549/ BANK%2DSECRECY%2D CRIMINAL.PDF

est approach, that is, a low-level harmonised withholding tax instead of an automatic reporting system, was justified by reference to the outside world. There was fear of capital flight outside the EU from the very beginning. Second, the "outside world conditionality" of the compromise of Feira shows that the EU member states wished to include all relevant potential tax havens into the co-operation. Third, Switzerland only agreed to some co-operation with the EU on the basis of a further outside world conditionality. The weakest-link character was surely one element that contributed to the failure of previous attempts of tax co-ordination.

However, a co-operative solution within the EU has now been found which includes some other states, although not *all* potential tax havens co-operate. How was this possible? In 1998, the OECD started an initiative to combat harmful tax competition (OECD 1998). An OECD report identified 47 tax regimes in OECD member states which were labelled "potentially harmful" and 35 tax regimes outside the OECD which were considered "harmful" (OECD 2000a). The OECD's plans to bully these tax havens into co-operation caused some conflict between the US and European OECD members (for a detailed account, cf. CEPS 2001, 10-18; Thomas 2002). As a consequence the OECD shifted its emphasis from targeting low tax regimes to the questions of transparency, bank secrecy, and exchange of information. After the events of 11 September 2001 this focus found world-wide support (CEPS 2001, 15).

In April 2000 a report was published on improving access to bank information for tax purposes (OECD 2000b). After negotiations with 20 members and 11 non-members the OECD published a model agreement on exchange of information in tax matters (OECD 2002). The model agreement is about exchange of information upon request and does not include routine exchange of information. Still, there are now prospects that there will be world-wide co-operation in matters of savings taxation on the basis of exchange of information. This international background has surely helped the EU member states to finally come to an agreement.

The OECD initiative can also explain the general shift from the idea of harmonising withholding taxes to an automatic information exchange. Denmark and the Netherlands had introduced such systems domestically and had long pushed for a European automatic reporting system. It is obvious that the states which suffered most from capital flight — Germany, France, and Belgium - did not try to introduce national automatic reporting systems, because this aggravated their problem. Why did they not push for such a system at the EU level, however? From the 1960s onward, it was well known that information exchange is an optimal solution, as it does not require capital income tax harmonisation and it completely prevents tax evasion. Two arguments were raised against it,

bank secrecy and the "outside world constraint", which with the OECD's initiative became obsolete.

The fact that the strategic constellation is an asymmetric dilemma explains why some governments have a strong incentive to find a co-operative solution, and thus why after some failures there were again and again attempts to find a solution at the EU – and later also at the OECD - level. The EU offers a co-operative institutional structure within which dilemmas can in principle be overcome. However, other governments have an incentive to remain in the state of tax competition. The asymmetry became an obstacle to successful negotiation because tax matters require unanimity at the EU level. Thus, the latter governments could veto co-operation attempts. This is another element of explanation of the repeated failures.

How was an agreement finally possible? Without the majority rule, a solution of this negotiation problem was only possible by resorting to compensation or by compromise. There is some evidence that there has been compensation in the form of package deals for countries which favour tax competition. In the final round of negotiations Austria insisted on a solution to the problem of heavy vehicle transit across Austria before it was ready to compromise in the tax conflict (Neue Zürcher Zeitung, 04.12.02; Süddeutsche Zeitung, 04.12.02). Three of the third states the Commission negotiated with got something "in exchange". Switzerland has requested that it be permitted to take advantage of other measures of the EU tax package; Andorra wants to officially introduce the Euro as its currency; Monaco has asked for equal rights on EU markets for financial services (European Commission 2002). This explains these countries' agreement to the whole package.

Another factor is the "split outcome", which can be seen as a compromise solution: While those EU member states which have always favoured co-operation (and the US) will apply an automatic reporting system, the other EU members (and the European third states) will levy withholding taxes. Both systems will co-exist as long as not all states change to the exchange-of-information system. This solution represents a compromise. It is not full co-ordination of strategies, but is it by no means non-coordination.

For the states willing to co-operate the application of withholding taxes is an equivalent measure if the withholding tax rates are high enough to prevent tax evasion. For the states favouring competition this was acceptable as they may still gain from the differentiated system. As long as the withholding tax rates are below the taxes on savings and bonds in the other countries, tax-induced attraction of capital is still possible. These gains will decrease, however,

as the withholding tax rate for non-residents will increase up to 35 %. Thus, after 2010 the tax differential might even be negative against some countries.

Since the tax rates differ widely (cf. table 1), and since future changes of rates for residents are possible in all countries, it is, however, very difficult to predict which group of countries will be the winners and which will be the losers of the split outcome. A great advantage of the information exchange system is that it prevents tax evasion but does not constrain national governments in their choice of tax rates for residents. It might well be that the states applying the automatic reporting system keep their tax rates low or even decrease them, as for example Germany has already announced.[8] With a definitive domestic tax rate of 25 %, foreign investment in countries which have to withhold 35 % is no longer attractive for tax reasons. This might eventually cause the opposing states also to join the information exchange system.

Therefore, the asymmetric dilemma with its distributional element accounts for failures of negotiations, for new attempts to negotiate, as well as for a compromise and compensation outcomes as is typical in negotiation problems. It was not the constellation of a dilemma as such that was responsible for the difficulties in resolving this issue at EU level. Rather it was the problem of finding an agreement, as well as the fact that the problem is not confined to the EU but is global in scale.

CONCLUSION

In this article two new elements have been introduced into the analysis of the European attempts to achieve co-operation in the field of capital income taxes. First, the common good associated with this problem has been identified as a weakest-link good, that is, co-operation of all potential tax havens is needed. Second, it has been assumed that in capital taxation governments are not solely motivated by tax revenue but also by the economic and political benefits from a large domestic capital market. Although this assumption is not uncommon, it has not been explicitly taken into account in previous models of the tax co-operation problem.

The weakest-link character explains why the EU attempts to achieve co-operation have failed several times and why they were accompanied by "outside world conditionalities". An agreement at the EU level was only possible after the US and the most important European tax havens were included into a co-

operative scheme, and, moreover, after the OECD initiative prospects opened up world-wide co-operation in capital tax matters.

The introduction of the "political benefits" as a second factor in the utility function of the governments reveals why the tax game has the structure of a dilemma rather than of a co-ordination game. Moreover, it shows that the heterogeneity of interests of EU member states is not only a consequence of asymmetry in size but also of different valuation of the two factors by governments. The two factors explain the actual policy preferences of the EU member state governments better than models which use only "tax revenue" in the utility function.

These assumptions allowed the strategic constellation in the savings taxation case to be classified as an asymmetric dilemma, which combines a defection problem and a distributional problem. Thus, the problem is neither a simple defection game as implied in Genschel and Plümper (1997), nor a pure conflict game as in Dehejia and Genschel (1999). This model explains why it was so difficult to find an agreement at the EU level. Since the EU offers co-operative institutions, a symmetric dilemma should not have caused so many difficulties. The difficulties arose from the distributional problems and the weakest-link character.

The analysis presented here also yields methodological insights. In section 4 it became obvious that matrix games are very sensitive to changes in assumptions. Tax competition games may, for example, differ with respect to the taxes concerned. It makes a difference whether transfer-pricing rules for multi-national companies (Radaelli 1998) or capital income taxation are analysed. However, even if the same problem is the subject of analysis, the type of game depends on the exact assumptions about the preferences of the governments and the peculiarities of a strategic constellation. Thus, applying matrix game analysis requires that one starts with explicit assumptions about the utility function of the players, and specifies correctly other crucial features of the situation.

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[8] http://www.bundesregierung.de/Themen-A-Z/Steuern-und-Finanzen-,470.468071/ Rueck-kehr-in-die-Steuerehrlich.htm

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