Brückner, Matthias

Working Paper
Strategic delegation and international capital taxation

ZEI working paper, No. B 22-2001

Provided in Cooperation with:
ZEI - Center for European Integration Studies, University of Bonn

Suggested Citation: Brückner, Matthias (2001) : Strategic delegation and international capital taxation, ZEI working paper, No. B 22-2001, ZEI, Bonn

This Version is available at:
http://hdl.handle.net/10419/39543

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
Matthias Brückner

Strategic Delegation and International Capital Taxation
Strategic Delegation and International Capital Taxation∗

Matthias Brueckner†

September 2001

Abstract

The literature on tax competition generally concludes that international coordination of capital taxes among symmetric countries increases tax rates. This paper investigates whether this conclusion also holds in a political economy framework where taxes are set by elected policy makers. It shows that policy makers are fiscally more liberal than the average citizen if taxes are set non-cooperatively. However, fiscally more conservative policy makers are elected if taxes are set cooperatively. The introduction of tax coordination cannot remove the incentive to compete for foreign capital, but simply shifts it to the election stage. The paper proves that with standard specifications of the utility functions, coordination leads to lower tax rates than competition.

Keywords: Tax competition, tax coordination, strategic delegation

JEL classification: H2

∗I would like to thank Jürgen von Hagen, Klaus Adam, Marcel Jansen, Anna Rubinchik-Pessach and Lisa Grazzini for very helpful suggestions and discussions. I have also benefitted from comments by participants of the EPCS meeting in Paris and the IIPF conference in Linz.

†Center for European Integration Studies (ZEI), University of Bonn, Walter-Flex-Str. 3, 53113 Bonn, Germany, e-mail: brueckne@united.econ.uni-bonn.de, phone +49 228 1884, fax +49 228 1809.
1 Introduction

Capital taxation in open economies attracts an enormous attention among economists and politicians, especially in the European Union. It is a common presumption in this discussion that tax coordination among independent countries leads to higher tax rates on mobile capital compared to non-cooperative tax policies. This paper shows that this presumption is not generally true if the political reactions on different tax regimes are taken into account. Building on a simple symmetric two-country model in which tax rates are set by elected policy-makers, we show that tax coordination can actually lead to lower tax rates than tax competition. Therefore, this paper casts doubts on standard conclusions made in the academic and public discussion on the consequences of worldwide, or European, capital tax coordination.

In the present model, capital taxes are determined in a two stage game. In the first stage, national electorates choose one of their members as policy maker. In the second stage, the elected policy makers set tax rates either competitively or cooperatively. The tax proceeds are used to finance national public goods. In this setting, tax coordination and tax competition affect the voters’ choices at the first stage in different ways. Start with considering the case of tax competition. Assume, first, that the national median voters chose the tax rates in the second stage themselves. It is well known that the mobility of the tax base (foreign capital) creates incentives to lower tax rates. This leads to inefficiently low tax rates from an ex-ante view of the median voters. Anticipating this outcome in the first stage, the median voters have an incentive to elect policy makers who care more for the public good (i.e., who are fiscally more liberal) than themselves, if tax policies are delegated to elected politicians. Therefore, the tax decreasing effect of competition is partially offset. Next, consider the case of tax coordination. Under this regime, the two policy makers choose the two tax rates to maximize their joint utility. The incentive for policy makers to attract more capital by lowering the tax rates is removed. However, the same incentive now plays a crucial role for voters in the election stage. By choosing

\[1\] It should be noted that tax coordination is quite different from tax harmonization where policy makers decide jointly on one tax rate valid in all countries. However, since this paper builds on a symmetric model, it is not well suited for an analysis of this frequently proposed mechanism. In general, tax harmonization includes the cost that countries have identical tax rates despite of differences in financial needs or preferences. Obviously, a symmetric model cannot capture this potential cost.
delegates with rather low preferences for the public good, the national median voters try to achieve (relatively) lower tax rates in the second stage and attract more capital. Therefore, switching from a competitive to a coordinated tax regime replaces one channel for reducing tax rates by another. Moreover, under tax coordination there is no possibility to partly offset this incentive through the political process. This paper demonstrates that with commonly assumed specifications of utility and production functions, implementing tax coordination actually decreases capital tax rates. This holds, e.g., if preferences are log-linear and the production functions are of the Cobb-Douglas type. More general, we show that this result extends to all utility functions for which the relative risk-aversion with respect to public good consumption is greater than one.

The issue of delegation in the presence of tax competition for mobile capital has been investigated before by Persson and Tabellini [10]. They show that elected policy makers are fiscally more liberal than national median voters. This paper can be seen as an extension of their analysis to the case of delegation in a coordination regime. Our analysis builds on the symmetric one-period two-country model for international capital taxation by Wildasin [13]. Capital taxes are used to finance national public goods with no cross-border externalities. However, Wildasin and most of the literature on tax competition assume that taxes are set by benevolent governments. They conclude that tax competition leads to an underprovision of public goods or to inefficiently high tax rates on labor. In a recent paper, Fuest and Huber [6] question the feasibility of tax coordination. They conclude that cooperative agreements are ineffective if they do not include all tax instruments. A similar result can be found in Cremer and Gahvari [3]. They show that countries might strategically choose to allow for tax evasion in order to offset tax increasing effects of tax coordination. Our paper demonstrates that even if tax coordination includes all tax instruments, taxes might nevertheless decrease due to political reactions. The result of socially wasteful tax competition has been questioned by many authors working on optimal taxation. These authors point out that in a dynamic context, capital taxation faces a time-inconsistency problem (see Kehoe [8]). In general, it is optimal to tax installed capital at very high rates, but to set tax rates in the long run equal to zero (see Judd [7] or Chamley [1], for a more general discussion see Chari and Kehoe [2]). Without commitment, this solution is not attainable. Therefore, it

\^2For a recent survey of the literature on tax competition, see Wilson [14].
is often concluded that tax competition is socially preferable to tax coordination since it partially offsets the time-inconsistency problem. However, as the literature on tax competition, this view neglects the fact that tax competition and tax coordination might induce very different political reactions. This also holds for the literature that, based on public choice arguments, replaces the assumption of a benevolent government by a leviathan assumption.\(^3\) Even though this paper deals with the political economy of capital taxation in a static framework, the result of tax rate decreasing tax coordination should also be of importance in a dynamic context.\(^4\) Our result of decreasing capital taxes as consequence of introducing tax cooperation indicates that those proposing tax coordination in order to avoid a race-to-the-bottom might have to reconsider their proposal. However, those who share the opinion that capital is actually taxed too high (e.g., due to a time-inconsistency problem) might benefit from tax coordination among short-sighted politicians.

The remainder of this paper proceeds as follows. The next section presents the model and derives implicit solutions for the equilibrium tax rates in a competitive and in a cooperative tax regime. These solutions hold for general utility and production functions. Moreover, it presents sufficient conditions for an introduction of tax coordination to induce decreasing tax rates. Section 3 considers the above mentioned example of log-linear preferences to further illustrate the tax decreasing effects of international capital tax coordination. Finally, section 4 concludes.

2 The Model

2.1 The Economic Environment

The economy consists of two countries, both inhabited by an infinite number of agents with unit mass. The agents derive utility from the consumption of a private good \(c\) and a national public good \(g\). The utility functions are separable, strictly concave and satisfy the Inada-conditions. Each agent inelastically supplies one unit of labor and owns \(S\) units

---

\(^3\)Recent contributions include Edward and Keen [4], Fuest [5] and Rauscher [12].

\(^4\)There exist quite a few contributions of political economy aspects of capital taxation in two period models (see especially Persson and Tabellini [11] and the references therein) and some in dynamic models (e.g., Krusell et al. [9]), albeit almost exclusively for closed economies.
of capital, that can be invested at home or abroad. Capital is perfectly mobile across
countries, whereas labor is perfectly immobile. The public goods are financed by a per-
unit tax on employed capital $K_i$, i.e., capital is taxed according to the source principle.
The agents are heterogenous with respect to their valuation of the public good. More
specifically, the utility function of agent $l$ in country $i$ is given by

$$U_{il} = u(c_{il}) + \alpha_{il}v(g_i)$$

$$v'(g) , u'(c) > 0 , v''(g) , u''(c) < 0 , \alpha_{il} \in \mathbb{R}^+$$

$$c_{il} = w_i + \rho S$$

$$g_i = t_i K_i$$

Here, $\rho$ is the net (i.e., after tax) return of capital. Due to inelastic labor supply, the only
(economic) choice of the households is to decide where to invest. Due to perfect capital
mobility, optimal investment behavior of households implies that, in any competitive
equilibrium, the after tax return $\rho$ is equal in the two countries. The parameter (or
types) $\alpha_{il}$ are continuously distributed and have an identical median value, denoted as $\beta$.

As described in the introduction, taxes are set by elected policy-makers. Throughout the
paper, we will often call them delegates since they act on behalf of their electorates. We
will characterize the delegates (policy-makers) by the type indicating their valuation of
the public good. For convenience, we denote the type of the delegate in country $i$ as $\alpha_{i}$.

Firms in both countries are competitive and have access to an identical production
technology exhibiting constant returns to scale,

$$F(K,L) = LF\left(\frac{K}{L}\right) = f(K) = f(k)$$

A politico-economic equilibrium in this economy consists of wages $w_i$, gross interest
rates $r_i$, per capita investments (capital) $k_i$, taxes $t_i$ and delegates $\alpha_i$. When making their
decisions, private agents take the politically determined tax rates in both countries as
given.\(^5\) It is straightforward to see that the equilibrium values determined in the private
sector fulfill\(^6\)

$$w_i = f(k_i) - k_i f'(k_i)$$

\(^5\)Note that the type of delegates only indirectly affects utility and profit functions.
\(^6\)As in most of the literature, we do not impose any bound on tax rates. Hence, we implicitly exclude
free disposal of capital. However, the main results of this paper do not depend on this simplifying
assumption.
\[ r_i = f'(k_i) \]  
\[ k_i + k_j = 2S \]  
\[ \rho = r_i - t_i = r_j - t_j \]  

In (6), \( \rho \) denotes the after-tax-return of capital, that is equalized among countries due to free capital mobility. In the next subsection, we turn to the politically determined equilibrium taxes \( t_i \), chosen by the delegates in the second stage of the tax game. Depending on the regime, taxes are set either non-cooperatively or cooperatively. Subsequently, we determine the equilibrium types of the delegates \( \alpha_i \). The delegates are chosen by majority voting within each country. However, instead of explicitly modelling the election process, we will use the fact that the median voter theorem applies in our context.

### 2.2 Tax Competition and Tax Coordination

We start with the determination of capital taxes in the competitive tax regime. Here, the policy makers (delegates) simultaneously choose the tax rates on capital. For their decision, the delegates anticipate the reactions of the private agents on the chosen tax rates. Therefore, we can insert the equilibrium conditions (3), (4) and (6) into the utility function of a delegate, i.e.,

\[ U_i = u(f(k_i) - k_i f'(k_i) + (f'(k_i) - t_i)S) + \alpha_i v(t_i k_i) \]

Maximizing the utility function with respect to the tax rates results in the following FOC.

\[
\frac{\partial u_i}{\partial c_i} \left( f''(k_i) \frac{\partial k_i}{\partial t_i} (S - k_i) - S \right) + \alpha_i \frac{\partial v_i}{\partial g_i} \left( k_i + t_i \frac{\partial k_i}{\partial t_i} \right) = 0
\]

(Total differentiation of (5) and (6) and combining the results yields

\[
\frac{\partial k_i}{\partial t_i} = \frac{1}{f''(k_i) + f''(k_j)}
\]

\[
\frac{\partial k_j}{\partial t_i} = -\frac{1}{f''(k_i) + f''(k_j)}
\]

For later use, it is convenient to define the (negative) tax elasticity of capital as

\[ \eta = -\frac{\partial k_i}{\partial t_i} \frac{t_i}{k_i} \frac{1}{f''(k_i) + f''(k_j)} > 0 \]
Inserting (8) into (7) shows that, in a symmetric equilibrium, capital taxes are determined by

\[ \alpha_i \frac{\partial v_i}{\partial g_i} \left( S + \frac{t_i}{2f''(S)} \right) = S \frac{\partial u}{\partial c_i} \]  

(10)

Since \( f''(S) < 0 \), (10) implies that the marginal rate of substitution between private and public good consumption is smaller than one for the policy makers. Therefore, the Samuelson condition of equal marginal rates does not hold. In order to see that the tax elasticity affects the equilibrium allocation even though in equilibrium there are no capital movements, we can rewrite (10) as

\[ \alpha_i \frac{\partial v_i}{\partial g_i} (1 - \eta) = \frac{\partial u}{\partial c_i} \]  

(11)

Next, consider the case of tax coordination. Following the literature, tax coordination means that the delegates choose the two tax rates to maximize the sum of their utility functions (see, e.g., Persson and Tabellini [11]). Hence, it is implicitly assumed that the tax setter have access to sidepayments that do neither influence the utility of the electorates nor the tax choice by the delegates. The FOC’s of the delegates are then given by

\[ \frac{\partial u_i}{\partial c_i} \left( \frac{f''(k_i) + f''(k_j)}{f''(k_i) + f''(k_j)} (S - k_i) - S \right) + \alpha_i \frac{\partial v_i}{\partial g_i} \left( k_i + \frac{t_i}{f''(k_i) + f''(k_j)} \right) \]  

\[ - \frac{\partial u_i}{\partial c_j} \left( \frac{f''(k_i)}{f''(k_i) + f''(k_j)} (S - k_j) \right) - \alpha_i \frac{\partial v_j}{\partial g_j} \left( \frac{t_j}{f''(k_i) + f''(k_j)} \right) = 0 \]  

(12)

In the symmetric case, this expression simplifies to

\[ \alpha_i \frac{\partial v_i}{\partial g_i} = \frac{\partial u_i}{\partial c_i} \]  

(13)

Hence, in equilibrium both delegates equalize their marginal rates of substitution between private and public good consumption. In equilibrium, the tax elasticity does not affect the choices of the delegates. Moreover, any agent would choose higher tax rates in the coordination regime, as it is shown in the previous literature. However, the incentives to strategically choose the policy makers drastically differ among the two regimes. Hence, if one introduces tax coordination, different agents are chosen as policy makers. Therefore, it is a-priori an open question which regime yields higher equilibrium tax rates.
2.3 Delegation and Tax Regimes

Now we turn to the first stage, in which the delegates (policy makers) are chosen. Since preferences are single-peaked, we do not model the political system in great detail. Instead, it is assumed that essentially the national median voters decide on the delegates.\textsuperscript{7} Maximizing the utility function of the median voter (or better, of the politically decisive agent) with respect to the type of the delegate yields the following FOC.

\[
\frac{\partial u_i}{\partial c_i} \left( f''(k_i)(S - k_i) \left( \frac{\partial k_i}{\partial t_i} \frac{\partial t_i}{\partial \alpha_i} + \frac{\partial k_i}{\partial t_j} \frac{\partial t_j}{\partial \alpha_i} \right) - \frac{\partial t_i}{\partial \alpha_i} S \right) + \beta \frac{\partial v_i}{\partial g_i} \left( k_i \frac{\partial t_i}{\partial \alpha_i} + t_i \left( \frac{\partial k_i}{\partial t_i} \frac{\partial t_i}{\partial \alpha_i} + \frac{\partial k_i}{\partial t_j} \frac{\partial t_j}{\partial \alpha_i} \right) \right) = 0
\]

Using symmetry, i.e., \( k_i = k_j = S \) for \( t_i = t_j \), and dividing by \( \frac{\partial t_i}{\partial \alpha_i} \) results in

\[
\beta \frac{\partial v_i}{\partial g_i} \left( S + \frac{t_i}{2f''(S)} \left( 1 - \frac{\partial t_j}{\partial t_i} \right) \right) = \frac{\partial u_i}{\partial c_i} S
\]

\[
\beta \frac{\partial v_i}{\partial g_i} \left( 1 - \eta \left( 1 - \frac{\partial t_j}{\partial t_i} \right) \right) = \frac{\partial u_i}{\partial c_i}
\]

These equations are valid for both tax regimes. However, the induced reaction functions \( \frac{\partial t_j}{\partial t_i} \) differ between the two regimes because both foreign and home tax rates depend differently on the elected delegate. Therefore, different tax regimes lead to the election of different policy-makers. If we combine (14) with (10), we can see that the policy maker in the competitive tax regime is implicitly given by

\[
\alpha_i = \beta \frac{1 - \eta \left( 1 - \frac{\partial t_i}{\partial t_i} \right)}{1 - \eta}
\]

(15)

It should be emphasized that both the elasticity \( \eta \) and the reaction curve \( \frac{\partial t_i}{\partial t_i} \) are functions of \( \alpha_i \). In case of a cooperative tax regime, combining (14) with (13) yields

\[
\alpha_i = \beta \left( 1 - \eta \left( 1 - \frac{\partial t_i}{\partial t_i} \right) \right)
\]

(16)

Condition (16) reveals that the equilibrium allocation crucially depends on the elasticity \( \eta \) even in the cooperative tax regime, since it affects the selection of delegates by the political decisive agents.

\textsuperscript{7}However, the central results of this paper do not depend on the validity of the median voter hypothesis. It is also possible to interpret \( \beta \), the median of the distribution of types in a country, as type of the government. In such a context, \( \beta \) can be the outcome of a political bargaining game among different parties.
Most economists find that taxes are strategic complements, i.e., \( \frac{\partial t_j}{\partial t_i} > 0 \), at least if the countries are sufficiently symmetric. Under this condition, (15) shows that in the competitive regime the policy maker likes the public good more than the median voter, i.e. \( \alpha_i > \beta \). Since \( \frac{\partial t_i}{\partial t_o} > 0 \), delegation has a tax increasing effect. Therefore, we characterize the policy-maker as fiscally liberal. If taxes were strategic substitutes, one can easily see that the elected policy maker would be fiscally more conservative than the median voter. However, in the coordination regime, one can infer from (16) that the elected policy maker is always fiscally conservative, independent of the sign of \( \frac{\partial t_j}{\partial t_i} \). Hence, delegation leads to decreasing capital taxes. Moreover, a regime switch from tax competition to coordination always induces the election of more conservative policy-makers. The political reactions to an introduction of tax coordination, therefore, compensate at least some of the immediate changes in the tax rates.

One main purpose of this paper is to investigate whether a change from tax competition to tax coordination leads to an increase or a decrease of tax rates. Essentially, this depends on the reaction functions \( \frac{\partial t_i}{\partial t_i} \). To see this clearly, rewrite (14) as

\[
\frac{\partial t_i}{\partial t_i} + \eta \left( 1 - \left( \frac{\partial t_j}{\partial t_i} \right) \right) = 1
\]  

(17)

It should be noted that by anticipating the behavior of delegates, the national median voters ultimately determine the tax rates. Suppose the tax regime changes, but the tax rates remain constant. This view implies that the median voters select delegates that in equilibrium would choose the same tax rates as the previous delegates chosen under the competitive regime. Suppose now that the slope of the reaction function increases. Since marginal utility of public good consumption is decreasing in \( t_i \) whereas marginal utility of public good consumption and the tax elasticity of capital are increasing in \( t_i \), tax rates must increase. Conversely, if the slope initially decreases, introducing tax cooperation lowers tax rates. Therefore, we have to investigate the differences of the slopes \( \frac{\partial t_j}{\partial t_i} \) between the two regimes. For that, we use the following lemma:

**Lemma 1** If taxes are set competitively and \( t_i = t_j \), then

\[
\frac{\partial t_j}{\partial t_i} = \frac{1 + \frac{2\eta}{1-\eta} - 2r_g}{1 + \frac{2(1+\eta)}{1-\eta} + \frac{2 q_t}{\eta c_i} r_c + \frac{2(1-\eta)}{\eta} r_g}
\]  

(18)

\( ^8 \text{Note that the condition } \frac{\partial t_j}{\partial t_i} < 1 \text{ must hold in any equilibrium.} \)
If taxes are set cooperatively and $t_i = t_j$, then
\[
\frac{\partial t_j}{\partial t_i} = \frac{1 - 2 (1 - \eta) r_g}{1 + \frac{g_i g_c}{\eta} r_c + \left(\frac{(1 - \eta)^2}{\eta} + \eta \right) r_g}
\] (19)

Proof. See appendix

In (18) and (19), $r_g$ and $r_c$ denote the relative risk aversion with respect to public and private good consumption, i.e.,
\[
r_g = -\frac{c_i}{\partial u_i / \partial c_i^2}, \quad r_g = -\frac{g_i}{\partial u_i / \partial g_i^2}
\]

Note that in deriving (18) and (19), we made use of the equilibrium conditions for the delegates, (10) and (13), in order to eliminate $\alpha_i$. The use of lemma 1 enables us to determine which tax regime results in lower tax rates.

Proposition 1 A change from the competitive to the cooperative tax regime leads to lower tax rates if
\[
\eta \geq (1 - 2 (1 - \eta) r_g) \left(2 + \frac{1 - 2 \eta \eta}{\eta} r_c \right)
\] (20)

where $r = \frac{g_i}{c_i} r_c + r_g$

If (20) does not hold, tax rates increase.

A sufficient condition for a tax decrease induced by introducing tax cooperation is $r_g \geq 1$.

Proof. The first part follows from comparing (18) and (19) and the arguments made before. For the sufficient condition, note that (20) implies
\[
r \geq (1 - 2 (1 - \eta) r) \left(2 + \frac{1 - 2 \eta \eta}{\eta} r_c \right)
\] (21)

It can then easily be shown that $r \geq 1$ fulfills this condition for any $0 \leq \eta \leq 1$. Finally, note that $r_g \geq 1$ implies $r \geq 1$.

An increase in risk-aversion with respect to public good consumption flattens the slope of the reaction function in both regimes because the tax externalities become more important. However, in case of tax cooperation, the decrease in the slope is relatively larger, since the reaction functions depend on the utility of both policy-makers. It should be emphasized that the condition $r_g \geq 1$ is by far not necessary for decreasing tax rates.
First, the ratio of public to private good consumption is smaller than one, but usually
significantly larger than zero. Moreover, agents are normally assumed to be risk-averse
with respect to private good consumption. Hence, \( r \geq 1 \) might hold even if \( r_g \) is (slightly)
lower than 1. Second, in the initial equilibrium under tax competition, \( \eta \) will be strictly
smaller than one, as can be seen from (10). Since it can be shown that right hand side of
(21) is increasing in \( \eta \), (20) might well hold even if \( r \) is smaller than one.

In the next section we will use a specific example to further illustrate the (possible)
tax decreasing effect of introducing tax cooperation.

3 Example

In this section, it is assumed that preferences are log-linear and that the production func-
tion is Cobb-Douglas. For analytical convenience, the production function is symmetric
with respect to both inputs.

\[
\begin{align*}
    u(c) &= \ln c \\
    v(g) &= \ln g \\
    f(k) &= k^{1/2} \\
    f''(k) &= -\frac{1}{4}k^{-3/2}
\end{align*}
\]

This specification implies that \( r_g = 1 \) so that we know from proposition 1 that tax rates
will be lower under tax cooperation. We normalized the type of the median voters, \( \beta \),
to one since proposition 1 implies that \( \beta \) does not affect the relative ranking of the tax
regimes.

First, we explicitly consider the equilibrium choices for the delegates. Inserting
(10) and (22) to (25) into (14) and some algebra yields \( \alpha = 1.3984 \). However, doing the
same exercise for the cooperative tax regime, results is \( \alpha = 0.4411 \).

Hence, we might conclude that delegation, measured by the difference in types between median voters and
delegates, is more pronounced in case of tax coordination. This result is not surprising.

In this regime, the delegates take the externalities of tax rates on each other into account.

\footnote{The fact that the types of the delegates are independent of the capital endowments \( S \) is due to the
specification of the utility functions.}
Thus, compared to tax competition, the median voters must choose delegates with a larger preference bias ($|\alpha_i - \beta|$) in order to unilaterally achieve a certain change in tax rates. Still, lower tax rates with tax coordination might seem to be a paradox. The main reason for this result is the lack of a competition alleviating mechanism under tax coordination. To see this point, let, without loss of generality, $S = 1$. The resulting tax rates are 0.3266 in case of tax competition and 0.3061 in case of tax coordination. Consider also the hypothetical tax rates that emerged in the absence of strategic delegation. Letting $\alpha = 1$ in (10) resulted in competitively set tax rates of 0.2929. On the other hand, without delegation, tax coordination yielded a tax rate of 0.5, as can be derived from (13) with $\alpha = 1$. As discussed in the introduction, competition under tax coordination works via strategic delegation of policy makers in the first stage. Since the equilibrium tax rate of 0.3061 is higher than the competitive tax rate without delegation of 0.2929, the tax decreasing competition effect appears to be weaker in the case of tax coordination. However, under tax competition, strategic delegation can be used to alleviate the tax decreasing mechanism that works in the second stage. Due to the absence of such a mechanism, an introduction of tax coordination eventually leads to a tax decrease.

We can further illustrate this example by drawing the reaction function of the policy makers. With the help of some tedious algebra, we can actually write the equilibrium conditions of capital market clearing and the non-arbitrage condition as

$$k_i = 1 - \text{sign} (t_i - t_j) \sqrt{\frac{8 (t_i - t_j)^4 - 1 - 4 (t_i - t_j)^2 + \sqrt{1 + 8 (t_i - t_j)^2}}{8 (t_i - t_j)^4}}$$  \hspace{1cm} (26)$$

Assume we are in the competitive regime and want to investigate the effects of a regime switch. The initial reaction functions can be obtained by inserting (26) into the FOC’s of the policy makers (10) and letting $\alpha = 1.3984$, the equilibrium value derived above. In figure 2, these functions are given by the two dotted curves. We see that tax rates are strategic complements for intermediate and high levels of the other country’s tax rate. However, for very low levels of the other country’s tax rate, $\frac{\partial t_i}{\partial t_j}$ has a negative slope. This is because for low levels of $t_j$ total factor income in country $i$ is reduced if the other country’s tax rate increases. The decrease in capital income due to suppressed after-tax-returns overcompensates the wage increase due to capital inflows. By lowering taxes country $i$’s policy maker partly offsets this reduction in private consumption.
The immediate effect of introducing tax coordination can be inferred from the new reaction functions that we obtain by inserting (26) into (13) with $\alpha = 1.3984$. They are drawn as the two outer solid lines in figure 1. As discussed above, the internalization of tax externalities quite substantially shifts the reaction function outwards. Moreover, we see that taxes are now strategic substitutes not only for low (as before) but also for high values of the other country’s tax rate. In this regime, policy maker $i$ also lowers his tax rate in order to compensate a negative income effect for policy maker $j$. Nevertheless, taxes are still strategic complements for intermediate tax rates. However, the electorates react on this regime change by choosing fiscally more conservative policy makers. This leads to an inward shift of the reaction functions. Using (26), (13) and choosing the new equilibrium type of delegates of $\alpha = 0.4411$ results in the two inner solid lines in figure 1. As we derived from proposition 1, this policy effect overcompensates the internalization effect in our example. Therefore, equilibrium tax rates on capital are reduced.

\footnote{\textsuperscript{10}Since taxes are now set cooperatively, these are not reaction functions in a strict sense. However, tax coordination is equivalent to a situation in which each policy-maker sets his tax rate independently, but the other policy-maker’s utility enters his objective function with equal weight.}
4 Conclusion

This paper investigates the political economy effects of two different regimes of international capital taxation, tax competition and tax coordination. Contrary to the popular view, tax coordination can lead to lower tax rates. Once the political reactions are taken into account, tax coordination fails to eliminate the competition for internationally mobile capital. Instead, this incentive is moved to the stage in which policy makers are selected. This analysis leads to important policy implications. We do not expect large drifts in capital tax rates if tax coordination were introduced. If agents are sufficiently risk-averse with respect to public good consumption, e.g., as in the case of a log-linear utility function, tax rates would even decline further. The current political and economic debate on capital taxation in Europe focuses on the normative issue whether capital taxes, from a social point of view, are too low or too high. The positive question, whether tax coordination increases tax rates, is usually answered affirmative without explicit investigation. However, this paper shows that this view is questionable.

The model presented is certainly not well suited to give a direct recommendation on whether tax coordination is advisable from a social point of view, even though it is based on a standard model in the tax competition literature. For that, the model had to be simultaneously extended along several lines, which may probably come at the cost of losing tractability. The model should be dynamic to make savings endogenous and the symmetry assumption should be relaxed. It could also be worthwhile to allow for distorting wage taxes. Moreover, possible systematic differences between politically determined and socially optimally preferences for public goods have to be taken into account. But already in the present form, the paper clearly demonstrated that a decision on introducing tax coordination, e.g., in the European Union, must carefully take the induced political reactions into account.
Appendix

Proof of lemma 1

Under the competitive regime, taxes are defined by

\[ u_i \frac{\partial c_i}{\partial t_i} + \alpha_i v'_i \frac{\partial g_i}{\partial t_i} = 0 \]

For the reaction functions, we have by the implicit function theorem

\[ \frac{\partial t_j}{\partial t_i} = -\frac{\frac{\partial^2 c_i}{\partial t_i t_j} + u_i^t \frac{\partial c_i}{\partial t_i} + \alpha_i v'_i \frac{\partial^2 g_i}{\partial t_i^2} + \alpha_i v'_i \frac{\partial g_i}{\partial t_i} \frac{\partial c_i}{\partial t_i}}{u_i^t \frac{\partial^2 c_i}{\partial t_i^2} + u_i^t \left( \frac{\partial c_i}{\partial t_i} \right)^2 + \alpha_i v'_i \frac{\partial^2 g_i}{\partial t_i} \frac{\partial c_i}{\partial t_i} + \alpha_i v'_i \left( \frac{\partial g_i}{\partial t_i} \right)^2} \]

Replacing \( \alpha_i \) with the equilibrium condition (10), dividing both numerator and denominator by \( u_i' \) and using the definition for relative risk aversion \( r_g = -\frac{\alpha v''_i}{v'_i}, \quad r_c = -\frac{\alpha v''_i}{u_i'} \)
yields

\[ \frac{\partial t_j}{\partial t_i} = -\frac{\frac{\partial^2 c_i}{\partial t_i t_j} - r_c \frac{\partial c_i}{\partial t_i} \frac{\partial c_i}{\partial t_i} \frac{\partial c_i}{\partial t_i} + r_c \frac{\partial c_i}{\partial t_i} \frac{\partial g_i}{\partial t_i} \frac{\partial c_i}{\partial t_i} + r_c \frac{\partial g_i}{\partial t_i} \frac{\partial c_i}{\partial t_i}}{\frac{\partial^2 c_i}{\partial t_i^2} - r_c \left( \frac{\partial c_i}{\partial t_i} \right)^2 - r_c \frac{\partial c_i}{\partial t_i} \frac{\partial g_i}{\partial t_i} + r_c \frac{\partial g_i}{\partial t_i} \frac{\partial g_i}{\partial t_i}} \]

We have

\[ \frac{\partial c_i}{\partial t_i} = f''(k_i) (S - k_i) - S, \quad \frac{\partial c_i}{\partial t_i} = -f''(k_i) (S - k_i) \]

\[ \frac{\partial^2 c_i}{\partial t_i^2} = \frac{\partial}{\partial t_i} \left( \frac{f''(k_i) + f''(k_j)}{(f''(k_i) + f''(k_j))^2} \right) (S - k_i) - f''(k_i) (f''(k_i) + f''(k_j))^2 \]

\[ \frac{\partial^2 c_i}{\partial t_i t_j} = \frac{\partial}{\partial t_i} \left( \frac{f''(k_i) + f''(k_j)}{(f''(k_i) + f''(k_j))^2} \right) (S - k_i) + f''(k_i) (f''(k_i) + f''(k_j))^2 \]

\[ \frac{\partial^2 c_i}{\partial t_i t_j} = -\frac{\partial}{\partial t_i} \left( \frac{f''(k_i) + f''(k_j)}{(f''(k_i) + f''(k_j))^2} \right) (S - k_i) - f''(k_i) (f''(k_i) + f''(k_j))^2 \]

\[ \frac{\partial g_i}{\partial t_i} = k_i + t_i, \quad \frac{\partial g_i}{\partial t_j} = -f''(k_i) + f''(k_j) \]

\[ \frac{\partial^2 g_i}{\partial t_i^2} = \frac{2}{f''(k_i) + f''(k_j)} + t_i \left( \frac{f''(k_i) - f''(k_j)}{(f''(k_i) + f''(k_j))^2} \right) \]

\[ \frac{\partial^2 g_i}{\partial t_i t_j} = \frac{1}{(f''(k_i) + f''(k_j))^2} - t_i \left( \frac{f''(k_i) - f''(k_j)}{(f''(k_i) + f''(k_j))^3} \right) \]

\[ \frac{\partial^2 g_i}{\partial t_i t_j} = -t_i \left( \frac{f''(k_i) - f''(k_j)}{(f''(k_i) + f''(k_j))^3} \right) \]

Using the fact that \( t_i = t_j \Rightarrow k_i = k_j = S \) leads to the expression for the reaction function

\[ \frac{\partial t_j}{\partial t_i} = -\frac{1}{4f''(S)} - \frac{S}{2sf''(S) + t_i} + \frac{r_c}{v_t} S \frac{St_i}{2f''(S) + t_i} - \frac{r_c}{v_t} S \frac{S^2}{2s f''(S) + t_i} - \frac{r_c}{v_t} S \frac{S}{2f''(S)} \]
\[
\begin{align*}
&= - \frac{1}{4f'(S)} - \frac{S}{2Sf'(S) + t_i} + \frac{r_g}{2f'(S)} \\
&= - \frac{1}{2} + \frac{1}{1-\eta} - r_g \\
&= \frac{1}{2} + \eta \alpha e \frac{1}{c_i} r_c + \left(1 - \frac{1}{1-\eta} \right) r_g \\
&= \frac{1 + 2\eta \alpha e }{1-\eta} - 2r_g
\end{align*}
\]

In a similar fashion, we can derive the reaction functions \( \frac{\partial t_j}{\partial t_i} \) in the cooperative regime by implicitly differentiating (12) and employing the fact that in equilibrium, marginal utilities are the same in both countries.

\[
\frac{\partial t_j}{\partial t_i} = \begin{bmatrix}
  u_i' \frac{\partial^2 c_i}{\partial t_i \partial t_j} + u_i' \frac{\partial c_i}{\partial t_i} \frac{\partial c_j}{\partial t_j} + \alpha_i v_i' \frac{\partial^2 d_i}{\partial t_i \partial t_j} + \alpha_i v_i' \frac{\partial d_i}{\partial t_i} \frac{\partial d_j}{\partial t_j} \\
  + u_j' \frac{\partial^2 c_j}{\partial t_i \partial t_j} + u_j' \frac{\partial c_j}{\partial t_i} \frac{\partial c_i}{\partial t_j} + \alpha_j v_j' \frac{\partial^2 d_j}{\partial t_i \partial t_j} + \alpha_j v_j' \frac{\partial d_j}{\partial t_i} \frac{\partial d_i}{\partial t_j} \\
  = - \frac{\partial^2 c_i}{\partial t_i \partial t_j} - \frac{r_e}{c_i} \frac{\partial c_i}{\partial t_i} \frac{\partial c_j}{\partial t_j} - \frac{\partial^2 d_i}{\partial t_i \partial t_j} - \frac{r_g}{g_i} \frac{\partial d_i}{\partial t_i} \frac{\partial d_j}{\partial t_j} + \frac{\partial^2 c_j}{\partial t_i \partial t_j} + \frac{r_g}{g_j} \frac{\partial d_j}{\partial t_i} \frac{\partial d_i}{\partial t_j} \\
  - \frac{1}{2} \left( \frac{\partial^2 c_i}{\partial t_i^2} + \frac{\partial^2 c_j}{\partial t_j^2} \right) \frac{\partial c_i}{\partial t_i} \frac{\partial c_j}{\partial t_j} + \frac{r_g}{g_i} \frac{1}{2} \left( \frac{\partial^2 d_i}{\partial t_i^2} + \frac{\partial^2 d_j}{\partial t_j^2} \right) \frac{\partial d_i}{\partial t_i} \frac{\partial d_j}{\partial t_j}
\end{bmatrix}
\]

Using \( t_i = t_j \Rightarrow k_i = k_j = S \) and some algebra then yields

\[
\frac{\partial t_j}{\partial t_i} = \frac{-1/2 + 1 - (1-\eta) r_g}{1 + 1/\eta \alpha e r_c + (1-\eta)^2 + \eta r_g}
\]

References


2008
B01-08 Euro-Diplomatie durch gemeinsame „Wirtschaftsregierung“ Martin Seidel

2007
B03-07 Löhne und Steuern im Systemwettbewerb der Mitgliedstaaten der Europäischen Union Martin Seidel
B02-07 Konsolidierung und Reform der Europäischen Union Martin Seidel
B01-07 The Ratification of European Treaties - Legal and Constitutional Basis of a European Referendum. Martin Seidel

2006
B03-06 Financial Frictions, Capital Reallocation, and Aggregate Fluctuations Jürgen von Hagen, Haiping Zhang
B02-06 Financial Openness and Macroeconomic Volatility Jürgen von Hagen, Haiping Zhang
B01-06 A Welfare Analysis of Capital Account Liberalization Jürgen von Hagen, Haiping Zhang

2005
B11-05 Das Kompetenz- und Entscheidungssystem des Vertrages von Rom im Wandel seiner Funktion und Verfassung Martin Seidel
B10-05 Die Schutzklauseln der Beitrittsverträge Martin Seidel
B09-05 Measuring Tax Burdens in Europe Guntram B. Wolff
B08-05 Remittances as Investment in the Absence of Altruism Gabriel González-König
B07-05 Economic Integration in a Multicone World? Christian Volpe Martincus, Jennifer Pédussel Wu
B06-05 Banking Sector (Under?)Development in Central and Eastern Europe Jürgen von Hagen, Valeriya Dinger
B05-05 Regulatory Standards Can Lead to Predation Stefan Lutz
B04-05 Währungspolitik als Sozialpolitik Martin Seidel
B03-05 Public Education in an Integrated Europe: Studying to Migrate and Teaching to Stay? Panu Poutvaara
B02-05 Voice of the Diaspora: An Analysis of Migrant Voting Behavior Jan Fidrmuc, Orla Doyle
B01-05 Macroeconomic Adjustment in the New EU Member States Jürgen von Hagen, Iulia Traistaru

2004
B33-04 The Effects of Transition and Political Instability On Foreign Direct Investment Inflows: Central Europe and the Balkans Josef C. Brada, Ali M. Kutan, Tamer M. Yigit
B32-04 The Choice of Exchange Rate Regimes in Developing Countries: A Multinomial Panel Analysis Jürgen von Hagen, Jizhong Zhou
B31-04 Fear of Floating and Fear of Pegging: An Empirical Analysis of De Facto Exchange Rate Regimes in Developing Countries Jürgen von Hagen, Jizhong Zhou
B30-04 Der Vollzug von Gemeinschaftsrecht über die Mitgliedstaaten und seine Rolle für die EU und den Beitrittsprozess Martin Seidel
B29-04 Deutschlands Wirtschaft, seine Schulden und die Unzulänglichkeiten der einheitlichen Geldpolitik im Eurosystem Dieter Spethmann, Otto Steiger
B28-04 Fiscal Crises in U.S. Cities: Structural and Non-structural Causes Guntram B. Wolff
B27-04 Firm Performance and Privatization in Ukraine Galyna Grygorenko, Stefan Lutz
B26-04 Analyzing Trade Opening in Ukraine: Effects of a Customs Union with the EU Oksana Harbuzyuk, Stefan Lutz
B25-04 Exchange Rate Risk and Convergence to the Euro Lucjan T. Orlowski
B24-04 The Endogeneity of Money and the Eurosystem Otto Steiger
B23-04 Which Lender of Last Resort for the Eurosystem? Otto Steiger
B21-04 The Effectiveness of Subsidies Revisited: Accounting for Wage and Employment Effects in Business R+D Volker Reinthaler, Guntram B. Wolff
B20-04 Money Market Pressure and the Determinants of Banking Crises Jürgen von Hagen, Tai-kuang Ho
B19-04 Die Stellung der Europäischen Zentralbank nach dem Verfassungsvertrag Martin Seidel
Transmission Channels of Business Cycles Synchronization in an Enlarged EMU

Iulia Traistaru

Foreign Exchange Regime, the Real Exchange Rate and Current Account Sustainability: The Case of Turkey

Sübidey Togan, Hasan Ersel


Harry P. Bowen, Jennifer Pédussel Wu

Do Economic Integration and Fiscal Competition Help to Explain Local Patterns?

Christian Volpe Martincus

Euro Adoption and Maastricht Criteria: Rules or Discretion?

Jiri Jonas

The Role of Electoral and Party Systems in the Development of Fiscal Institutions in the Central and Eastern European Countries

Sami Yläoutinen

Measuring and Explaining Levels of Regional Economic Integration

Jennifer Pédussel Wu

Economic Integration and Location of Manufacturing Activities: Evidence from MERCOSUR

Pablo Sanguinetti, Iulia Traistaru, Christian Volpe Martincus

Economic Integration and Industry Location in Transition Countries

Laura Resmini

Testing Creditor Moral Hazard in Sovereign Bond Markets: A Unified Theoretical Approach and Empirical Evidence

Ayse Y. Evrensel, Ali M. Kutan

European Integration, Productivity Growth and Real Convergence

Tanner M. Yigit, Ali M. Kutan

The Contribution of Income, Social Capital, and Institutions to Human Well-being in Africa

Mina Baliamoune-Lutz, Stefan H. Lutz

Rural Urban Inequality in Africa: A Panel Study of the Effects of Trade Liberalization and Financial Deepening

Mina Baliamoune-Lutz, Stefan H. Lutz

Money Rules for the Eurozone Candidate Countries

Lucjan T. Orlowski

Who is in Favor of Enlargement? Determinants of Support for EU Membership in the Candidate Countries’ Referenda

Orla Doyle, Jan Fidrmuc

Over- and Underbidding in Central Bank Open Market Operations Conducted as Fixed Rate Tender

Ulrich Bindseil

Total Factor Productivity and Economic Freedom Implications for EU Enlargement

Ronald L. Moomaw, Euy Seok Yang

Die neuen Schutzklauseln der Artikel 38 und 39 des Beitrittsvertrages: Schutz der alten Mitgliedstaaten vor Störungen durch die neuen Mitgliedstaaten

Martin Seidel

2003

Macroeconomic Implications of Low Inflation in the Euro Area

Jürgen von Hagen, Boris Hofmann

The Effects of Transition and Political Instability on Foreign Direct Investment: Central Europe and the Balkans

Josef C. Brada, Ali M. Kutan, Tanner M. Yigit

The Performance of the Euribor Futures Market: Efficiency and the Impact of ECB Policy Announcements (Electronic Version of International Finance)

Kerstin Bernoth, Juergen von Hagen

Sovereign Risk Premia in the European Government Bond Market (überarbeitete Version zum Herunterladen)

Kerstin Bernoth, Juergen von Hagen, Ludger Schultechnot

How Flexible are Wages in EU Accession Countries?

Anna Iara, Iulia Traistaru

Monetary Policy Reaction Functions: ECB versus Bundesbank

Bernd Hayo, Boris Hofmann

Economic Integration and Manufacturing Concentration Patterns: Evidence from Mercosur

Iulia Traistaru, Christian Volpe Martincus

Reformzwänge innerhalb der EU angesichts der Osterweiterung

Martin Seidel

Reputation Flows: Contractual Disputes and the Channels for Inter-Firm Communication

William Pyle

Urban Primacy, Gigantism, and International Trade: Evidence from Asia and the Americas

Ronald L. Moomaw, Mohammed A. Alwosabi

An Empirical Analysis of Competing Explanations of Urban Primacy Evidence from Asia and the Americas

Ronald L. Moomaw, Mohammed A. Alwosabi
B18-03 The Effects of Regional and Industry-Wide FDI Spillovers on Export of Ukrainian Firms
Stefan H. Lutz, Oleksandr Talavera, Sang-Min Park

B17-03 Determinants of Inter-Regional Migration in the Baltic States
Mihails Hazans

B16-03 South-East Europe: Economic Performance, Perspectives, and Policy Challenges
Iulia Traistaru, Jürgen von Hagen

B15-03 Employed and Unemployed Search: The Marginal Willingness to Pay for Attributes in Lithuania, the US and the Netherlands
Jos van Ommeren, Mihails Hazans

B14-03 FClS and Economic Activity: Some International Evidence
Charles Goodhart, Boris Hofmann

B13-03 The IS Curve and the Transmission of Monetary Policy: Is there a Puzzle?
Charles Goodhart, Boris Hofmann

B12-03 What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Investment, Human Resources, and Geography
Gabriele Tondl, Goran Vuksic

B11-03 Die Weisungs- und Herrschaftsmacht der Europäischen Zentralbank im europäischen System der Zentralbanken - eine rechtliche Analyse
Martin Seidel

B10-03 Foreign Direct Investment and Perceptions of Vulnerability to Foreign Exchange Crises: Evidence from Transition Economies
Josef C. Brada, Vladimír Tomsík

B09-03 The European Central Bank and the Eurosystem: An Analysis of the Missing Central Monetary Institution in European Monetary Union
Gunnar Heinsohn, Otto Steiger

B08-03 The Determination of Capital Controls: Which Role Do Exchange Rate Regimes Play?
Jürgen von Hagen, Jizhong Zhou

B07-03 Nach Nizza und Stockholm: Stand des Binnenmarktes und Prioritäten für die Zukunft
Martin Seidel

B06-03 Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact
Jürgen von Hagen

B05-03 Reconsidering the Evidence: Are Eurozone Business Cycles Converging?
Michael Massmann, James Mitchell

B04-03 Do Ukrainian Firms Benefit from FDI?
Stefan H. Lutz, Oleksandr Talavera

B03-03 Europäische Steuerkoordination und die Schweiz
Stefan H. Lutz

B02-03 Commuting in the Baltic States: Patterns, Determinants, and Gains
Mihails Hazans

B01-03 Die Wirtschafts- und Währungsunion im rechtlichen und politischen Gefüge der Europäischen Union
Martin Seidel

2002

B30-02 An Adverse Selection Model of Optimal Unemployment Assurance
Marcus Hagedorn, Ashok Kaul, Tim Mennel

B29B-02 Trade Agreements as Self-protection
Jennifer Pédussel Wu

B29A-02 Growth and Business Cycles with Imperfect Credit Markets
Debajyoti Chakrabarty

B28-02 Inequality, Politics and Economic Growth
Debajyoti Chakrabarty

B27-02 Poverty Traps and Growth in a Model of Endogenous Time Preference
Debajyoti Chakrabarty

B26-02 Monetary Convergence and Risk Premiums in the EU Candidate Countries
Lucjan T. Orlowski

B25-02 Trade Policy: Institutional Vs. Economic Factors
Stefan Lutz

B24-02 The Effects of Quotas on Vertical Intra-industry Trade
Stefan Lutz

B23-02 Legal Aspects of European Economic and Monetary Union
Martin Seidel

B22-02 Der Staat als Lender of Last Resort - oder: Die Achillesverse des Eurosystens
Otto Steiger

B21-02 Nominal and Real Stochastic Convergence Within the Transition Economies and to the European Union: Evidence from Panel Data
Ali M. Kutan, Taner M. Yigit

B20-02 The Impact of News, Oil Prices, and International Spillovers on Russian Financial Markets
Bernd Hayo, Ali M. Kutan
B19-02 East Germany: Transition with Unification, Experiments and Experiences
Jürgen von Hagen, Rolf R. Strauch, Guntram B. Wolff

B18-02 Regional Specialization and Employment Dynamics in Transition Countries
Iulia Traistaru, Guntram B. Wolff

B17-02 Specialization and Growth Patterns in Border Regions of Accession Countries
Laura Resmini

B16-02 Regional Specialization and Concentration of Industrial Activity in Accession Countries
Iulia Traistaru, Peter Nijkamp, Simonetta Longhi

B15-02 Does Broad Money Matter for Interest Rate Policy?
Matthias Brückner, Andreas Schaber

B14-02 The Long and Short of It: Global Liberalization, Poverty and Inequality
Christian E. Weller, Adam Hersch

B13-02 De Facto and Official Exchange Rate Regimes in Transition Economies
Jürgen von Hagen, Jizhong Zhou

B12-02 Argentina: The Anatomy of A Crisis
Jiri Jonas

B11-02 The Eurosystem and the Art of Central Banking
Gunnar Heinsohn, Otto Steiger

Martin Seidel

B09-02 Monetary Policy in the Euro Area - Lessons from the First Years
Volker Clausen, Bernd Hayo

B08-02 Has the Link Between the Spot and Forward Exchange Rates Broken Down? Evidence From Rolling Cointegration Tests
Ali M. Kutan, Su Zhou

B07-02 Perspektiven der Erweiterung der Europäischen Union
Martin Seidel

B06-02 Is There Asymmetry in Forward Exchange Rate Bias? Multi-Country Evidence
Su Zhou, Ali M. Kutan

B05-02 Real and Monetary Convergence Within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach
Josef C. Brada, Ali M. Kutan, Su Zhou

B04-02 Asymmetric Monetary Policy Effects in EMU
Volker Clausen, Bernd Hayo

B03-02 The Choice of Exchange Rate Regimes: An Empirical Analysis for Transition Economies
Jürgen von Hagen, Jizhong Zhou

B02-02 The Euro System and the Federal Reserve System Compared: Facts and Challenges
Karlheinz Ruckriegel, Franz Seitz

B01-02 Does Inflation Targeting Matter?
Manfred J. M. Neumann, Jürgen von Hagen

2001

B29-01 Is Kazakhstan Vulnerable to the Dutch Disease?
Karlygash Kuralbayeva, Ali M. Kutan, Michael L. Wyzan

B28-01 Political Economy of the Nice Treaty: Rebalancing the EU Council. The Future of European Agricultural Policies
Deutsch-Französisches Wirtschaftspolitisches Forum

B27-01 Investor Panic, IMF Actions, and Emerging Stock Market Returns and Volatility: A Panel Investigation
Bernd Hayo, Ali M. Kutan

B26-01 Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries
Konstantinos Drakos, Ali M. Kutan

B25-01 Monetary Convergence of the EU Candidates to the Euro: A Theoretical Framework and Policy Implications
Lucjan T. Orlowski

B24-01 Disintegration and Trade
Jarko and Jan Fidrmuc

B23-01 Migration and Adjustment to Shocks in Transition Economies
Jan Fidrmuc

B22-01 Strategic Delegation and International Capital Taxation
Matthias Brückner

B21-01 Balkan and Mediterranean Candidates for European Union Membership: The Convergence of Their Monetary Policy With That of the Eurozone Central Bank
Josef C. Brada, Ali M. Kutan

B20-01 An Empirical Inquiry of the Efficiency of Intergovernmental Transfers for Water Projects Based on the WRDA Data
Anna Rubinchik-Pessach

B19-01 Detrending and the Money-Output Link: International Evidence
R.W. Hafer, Ali M. Kutan
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>B18-01</td>
<td>Monetary Policy in Unknown Territory. The European Central Bank in the Early Years</td>
<td>Jürgen von Hagen, Matthias Brückner</td>
</tr>
<tr>
<td>B17-01</td>
<td>Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Carribean Countries</td>
<td>Mark Hallerberg, Patrick Marier</td>
</tr>
<tr>
<td>B16-01</td>
<td>Sources of Inflation and Output Fluctuations in Poland and Hungary: Implications for Full Membership in the European Union</td>
<td>Selahattin Dibooglu, Ali M. Kutan</td>
</tr>
<tr>
<td>B15-01</td>
<td>Programs Without Alternative: Public Pensions in the OECD</td>
<td>Christian E. Weller</td>
</tr>
<tr>
<td>B14-01</td>
<td>Formal Fiscal Restraints and Budget Processes As Solutions to a Deficit and Spending Bias in Public Finances - U.S. Experience and Possible Lessons for EMU</td>
<td>Rolf R. Strauch, Jürgen von Hagen</td>
</tr>
<tr>
<td>B13-01</td>
<td>German Public Finances: Recent Experiences and Future Challenges</td>
<td>Jürgen von Hagen, Rolf R. Strauch</td>
</tr>
<tr>
<td>B12-01</td>
<td>The Impact of Eastern Enlargement On EU-Labour Markets. Pensions Reform Between Economic and Political Problems</td>
<td>Deutsch-Französisches Wirtschaftspolitisches Forum</td>
</tr>
<tr>
<td>B11-01</td>
<td>Inflationary Performance in a Monetary Union With Large Wage Setters</td>
<td>Lilia Cavallar</td>
</tr>
<tr>
<td>B09-01</td>
<td>Democracy in Transition Economies: Grease or Sand in the Wheels of Growth?</td>
<td>Jan Fidrmuc</td>
</tr>
<tr>
<td>B08-01</td>
<td>The Functioning of Economic Policy Coordination</td>
<td>Jürgen von Hagen, Susanne Mundschenk</td>
</tr>
<tr>
<td>B07-01</td>
<td>The Convergence of Monetary Policy Between Candidate Countries and the European Union</td>
<td>Josef C. Brada, Ali M. Kutan</td>
</tr>
<tr>
<td>B06-01</td>
<td>Opposites Attract: The Case of Greek and Turkish Financial Markets</td>
<td>Konstantinos Drakos, Ali M. Kutan</td>
</tr>
<tr>
<td>B05-01</td>
<td>Trade Rules and Global Governance: A Long Term Agenda. The Future of Banking.</td>
<td>Deutsch-Französisches Wirtschaftspolitisches Forum</td>
</tr>
<tr>
<td>B04-01</td>
<td>The Determination of Unemployment Benefits</td>
<td>Rafael di Tella, Robert J. MacCulloch</td>
</tr>
<tr>
<td>B03-01</td>
<td>Preferences Over Inflation and Unemployment: Evidence from Surveys of Happiness</td>
<td>Rafael di Tella, Robert J. MacCulloch, Andrew J. Oswald</td>
</tr>
<tr>
<td>B02-01</td>
<td>The Konstanz Seminar on Monetary Theory and Policy at Thirty</td>
<td>Michele Fratianni, Jürgen von Hagen</td>
</tr>
<tr>
<td>B01-01</td>
<td>Divided Boards: Partisanship Through Delegated Monetary Policy</td>
<td>Etienne Farvaque, Gael Lagadec</td>
</tr>
</tbody>
</table>

**2000**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>B20-00</td>
<td>Breakin-up a Nation, From the Inside</td>
<td>Etienne Farvaque</td>
</tr>
<tr>
<td>B19-00</td>
<td>Income Dynamics and Stability in the Transition Process, general Reflections applied to the Czech Republic</td>
<td>Jens Hölscher</td>
</tr>
<tr>
<td>B18-00</td>
<td>Budget Processes: Theory and Experimental Evidence</td>
<td>Karl-Martin Ehrhart, Roy Gardner, Jürgen von Hagen, Claudia Keser, Martin Seidel</td>
</tr>
<tr>
<td>B17-00</td>
<td>Rückführung der Landwirtschaftspolitik in die Verantwortung der Mitgliedsstaaten? - Rechts- und Verfassungsfragen des Gemeinschaftsrechts</td>
<td>Christa Randzio-Plath, Tomasso Padoa-Schioppa, Jürgen von Hagen, Ralf Hepp</td>
</tr>
<tr>
<td>B16-00</td>
<td>The European Central Bank: Independence and Accountability</td>
<td>Selahattin Dibooglu, Ali M. Kutan</td>
</tr>
<tr>
<td>B15-00</td>
<td>Regional Risk Sharing and Redistribution in the German Federation</td>
<td>Nauro F. Campos</td>
</tr>
</tbody>
</table>
B12-00 Rechtsetzung und Rechtsangleichung als Folge der Einheitlichen Europäischen Währung

B11-00 A Dynamic Approach to Inflation Targeting in Transition Economies

B10-00 The Importance of Domestic Political Institutions: Why and How Belgium Qualified for EMU

B09-00 Rational Institutions Yield Hysteresis

B08-00 The Effectiveness of Self-Protection Policies for Safeguarding Emerging Market Economies from Crises

B07-00 Financial Supervision and Policy Coordination in The EMU

B06-00 The Demand for Money in Austria

B05-00 Liberalization, Democracy and Economic Performance during Transition

B04-00 A New Political Culture in The EU - Democratic Accountability of the ECB

B03-00 Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990’s

B02-00 Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic

B01-00 Monetary Union and Fiscal Federalism

1999


B25-99 Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe

B24-99 What Makes a Revolution?

B23-99 Informal Family Insurance and the Design of the Welfare State

B22-99 Partisan Social Happiness

B21-99 The End of Moderate Inflation in Three Transition Economies?

B20-99 Subnational Government Bailouts in Germany

B19-99 The Evolution of Monetary Policy in Transition Economies

B18-99 Why are Eastern Europe’s Banks not failing when everybody else’s are?

B17-99 Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia

B16-99 Multinational Banks and Development Finance

B15-99 Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?

B14-99 Industry Effects of Monetary Policy in Germany

B13-99 Financial Fragility or What Went Right and What Could Go Wrong in Central European Banking?

B12-99 Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work

B11-99 Financial Supervision and Policy Coordination in the EMU

B10-99 Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland

B09-99 Monetary Policy, Parameter Uncertainty and Optimal Learning

B08-99 The Connection between more Multinational Banks and less Real Credit in Transition Economies

B07-99 Financial Supervision and Policy Coordination in The EMU

B06-99 The Demand for Money in Austria

B05-99 Liberalization, Democracy and Economic Performance during Transition

B04-99 A New Political Culture in The EU - Democratic Accountability of the ECB

B03-99 Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990’s

B02-99 Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic

B01-99 Monetary Union and Fiscal Federalism

1999


B25-99 Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe

B24-99 What Makes a Revolution?

B23-99 Informal Family Insurance and the Design of the Welfare State

B22-99 Partisan Social Happiness

B21-99 The End of Moderate Inflation in Three Transition Economies?

B20-99 Subnational Government Bailouts in Germany

B19-99 The Evolution of Monetary Policy in Transition Economies

B18-99 Why are Eastern Europe’s Banks not failing when everybody else’s are?

B17-99 Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia

B16-99 Multinational Banks and Development Finance

B15-99 Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?

B14-99 Industry Effects of Monetary Policy in Germany

B13-99 Financial Fragility or What Went Right and What Could Go Wrong in Central European Banking?

B12-99 Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work

B11-99 Financial Supervision and Policy Coordination in the EMU

B10-99 Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland

B09-99 Monetary Policy, Parameter Uncertainty and Optimal Learning

B08-99 The Connection between more Multinational Banks and less Real Credit in Transition Economies
B07-99 Comovement and Catch-up in Productivity across Sectors: Evidence from the OECD Christopher M. Cornwell and Jens-Uwe Wächter

B06-99 Productivity Convergence and Economic Growth: A Frontier Production Function Approach Christopher M. Cornwell and Jens-Uwe Wächter

B05-99 Tumbling Giant: Germany’s Experience with the Maastricht Fiscal Criteria Jürgen von Hagen and Rolf Strauch

B04-99 The Finance-Investment Link in a Transition Economy: Evidence for Poland from Panel Data Christian Weller

B03-99 The Macroeconomics of Happiness Rafael Di Tella, Robert MacCulloch and Andrew J. Oswald

B02-99 The Consequences of Labour Market Flexibility: Panel Evidence Based on Survey Data Rafael Di Tella and Robert MacCulloch

B01-99 The Excess Volatility of Foreign Exchange Rates: Statistical Puzzle or Theoretical Artifact? Robert B.H. Hauswald

1998

B16-98 Labour Market + Tax Policy in the EMU Deutsch-Französisches Wirtschaftspolitisches Forum

B15-98 Can Taxing Foreign Competition Harm the Domestic Industry? Stefan Lutz

B14-98 Free Trade and Arms Races: Some Thoughts Regarding EU-Russian Trade Rafael Reuveny and John Maxwell

B13-98 Fiscal Policy and Intrational Risk-Sharing Jürgen von Hagen

B12-98 Price Stability and Monetary Policy Effectiveness when Nominal Interest Rates are Bounded at Zero Athanasios Orphanides and Volker Wieland

B11A-98 Die Bewertung der "dauerhaft tragbaren öffentlichen Finanzlage"der EU Mitgliedstaaten beim Übergang zur dritten Stufe der EWWU Rolf Strauch

B11-98 Exchange Rate Regimes in the Transition Economies: Case Study of the Czech Republic: 1990-1997 Julius Horvath and Jiri Jonas

B10-98 Der Wettbewerb der Rechts- und politischen Systeme in der Europäischen Union Martin Seidel

B09-98 U.S. Monetary Policy and Monetary Policy and the ESCB Robert L. Hetzel

B08-98 Money-Output Granger Causality Revisited: An Empirical Analysis of EU Countries (überarbeitete Version zum Herunterladen) Bernd Hayo

B07-98 Designing Voluntary Environmental Agreements in Europe: Some Lessons from the U.S. EPA’s 33/50 Program John W. Maxwell

B06-98 Monetary Union, Asymmetric Productivity Shocks and Fiscal Insurance: an Analytical Discussion of Welfare Issues Kenneth Kletzer

B05-98 Estimating a European Demand for Money (überarbeitete Version zum Herunterladen) Bernd Hayo

B04-98 The EMU’s Exchange Rate Policy Deutsch-Französisches Wirtschaftspolitisches Forum

B03-98 Central Bank Policy in a More Perfect Financial System Jürgen von Hagen / Ingo Fender

B02-98 Trade with Low-Wage Countries and Wage Inequality Jaleel Ahmad

B01-98 Budgeting Institutions for Aggregate Fiscal Discipline Jürgen von Hagen

1997

B04-97 Macroeconomic Stabilization with a Common Currency: Does European Monetary Unification Create a Need for Fiscal Insurance or Federalism? Kenneth Kletzer


B02-97 Employment and EMU Deutsch-Französisches Wirtschaftspolitisches Forum (a Forum organized by ZEI)

B01-97 A Stability Pact for Europe (a Forum organized by ZEI)