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Discussion Paper Nr. 6

# Distributional Consequences of Capital Tax Coordination

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**FWF**

# Distributional Consequences of Capital Tax Coordination

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## **Abstract**

This paper has two ambitions. First, we review the economic literature on tax coordination. Second, we argue that the taxation of capital is not an issue of efficiency, but instead an issue of equity. In particular, capital tax coordination can alter the vertical distribution of income between the production factors capital and labour. Capital is in perfectly elastic supply in a small open economy. Therefore the tax incidence falls to the immobile factor, labour. By contrast, capital is in inelastic supply at the international level, and therefore the capital tax incidence falls completely on capital, without welfare losses of taxation.

## **1. Introduction**

It is the ambition of this paper to review the literature on tax coordination with a special emphasis on distributional consequences. The literature is divided on its view of tax coordination. One strand of literature emphasises the importance of tax competition to induce efficiency in an international setting. Another strand of literature focuses on the inefficiencies associated with tax competition, and suggests tax harmonization as a possible solution.

Instead of discussing these two strands of literature separately, it turns out that we can discuss it by answering a series of questions. First, we ask if we need capital taxation? Second, we ask why we need capital taxation? Third, we ask why capital income taxes are set too low? Forth, we ask why capital income taxes are set too high? Finally, we ask which form of tax coordination could improve welfare? These five questions should allow us to review the papers and understand why the two authors draw divergent conclusions.

## ***2. Do we need capital taxation?***

With the exception of Pigovian taxes to mitigate economic distortions, taxes are a means to collect revenue for government expenditures. It is beyond the scope of this paper to investigate the latter, and in line with the literature (and the two authors) we shall therefore assume that governments need to raise a given amount of revenue. The question then is, which taxes should governments levy? All taxes introduce distortions in the economy, which should be avoided. For a given amount of revenue, the distortion due to the income effect will be identical<sup>1</sup>. Therefore an optimal tax system should minimize the distortions due to the substitution effect<sup>2</sup>. The only taxes that do not trigger a substitution effect are lump-sum or poll taxes. Lump-sum taxes can for instance be levied per person or per unit of existing capital income. If levied per person, lump-sum taxes are extremely regressive, and therefore rejected by most governments on distributional grounds<sup>3</sup>. Lump-sum taxes could in principle also be levied per unit of existing capital, as this would not influence future investment decisions. A government that would engage in such a practice once could not be trusted not to use the practice again, so that investors expect future taxes on capital, which tends to reduce capital accumulation<sup>4</sup>. Feld (2005) notes, that the problem is similar to a hold-up problem that has been well analyzed in the industrial organization literature. He argues that unless governments can commit, or firms can move capital costless after installation, the first best solution has to be discarded, and we have to focus on second best solutions.

The theory of optimal taxation suggests a set of consumption taxes that minimizes the excess burden of taxation (Stiglitz, 2000). As distortions are larger for goods in elastic supply and demand, it turns out that the optimal tax rate is inversely proportional to the price elasticities. Taxes on products that are inelastic in demand should therefore be taxed higher. The theory suggests that apart from consumption taxes, only profits<sup>5</sup> should be completely taxed away. In particular, the theory

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<sup>1</sup> Taxes reduce the income of individuals, who can therefore consume less.

<sup>2</sup> A tax on a particular good changes relative prices, which distorts consumption decisions.

<sup>3</sup> Indeed, lump-sum taxes levied on persons are not as innocent as they appear, as they do distort fertility decisions, even if children are tax exempt.

<sup>4</sup> In principle, governments could levy future capital taxes based on the capital stock existing in a given initial year, say 2005. In a closed economy, this would allow lump-sum taxation based on wealth. In an open economy, capital owners have an incentive to leave the economy (and it would require a capital flight tax equivalent to the discounted stream of future taxes on capital to prevent this - the tax on capital for the capital flight tax has to be at least as high as the capital income tax).

<sup>5</sup> Profits are seen as the result of an inefficient market setting of imperfect competition.

suggests that capital does not need to be taxed, as consumption can fully replicate capital taxes.

The argument is simple to develop. Suppose an individual earns income  $E$  in the first period, and spends it on first period and second period consumption,  $C_1$  and  $C_2$  respectively. Consumption is taxed each period, and income not spent in the first period yields interest  $r$ . The individual's budget constraint therefore reads:

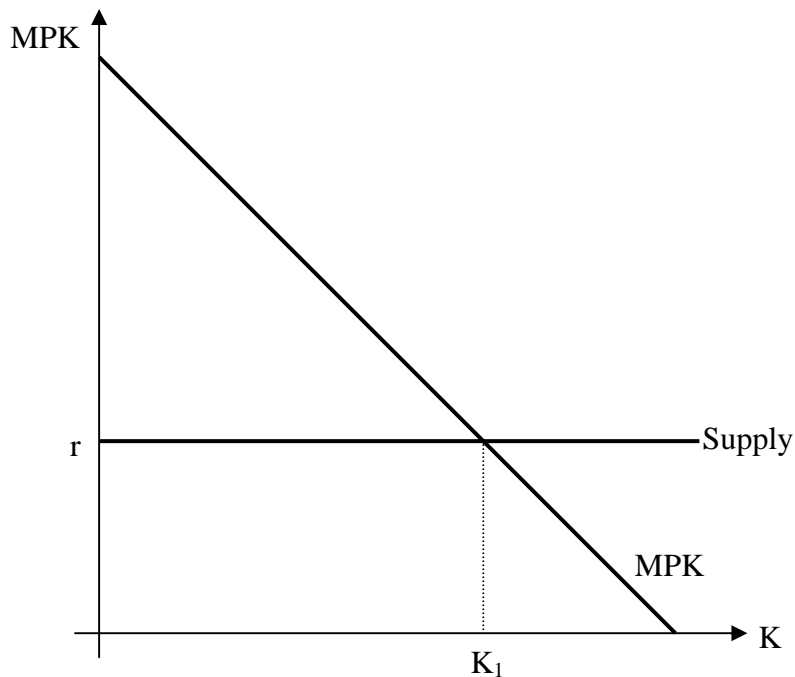
$$E = (1 + t_1)C_1 + (1 + t_2)C_2/(1 + r).$$

Rearranging this equation to get an expression in second period income, we obtain:

$$C_2 = (1 + t_1 - t_2)(1 + r)[E/(1 + t_1) - C_1].$$

Income divided by first period taxes is net income. Net income minus first period consumption is wealth. Multiplied by the interest factor  $(1 + r)$  gives wealth and income from wealth. The first parenthesis in the above equation is therefore the tax on wealth and wealth income. It is positive if  $t_1 > t_2$  and negative otherwise. Therefore, no capital income taxation is required, as consumption taxes can fully replicate a capital tax. (Nowotny, 1999)

There is an even stronger efficiency argument against capital taxation in open economies. In the context of open economies, we typically assume that capital is mobile internationally, but in fixed supply at the global level. Labour, by contrast, is considered to be in fixed supply nationally. On a particular national capital market, this implies a horizontal supply curve (at the global interest rate  $r$ ), and a conventional falling demand schedule, due to the law of the diminishing marginal product of capital. Optimality implies that the marginal product of capital ( $mpk$ ) equals the world interest rate.

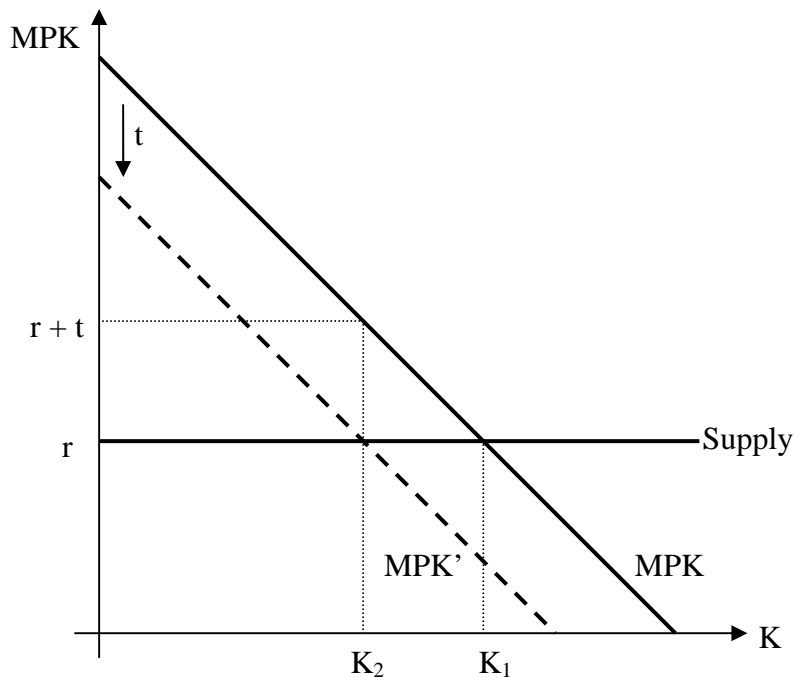


Countries that levy a capital tax of  $t$  alter the optimality condition to  $mpk = r + t$ . The net return to capital  $mpk - t$  still equals the global interest rate. With a diminishing marginal product of capital, this implies a lower capital stock<sup>6</sup>. (Sinn, 2003)

In terms of welfare, there is no surplus to capital owners nationally, as the supply of capital is equal to the net return earned. As firms would be willing to pay a higher price for the first units of capital than the interest rate, firms make a surplus, which is distributed to workers under perfect competition. A tax on capital will earn the same net return to capital. However, the surplus going to labour will decline. It will decline by more than the tax revenue, as the demand schedule has a negative slope. Hence, workers suffer more from a capital tax than from a tax on labour. If we only consider the national capital market, we could draw the premature conclusion that capital taxes in an international environment have negative distributional consequences.

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<sup>6</sup> In contrast to common believe, an increase in capital taxation does not imply a complete flight of capital. The amount of capital leaving the economy depends on the output elasticity of capital, which is typically less than unity, i.e. a one percent increase in  $t$  reduces  $K$  by less than one percent.



### 3. Why do we need capital taxation?

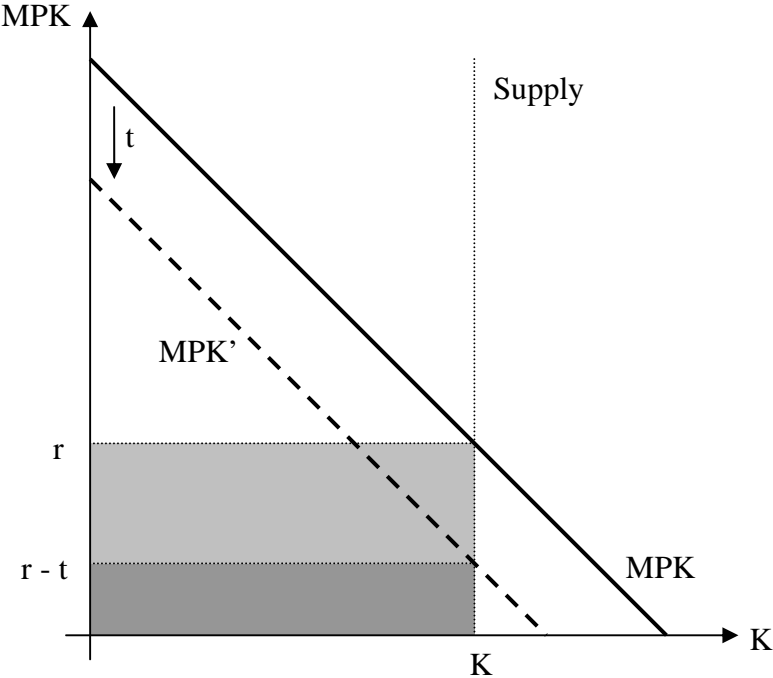
Minimizing distortions, as suggested by the above theory of optimal taxation is equivalent to minimizing the excess burden of taxation. In so doing, the theory ignores distributional consequences. In particular, it suggests the highest tax rates for inelastic goods, which tend to be necessities most consumed by poor individuals, whereas it suggests to tax elastic goods least, which conforms to consumption patterns of the rich. As shown above, it also implies taxing first period consumption higher than second period consumption ( $t_1 > t_2$ ), which implies that young individuals should be taxed higher than old individuals. If young individuals are poorer than old, it also exhibits negative intergenerational distributional implications.

If we wish to include distributional considerations in taxation<sup>7</sup>, we need to resort to a third best policy. In such a policy, capital taxation can be an important instrument to redistribute income vertically from capital to labour. If wealth correlates with income (as it empirically does), capital taxation can also contribute to the interpersonal or horizontal redistribution of income.

This suggests that in a closed economy, the predominant argument for capital taxation is redistribution. We cannot immediately carry this argument forward to the

<sup>7</sup> In a pure neoclassical economy, distribution is a non-issue. Production factors are rewarded according to their respective marginal product, and interpersonal differences in wealth are due to individual choice, in particular over patience, only.

open economy, as we have previously shown that workers actually suffer from a capital tax increase in a particular country. However, if capital is indeed in inelastic supply globally (which it is at least in the short run), then the surplus to capital owners is equal to the total revenue, or  $rK$  (in the graph below, both areas shaded in grey). Hence capital owners do earn rents in the open economy.



If all countries introduce a tax on capital, the net interest rate would fall globally to  $r - t$ . The surplus to owners of capital would fall to the area shaded in dark grey, and tax revenue would equal the area in light grey. Total surplus in the economy would not change. Under globally perfectly inelastic supply of capital, capital taxation would not generate any excess burden. This would not be the case if we tax labour. Hence internationally capital income taxation still enables the redistribution of income. But it required the joint efforts of all countries, or tax coordination. Both the theory of optimal taxation and the international taxation of capital therefore come to the conclusion that capital taxation is allocatively inefficient, but improves equity within an economy. We should therefore tax capital predominantly because it improves the distribution of income.

The literature discusses distributional consequences at the margins. Feld (2005) discusses the impact of migration (rich individuals move to countries with low taxes and low social transfers, whereas poor people would move in the opposite direction). He also acknowledges the fact that public expenditure will shift from welfare



expenditures to infrastructure expenditures. He notes that "firms supposedly benefit more heavily" from "a shift from social transfers to infrastructural spending".

There is an empirical for both the migration hypothesis, and finds little evidence in Europe, and the redistribution issue. Winner (2004) notes that in 23 OECD countries and the time period 1965 to 2000, capital mobility shifts the tax burden from capital taxation to labour taxes. This clearly implies a deterioration in income distribution. Feld (2005) presents a lot of evidence for Switzerland, where apparently tax competition among cantons does not induce a decline in the Swiss welfare state. He uses this as evidence to refute the redistributive argument on empirical grounds. In passing, he notes however, that "there is some redistribution at the federal level".

The European Union so far has no tax privileges. Still, there is some redistribution within Europe, particularly through structural and cohesion funds. However, these allow for redistribution only from rich regions in Europe to poor regions, but do not allow for intra-national redistribution. Moreover, they are quantitatively insignificant and certainly cannot replace redistribution through taxes and social transfers as undergone by EU member states. It is of course illusionary to imagine the European Union to ever redistribute enough income to satisfy the needs of the people (similar to Swiss cantons today), so that indeed tax competition could lead to an outcome that does not correspond to the will of the people.

#### ***4. Why are capital income taxes set too low?***

The previous chapter has concluded that the reason to coordination capital income taxation is predominantly an issue of income redistribution. Vertical redistribution implies that rich capital owners should pay part of welfare expenses. And, of course, firms should pay for public infrastructure that improves capital productivity. We will now ask under which conditions capital contributes to the financing of the welfare state, and under which conditions they pay too little taxes.

Suppose public infrastructure is an impure public good with congestion. Private marginal costs to firms of using public infrastructure ( $C$ ) depends positively on the size of the firm ( $K$ ), and negatively on the amount of infrastructure provided ( $G$ ). With internationally mobile capital, profit maximization implies

$$mpk = r + t + C(K, G).$$

A benevolent government would maximize income of its citizens, which equals

$$E = Y - r(K - A) - KC(K, G) - G,$$

where  $Y$  is output,  $A$  is domestic assets, and  $r(K - A)$  is interest income going abroad. If a country is a net exporter of capital, this term would be negative.  $C(K, G)$  are total user costs of public infrastructure, and  $G$  is the amount of public goods provided. With a constant world interest rate and a diminishing marginal product of capital, the tax rate and the capital stock are inversely related, so that we can let governments maximize income with respect to capital and infrastructure expenditures. The first order condition with respect to capital yields

$$mpk = r + C(K, G) + K (dC/dK).$$

Comparing this with the firm's optimality condition, we find that the optimal capital income tax equals  $t^* = K (dC/dK)$ . The optimal tax rate is equal to the elasticity of user cost with respect to capital multiplied by the marginal cost for using the public infrastructure. The first order condition with respect to infrastructure yields  $-K(dC/dG) = 1$ . This implies that the usage cost of the public good should equal the marginal cost of provision, which is unity. (Sinn, 2003)

Clearly, this simple model identifies government expenditures and government revenues separately. Hence the two need not necessarily match. In order to identify whether capital taxation generates a surplus, which could be used to finance part of the welfare state, we invoke Euler's theorem, which reads

$$K(dC/dK) + G(dC/dG) = xC,$$

where  $x$  is degree of homogeneity (scale factor) in the usage cost function of public infrastructure. Substituting the two first order conditions for the derivatives, we find  $tK - G = xCK$ . Hence, capital taxation yields a surplus if and only if the scale factor is positive. A tax on capital can finance public infrastructure only when the usage cost function does not have a negative degree of homogeneity. A public good with a positive scale factor is a club good, and can be financed entirely through membership fees. By contrast, most public goods exhibit economies of scale. In our example, this would be the case if a small increase in  $G$  leads to a large decline in costs, whereas a small reduction in usage ( $K$ ) changes costs only little. Most public goods exhibit this property.

Starting from a capital tax rate that represents preferences over redistribution, governments have an incentive to reduce the capital tax rate. If other countries don't react, this reduction would lure in additional capital, leading to an increase in revenues. However, other countries have the same incentive to reduce tax rates, leading to tax competition below the socially preferable level, and in case of public

goods with scale economies, even below self-financing of public infrastructure. This is the essence of the fiscal externality present with tax competition. Not only would workers have to bear the entire cost of the welfare state, they would also have to bear part of the infrastructure costs. Therefore, tax competition may not only be negative for equity considerations, but also from an efficiency perspective. (Sinn, 2003)

A number of arguments beyond the simple model of capital tax competition with public infrastructure presented above have been discussed in the literature. Zodrow (2003) notes that tax competition can lead perfectly identical regions to inefficiently specialize in different activities, simply because they implement a different mix of capital taxation and infrastructure expenditures. He also notes that capital taxation can be a (weak) alternative to profit taxation, if the latter is not available due to transfer pricing. He finally notes that international public goods would reduce the incentive to compete over tax rates, as the productivity of one economy now depends on the amount of infrastructure provided by the other, and therefore on the amount of tax revenue levied by the foreign government. Lars Feld (2005) touches on the issue when discussing regional spillovers. He makes the point that regional spillovers could work in the opposite direction, if the foreign public good gets congested by domestic citizens. Whereas international public goods should reduce the incentive to coordinate capital taxation, regional spillovers may enforce the incentive to coordinate.

### ***5. Why are capital income taxes set too high?***

Clearly, the above analysis has assumed that governments behave optimally when setting policy. However, optimality was constrained, as each government would have taken decisions of other governments as given. Fully benevolent governments would get together and coordinate on a level of taxation, or a tax policy, which would ensure that at least all public infrastructure is financed through taxes on capital income. However, as Stiglitz (2000) has stated, good government is scarce public good. And this argument is frequently mentioned with respect to tax coordination. "The state does not always do what it ought to do. Political actors follow their own self-interest and seek to get rents from the political process." (Feld, 2005)

Even if we start out from a situation of tax competition with fiscal externalities, raising tax rates may not necessarily improve welfare. As Keen and Edwards (1996) have

demonstrated, capital taxation will only increase welfare for the citizens under certain conditions. In particular, tax coordination improves welfare through an income effect which internalizes the fiscal externality, implying higher revenue from capital taxation and a higher level of public expenditures. Tax coordination reduces welfare due to a substitution effect (or relative price effect), which identifies how much of the welfare gain the policymaker is able to divert from private welfare to rents. If the negative substitution effect outweighs the positive income effect, tax coordination may be inefficient from the beginning. Selfish policymakers will agree coordination measures until they can no longer extract private rents. Capital taxation among selfish policymakers may therefore almost certainly end up with capital taxes too high.

The literature is divided on the issue. Some authors suggest that rent seeking of policymaker is indeed a crucial problem, and competition among policymakers, in particular over capital taxation, could improve welfare. Others, by contrast, have a more positive view on policymakers. For instance, Genser (2005) clearly states his belief "that there is room for further coordination which properly implemented should be beneficial to the member states".

## ***6. Which form of tax coordination could improve welfare?***

For the reasons mentioned above, there may be too much or too little capital taxation. Either way, tax coordination can be justified both on efficiency grounds and on distributional grounds. However, depending on the motivation for tax coordination, different regimes of coordination will be implemented. If capital taxation is coordinated in order to internalize fiscal externalities, we can expect countries to suffer from similar levels of externalities, and therefore a similar increase in tax rates will be supported. Even if tax coordination is due to rent-seeking politicians, we would expect similar behaviour of politicians in similar constitutional systems (Janeba and Schjelderup, 2002), and therefore again similar increase in tax rates will be supported. However, if tax coordination is aspired in order to alter the vertical distribution, we would expect countries with different preferences for equality to target different capital tax rates, rendering tax coordination more difficult.

There has been a sequence of proposals in the European Union to coordinate capital taxation, starting from the Neumark report (1962), followed by the Van den Tempel report (1970), the CIT Draft Directive, the Ruding report (1992), and finally the Bolkestein report (2001). We may speculate that the reason that policymakers could

not agree was not so much the existence of market inefficiencies or the consequence of the political economy, but that agreement over the size of redistribution could not be reached because of differences in the underlying preference structure.

We can find support for this hypothesis in Feld (2005), who concludes: "Whilst [fiscal competition] does apparently not lead to any efficiency problems at least there is no evidence supporting this hypothesis, its impact on the ability of governments to conduct redistribution is less favourable." Feld then continues to discuss proposals to mitigate the problem, in particular residence requirements and delayed integration in welfare systems. Even there we find support for some form of tax coordination at least for multinationals, as multinational firms can easily shift profits to jurisdictions with low tax rates. In fact, profit shifting leads to redistribution, because tax payments are foregone and no relocation of firms occurs.

The taxation of multinationals should indeed be a main objective of European corporate income tax coordination. There are three main arguments, namely the provision of a level playing field for business activities, non-discrimination of cross border activities, and the mitigation of fiscal externalities. Whilst the latter has been discussed at length throughout this paper, the prior two deserve some consideration. Non-discrimination is certainly a central aspect of the common market, and can be traced back to the founding document of the European Union, the Treaty of Rome. However, it is a political argument more than an economic argument. The provision of a level playing field, and can be traced back to the concept of *Ordnungspolitik*, which received some attention in the German theoretical debate on economic policy. It postulates that competition between firms is always beneficial, and should therefore be a goal of economic policy. If there is already competition within countries, international competition cannot provide any more efficiency gains.

The arguments in favour of consolidation typically are a reduction in compliance costs for firms, the ensuring of international loss offset, reduced monitoring and control costs of tax authorities, the elimination of fiscal externalities, and compliance with capital export neutrality. (Genser, 2005) On the other hand, it distorts the optimal locational choice of firms (Pethig and Wagener, 2003) and requires national tax authorities to share information. However, following the Parent/Subsidiary Directive (1969 and 1990), the Merger Directive (1969 and 1990) and the Arbitration Directive (1974 and 1990), we find that national tax authorities need to share information even under separate accounting.

## **7. Concluding remarks**

The aim of this paper was to review. The main argument of this paper has been that capital tax coordination is predominantly an issue of distribution. In particular, capital tax coordination can alter the vertical distribution of income between the production factors capital and labour. Capital is in perfectly elastic supply in a small open economy. Therefore the tax incidence falls to the immobile factor, labour. By contrast, capital is in inelastic supply at the international level. Hence coordinated taxation of capital can shift income from labour to capital. If distribution is the main concern, then tax coordination will only arise if countries have similar preferences over redistributive policies, at least under the current European political institutions of unanimity.

This paper has also shown that fiscal externalities are a concern, and capital tax coordination could also be motivated on efficiency grounds. The literature is divided on the source of the inefficiency. One strand of the literature focuses on economic externalities, whereas the other on political externalities, insinuating a political process that is at least in part driven by self-interest.

This distinction makes all the difference in the position towards tax coordination in the two strands of literature. A benevolent view on public decision-making implies that tax coordination is favourable both to internalize fiscal externality and engage in redistributive policies. By contrast, a negative perspective on the political process induces support of political competition to minimize rent seeking. Despite these differences, a large body of literature agrees that consolidation of tax bases for multinationals, as suggested by the Bolkestein report, is indeed a worthwhile cause.

The coordination of the tax base does not necessarily imply a reduction of competition over tax rates. Indeed, with a common tax base, information over favourable tax regimes is more readily available, and hence competition in tax rates may get fiercer. In addition, this may induce further competition in subsidies, tax holiday regulation, and tax enforcement, as suggested by Feld in this volume.

Finally, we have to be aware that the elimination of capital tax competition does not necessarily preclude tax competition. We know from national accounting identities that capital income plus labour income plus investment is equivalent to consumption plus total savings, or  $rK + wL + I = Y = C + S$ . (Cnossen, 2001) Rearranging this equation, we find that the capital income tax base, and hence capital income taxation, can be replicated with a consumption tax, a tax on net savings and a wage

subsidy,  $rK = C - wL + (S - I)$ . Instead of capital tax competition, competition could merely shift to commodity tax competition (see Lockwood, 2001) accommodated by an increase in labour taxation.

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