
20 Tax competition and the harmonisation of corporate tax rates in Europe

*Killian J. McCarthy, Frederik van Doorn and
Brigitte Unger**

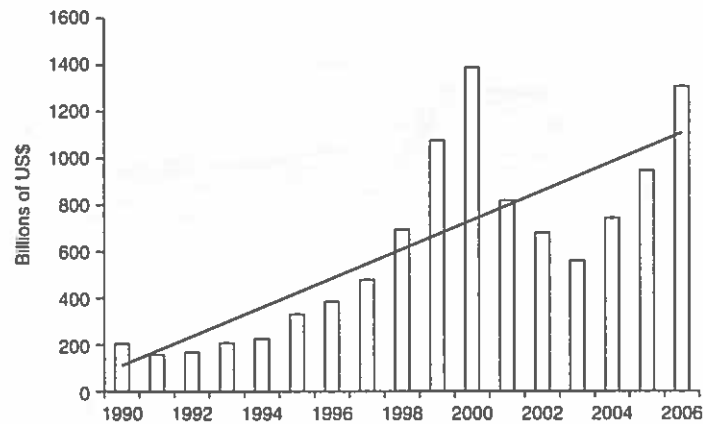
1 INTRODUCTION

Over the course of the 20th century, deregulation, liberalisation and increased capital mobility created the phenomenon of the multinational firm, and provided an environment in which such firms could both proliferate and thrive. Between 1969 and 2002 the number of multinationals soared, from 7,258 to more than 82,000 (Drucker, 2005; UNCTAD, 2009), and so successful were they that, by the end of the century, somewhere between 29 and 51 of the world's largest economic entities were private multinational firms.¹ General Motors, for example, was 'economically' more significant than Denmark in 2002, and DaimlerChrysler more significant than Poland, while Royal Dutch Shell, IBM and Sony were each more important than Iran, Ireland and Pakistan.² Taken together, the world's top 200 multinational firms accounted for about 27 per cent of global economic activity in 2000, and earned between them an income greater than that of the world's poorest 1.2 billion people (Anderson and Kavanagh, 2000).

As the process of globalisation continues to knit national economies into a world economy, however, and as everything from banking to telecommunications, energy and manufacturing slowly falls under private multinational control, ordo-liberal fears of an undemocratic centralisation of power are fast being realised (Schmitz, 2002). And with this, concerns are being raised on the question of taxation (OECD, 1998).

Traditionally, the payment of taxes has been an obligation for all individuals or legal entities within a state, and has been levied for a variety of reasons. The provision of public goods, such as military defence, the redistribution of wealth, and the protection of private property are well-known examples (Mueller, 2003). And because government is the 'shepherd' to the 'flock of timid and industrious animals' that is the civil nation (de Tocqueville, 1840), taxes – by funding the state – can even be seen to have played a role in 'liberating' man from a Hobbesian state of 'nature' (Hobbes, 1982). It is government and government alone that equates rich and poor, provides public goods and secures private property, and for this reason, taxation has been at the very core of the sovereign state since time immemorial. The right to tax is, and has always been, a mark of power and legitimacy and, since the time of Cicero and the Roman Empire, the responsibility to pay tax, and to maintain the state, has been the 'honour' of citizenship.

Empirical studies suggest, however, that as foreign direct investment (FDI) has risen in recent times (Figure 20.1), to historic highs in 2007 (UNCTAD, 2009), the 'honour' associated with taxation has diminished. One study of US multinationals (Altshuler et al., 2002) for instance, discovered that FDI had become increasingly sensitive to taxes between 1984 and 1992, with results for 1992 suggesting that countries with tax rates 10



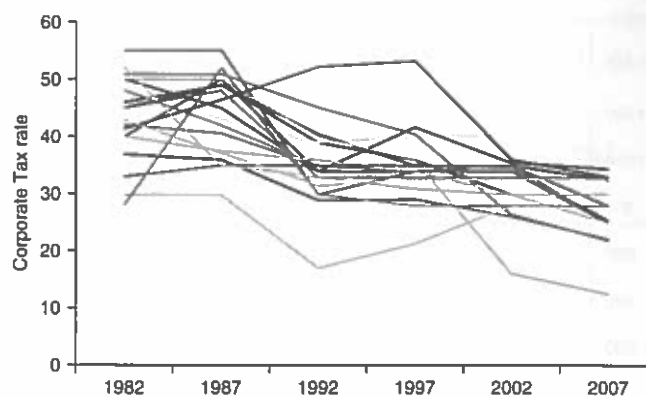
Source: Data supplied by UNCTAD (1996, 2001, 2004, 2007), prepared in Excel and overlaid with a trend line. Discounting for the shock that was 9/11, the upward trend in FDI flows is obvious.

Figure 20.1 Foreign direct investment overlaid with a trend line

per cent higher than the average received 30 per cent less US FDI, when controlling for other factors. And while subsequent reports have shown variable and often less dramatic elasticities,³ the consensus finds 'strong evidence' that direct investment flows are 'positively and significantly' affected by tax systems (See also Riedl and Rocha-Akis, 2007, 2009). Hines (1999, p. 309) suggests that 'taxation significantly influences the location of FDI, corporate borrowing, transfer pricing, dividend and royalty payments', and Sullivan (2002, p. 11) finds that, at least in the European context, countries which employ a 'favourable tax regime' have 'significantly larger inflows of FDI' than those of their higher-tax counterparts.⁴

As predicted by Tiebout theory (1956), it thus appears that internationalisation – broadly defined as a process by which goods, services, capital and labour are traded without major restrictions, and where information and the results of research flow readily between countries – has empowered firms to 'vote [for liberalising economic policies] with their feet' (Glomm and Lagunoff, 1998, p. 8). In the world that has resulted, however, the government of an open economy can, it is suggested, have no interest in increasing tax rates above that of the international equilibrium, for to do so would simply drive away investment, and stimulate a capital flight.⁵ In an international world, countries are therefore not only pressurised to keep taxes low, but are also incentivised to reduce them even further. As a result, however, the ability of the state to pursue independent economic policies has been greatly compromised – if not destroyed – and the once proud nation-state has been reduced to the point of being little more than a beggar at the plate of the multinational. The options it faces now are either 'forge ahead' with pro-business deregulation and market liberalisation – and in so doing succumb to the international deregulatory 'race to the bottom' – or remain on the moral high ground, and 'fall behind' in the investment race of the twenty-first century.

No state, however, can afford the cost of falling behind – be it for social, political or economic reasons – meaning that the deregulatory race to the bottom (Sinn, 2003) is



Source: Compiled from figures of the OECD Tax Database.

Figure 20.2 *Declining corporate tax rates in OECD member states*

all but inevitable. International tax competition – defined as a governmental strategy of attracting FDI by minimising the overall taxation level – is the result of this pressure. Rising trade and investment flows, greater labour mobility and rapid transfers of technology have meant that the majority of industrial nations have already been forced to reduce commercial tax rates in recent years, and in doing so have pushed the average top corporate tax rate in the Organisation for Economic Co-operation and Development (OECD) countries down from 41.6 per cent in 1982 to 25.1 per cent in 2007 (Figure 20.2). Among these, Austria, Germany and Ireland have all cut their rates by more than 25 per cent, while another six countries have cut theirs by more than 15 per cent, tightening the tails of the tax range from between 55 and 28 per cent to between 34 and 12.5 per cent in the process.⁶

This chapter is structured as follows, in four further sections. To some commentators, international tax competition produces a situation in which politicians are ‘forced to keep tax rates reasonable’ (Edward and de Rugy, 2002). As we shall show in Section 2, however, tax competition results in a dangerous situation, and is not only degrading to the state, but also destructive, wasteful and socially inequitable. Because budgets must be balanced, lower corporate taxes implies that higher labour taxes must be levied to make up the difference, and so tax competition inevitably produces a situation which punishes the immobile (that is, human, labour) factors of production for being immobile. This, we suggest, makes the term ‘harmful’ nothing if not an understatement, and requires action if government is to fulfil its mandate. Government, it must be remembered, has been empowered ‘by the people and for the people’ (Lincoln, 1863), and so a process whereby the wealthy multinational benefits at the cost of the poor uni-national is intolerable in the extreme.⁷

To its credit, the European Union (EU) seems to be acutely aware of this inequity, and in recent years has proposed a pan-European system of tax harmonisation in an effort to tackle harmful tax competition; a proposal which we shall briefly outline in the course of Section 3. However, and as we shall show, both the theoretical and empirical evidence suggest that these tax harmonisation plans contain the potential not only to

exacerbate the problems that they were designed to solve, but also to intensify regional economic variances, and to undermine the very foundations of the European Project. It will therefore be argued in this chapter that tax harmonisation (that is, the equalisation of corporate tax rates) is not the economic panacea it is thought to be, and that it cannot be adopted as a solution to the problem at hand. Instead, an alternative solution will be proposed in the course of Section 4, and its economic and theoretic feasibility will be commented upon. The chapter will then conclude in Section 5 with a discussion of the future of tax competition policy in Europe, and we shall point to a number of research questions which should be addressed if the challenges of harmful tax competition are to be overcome.

2 THE PROBLEM OF HARMFUL TAX COMPETITION

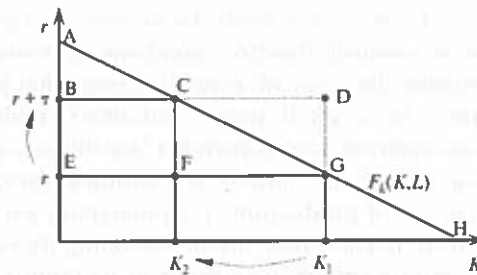
To many economists tax competition is little more than an issue of supply and demand: international investors, with mobile capital, demand a low-tax environment in which to do business. And, through the process of policy competition, states compete for the elusive point of tax equilibrium – that is, the reconciliation of supply and demand – necessary to attract this capital, by lowering their tax rates relative to those of their rivals. Here, taxes are seen to be little more than a dreaded market distortion, and markets are robust, and so competition between states serves to ensure the maximisation of welfare. Tax competition therefore is simply a mechanism by which the market can move towards achieving the utopian position of perfect competition, because governments that do not face competition operate like private monopolists and have little incentive to reduce waste or increase quality (Roin, 2001). The process of tax competition should, accordingly, not be feared, prevented or corrected, but rather should be applauded and respected for contributing to economic efficiency.

And although there may be certain truths in this line of thinking it is not a position shared by all economists. First, it has been recognised that not all forms of competition are constructive, and that competition is not necessarily good *per se* (see, for example, Sullivan, 1995). Second, and even if this were not the case, the appropriateness of the state competing for investment in a manner similar to how a firm competes for customers has been questioned. In modern economic theory, the existence of the state is legitimised only by its role in managing market failures – to paraphrase, rendering unto Caesar the things that are Caesar's and unto the market the things that are the market's. Many mainstream economists therefore condemn inter-state tax competition as being something both outside the scope of a state's operational portfolio and as essentially destructive in nature. As a case in point, an OECD (1998) report identified six negative effects of low-tax regimes, and concluded that the net result of international tax competition will be a shift in the burden of taxation from the mobile (capital) to the immobile (human) factors of production. To understand why, we shall attempt, in the course of this section, to explain this line of reasoning by outlining both the economic theory and by providing empirical evidence of its reality. In doing so, we shall draw some robust conclusions on the inescapably harmful nature of state-sponsored tax competition.

The Standard Argument**The theoretical standard argument**

The theoretical standard argument, upon which much of the literature on tax competition is based, suggests that the imposition of a tax on internationally mobile capital is impossible in an open and dynamic economy, because capital will always be able to shift the burden of taxation. Accordingly, the effects of the imposition of a source tax are twofold: first, the increased tax will drive away mobile capital and stimulate a capital flight; and second, the tax will cause both the domestic product, and the marginal productivity of the complementary immobile factors, to fall. The crucial point is that the income of these factors declines at a rate greater than it would if the factors were to pay the tax themselves. As a result, tax competition means overall losses to society, and an overburdening of the labour factor.

This argument is graphically represented in Figure 20.3, wherein the decision situation of a single country is illustrated. Here, and summarising Sinn (2003), the country is seen to produce homogeneous output according to the downward-sloping production function $f(L, K)$, using a fixed and constant amount of labour, L , and a variable amount of internationally mobile capital, K , available at any amount and at the net world market return, r . The downward slope illustrates the marginal product of capital. Where there is no tax, the profit-maximising firm invests up to the point $f_k = r$, and chooses the investment amount of capital K_1 . The imposition of a source tax levied on capital to the value to $\tau = BE$, however, stimulates a capital flight, and the level of capital invested is seen to fall to the new equilibrium point of K_2 . As the net return r is given by the world market, capital leaves the country until its net marginal product after tax is again equal to the given world market of $f_k - \tau = r$. The result then is that the tax burden is shifted completely to the immobile factor, causing the wage income to fall from AGE to ACB. The tax revenue – BCFE – is obviously smaller than the reduction in wages; which is BCGE. Even if total tax revenue were paid to the wage earners, they would still face a loss of CGF due to job losses resulting from the withdrawal of capital. Attempting to tax mobile capital thus serves only to hurt the immobile element more. The equilibrium in tax competition between states is therefore K_1 .



Source: Adapted from Sinn (2003).

Figure 20.3 The effects of an imposed tax rate

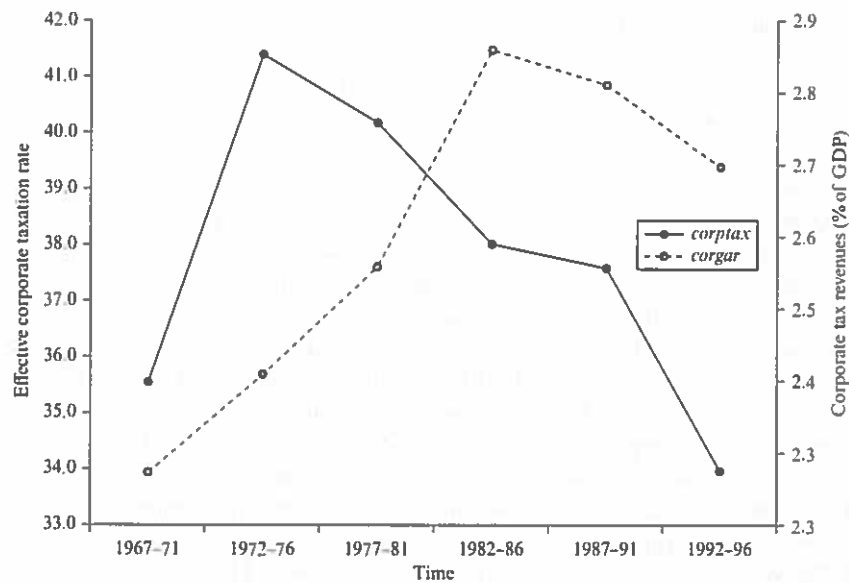
Empirical proof of the standard argument

In full accordance with microeconomic principles, the predictions outlined above are derived from general equilibrium models. The implications are, however, anything but new. More than two centuries ago, Adam Smith noticed that heavy taxes on mobile stock or capital would cause a loss to workers and the economy.⁸ It is thus surprising to see that most of recent empirical studies obtain almost inverse results.⁹ However, it has been suggested that a closer look at these results reveals some severe problems and deficiencies, in reasoning of both an economic and an econometric nature (Bretschger and Hettich, 2002), but to accept the 'standard' line of argument we nevertheless need to see positive empirical evidence of a post-globalisation shift of the tax burden. The important paper by Bretschger and Hettich fortunately provides just this.

This study considers a panel of 14 OECD countries over the 1967–96 period and produces two interesting results. First, the study finds that globalisation has a negative and significant impact on corporate taxes. In a regression model with 303 observations, and using corporate tax rate as the endogenous variable, the study finds coefficients of –19.02 for the variable 'openness' – defined as the degree of integration of the countries in the world economy – significant at the 1 per cent level, and so robustly proves the negative relation between globalisation and corporate tax burdens. The study argues that while, on paper, corporate tax rates as a percentage of GDP (*cogar*) seem to have increased in the OECD, the unweighted 'effective' corporate tax rate (*corptax*) – that is, the net rate paid by the firm – has declined sharply. The effective corporate tax rate for all countries increased from the late 1960s and early 1970s, it is suggested, to a level of more than 41 per cent, and then entered a period of serious decline (1992–96), ending at 34 per cent. This is illustrated in Figure 20.4, wherein *corptax* is the bold line.

Second, and given that the state must be financed, the paper then investigates whether there is a corresponding rising labour tax trend, and so a transfer in the tax burden. When analysing the equations with labour tax rates as the endogenous variable, for example, the investigation finds that globalisation 'has a significant [and] positive impact on labour taxes' (p. 699). The degree of integration, measured again by the variable 'openness', produces a positive and significant result. When the effects of size are eliminated, and lags are included, the results hold at the 1 per cent level, leading the authors to conclude that 'globalisation has a very clear and significant impact on the relation between labour and corporate taxes' (p. 701). The authors note, however, that the sign of the country-size variable changes compared to corporate taxes, illustrating that the smaller the countries are, the greater the requirement to lower corporate tax rates, and to compensate for these revenue drops with higher labour rates. This corresponds closely with the 'results on the ground', where it is observed that corporate tax havens are often smaller countries.

Such findings, while impressive, are far from unique. Winner (2005), for example, recently conducted a time-series analysis of the average effective tax rate on capital income and labour income, in 23 OECD countries over the period from 1965 to 2000, and comes to a similar conclusion. Winner finds that, while the consumption tax burden has been almost constant over the period, the average effective tax on labour has grown steadily – from 21 to 40 per cent – while the average tax on capital has declined (Figure 20.5a). Until 1976, he reports, the corporate tax burden moved more or less simultaneously with labour-based taxation – increasing from 21 per cent to around 30 per cent



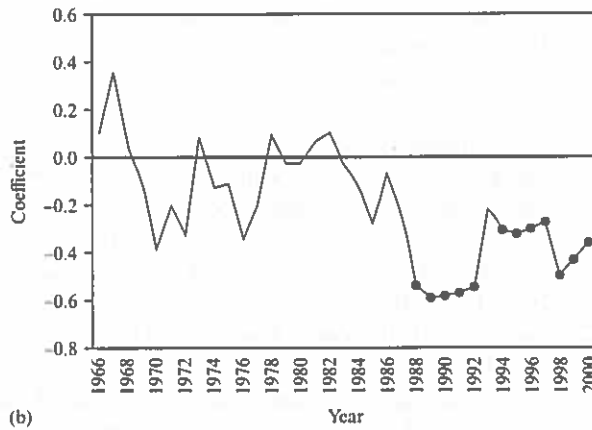
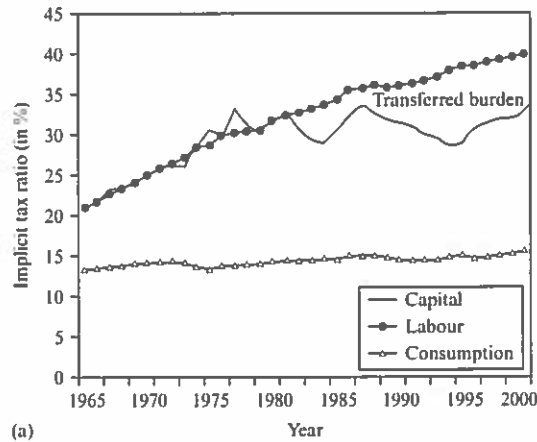
Source: Bretschger and Hettich (2002).

Figure 20.4 *The effective corporate tax rate, pitched against the labour tax rate*

– but from the late 1970s the two diverged. Political attitudes towards FDI changed in the 1980s, and the tax burden on capital decreased from 33.8 to 28.6 per cent. This, again, indicates that the tax burdens on labour and capital have drifted apart over time – and especially so since the 1980s – and once more supports the claim that tax competition has induced a shift of tax burden from capital to labour.

The study continues to consider these facts in regression form; investigating the robustness of the relationships between the tax rates, country size and the degree of capital mobility, and the intensification of tax competition over time. A static model is used in estimating the interaction effects between capital mobility and the fixed time effects; the results of which are summarised in Figure 20.5b. Here, a negative (positive) entry indicates a negative (positive) effect of capital mobility on factor income taxes in the corresponding year (and the dotted points denote significance at least at the 10 per cent level), and so the results point to the increasingly negative impact of capital mobility on capital tax burdens. Until the mid-1980s, we are not able to identify any significant effects of capital mobility on capital tax burden, but since then we observe negative coefficients throughout. This confirms the widely held belief that tax competition has intensified in recent years, and implies that as the pace of globalisation has quickened, it has induced a systematic shift from capital to labour tax burdens.

Position 1: On the standard argument On the basis of this we conclude positively on the robustness of the evidence in support of the standard argument of tax competition. In this, we therefore accept the theory that capital taxation is negatively related to the degree of international capital mobility, and that labour taxation relative to capital



Source: Adapted and modified from Winner (2005)

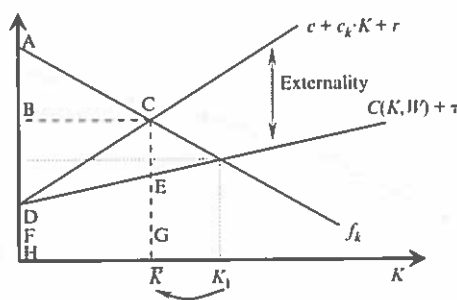
Figure 20.5 (a) Transferred burden, and (b) capital mobility

taxation is positively related to international integration of national economies, and that capital mobility results in a capital tax rate that is suboptimally low from a societal perspective.

The Infrastructure Argument

The theoretical infrastructure argument

According to the standard argument, the suggestion is that you cannot tax the mobile element – that is, the capital factor – for to do so would cause a reduction in the capital base and a simultaneous overburdening of the immobile labour element. However, the role of government infrastructure investment is often used as evidence against this pessimistic view of policy competition (Sinn, 2003). This line of argument suggests that if taxes are seen as the price that must be paid for publicly provided infrastructure



Source: Adapted from Sinn (2003).

Figure 20.6 *An inequitable situation*

– whereby infrastructure refers to anything provided by the government for the benefit of the firm – the investors will accept them. Ergo, destructive policy competition does not have to be feared, and the labour element saved.

Unfortunately, however, empirical studies have shown this to be based on the unrealistic assumption that infrastructure is a pure public good. In reality, infrastructure is an impure public good with negative externalities, where externalities are defined as the difference between the marginal private and social costs (Mueller, 2003).

A more realistic impure public good extension to the model is possible with the contribution of the literature on highway congestion models. In this, it is assumed that using a highway incurs a private unit cost $c(K, W) > 0$, which is based on the number of usage acts, K , and is proportional to the capacity of the infrastructure provided by the government, W . The properties of the usage function are therefore $c_k \geq 0$ and $c_w < 0$; where $c_k > 0$ indicates an impure public good, rivalrous in consumption (Mohring and Harwitz, 1962). It is assumed that the function c is homogeneous of degree λ . The total usage cost of the public good is $c(K, W) \cdot K$, and the total cost for the provision of the public good is $\rho \cdot W$. It is assumed that a homogeneous output is produced according to the linear production function $f(K, L)$, wherein capital, K , is completely internationally mobile, with a return, r , while labour, L , is immobile. The country has only a source tax on capital and a head tax on labour available to it, and these are raised at the rates τ and ω , respectively. In this situation, the profit-maximising firm invests capital up to the point where the marginal product of capital is equal to the sum of the marginal interest rates, usage and tax costs; that is, $f_k(K, L) = r + c(K, W) + \tau$. At this point, however, this firm only considers the associated marginal private costs, and investing to point K_1 – and the free market economy then floods the infrastructure (Figure 20.6).

The firm does not, however, consider the marginal social usage costs $c + c_k \cdot K$, where $c_k \cdot K$ is the marginal congestion externality, in its planning. The difference is left to the government to fill with its choice variables: τ and ω . The lump-sum labour tax rate, ω , is endogenously determined so that the government budget is balanced: $\omega L = \rho W - \tau K$. If the tax on capital therefore generates more revenue than is needed for the provision of the public good, there will be a subsidy to labour to balance the budget. The government's aim, however, considering these constraints, is to maximise the rents, R , of the domestic residents ($R = (f - f_k K) + r \bar{K} - \omega L$), where R is what is needed to cover a

potential deficit in the provision of the infrastructure. The combination of these gives an expression which shows that the total rent can also be expressed as the difference between the output and the sum of the interest cost in the imported capital, the total usage costs and the total cost of providing the public infrastructure ($R = f - r(K - \bar{K}) - c(K, W)K - \rho W$), and contains an implicit tax shifting result which is due to the fact that firms adjust competitively to the given world market of interest.

Given that the single country can take the total capital income as given, and the labour tax clears the budget, variations in the usage cost of providing the infrastructure are fully absorbed by the income of the immobile factor. Knowing this, the government tries to adjust the tax rate and the capacity of the public good in a way that maximises the rent of domestic citizens. The first-order conditions for a national policy optimum require: first, that the marginal product of capital equals the marginal social cost of capital, that is, $f_k = r + c + c_K K$; and second, the satisfaction of the Samuelson condition for the optimal provision of public goods, whereby the sum of all users' marginal willingness to pay is equal to the marginal cost of providing the infrastructure: $-c_W K = \rho$. From this we can see that to achieve the optimum, the government must set a tax rate equal to the marginal congestion externality. However, this optimum tax ($\tau = c_K K$) designed to include the total social cost and prevent the abuse of infrastructure, increases the imposition of taxation on the capital element. This induces a reduction in investment, as illustrated in Figure 20.6, and so the question then arises as to whether or not there is sufficient income from the capital tax revenue to pay for the cost of the infrastructure. It can be shown that the optimal congestion charge is sufficient if (and only if) $\lambda \geq 0$; that is, when the usage cost function does not have a negative degree of homogeneity.¹⁰ If, however, $\lambda < 0$, there will be a fiscal deficit, which is covered by the immobile factor.

The conclusion from this is that only when there are falling or constant returns to scale will marginal cost pricing generate enough revenue to cover the total cost of production. If there are increasing returns to scale, there is a financing deficit that has to be covered elsewhere – supporting the view that wage earners will be the victims of infrastructure competition. The 'selection principle' – that is, the suggestion that there must be a fundamental selection bias on behalf of the government towards those activities which have proved to be unsuitable for private markets (Sinn, 1997) – and an overview of the literature on the theory of clubs, confirms this hypothesis (Buchanan, 1965; Broadway, 1980; Berglas and Pines, 1981). This implies that if the state limits itself to the provision of those public goods for which $\lambda < 0$, an efficient charge for the use of the public infrastructure is not sufficient to finance the cost of provision. The question of the state limiting itself to the selection principle has yet to be confirmed empirically.

Empirical proof of the infrastructure argument

Theoretically speaking, Borchering and Deacon (1972) suggest that city size and public goods expenditure are proportional, and so conclude that λ is not less than zero, but in fact identically equal to it (see also Blankart, 1996 for evidence of this). The authors assume, however, that the quality of the public goods provided is independent of city size and, when this assumption is relaxed, the results do show that $\lambda < 0$. Brueckner (1981) echoes this result, but comes to a far more unambiguous conclusion, while explicitly accounting for size and quality. The study considers the provision of public fire bridges

– measuring the quality of the protection they offer in terms of the size of private fire insurance premia – and theoretically illustrates that $\lambda < 0$.

To comfortably accept the infrastructure argument, however, we would like to see some empirical evidence, but here we are disappointed as the evidence is quite scant. Many noteworthy scholars, working on tangents to this question, however, have indirectly contributed to the debate. Bretschger and Hettich (2002), for example, again prove useful to this end. Although this study does not explicitly consider the question of infrastructure, it does consider the per capita income level and unemployment levels in relation to social expenditure in 13 OECD countries over the period from 1980 to 1995. The analysis shows that both the degree of openness and the level of capital are positive and significant in determining the amount of governmental expenditure, and that this expenditure is independent of per capita income and employment. The suggestion, therefore, is that governments will overspend at the cost of the immobile factor.

Position 2: On the infrastructure argument Despite the difficulty in empirical proof, we consequently conclude on the basis of the strong theoretical foundations, that with the addition of infrastructure to the standard argument, in a situation of tax competition, only marginal benefit taxes on capital are possible, and that these are not sufficient to cover the cost of infrastructure. We therefore conclude that infrastructure causes capital to receive a net subsidy at the expense of immobile taxpayers, so that tax competition not only implies a race to the bottom, but may also imply a race below the bottom; that is, a race to subsidise at source, and to move the economy towards point H in Figure 20.3.

3 TAX HARMONISATION: AN ECONOMIC PANACEA?

On the basis of these arguments, the need for intervention appears obvious. In an influential report on harmful tax competition, however, the OECD recognised this fact, and suggests that there has to be an '[intensification of] international cooperation' (OECD, 1998, p. 23). To this end, the report proposes (in the form of Recommendation 15) some strict guidelines for dealing with 'harmful preferential tax regimes in member countries' (*ibid.*); guidelines which include the creation of a tax haven blacklist, and the development of 'the principles of good tax administration' through the political and economic links with these tax havens. The EU too has addressed this issue, and despite being in 'talks' since as early as 1962, only published its recommendations on the matter in November 1997. In this, the European Commission recommended a 'coordinated action against tax competition in Europe' and has, as a declared purpose, the objectives of: reducing distortions still existing within the single market; avoiding losses on tax receipts; and establishing a tax structure more favourable of employment (Euro Comm, *Bulletin*, 6-1997). There was a progress update on 2 May 2007 and in this it was tentatively suggested that a 'common base' could be in place some time 'after 2010'.

With both this and the OECD's proposals, however, the belief, obviously, is that if capital is taxed excessively, it can escape from one country, *à la* Tiebout (1956), but not from all countries. The authorities therefore expect to gain more power if they commit themselves to a policy of harmonisation, whereby tax rates are jointly

determined and fixed above the competitive equilibrium set by international policy competition. In doing so, harmonisation can be seen to allow the state to collect more revenue from capital and, simultaneously, to mitigate the distributional consequences to labour.

Unfortunately, this line of reasoning is simply too good to be true. Because despite its necessarily grandiose goals, tax harmonisation is a weak and dangerous instrument, and is likely only to backfire on its creators. The purpose of tax harmonisation is to provide a level playing field, free from tax havens, and while we accept that harmonisation will achieve this, there are, we suggest, always unexpected and unanticipated consequences from intervening in the free market. Every panacea has its side effects, and in this section we shall attempt to identify a few of the more obvious.

The Collusive Agreements Argument

First, we suggest that tax harmonisation is not a sustainable solution because, according to the teachings of game theory, it is not a Nash Equilibrium (NEQ). The logic here is simple: to address this challenge posed by increased internationalisation, the state must adapt. With tax harmonisation, the EU is trying to do exactly this, and is taking on a policy position of 'if you can't beat 'em, join 'em'. Instead of acting like a state, and operating on the traditional model of what a state should be, tax harmonisation policies suggest that the state should act like a firm in an oligopolistic market, and should collude with its peers to raise 'prices' above the competitive market level. And at first glance, the logic of the argument seems sound. However, it is seriously flawed.

To begin with, and as established by Cournot (1897), one firm's best response to another's is never the collusive position, as there are always gains to be achieved by a unilateral deviation from the agreement. We see little reason to suspect that states acting like firms would be able to overcome an incentive problem which firms acting like firms cannot themselves solve, and is so prevalent in the competitive market economy. As a case in point, we point to the prevalence of tax havens throughout Europe today, such as the tiny, land-locked state of Liechtenstein, recently put under investigation by the German authorities for reasons of tax evasion (*Süddeutsche Zeitung*, 2008). Through a unilateral deviation from the collusive, cooperative position on tax evasion, Liechtenstein attracts 'investment' from Germany, as does Luxembourg, and the other so-called 'uncooperative tax havens' dotted throughout Europe, such as Andorra and Monaco (OECD, 2002).¹¹

We do not deny, however, that collusion is possible and practical, and fully accept that collusion between European states – in the form of tax harmonisation – could occur. A paper by Ivaldi et al. (2003) establishes a number of situations in which collusion between firms is probable. Among the numerous constraints suggested, however, it is shown that transparent markets with symmetric market shares, cost structures and capacity constraints are important factors in producing a cooperative outcome. In the case of a 27-state EU, however, we suggest that none of these conditions can and will be met, and so claim that the collusive outcome is not a natural outcome.¹² The vast differences in size that exists between Luxembourg and Germany, as well as the economic potential of the two, suggests that collusion is improbable.

A collusive agreement could be made binding through the imposition of a credible

threat (Kreps, 1990). If tax harmonisation were supported by EU law, for example, and if harsh financial retaliations or even economic sanctions could be imposed on 'tax transgressors', tax harmonisation could become an NEQ outcome, and a cooperative solution could be induced between states. Because Luxembourg's economy is tied to Germany's, Germany could, for example, credibly threaten Luxembourg with sanctions, and could induce cooperation, thus making effective tax harmonisation a possibility.

Even in this case, however, we suggest that few countries would subscribe to the agreement to the policy, and that tax harmonisation will not occur as a result. Tax harmonisation, essentially, creates a 'tax cartel' between states, but according to the literature on networks and alliances, the formation of a such cartel creates a public good, which induces positive externalities on those who remain outside the agreement (Stigler, 1950). The incentive therefore is to free-ride on the cartel formed by the other states, and to attract the 'investment' that it produces. Because of globalisation, these free-riders need not necessarily be EU states, and so even if all 27 states could agree to tax harmonisation policies, countries in the European neighbourhood – such as Switzerland, Norway and Turkey – could benefit from a geographical closeness to the EU, and a significantly more competitive tax rate. In this case, participatory countries would lose out to non-participatory countries, and so no country would agree to the policy unless every country agreed. If the EU 'imposed' a tax harmonisation system, the result would be that the economic standing of the Union would be undermined, and the benefit of membership would be devalued. In the world of globalisation, the proposal of tax harmonisation can therefore be seen, in the most dramatic case, to pose an existential threat to continuance of the EU.

The Tax Game Argument

Second, we suggest that even if tax harmonisation were an NEQ between states, and even if it did not have positive externalities which created an existential threat for the EU, it would be an ill-advised policy move for the state, and would not benefit the participatory members.

To see this, we consider the so-called 'tax game', presented in Baldwin and Krugman (2002). This study shows that in a European Union of core and peripheral regions, tax harmonisation entails a shift from a non-cooperative tax game to a cooperative tax game, and can result in a Pareto improvement from the government's perspective. Such an improvement, however, can only occur, they suggest, in the absence of agglomeration, and with agglomerating forces, harmonisation will serve to make at least one, if not both regions, worse off. Two harmonising strategies are explored in the discussion: 'split-the-difference' tax harmonisation strategies, and the 'single-rate' strategies. In the case of the former, a common tax rate is adopted in both the core and peripheral regions, between the two existing rates already levied in the industrial 'north' and peripheral 'south'. At this rate, however, and given the scale of the cost involved in any relocation decision, firms would have no incentive to move south, and so would prefer to stay agglomerated in the north. The 'split-the-difference' harmonisation strategy would therefore not shift the core from the north to the south, but would merely deprive the south of a major policy instrument – namely the corporate tax rate – which it can

use to incentivise peripheral investment. Given that the south remains without industry in this scenario, its loss follows directly from the fact that its pre-harmonisation tax rate was an unconstrained maximum, and 'split the difference' is seen to favour the industrialised north. Compared to the initial equilibrium, however, the north too suffers some substantial losses. The harmonisation of taxes in the north means that tax rates have been lowered, and the north now has a suboptimal rate of corporate taxation. Harmonisation of this type is therefore seen to make both the core and the periphery worse off, and to succeed in nothing.

The alternative option would be to have 'single-rate' strategies in both regions. For example, by increasing both regions' rates the north would, of course, gain because its tax-competition constraint would be relaxed, and so could take advantage of its geographical appeal. Higher rates, however, would seriously disadvantage the south relative to the north, and stimulate a mass exodus. By contrast, lowering both rates would make both governments worse off, as neither region would collect the taxes that they could collect in isolation. In fact, any change in the southern equilibrium rate will lower the south's welfare, as measured by its government's objective function, and so it is easy to understand why there is no single rate that nations could agree upon. The tax rate of the core nation is constrained by competition, while that of the periphery nation is not, and consequently, there is no mutual gain to cooperation. Simply put, tax harmonisation cannot work in the presence of a core-periphery split.

Another study, by Fourçans and Warin (2001), also employs game theory to arrive at similar conclusions on the workability of EU-wide tax harmonisation policies. This study suggests that if each country's tax policy is independent of the others, free-riding behaviours will occur, as will a suboptimal tax equilibrium for the monetary zone. However, the paper points out that harmonisation may require some overly strict fiscal conditions – a sentiment reiterated in a study by Cremer and Gahvari (2000) – or the creation of a central coordination mechanism. Other studies, using similar techniques, have commented on the required nature of this coordination. Suggestions have ranged from a central fiscal authority (Cardarelli et al. 2002) to a stringent capital control mechanism (Rasmussen, 1997), all of which includes costs that are not currently considered by the debate.

The Overprovision Argument

Third, we suggest that even if tax harmonisation were an NEQ between states, which neither induced free-riding nor exacerbated the north-south divide, it would be an ill-advised policy move, as it would result in an even greater transfer of the burden of taxation to the immobile factor of production. To see this, we consider the 'overprovision argument'.

One of the main problems with tax harmonisation is that it eliminates only one of two competition parameters available to the domestic government. Despite the fixing of the capital tax rate, labour taxation still leaves the free choice of how much public infrastructure to provide, and it is unclear whether the government will continue to choose an infrastructure W , compatible with the Samuelson condition, as outlined in Section 2. To see how the rent of the domestic population reacts to an increase in the provision of public infrastructure, given the capital tax rate, we differentiate the expression which

shows that the total rent can also be expressed as the difference between the output and the sum of the interest cost in the imported capital, the total usage costs and the total cost of providing the public infrastructure ($R = f(K, L) - r(K - \bar{K}) - c(K, W)K - \rho W$), and find:

$$\frac{dR}{dW} \Big|_{\tau = \text{const}} = (f_K - r - c_K K - c) \Phi - c_W K - \rho$$

$$\Phi \equiv \frac{dK}{dW} \Big|_{\tau = \text{const}} = \frac{c_W}{f_{KK} - c_K} > 0,$$

where, Φ is the reaction coefficient for capital which results from implicitly differentiating the arbitrage condition, $f_k(K, L) = r + c(K, W) + \tau$, with a given τ . The result is a coefficient which, it is suggested, is always strictly positive, and so an improvement in the infrastructure, with a given capital tax rate, is seen to attract more capital into the country. It follows then that, in the unconstrained equilibrium, $\tau - c_k \cdot K = 0$ and $\rho + c_w \cdot K = 0$. Thus, the national optimum condition, $(\tau - c_k K) \Phi = \rho + c_w K$, would automatically hold if the harmonisation constraint on the national tax rate were not binding. With an effective constraint, however, which forces τ to obtain a value above the marginal congestion externality, $c_k \cdot K = 0$, the left-hand side of the expression is strictly positive, and then so too must the right-hand side. The marginal willingness to pay, summed over all usage acts, is less than the cost of providing the infrastructure, indicating an oversupply of the infrastructure as measured by the Samuelson rule: $c_w(K, W)K < \rho$. Given that capital is deterred by a tax rate higher than necessary to cover the marginal congestion externality, it pays domestic residents to attract more of it into the country by offering a better infrastructure. This, in turn, implies that more infrastructure will be provided than in a *laissez-faire* equilibrium, wherein τ and W were chosen competitively. Tax harmonisation is thus seen to intensify infrastructure competition between states, and to lead to an overprovision of the public infrastructure in equilibrium. This result is undesirable, not only from an efficiency perspective, but also from a distributional one. Because at least part of the extra tax revenue resulting from a harmonised tax rate increase will dissipate by financing the excessive amount of infrastructure at the expense, as always, of the fixed, labour factor of production.

Position 3: On tax harmonisation Based on the three theoretical arguments outlined above, we conclude that tax harmonisation could not result in an equitable solution to the problems of tax competition. Tax harmonisation is not an NEQ policy as there are always greater gains available from a unilateral deviation; it induces positive externalities, which will serve only to disadvantage subscribers to the policy relative to other parties, and may undermine the stability of the Union as it devalues membership; it exacerbates regional economic differences and further divides the north and south; and finally, as evidenced by the overprovision argument, tax harmonisation will not only fail to address the tax burden imbalance, but will in fact exaggerate the situation under tax competition.

4 AN ALTERNATIVE SOLUTION?

The Residence Principle

Far from an economic panacea, our discussion suggests that tax harmonisation will not only exacerbate the current inequitable symptoms of tax competition, but will also result in a litany of unwanted side-effects. However, the problem remains, and so, in this section, we introduce an alternative solution: the residence principle.

The solution of residence taxation has already been proposed in the OECD Model Double Tax Convention, and its superiority as a solution for the problem of destructive tax competition has also been discussed by Giovannini and Hines (1990), and Bucovetsky and Wilson (1991). According to the latter 'it is the absence of this residence-based tax, rather than taxes on wage income, that is responsible for the tendency of decentralised decision-making by local governments to produce inefficiently low levels of taxation and public spending' (p. 350). In short, under a system of source taxation, taxes on capital income are paid in the country where it is earned. As a result, firms, though residing in the same country, may face different tax rates, depending on the source of their income. Under a system of residence taxation, on the other hand, firms will pay the tax rate that is being levied in their country of residence, irrespective of where the income is earned. Because of this, it is often said that source taxation is a tool in order to realise capital import neutrality (CIN): regardless of where the capital is coming from (that is, the residence country), earnings are paid according to the source country's tax rate. The residence principle, however, realises capital export neutrality (CEN) as it does not matter where the income is generated; all income is taxed according to the residence country's rate (Cnossen, 1987).

To illustrate, consider the model in Iwamoto and Shibata (1991), of a small open economy which faces a given world interest rate, r . In the absence of taxes, owners of capital invest up to the point where the marginal product of capital, F_k , equals the world interest rate. That is, $F_k = r$ is the arbitrage condition for all investors. Consider, however, that this country introduces a residence tax on capital income, where θ denotes the tax rate. Foreign residents keep the same arbitrage condition, $F_k = r$, whereas domestic residents now face a different after-tax rate of return (regardless where capital is invested), $\rho = (1 - \theta)r$. However, their before-tax rate of return remains unchanged as they end up with an arbitrage condition of $(1 - \theta)F_k = (1 - \theta)r$, which can of course be reduced to the efficient condition $F_k = r$. To summarise, the response to the introduction of a residence tax is: $\rho = (1 - \theta)r$, $F_k = r$. Now, consider the situation if this country were to introduce a source tax rather than a residence tax on capital income. Here, investors will face a different tax rate per investment location and taxes are therefore levied on investment. With a tax rate of η , both domestic and foreign residents face an arbitrage condition of $(1 - \eta)F_k = r$, which shows that, under source taxation, the investment decision is affected. Although the after-tax rate of return still equals the world interest rate, the before-tax rate of return differs sharply. In short, $\rho = r$, $(1 - \eta)F_k = r$. Hence, '[t]he burden of a source tax appears only on the investment side of the economy', whereas 'the burden of a residence tax falls upon the saving side' (ibid., p. 487).

Unfortunately, however, reality is not as simple as that. Sinn (1990) analyses the effects of introducing either a system of residence taxation or one of source taxation. And

although he shows that the residence principle can indeed result in an efficient allocation of capital, this result is subject to an important additional condition: each country should use the strict Schanz–Haig–Simons definitions of capital income.¹³ This implies that distortions from accelerated depreciation, non-taxed capital gains and other divergences from correct accounting must be excluded. Therefore, if the residence principle for capital taxation were to be used as a solution for tax competition, the EU ought to implement the Schanz–Haig–Simons definitions for capital income and profits.

Problems with and Criticisms of the Residence Principle

Even though the economic theory outlined above indicates that the residence principle realises horizontal equity, its implementation would result in two difficulties.

The first problem is that although the residence principle eliminates tax competition in financial capital by realising horizontal equity, capital owners are all but indifferent towards their location of residence. In short, the realisation of CEN comes, by definition, at the cost of violating CIN. One can assume, however, that the realisation of CEN while violating CIN is better than vice versa.¹⁴ While it is true that CIN prevents tax competition by changing the location of residence, CEN creates horizontal equity and, therefore, eliminates tax competition through investment decisions, which is much more sensitive to differences in tax rates. It is reasonable to assume that the responsiveness of financial capital is much higher than that of real capital, that is, equipment and machinery (Keen, 1993). Moreover, Europe's labour force is well known for its reluctance to relocate to another country. Even though large differences in unemployment rates and wages should, in theory, result in relocation of the labour force, cultural barriers and the like seem to entail considerable costs, hence limiting European labour mobility (for example, Baldwin and Wyplosz, 2004).¹⁵ Besides this, relocating real capital can easily be assumed to be far more costly than relocating financial capital. Closing plants in one country and opening plants in another has huge corresponding financial costs and, taking into account social–political resistance, might take years to complete. As a result of the relatively low mobility of both labour and real capital, we suspect relatively little tax avoidance as a result of the violation of CIN, compared to the violation of CEN, in the short run. In the long run, however, it is suspected that relocating real capital and labour is easier and cheaper. Therefore, Gorter and de Mooij (2001) argue that the welfare loss associated with a violation of CEN is determined by the sensitivity of capital across space, whereas the welfare loss of violating CIN depends on the sensitivity of saving across time, determined by the intertemporal elasticity of substitution. The research on this empirical question suggests that distortions in the allocation of capital are relatively large to the intertemporal distortions, indicating that violating CEN is more distortive than violating CIN (*ibid.*).

The second problem of eliminating tax competition by implementing the residence principle considers the exchange of information. A drawback to the residence principle that is regularly mentioned is that it makes tax evasion relatively easy. On the one hand, investors obviously have an incentive to conceal their income from the residence country, resulting in a higher after-tax income. On the other, without further arrangements, by not providing information to foreign tax authorities, source countries make themselves more attractive to foreign investors as it reduces the tax base of foreign investors. As a

result, under the residence principle it might be in their best interest for source countries not to disclose tax information to residence countries. There are, however, a number of reasons why countries might voluntarily engage in sharing tax-relevant information.

In a reputation game, source countries will also derive benefits from information sharing, as they will increase the likelihood of being given tax information themselves. In such a game, countries face a trade-off between the costs, that is, reduced attractiveness for foreign investors, and benefits, that is, increase in tax revenue from abroad, associated with information sharing. Bacchetta and Espinosa (1995) show that it may be in the best interest of countries to provide some, but not all, information. However, when countries are asymmetric in size, large countries might be more willing to cooperate than small ones.¹⁶ The reason is that the tax base of residents is large compared with foreign investment. In contrast, small countries might have little incentive to cooperate, which can explain why tax havens are often relatively small countries. Changing the settings used in Bacchetta and Espinosa might induce countries to provide more information. In a regime of tacit cooperation, countries can be voluntarily induced to share tax-relevant information (Keen and Ligthart, 2006a). In an infinitely repeated game, countries can either choose to sustain cooperation by fully providing tax information to residence countries or choose to deviate from the strategy by not providing (full) information. Cooperation might prevail if the punishment for violating is sufficiently high. Each country balances the temporary benefits from deviating with the long-term costs from this non-cooperative behaviour. Given that defecting in one period will yield higher tax income, cooperation will only be sustainable if and only if countries put sufficient weight on future tax income.

Countries will also be induced to exchange information voluntarily with foreign tax authorities in a revenue-sharing scheme. By giving some of the additional earned tax revenue through information sharing, residence countries create an incentive for source countries to share their information. This regime is analysed in Keen and Ligthart (2006b), taking into account asymmetry in size, and it is concluded that it may be in the best interest of large countries to share some of their proceeds from information exchange with small countries to make sure that the latter gain from sharing information and will hence voluntarily exchange information.¹⁷

Establishing a regime of effective information exchange, however, will face political opposition because it deals with highly confidential tax information.¹⁸ Tax authorities need to have the legal capacities both to acquire tax information from non-residents and to share this information with the respective cooperative countries. Moreover, problems will occur when third countries are unwilling or unable to satisfy these conditions, for example, when bank information is to be kept a commercial secret. Unwillingness to cooperate might be expected from tax havens which benefit from an inflow of financial capital by offering the possibility to hide income from tax authorities. This third-country problem greatly reduces the incentives of countries to engage in information exchange. It is the background of these difficulties that should be kept in mind when looking at the European Council's initiative for a Savings Tax Directive.¹⁹

The directive, which came into force on 1 July 2005, aims to enable savings income in the form of interest payments made in one member state to benefit individuals who are resident in another member state to be made subject to effective taxation in accordance with the laws of the latter member state. Moreover, the directive establishes a regime of

effective information exchange by obliging all member states to automatically exchange information on interest payments by paying agents established in their territories to individuals resident in other member states. The directive, however, does not apply a pure residence principle, as it allows three countries not to automatically exchange information because of 'structural differences' and to levy withholding taxes.²⁰ The tax rate of this withholding tax is fixed and 75 per cent of its revenue must be transferred to the residence country. Although this innovating revenue-sharing scheme is a big step forward with respect to sharing tax-relevant information, it is not a strict implementation of the residence principle and, therefore, violates CEN.

Position 4: The residence tax On the basis of the arguments outlined above we believe that a change in the tax base towards pure residence taxation is a superior – but clearly not flawless – alternative to that of tax harmonisation. However, the residence principle violates CIN and inflames the discussion on sharing tax-relevant information among countries. The Savings Tax Directive is a step towards a regime of effective information exchange, but is not the panacea for the problem of harmful tax competition as it is no strict implementation of the residence principle.

5 DISCUSSION AND CONCLUSION

The purpose of this chapter was a simple one: first, to prove that tax competition was occurring due to the increased mobility of capital; second, to prove that the process was harmful and resulted in an unfair burdening of the labour element; third, to prove that the European Commission's tax harmonisation proposal was not the panacea it is suggested to be; and finally, to discuss alternative solutions to harmful tax competition.

Of these, the first two purposes were fulfilled with concrete empirical evidence, and we illustrated both the process of tax competition over time, and the successive transfer of the tax burden to the immobile labour element. In attempting the third objective, we first showed that the implementation of a tax harmonisation scheme is not feasible, as it will result in positive externalities for those not party to the agreement. We suggested that tax harmonisation will result only in a disadvantage to EU members, relative to their neighbours, and may devalue the advantages of membership. In the worst-case scenario, we noted that tax harmonisation may, according to the literature of networks, even disincentivise membership.

However, we accepted that while states harmonising taxes are similar to firms harmonising prices, the theories of industrial organisation might not necessarily be transferable to the state. Therefore, we proceeded to illustrate other prominent reasons not to harmonise taxes. In doing so we showed that tax harmonisation will: first, exacerbate the economic core and periphery divisions already so prominent in the EU27; and second, result in the overprovision of infrastructure, all at the cost of the labour element. On the basis of these arguments, we suggest then that European-level tax-harmonisation plans will exaggerate regional economic differences, and burden the labour element with even greater tax responsibilities than they experience now in a position of harmful tax competition.

With the completion of this, our discussion was then in the position from which it had

begun: tax competition existed, and was detrimental to both the state and the labour element of production, relative to the mobile capital of the multinational. At this point therefore, we introduced the concept of a shift in the tax base from mixed taxes (residence and withholding) to pure residential taxation as an alternative solution. As the residence principle creates horizontal equity among investors it realises CEN and, therefore, eliminates tax competition through investment decisions.

The residence principle, however, is not a flawless solution to the problem of tax competition, as it gives rise to two problems. First, although the residence principle realises CEN it violates CIN; that is, it *does* matter where the investment comes from. Investors may relocate to another residence country in order to realise the highest after-tax gain. However, there is reason to believe that a violation of CIN is not as harmful as a violation of CEN because the sensitivity of real capital and individuals to differences in tax rates is lower than that of financial capital. A second problem with the implementation of the residence principle is that, in order to work properly, it requires a regime of effective exchange of tax-relevant information. However, notions of privacy and differences in political preferences keep, as of yet, certain source countries from exchanging information to tax authorities in residence countries. The introduction of the Savings Tax Directive is a step towards improving information sharing between the Community's tax authorities. However, the directive does not realise a strict implementation of the residence principle as exceptions are made for countries that, because of 'structural differences' cannot apply the automatic exchange of information. Consequently, the directive does not guarantee CEN and is therefore no final solution to the problem of harmful tax competition.

In conclusion, we have shown that tax competition is occurring, harmful, and not to be solved by tax rate harmonisation. Initiatives of the OECD and the European Council to eliminate tax competition may not have resulted in a panacea yet, but indicate recognition of the problem. Implementation of the residence principle is a theoretical plausible solution to the problem, but also gives rise to several practical problems. Further legal and economic research, as well as political negotiations, however, may eventually result in the long-awaited panacea, and with this chapter, we hope to have contributed to that end.

SUMMARY

This chapter surveys the literature on tax competition, and analyses current European (EU) proposals to harmonise corporate tax rates. It begins by introducing the phenomenon of international tax competition, and illustrates the reality of the regulatory 'race to the bottom'. Section 2 demonstrates the harmful consequences of tax competition – with reference to the immobile factors of production – and makes obvious the necessity of effective intervention. Section 3 then introduces and evaluates the calibre of the current proposals to tackle tax competition through collusion and harmonisation, and concludes negatively in the process. As illustrated in this discussion, any efforts to harmonise corporate taxes above the international equilibrium will not only fail to solve the problem at hand, but will exacerbate them, and may even serve to undermine and destabilise the political Union. Section 4 then introduces an alternative solution to the problem – in the

form of the residence principle – and the final section concludes by considering the policy implications.

Keywords

Tax, taxation, policy competition, Europe, regulation.

JEL Classification

E62, E65, F41, F42, H26, H87, O52.

NOTES

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- 1. UNCTAD (2002) finds that 21 of the world's top economic entities are corporations – as measured in terms of purchasing power parity – whereas Anderson and Cavanagh (2000), through a comparison of corporate sales and GDP, find that 51 of the hundred are multinationals.
- 2. Admittedly, the significance of many of these firms has declined quite dramatically since 2002. In 2010, both General Motors and DaimlerChrysler, for example, were struggling to maintain solvency.
- 3. Broekman and van Vliet (2001) using a panel of FDI inflows in EU countries find elasticities of between -1.4 and -2.2 ; Devereux and Griffith (1998) using a panel of US multinationals investing in EU countries finds elasticities of -0.4 for the UK and -1.7 for both France and Germany; Devereux and Freeman (1991) with a panel of outward FDI in seven OECD countries between 1984 and 1989 find elasticities of -0.4 ; Altshuler et al. (2001) studies US outward investment in 58 countries in 1984 and reports results of -1.5 , increasing to -2.7 in 1992; Hines and Rice (1994) study outward investment into 73 countries in 1982 and report elasticities of -3.3 ; Grubert and Mutti (1991) study US investment into 33 countries in 1982 and find elasticities of -0.3 ; Hines (1999) reports results a consensus estimate of -1.7 based on time-series models for US investment abroad; and Devereux (1999, p. 112) surveys the literature and concludes that there are 'significant negative effect of taxes on foreign investment'.
- 4. Sullivan (2002, p. 7) found that four European countries in particular with 'favourable tax regimes' – namely Ireland, the Netherlands, Luxembourg and Switzerland – attracted 38 per cent of US FDI to Europe between 1996 and 2000, despite accounting for only 9 per cent of EU GDP.
- 5. Gorter and de Mooij (2001) illustrate the increasing ratio of intangible to tangible capital investment in six EU countries (Austria, Belgium, France, the Netherlands, the United Kingdom and Sweden), over the period from 1990 to 1997, from 0.4 to 0.55.
- 6. This range ignores Switzerland; an outlier among the OECD countries for historical reasons. Despite an initially low rate, however (of 10 per cent in 1986), the same downward trend has been observed in Switzerland, and rates have been cut by some 20 per cent over the period, to 8 per cent in 2000.
- 7. Abraham Lincoln: 'that this nation, under God, shall have a new birth of freedom – and that government of the people, by the people, for the people, shall not perish from the earth' (Gettysburg Address, Gettysburg, Pennsylvania, 19 November 1863).
- 8. '[Land] is a subject which cannot be removed, whereas stock easily may. The proprietor of land is necessarily a citizen of the particular country in which his estate lies. The proprietor of stock is properly a citizen of the world, and is not necessarily attached to any particular country. He would be apt to abandon the country in which he was exposed to a vexatious inquisition, in order to be assessed to a burdensome tax, and would remove his stock to some other country where he could either carry on his business, or enjoy his fortune more at his ease. By removing his stock he would put an end to all the industry which it had maintained in the country which he left. . . A tax which tended to drive away stock from any particular country would so far tend to dry up every source of revenue' (Smith, 1776, Book V, p. 54).
- 9. For instance, in a panel regression of 15 OECD countries for the 1976–90 period, Garrett (1995), finds that a rising exposure to international trade, which is used as a proxy for financial liberalisation, leads to an increase in capital taxation. Referring to cross-country studies of economic growth, Quinn (1997)

considers a broader range of 64 countries with annual data averaged over 1974–89, and concludes that corporate taxation is positively associated with financial liberalisation under a wide variety of different model specifications. These findings are supported by Swank (1998) in which a panel regression for 17 industrialised countries (mainly OECD countries) for the 1966–93 period finds that three different measures of capital mobility are positively related to the proxy of corporate taxation. A more recent paper, Simmons (2006) overviews trends in OECD statistics and notes the shift in the burden of taxation.

10. $c_K \cdot K + c_W \cdot W = \lambda c$ where λ is the degree of homogeneity of the usage cost function $c(K, W)$. Inserting the maximisation condition $-c_W \cdot K = \rho$ and $\tau = c_K \cdot K$ into this gives the expression $\tau K = \rho W + \lambda c K$. See Sinn (2003) for a fuller exploration of this issue.
11. Since May 2009 this OECD list has been empty and a new list for blacklisting countries is under construction (see www.oecd.org).
12. As evidence of these non-symmetric markets, consider that total GDP in Germany, in terms of 2006 purchasing power parity, for example, has been estimated to be in the region of \$2.585 trillion, while Luxembourg's GDP is about \$40,577 billion. In per capita terms, Ireland's GDP was \$43,000 in 2006, whereas France's was \$30,100, Poland's was \$17,815 and Romania's was only \$11,989 (Eurostat).
13. Looking at topics other than harmful tax competition, Sinn (1990) also shows that the source principle, too, can result in an efficient allocation of capital. However, whereas the residence principle requires true economic depreciation to realise efficiency, the source principle needs an immediate write-off.
14. See, for example, Giovannini et al. (1989).
15. Moreover, concerning labour mobility, Bentivogli and Pagano (1999) show that Europeans are more risk averse than Americans, whose flexibility is an important factor driving the relative success of the US economy (Zimmermann, 2005).
16. See Keen and Ligthart (2006a, 2007).
17. See also Keen and Ligthart (2007).
18. See, for example, Rahn and de Rugy (2003).
19. 2003/48/EC.
20. Austria, Belgium and Luxembourg are subject to a transition period in which they levy a withholding tax of 15 per cent in the first three years, 20 per cent in the next three years, and 35 per cent thereafter, until third countries, including the US and Switzerland, apply measures equivalent to, or the same as, those provided by the directive.

REFERENCES

- Altshuler, R., H. Grubert and S. Newlon (2001), 'Has U.S. investment abroad become more sensitive to tax rates?' in J.R. Hines Jr. (ed.), *International Taxation and Multinational Activity*, Chicago, IL: University of Chicago Press.
- Anderson, S. and J. Cavanagh (2000), 'The rise of corporate global power', Institute for Policy Studies, Working Paper.
- Bacchetta, P. and M.P. Espinosa (1995), 'Information sharing and tax competition among governments', *Journal of International Economics*, 39, 103–21.
- Baldwin, R. and P. Krugman (2002), 'Agglomeration, integration and tax harmonization', NBER Working Paper 9290, National Bureau of Economic Research, Cambridge, MA.
- Baldwin, R. and C. Wyplosz (2004), *The Economics of European Integration*, London: McGraw-Hill.
- Bentivogli, C. and P. Pagano (1999), 'Regional disparities and labour mobility: the Euro-11 versus the USA', *Labour*, 13 (3), 737–60.
- Berglas, D. and D. Pines (1981), 'Clubs, public goods and transportation models', *Journal of Public Economics*, 15 (2), 141–62.
- Blankart, Ch. B. (1996), 'Braucht Europa mehr zentralstaatliche Koordination? Einige Bemerkungen zu Hans-Werner Sinn', *Wirtschaftsdienst*, 76 (2), 87–91.
- Borcherding, T.E. and R.T. Deacon (1972), 'The demand for the services of non-federal governments', *American Economic Review*, 62 (5), 891–901.
- Bretschger, L. and F. Hettich (2002), 'Globalisation, capital mobility and tax competition: theory and evidence for OECD countries', *European Journal of Political Economy*, 18 (4), 695–716.
- Broadway, R. (1980), 'A note on the market provision of club goods', *Journal of Public Economics*, 13 (1), 131–7.
- Broekman, P. and W.N. van Vliet (2001), 'Winstbelasting en Kapitaalstromen in de EU', *Openbare Uitgaven*, 33, 46–53.

- Brueckner, J.K. (1981), 'Congested public goods: the case of fire protection', *Journal of Public Economics*, 15 (1), 45–58.
- Buchanan, J.M. (1965), 'An economic theory of clubs', *Economica*, 32 (125), 1–14.
- Bucovetsky, S. and J.D. Wilson (1991), 'Tax competition with two tax instruments', *Regional and Urban Economics*, 21 (3), 333–50.
- Cardarelli, R., E. Taugourdeau and J.P. Vidal (2002), 'A repeated interactions model of tax competition', *Journal of Public Economic Theory*, 4 (1), 19–38.
- Cnossen, S. (1987), *Tax Coordination in the European Community*, Deventer: Kluwer.
- Cournot, A. (1897), *Researches into the Mathematical Principles of the Theory of Wealth* (Reserches sur les principes mathématiques de la théorie des richesses), trans N.T. Bacon with a Bibliography of Mathematical Economics by I. Fische, New York: Macmillan.
- Cremer, H. and F. Gahvari (2000), 'Tax evasion, fiscal competition and economic integration', *European Economic Review*, 44 (9), 1633–57.
- de Tocqueville, A. (1840), *Democracy in America*, trans. and ed., Harvey C. Mansfield and Delba Winthrop, Chicago, IL: University of Chicago Press, 2000.
- Devereux, M. (1992), 'The harmonisation of corporate income taxes in Europe: the Ruding Committee Report', *Fiscal Studies*, 13 (2), May, 108–21.
- Devereux M. and H. Freeman (1991), 'A general neutral profits tax', *Fiscal Studies*, 12 (3), 1–15.
- Devereux, M. and R. Griffith (1998), 'The taxation of discrete investment choices', IFS Working Papers W98/16, Institute for Fiscal Studies, Washington, DC.
- Drucker, P.F. (2005), 'Trading places', *The National Interest*, no. 79, 101–7.
- Edward, C. and P. de Rugy (2002), 'International tax competition: a 21st-century restraint on government', *Policy Analysis*, 12, 1–43.
- Fourçans, A. and T. Warin (2001), 'Tax harmonization versus tax competition in Europe: a game theoretical approach', Working Paper 132, *Centre for Research on Economic Fluctuations and Employment*, Montreal.
- Garrett, G. (1995), 'Capital mobility, trade and the domestic politics of economic policy', *International Organisation*, 49 (4), 657–87.
- Giovannini, A. and J.R. Hines Jr. (1990), 'Capital flight and tax competition: are there viable solutions to both problems?', NBER Working Paper 3333, National Bureau of Economic Research, Cambridge, MA.
- Giovannini, A., E. Malinvaud and C. Mayer (1989), 'National tax systems versus the European capital market', *Economic Policy*, 4 (9), 345–86.
- Glomm, G. and R. Lagunoff (1998), 'A Tiebout theory of public vs. private provision of collective goods', *Journal of Public Economics*, 68 (1), 91–112.
- Gorter, J. and R.A. de Mooij, (2001), 'Capital income taxation in Europe: trends and trade-offs', CPB Working Paper, Netherlands Bureau for Economic Policy Analysis, The Hague.
- Grubert H. and J. Mutti (1991), 'Taxes, tariffs and transfer pricing in multinational corporation decision making', *Review of Economics and Statistics*, 73, 285–93.
- Hines, J. (1999), 'Lessons from behavioural responses to international taxation', *National Tax Journal*, 52 (2), 305–22.
- Hines, J. and E.M. Rice (1994), 'Fiscal paradise: foreign tax havens and American business', NBER Working Paper 3477, National Bureau of Economic Research, Cambridge, MA.
- Hobbes, T. (1982), *Leviathan*, London: Penguin Classics.
- Ivaldi, M., B. Jullien, P. Rey, P. Seabright and J. Tirole (2003), 'The Economics of Tacit Collusion', Final Report for DG Competition, European Commission, Brussels.
- Iwamoto, Y. and A. Shibata (1991), 'Capital income taxation and the current account in a small open economy', *Journal of International Money and Finance*, 10 (4), 480–96.
- Keen, M. (1993), 'The welfare economics of tax coordination in the European Community: a survey', *Fiscal Studies*, 14 (2), 15–36.
- Keen, M. and J.E. Ligthart (2006a), 'Information sharing and international taxation: a primer', *International Tax and Public Finance*, 13, 81–110.
- Keen, M. and J.E. Ligthart (2006b), 'Incentives and information exchange in international taxation', *International Tax and Public Finance*, 13, 163–80.
- Keen, M. and J.E. Ligthart (2007), 'Revenue sharing and information exchange under non-discriminatory taxation', *Scandinavian Journal of Economics*, 109 (3), 487–504.
- Kreps, D. (1990), *Game Theory and Economic Modelling*, Oxford: Oxford University Press.
- Mohring, H. and M. Harwitz (1962), *Highway Benefits, An Analytical Framework*, Evanston, IL: Northwestern University Press.
- Mueller, D.C. (2003), *Public Choice III*, 3rd edn, Cambridge: Cambridge University Press.
- OECD (1998), 'Harmful Tax Competition: An Emerging Global Issue', OECD report, Organisation for Economic Co-operation and Development, Paris.

- OECD (2002), 'The OECD issues: the list of unco-operative tax havens', Organisation for Economic Co-operation and Development', Paris, 18 April.
- Quinn, D. (1997), 'The correlates of change in international financial regulation', *American Political Science Review*, 91 (3), 531-51.
- Rahn, R.W. and V. de Ruyg (2003), 'Threats to financial privacy and tax competition', *Policy Analysis*, 491, 1-14.
- Rasmussen, B.S. (1997), 'International tax competition tax cooperation and capital controls', University of Aarhus Department of Economics Working Paper 1997-9, available at: <http://ssrn.com/abstract=8744>.
- Riedl, A. and S. Rocha-Akis (2007), 'Testing the tax competition theory: how elastic are national tax bases in Western Europe?', Working Paper 112, Vienna University of Economics Working Paper Series, November.
- Riedl, A. and S. Rocha-Akis (2009), 'Testing the tax competition theory: how elastic are national tax bases in OECD countries?', CESifo Working Paper 2669, Munich available at: http://ideas.repec.org/p/ces/ceswps/_2669.html.
- Roin, J. (2001), 'Competition and evasion: another perspective on international tax competition', *Georgetown Law Journal*, 89, 543-604.
- Schmitz, S. (2002), 'The European Commission's Decision in GE/Honeywell and the question of the goals of antitrust law', *Journal of International Economic Law*, 23, Fall, 539-95.
- Simmons, R. (2006), 'Does recent empirical evidence support the existence of international corporate tax competition?', *Journal of International Accounting, Auditing and Taxation*, 15 (1), 16-31.
- Sinn, H.W. (1990), 'Tax harmonization and tax competition in Europe', *European Economic Review*, 34, 489-504.
- Sinn, H.W. (1997), 'The selection principle and market failure in systems competition', *Journal of Public Economics*, 66 (2), 247-74.
- Sinn, H.W. (2003), *The New Systems Competition*, Malden, MA: Blackwell.
- Smith, A. (1776), *The Wealth of Nations*, New York: Modern Library.
- Stigler, J.G. (1950), 'Monopoly and oligopoly by merger', *American Economic Review*, 40 (2), 23-34.
- Süddeutsche Zeitung* (2008), 'Skandal gigantischen Ausmasses', 2008-2-15.
- Sullivan, L. (1995), 'Post-Chicago economics', *Antitrust Law Journal*, 63, 669-82.
- Sullivan, M. (2002), 'Data show Europe's tax havens soak up U.S. capital', *Tax Notes*, 4 February.
- Swank, D. (1998), 'Funding the welfare state: globalisation and the taxation of business in advanced market economies', *Political Studies* 46 (4), 671-92.
- Tiebout, C. (1956), 'A pure theory of local expenditures', *Journal of Political Economy*, 64 (5), 416-24.
- UNCTAD (1996, 2001, 2002, 2004, 2007, 2009), 'World Investment Report: Transnational Corporations and Export Competitiveness', United Nations Conference on Trade and Development, New York.
- UNCTAD (2009) 'World Investment Report: Transnational Corporations, Agricultural Production and Development', United Nations Conference on Trade and Development, New York.
- Winner, H. (2005), 'Has tax competition emerged in OECD countries? Evidence from panel data', *International Tax and Public Finance*, 12 (5), 667-87.
- Zimmermann, K.F. (2005), 'European labour mobility: challenges and potentials', *De Economist*, 153 (4), 425-50.