

Keuschnigg, Christian; Loretz, Simon; Winner, Hannes

Working Paper

Tax competition and tax coordination in the European Union: A survey

Working Papers in Economics and Finance, No. 2014-04

Provided in Cooperation with:

Department of Social Sciences and Economics, University of Salzburg

Suggested Citation: Keuschnigg, Christian; Loretz, Simon; Winner, Hannes (2014) : Tax competition and tax coordination in the European Union: A survey, Working Papers in Economics and Finance, No. 2014-04, University of Salzburg, Department of Social Sciences and Economics, Salzburg

This Version is available at:

<https://hdl.handle.net/10419/122170>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

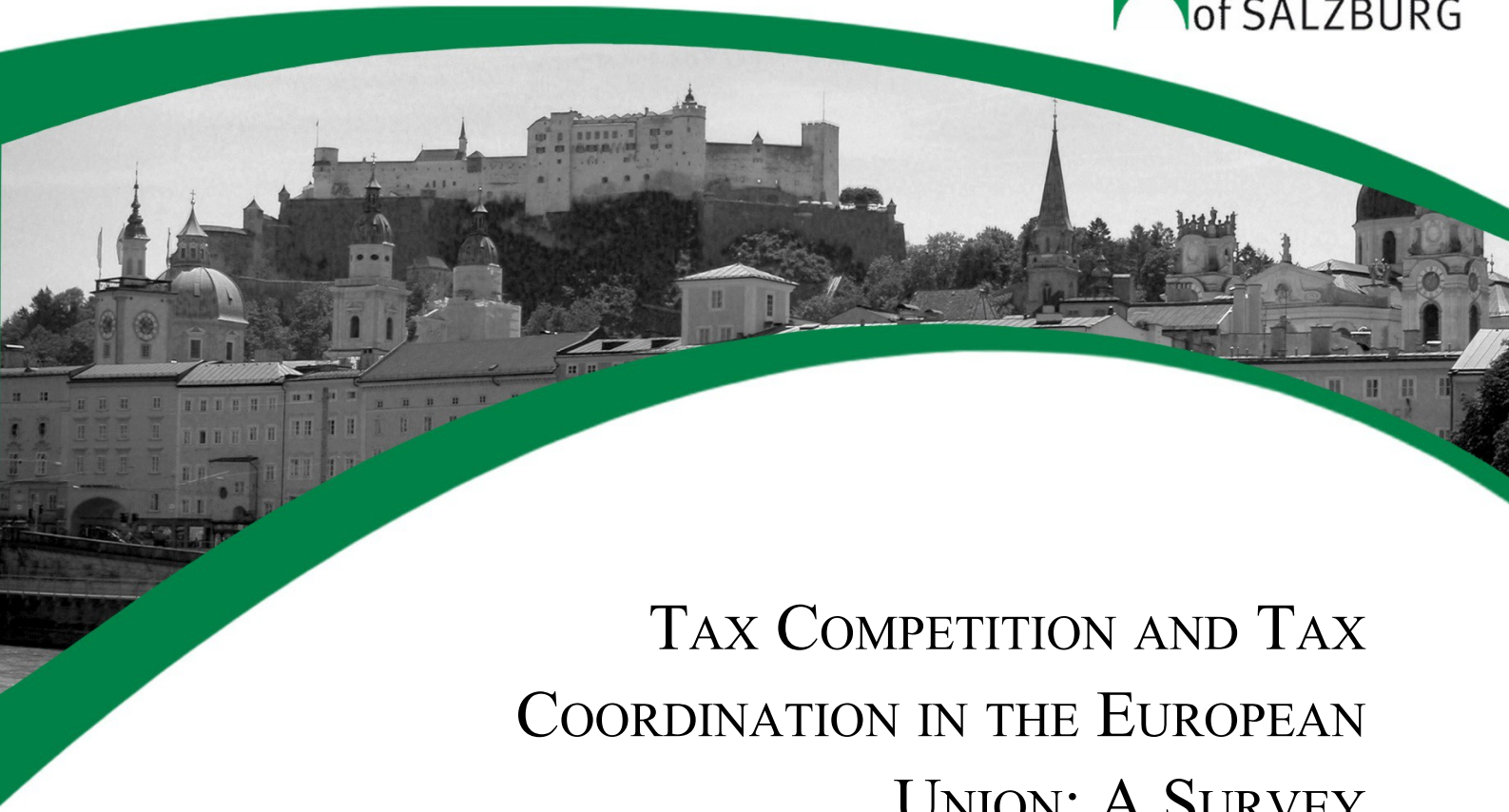
Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

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

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



TAX COMPETITION AND TAX
COORDINATION IN THE EUROPEAN
UNION: A SURVEY

CHRISTIAN KEUSCHNIGG, SIMON LORETZ AND HANNES WINNER

WORKING PAPER No. 2014-04

WORKING PAPERS IN
ECONOMICS AND FINANCE

Tax Competition and Tax Coordination in the European Union: A Survey*

Christian Keuschnigg,^{a,b)} Simon Loretz^{b)} and Hannes Winner^{c)}

^{a)}University of St. Gallen (IFF-HSG), Switzerland, ^{b)}Institute for Advanced Studies, Vienna, Austria. ^{c)}University of Salzburg, Austria

August 2014

Abstract

This survey summarizes the state and development of European tax policy, in particular discussing the harmonization progress in direct as well as indirect taxes. Based on an overview over the theoretical and empirical literature on tax competition, we further ask whether increased tax coordination is necessary to prevent a race to the bottom. We show that theoretical predictions on the outcome of tax competition are ambiguous, and the empirical evidence in this regard is inconclusive as well. This, in turn, gives rise to an only limited scope of stronger tax harmonization.

JEL-Codes: H87, H77

Keywords: Tax Competition, tax coordination, European economic integration

* Forthcoming in Harald Badinger and Volker Nitsch (eds.), *The Handbook of the Economics of European Integration*, London: Routledge

1. Introduction

Although the European Union was ultimately grounded on political motives, it was mainly promoted by economic means and measures. This is also reflected in the institutional design of the European Union (EU), which initially was approached as economic community, but slowly proceeded into broader political and societal areas.² According to Article 3 of the Treaty on the European Union (TEU), the EU intends to “... *offer its citizens an area of freedom, security and justice without internal frontiers ...*“, and to “... *establish a common market*“. To achieve these goals, the Union relies heavily on market competition, largely eliminating trade impediments and distortions of consumer and producer choices. This, in turn, requires a substantial degree of policy coordination and, among others, a strong mandate to harmonize taxes, even if the TEU does not stipulate explicit taxing rights at the European level.

Before proceeding further, we would like to define three important concepts regarding the European tax policy. The first is **tax competition**, which is originally based on the analysis of optimal tax assignment in federal states as developed by Oates (1972) and the subsequent research on fiscal federalism, showing that tax rates on mobile factors might end up at inefficiently low levels. Subsequent theoretical developments extend this approach to competition between independent jurisdictions, with widely varying policy implications depending on the particular assumptions made. For the purposes of this chapter, we rely on this notion of inter-country competition defining tax competition in a broad sense and along the lines of Devereux and Loretz (2013, p. 746) as “... *the uncooperative setting of taxes where a country is constrained by the tax setting behaviour of other countries.*” **Tax coordination** refers to a cooperative tax setting, where countries or a group of them build on domestic tax systems to render them compatible with the aims of the Union as formulated in the TEU. Consequently, countries deliberately give up parts of their autonomy in tax matters. **Harmonization** is viewed as tighter coordination, leading to almost identical or at least similar tax systems, tax bases and tax rates within a Union.

² The aim to “... *make war not only unthinkable but materially impossible ...*” (Robert Schuman) was achieved by regional integration creating a common market for coal and steel, especially in the Ruhr area. This idea was extended further to a general customs union (Treaty of Rome, 1957) and, more recently, to the creation of the Economic and Monetary Union (Treaty of Maastricht, 1992), which is often viewed as the final step of economic integration, but at the very same time, explicitly was thought as a first step to establish a political union.

The reason why tax competition may lead to undesirable outcomes lies mostly in two externalities inherent to international taxation. First, an increase in a country's tax burden might induce to a re-location of mobile tax bases to adjacent economies, representing a **positive externality**. If tax policies are adjusted uncooperatively, policymakers ignore this externality in neighbouring countries and, therefore, set tax rates at inefficiently low levels. The second effect comprises a **negative externality** when taxes imposed by one country are borne partly by the residents of another country. It is known as tax exporting and appears if a country imposes source based taxes on natural resources (e.g., land), income or consumer activities of non-residents. In this case, the tax burden tends to be higher than optimal from a social point of view.³ Tax competition may lead to over- or undertaxation, depending on which of these countervailing effects is the dominating one.

The European integration affects the intensity of both externalities. First, the establishment of a common market and the abolition of borders fosters the mobility of tax bases and, consequently, reinforces positive tax externalities in each Member State. At the same time, impediments on the free movement of goods, services, persons and capital are amongst others eliminated by ruling out discrimination because of nationality. This reduces the possibilities to raise taxes particularly on foreigners and, in turn, lowers the negative effects of tax exporting. Taken together, it seems that the existence and development of the EU increases tax competition and exerts downward pressures on tax rates.

A race to the bottom due to increased tax competition was feared since the very beginning of European integration. It was one of the driving forces behind any attempts to harmonize taxes at the European level. However, tax harmonization succeeded only moderately so far. The main reason was that Member States did not agree on the necessity and also the scope of harmonization, apart from the fact that tax matters remain one of the few areas where a proposal needs unanimity to pass the Council of the EU.

The next section briefly reviews the historical development of EU tax policy highlighting the implemented directives to harmonize taxes. Section 3 summarizes the state of theoretical and empirical research on tax competition, focusing on whether the observed differentials in cross-

³ See Haufler (2001), for a comprehensive discussion of the externalities with regard to capital taxation.

country tax rates give rise to a stronger coordination of EU tax policy. Section 4 summarizes and draws some policy conclusions.

2. A brief history of tax harmonization

The original intention of the EU to establish a customs union translates into very different legal mandates for direct and indirect taxation.⁴ In particular, cross border flows of goods and services are not only influenced by tariffs and technical trade barriers, but also by commodity taxation. Therefore, a legal mandate for the EU to harmonize indirect taxes was necessary to guarantee the functioning of a customs union. Personal and corporate income taxes, in contrast, mainly affect the mobility of capital and labour and are, therefore, important to establish the common market. As a result, harmonization is widely advanced for commodity taxation and relatively less developed for direct taxes, where the EU mainly tried to commit the Member States to a levelling of the playing field via the abolition of unfair tax practices.⁵

2.1. Indirect taxation

The fact that non-uniform indirect taxes may lead to substantial intra-Community trade impediments was recognized from the very beginning of European integration. The Tinbergen Committee was already the first expert group requested to tackle unresolved issues of commodity taxation in the European Coal and Steel Community (Tinbergen 1953). One of its particular mandates was to assess the economic effects of two taxing principles governing general sales taxation on intra-Community trade. Under the **destination principle**, commodities are taxed by the country where they are finally consumed; also, the revenues are attributed to this

⁴ In the following, we subsume commodity taxes (i.e., the value added tax and excise duties) under *indirect taxation*, while assigning personal and corporate income taxes to *direct taxation*. This is also in line with the usual classification of taxes as used, for example, in the OECD's Revenue Statistics (e.g., OECD 2014).

⁵ This difference also translates into a stronger legal mandate in the TEU to harmonize commodity taxes. In particular, Article 110 TEU states that “[N]o Member State shall impose, directly or indirectly, on the products of other Member States any internal taxation of any kind in excess of that imposed directly or indirectly on similar domestic products.” Further, Article 113 TEU calls for the European Council do adopt unanimously measures regarding “... [the] harmonisation of legislation concerning turnover taxes, excise duties and other forms of indirect taxation to the extent that such harmonisation is necessary to ensure the establishment and the functioning of the internal market and to avoid distortion of competition.”

jurisdiction. Exports are free of taxes and imported goods are subject to sales taxation once they cross the border. Consequently, the application of the destination principle leads to equal relative prices between in-state and out-of-state produced goods and services. The **origin principle**, in contrast, taxes goods and services in the country of production, and the revenues are distributed according to the value added in each country. Commodities produced in one Member State would bear the same tax burden within the EU, irrespective where they are consumed. Under this principle, no border adjustments are needed, making it more consistent with the operation of a common market. Under arbitrage conditions and different commodity tax rates across countries, the destination principle balances producer prices (before taxes), therefore maintaining **production efficiency**, while the origin principle promotes **exchange efficiency** via the equalization of after tax (consumer) prices (see, e.g., Razin and Sadka 1991).⁶ Further, the revenue consequences for each Member State are very different under both systems, depending on whether a country is a (net) importer or -exporter and/or levying high or low tax rates.

The Tinbergen Committee arrived at the conclusion that both principles are equivalent under certain conditions (e.g., uniform tax rates and tax bases) and, since the destination principle was commonly used in international trade at that time, there was no need to substitute the destination by the origin principle (Tinbergen 1953, p. 132). Ten years later, the Neumark Report (1963) recognized that the destination principle is not sustainable once the single market is completed. Therefore, it explicitly advocated a change to the origin principle. For similar reasons, the Neumark Committee recommended to replace the gross turnover tax by a net turnover or **value added tax (VAT)**.⁷ The European Economic Community (EEC) followed this advice and released the First and Second VAT Directives in 1967 (Council Directives 67/227/EEC and 67/228/EEC), which laid down the general structures of the VAT system but left it to the Member States to determine the coverage of the VAT and its rate structure. It took many years to implement the VAT uniformly, with some countries being able to introduce this system only a decade after the enactment of the directives (see Table 1).⁸ In 1977, the EEC adopted the Sixth VAT Directive establishing a widely uniform coverage of the VAT (Council

⁶ Diamond and Mirrlees (1971) have demonstrated that the goal of production efficiency has to be preferred over the one of exchange efficiency. Therefore, the destination principle is more desirable from a welfare perspective.

⁷ The former was applied in five out of the six original Member States, the latter only in France. See Ebrill, Keen and Summers (2001) for more technical and historical details on the VAT.

⁸ Subsequently, the adoption of the VAT became a non-negotiable pre-requisite to join the EU.

Directive 77/388/EEC). However, the directive refrained from narrowing national exemptions and product-specific VAT rates, leaving the core of systematic imbalances untouched.

The completion of the Single European Market (SEM) in 1993 induced a substantial change in EU tax policy, especially with regard to commodity taxes. The removal of borders implied that it was impossible to maintain the destination principle any longer and let the European Commission fear that cross border shopping of individuals and illegal arbitrage activities for commercial purposes would increase massively. The Commission launched two draft directives, the first in 1987 and a modified version in 1989, proposing to replace the destination by the origin principle and to introduce a two-rate VAT system.⁹ Switching to the origin principle would have changed the distribution of tax revenues within EU Member States dramatically. To circumvent this problem, the Commission proposed a “**clearing mechanism**” based on single purchases (1987; *micro* clearing) or trade statistics (1989; *macro* clearing). The purpose of the clearing mechanism was to restore the Member States’ revenue distribution according to the destination principle. The clearing system never was implemented as the Member States were concerned to lose sovereignty in taxing rights but also feared additional administrative burdens to govern the mechanism.

In 1993, the Member States met a compromise and agreed upon a “**transitional**” scheme, which attempts to mirror border adjustments on cross-border trade between registered businesses via a deferred payment or postponed accounting basis (Council Directive 91/680/EEC). Accordingly, exports are free of VAT; importers of goods and services declare their purchases, apply the corresponding VAT and take credit for the same amount. An Information Exchange System (VIES) requires registered businesses to file quarterly reports on exports and imports. While this system in effect leads to the application of the destination principle for businesses, over-the-counter sales to nonregistered traders and consumers (accounting for the minor share of total intra-EU trade) are taxed on an origin basis.¹⁰ Finally, minimum rates of 15 percent (standard rate) and 5 percent (reduced rate) were agreed upon (Council Directive 92/77/EEC). Apart from this, the existing zero rates applied in certain countries and for specific necessities

⁹ While the 1987 draft directive planned to restrict the Member States to bandwidths of 14 to 20 percent for the standard rate and of 4 to 9 percent for a reduced rate on basic goods, the Commission proposed a system of minimum rates of 14 (standard rate) and 9 (reduced rate) percent in the 1989 proposal.

¹⁰ Exceptions are household purchases of motor vehicles, mail-order sales and intra-EU acquisitions of intermediate inputs by VAT-exempted firms. In all these cases, the destination principle still applies to cross-border consumption.

were allowed to continue (e.g., for food products, medicines or newspapers). Many observers have argued that the deferred payment system not only creates additional bureaucracy and expenses for firms, but also increases the danger of cross-border shopping and tax fraud (see, e.g., European Parliament 2001).

The transitional system was planned to be in effect until 1996 and thereafter to be replaced by a “definitive” solution. This never happened and so the transitional system continues to work even today.¹¹ The co-existence of the destination principle for VAT-registered traders and the origin principle for final consumers increases a country’s incentives to attract foreign consumers by lowering its commodity tax rates, which in turn might intensify cross-border shopping and tax competition (see Haufler 2001, pp. 151).

Table 1 reports the VAT rates currently in use. First, it shows a great deal of disparities with regard to the number and the levels of specific VAT rates applied in the Member States. There is also large variation in standard VAT rates, ranging from 15 (Luxembourg) to 27 percent (Hungary). Generally, the standard VAT rate has been increased over the course of the years, especially since the recent financial and debt crisis, which might be viewed as suggestive evidence against the notion of increased competition in commodity taxation. Overall, we do not observe any remarkable convergence in VAT rates, which, together with inefficiencies from the deferred payment system, still may represent one major impediment for intra-EU trade.

> Table 1 about here <

The harmonization of special consumer taxes (excise duties) dates back to the early 1970s. However, and similar to the VAT, most important steps to a uniform system of excise duties were taken under the SEM-program. Since then, several directives have been issued covering the products subject to taxation (i.e., mineral oils, alcohol and alcoholic beverages, tobacco products and energy), the general arrangements of taxation (among others, the uniform application of the destination principle as the general scheme for cross-border consumption), and the corresponding minimum tax rates (including zero rates for specific products, for example wine). Apart from wide dispersions in tax rates, one may assert a stronger harmonization for

¹¹ Subsequent research also discusses additional alternatives, either based on some forms of clearing mechanisms (e.g., European Commission 1996) or on more centralized VAT systems, including the compensating VAT (CVAT, McLure 2000) and the viable integrated VAT (VIVAT, Keen and Smith 1996). Bird and Gendron (2000) for a detailed discussion.

these taxes than for the VAT, implying less administration and lower compliance costs associated with the functioning of the actual system.¹²

2.2. Direct taxation

As early as in the Neumark Report (1963) and in the Van den Tempel Report (1970) the long run goal of full harmonization of corporate taxation and a minimum tax burden of 50 percent on retained earnings were debated. However, due to the lack of a direct mandate to harmonize direct taxes, these proposals were never implemented. It is only in 1992, when the Ruding Report systematically reviews the distortions to the common market imposed by differences in corporate taxation. The conclusion that “[...] *the threat of overall tax atrophy does not seem to provide a sufficiently strong justification for the total harmonization of corporate taxes within the Community*” (Ruding Report 1992, p. 26) points to an important change in the approach towards EU tax policies in the area of direct taxation. While the Ruding Report still proposes a bandwidth for corporate income tax rates between 30 and 40 percent, the focus starts to shift on abolishing preferential tax regimes for foreign corporations and tax obstacles to cross border activities. This tendency is reiterated by the European Commission (1997), suggesting a package to tackle harmful tax competition. The subsequent Bolkestein Report (2001) switched the general harmonization strategy pursuing a policy of aligning the corporate tax base rather than tax rates. At the same time, the difficulties of finding unanimous decisions in tax matters are acknowledged and the idea of enhanced cooperation between a subgroup of Member States gained momentum.

Out of the Bolkestein Report, a common consolidated corporate tax base (CCCTB) emerged as the preferred measure of the European Commission. After assessing the possibilities of a CCCTB in depth, the Commission formally proposed the CCCTB on March 2011.¹³ However, the deep economic impact of the financial crises overshadowed the attempts of corporate tax harmonization, so that the future of the CCCTB proposal is still uncertain.

¹² In the following, we do not discuss harmonization issues of excise duties any further. The interested reader is referred to Cnossen (2001, 2006, 2007).

¹³ With the CCCTB, multinational companies would calculate the corporate tax base for their overall European activities and thereby overcome problems allocating activities to specific Member States. In a second step, the overall tax base would be allocated to the Member States according to formulas, which reflect the economic activities (e.g., employment, tangible assets or sales). See Betten-dorf et al. (2010) for an in-depth discussion of the CCCTB.

Apart from tax rate and tax base harmonization, the EU passed three directives intending to remove obstacles on cross-border activities of multinational firms (MNEs). First, the Mergers Directive (90/434/EEC last amended in Council Directive 2005/19/EC) rules out additional taxes on cross border transfers of assets in the case of mergers between two companies in different Member States. Second, the Parent Subsidiary (Council Directive 2003/123/EC) abolishes withholding taxes on payments and legal double taxation of dividends between associated companies of different Member States. Finally, the Interest and Royalty Directive (Council Directive 2003/49/EC) rules out withholding taxes on interest and royalty payments between associated companies of different Member States.

The incomplete tax harmonization process in the European Union has changed the surroundings for tax competition in a number of ways. The Parent and Subsidiary Directive and the Interest and Royalty Directive largely eliminate negative externalities from tax exporting (for example, arising from double taxation on dividend payments of foreign firms). Further, the abolition of withholding taxes increases the attractiveness of low tax countries and thereby influences the positive externality because of tax base flight. Therefore, one would expect a stronger downward pressure on corporate taxes within the European Union.

At the same time, the European Monetary Union and in particular the Stability and Growth Pact stipulates that the Members of the Eurozone ultimately have to balance their budgets and to maintain their debt to GDP ratios below 60 percent. This induces a strong restriction on tax policies of EU member states, especially in times of the recent financial and debt crisis. Tax revenues are strongly needed in many countries, which may well contribute to the mixed picture in Table 2, presenting the status quo and recent trends in both corporate and personal income taxation. Out of the 28 EU Member States, there are four countries having increased their top statutory corporate tax rate, while seven countries have lowered it during the course of the last five years. Some of the tax increases can be attributed to increased revenue needs (e.g., Cyprus and Greece) while some of the countries lowering their tax rate can be seen as traditionally high tax Nordic countries converging to a European average (Denmark, Sweden and Finland). Linking changes in corporate tax rates to ones in the corresponding tax bases reveals that only the United Kingdom and Denmark experienced rate-cut-cum-base-broadening reforms. This is somewhat surprising, as this type of reform has been prominently placed in many tax policy discussions over the last two decades.¹⁴ At the same time, the way the

¹⁴ See, for example, Devereux, Griffith and Klemm (2002) and Loretz (2009).

corporate tax base is measured may also underestimate the extent of base broadening, since a number of countries have broadened their tax base by restricting the deduction of financing costs, limiting the loss offset or abolishing lower tax rates for smaller businesses. In a similar vein, the relative small number of countries reducing tax rates might understate any general downward tendencies in corporate taxation as mirrored in a growing number of special provisions for tax treatment of R&D expenditures and related revenues.¹⁵

> Table 2 about here <

The swelling need for tax revenues with a potentially intensified corporate tax competition may result in an increased tax burden on less mobile labour. The last three columns of Table 2 report the top statutory personal income tax rate, the effective tax burden (including social security contributions) on a single taxpayer earning the country-specific average income, and the corresponding development of tax rates and tax bases over the last five years. Out of the 28 EU Member States, thirteen countries increased their top personal income tax rate, while five of them reduced these rates. Countries with unchanged top income tax rates are mainly Eastern European ones with partly flat taxes on personal income. Although there is no clear development of tax rates and tax bases reported in the last column of Table 2,¹⁶ we might assert a general increase in personal income tax burden over time, which, together with the observed pattern in corporate taxation, is broadly consistent with a shift in tax burden from (mobile) capital to (immobile) labour.

3. Tax Competition: Lessons from Economic Research

Since the mid-1980s, there has been a remarkable theoretical and empirical literature on tax competition, not only providing important insights into strategic interactions among jurisdictions, but also pointing to the policy implications of increased factor mobility and, more generally, globalization of markets. Many results from this research have been proved as theoretically robust and in line with empirical observations (Wilson 1999, Zodrow 2003 or Keen and

¹⁵ See for example Evers, Miller and Spengel (2014) for a discussion of the recent rise of patent boxes in Europe.

¹⁶ We measure the personal tax base as the progressivity of the tax system, defined as the ratio of the total tax wedges for single persons with above (167 percent) and below (67 percent) average incomes. This implies that our measure only captures some aspects of the breadth of the personal tax base.

Konrad 2013 provide comprehensive surveys over this research). For instance, there is a bulk of papers finding that tax competition leads to inefficiently low tax rates on mobile tax bases, with the tax burden shifted to less mobile factors. Further, it is shown that a country's ability to engage in the international tax game crucially depends on its country size. However, it is less clear whether tax competition leads to positive or negative welfare effects, and whether the tax reaction functions of countries are positively or negatively sloped, i.e., whether tax rates of competing countries are strategic complements or substitutes. Both aspects are relevant for European tax harmonization and discussed in the subsequent sections.

3.1. Theory

The concept of tax competition originally dates back to Tiebout (1956), who developed a model with autonomous regions and citizens who *vote with their feet* to choose the jurisdiction with the optimal combination of tax burdens and provision of public goods. Under a set of strict assumptions, this leads to an efficient sorting and, therefore, to welfare enhancing tax competition relative to unified tax rates across all jurisdictions.¹⁷ Intuitively, if a monopolist can segment its market and the customers sort themselves without frictions into the best fitting segment, the outcome will dominate the none-discriminating case. Bradford and Oates (1971) and Oates (1972) took a less optimistic view on tax competition, predicting that governments underprovide local public goods in an attempt to attract mobile factors. This line of reasoning is formalized in the seminal contributions of Zodrow and Mieszkowski (1986) and Wilson (1986), who assume a large number of jurisdictions competing for perfectly mobile capital. A tax cut in one region creates an inflow of mobile factors, increasing its tax base and, consequently, tax revenues. This revenue gain comes at the expense of all other jurisdictions, which are faced with shrinking tax bases representing a negative fiscal externality. In the Nash-equilibrium, capital tax rates are competed down to zero, a result that is known as “*race to the bottom*”. Much like a perfect competition case, these models have become the benchmark and starting point for extensions into various directions.¹⁸

¹⁷ It is worth noting that the original Tiebout model is not concerned about redistributive policy, which may reverse the overall desirability of the outcome.

¹⁸ See also Devereux and Loretz (2013) for analogies between tax competition models and competition models in the goods market.

Starting from the assumption of a benevolent government, the lack of monopoly power to impose taxes necessarily implies a loss in welfare. Brennan and Buchanan (1980) were more sceptical arguing that the governments act as *Leviathan* primarily interested in raising tax revenues. Under such a perspective, tax competition is beneficial as it helps to limit an overexpansion of the state. Edwards and Keen (1996) formalize this argument assuming that government officials not only maximize the welfare of their residents but also act in their self-interest. They show that tax harmonization fosters collusive behaviour of governments, leading to excessive spending. However, from a voter's perspective it is not clear whether this is welfare-reducing or -enhancing, depending on whether the distortions from harmonized taxes outweigh the revenues from previously uncoordinated taxes. Hence, if competition between jurisdictions does not imply very large excess burdens, there is room for beneficial tax competition in addition to the welfare enhancing differentiation of tax policy amongst European Member States.

The second key aspect where the tax competition literature seemingly fails to come to an agreement is the question whether tax rates are strategic complements or substitutes. In the former case, the tax reaction functions have a positive slope, i.e., a jurisdiction will lower (increase) its tax rate when tax rates of neighbouring jurisdictions are falling (increasing). In contrast, if tax rates are strategic substitutes, a country that is faced with decreasing tax rates in neighbouring countries and, hence, with a decline of the tax base due to re-locations of mobile factors, would increase its tax rate to maintain a certain level of public expenditures (see Wildasin 1988). Hence, the tax reaction function is negatively sloped. The ambiguity regarding the slope of the tax reaction functions can be explained through one key modelling assumption, namely whether the level of expenditure is exogenously given or determined by the ability to raise revenues. Early tax competition models treat expenditure as endogenous and find that tax rates are strategic complements, implying the race to the bottom result. In contrast, Wildasin (1988) shows that tax rates would be strategic substitutes if public expenditure were used as strategic variable. Rather than a race to the bottom, this would imply specialization into high tax and low tax countries. The reality is most likely a mixture of governments deciding on expenditure levels independently of the individual tax rate decisions, as well as countries adjusting expenditures because of difficulties to raise tax revenues. Hence, whether there is a race to the bottom or increasing differences in the tax rates depends amongst others on the rigidity of the expenditure level and availability of other tax instruments.

While the classical tax competition models only consider one tax instrument, Bucovetsky and Wilson (1991) focus on two tax instruments, i.e., immobile labour and perfectly mobile capital. They find that tax competition forces the optimal capital tax rate down to zero, while the remaining tax burden entirely falls on the immobile factor. The presence of a less mobile tax base will also weaken the link between the tax rate on a particular tax base and expenditure levels. Hence, with the availability of other tax instruments, tax rates on more mobile factors more likely become strategic complements. However, it should be noticed that this result is no longer valid if labour is mobile as well. For instance, Kleven, Landais and Saez (2013) show that the mobility of high skilled labour limits a country's ability to raise taxes on top incomes. Further, one cannot sharply distinguish between labour and capital mobility. In particular, generous replacement rates in social insurances push up reservation wages and inflate wage costs, which might have an equivalent effect on foreign direct investment (FDI) than a given increase in corporate tax rates (see Keuschnigg 2009). In the same vein, Keuschnigg and Ribi (2009) have demonstrated that labour taxation and social insurance magnifies outsourcing and offshoring of domestic employment. The upshot is that international fiscal competition might be as much driven by high labour taxes as by high corporate taxes.

The relative mobility of tax bases also depends on country size, as shown by Bucovetsky (1991) and Wilson (1991), modelling tax competition between jurisdictions of different size. They find that smaller regions will set lower tax rates on mobile factors and, consequently, win through tax competition. Further developments in the theoretical tax competition literature stress that even perfectly mobile tax bases can be de facto immobile because of agglomerations rents.¹⁹ These, in turn, reinforce the taxing power of jurisdictions and dampen the negative consequences of tax competition. Further, the downward pressure on corporate tax rates might be limited if the corresponding revenues are used to finance infrastructure and other public services (e.g., Sinn 1997, Keen and Marchand 1997). In a similar vein, Egger et al. (2014) argue that a country with high institutional quality and well developed capital markets leads firms to invest more in that country. In other words, if there are sound business reasons to be located in a particular country, it is possible to tax the accruing rents. Countries may thus be able to sustain higher tax rates as they offer other compensating advantages via a favorable

¹⁹ See, for example, Baldwin and Krugman (2004) for linking the new economic geography models with the tax competition literature.

institutional environment fostering international investment. However, the possibility to relocate the tax base abroad through profit shifting may undermine even the taxation of de facto immobile production factors. This most harmful aspect of tax competition has also moved increasingly into the focus of initiatives of international organisations like the EU or the OECD.²⁰

In addition to a broad literature on direct taxes, there is also theoretical research on commodity tax competition. One of the first contributions in this regard is by Mintz and Tulkens (1986), who model competition between two regions that are interlinked through cross-border shopping. Public goods are financed by a consumption tax based on the origin principle, which in turn gives rise to cross-border shopping of consumers. Tax competition arises if tax rate differentials are sufficiently large to compensate transportation costs. If a high tax country increases its commodity tax rate in this setting, it loses cross-border shoppers to neighbouring countries with lower tax rates. This represents a positive externality, leading to inefficiently low tax rates in the high tax country. From this, one might conclude that tax harmonization is efficiency-enhancing. However, a tax increase in the low tax country also induces a negative externality as cross-border shoppers are now faced with higher prices. Hence, a coordinated tax policy is not necessarily associated with a welfare improvement in the Mintz-Tulkens setting (see also Haufler 1998).

Kanbur and Keen (1993) extended the Mintz and Tulkens framework focusing on spatial competition between revenue maximizing governments. Countries are treated as asymmetric, distinguished by their population size (see Ohsawa 1999 and Nielsen 2001 for similar analysis). One finding of the model is that commodity tax rates are positively related to tax rates in neighbouring countries (i.e., tax reaction functions are upward sloping). Further, it is shown that smaller countries strictly set lower tax rates than their larger counterparts, which is consistent with models on capital tax competition. Intuitively, a small country that lowers its tax rate produces revenue gains from a large mass of foreign consumers, which outweighs the revenue loss from (relatively less) domestic individuals. The opposite is true for the large economy, so that it has no incentives to undercut the tax rates of a small country. After all, this result indicates that welfare implications of tax coordination are not symmetric, being particularly important if countries of an economic union are heterogeneous.

²⁰ In May 2013, the OECD adopted a declaration to combat base erosion and profit shifting (BEPS) and developed an action plan, which is supported by the finance ministers of the G20 countries.

What is common to all theoretical models on commodity tax competition is that cross-border shopping is mainly driven by transportation costs, influencing the incentives for purchasing abroad. Economic integration is associated with a reduction of transportation costs thereby intensifying tax competition and generally reducing tax rates. One way to avoid the negative consequences of such a race to the bottom is to ascertain minimum tax rates within the customs union, a policy the EU has been incorporated in commodity taxation. Kanbur and Keen demonstrated that such a policy is clearly welfare improving as the high tax country is now able to maintain higher tax rates, leading to revenue gains sufficiently large to compensate the low tax country for its revenue losses from cross-border shoppers.

3.2. Empirical evidence

The empirical literature on tax competition has been grown extensively in recent years, covering many different aspects of personal and corporate income taxes as well as commodity taxation. It goes beyond the scope of this chapter to address all of the related issues. We rather highlight some of the key findings associated with European tax harmonization.

Despite contributing only a moderate share of tax revenues, the bulk of the empirical research is concerned with two main aspects of business and corporate taxation. First, there is an extensive literature addressing the **elasticity of the corporate tax base**. Early contributions in this field were restricted by data availability and only investigate cross-country variations in statutory corporate tax rates and their impact on US inbound and outbound investment of multinational firms (see, e.g., Grubert and Mutti 1991, Hines and Rice 1994 and Hines 1996). Subsequent papers referred to a larger cross section of countries and exploited information on various elements of tax codes and tax treaties as reflected in (bilateral) effective tax rates (see, e.g., Devereux and Griffith 1998 or Egger et al. 2009). Generally, these papers find a systematic and robust impact of corporate taxation on foreign direct investment (De Mooj and Ederveen 2003 and Feld and Heckemeyer 2011 provide comprehensive meta-studies over this research).

As firm level data became increasingly accessible, researchers started to analyze more directly cross border profit shifting activities of MNEs. In this regard, Egger, Eggert and Winner (2010), relying on a large cross section of European firms, find that foreign-owned subsidiaries of MNEs pay significant lower taxes than their domestic counterparts. Many explanations have

been provided to explain this observation, where transfer pricing and debt shifting probably have attracted most attention so far (see Gresik 2001 and Devereux 2007 for comprehensive surveys). Transfer pricing allows MNEs to exploit international tax rate differentials by determining prices for intermediate goods or by charging license fees and royalties for headquarter services (see Dischinger and Riedel 2011 or Karkinsky and Riedel 2012 for recent evidence using European data). Under debt shifting, MNEs reduce their overall tax liability by shifting debt from low- to high-tax countries taking advantage of the high-interest deduction in high-tax jurisdictions (see, e.g., Huizinga, Laeven and Nicodème 2008, Egger et al. 2010 or Mintz and Weichenrieder 2010 for recent research). However, part of this profit shifting may occur for good economic reasons. In spite of obvious tax disadvantages, multinationals may shift profit to high tax countries because they need funds there to self-finance investment and to circumvent the difficulties of local financing due to bad institutional environment (see Egger et al. 2014), or underdeveloped capital markets (Keuschnigg and Devereux, 2013). After all, countries may compensate tax disadvantages and facilitate investment by offering high quality in institutional matters.

Apart from the literature on the impact of corporate taxation on location and production decisions of MNEs, there is an eminent line of research investigating **determinants of corporate tax policies** and the role of **strategic interaction** therein. Two strands of literature might be distinguished here. One group of authors investigates whether economic integration as measured by the increased mobility of factors is associated with in a decrease of tax burdens, as suggested by early tax competition models. Most of these studies find a negative relationship between those variables, suggesting that tax competition leads to a downward pressure on tax rates (see Leibrecht and Hochgatterer 2012 for a survey). However, one should interpret such results very cautiously as it is difficult to capture economic integration, factor mobility and the corresponding tax burdens without measurement error. Further, a (reduced-form) regression of a tax burden measure on factor mobility may hide any endogeneity issues,²¹ probably leading to wrongful conclusions on the consequences of international tax competition.

²¹ For instance, it might be the case that causality runs not only from capital mobility to corporate tax rates but also in the opposite direction, leading to potentially biased estimation results in such a regression.

Perhaps a more promising way to identify international tax competition is to directly test for strategic interaction in tax rate setting. Following the discussion about strategic complementarity above, it is not entirely clear whether we would expect a positive or a negative sign on the reaction functions, although the majority of the literature leans towards the idea of positively sloped reaction functions. The use of spatial econometric methods to test for reaction functions was established first in the local tax competition literature as surveyed by Brueckner (2003). More recently, Devereux, Lockwood and Redoano (2008) extend the empirical test to a panel of 21 OECD countries and find evidence for a positively sloped reaction functions in corporate tax rates. Subsequent research mainly refined this analysis and found that Eastern European countries are a driving force of the tax competition process (see, e.g., Cassette and Paty 2008). Further, Davies and Voget (2010) find that EU Membership in general increases any pressures from fiscal competition. More recently, the empirical identification strategy of spatial models has been criticized by some authors. Gibbons and Overman (2012) emphasize that confounding factors may induce spatial correlation and propose natural experiments for credible identification. So far, there is only one study by Parchet (2013) using tax rate variation from neighboring jurisdictions in Switzerland to identify strategic interactions among jurisdictions. He finds negatively sloped reaction functions, implying that Swiss municipalities are competing over expenditures rather than tax rates. This result is somewhat corroborated by Egger, Pfaffermayr and Winner (2009), who present evidence for more subtle strategic interactions in personal and corporate income tax rates among OECD countries. In particular, although they estimate positive reaction functions for both types of taxes, it seems that a reduction in corporate tax rates might be compensated by an increase in personal income tax rates, and vice versa. This finding is in line with theory predicting a shift in tax burden from mobile to less mobile factors.

With regard to commodity taxation, there is firstly literature estimating tax reaction functions at the international level. For instance, Egger, Pfaffermayr and Winner (2005) use spatial panel data techniques to test empirically the implications of the above-mentioned Ohsawa model. They find that VAT rates are strategic complements and that smaller countries tend to set lower VAT rates than their larger counterparts,²² which, again, indicates that all countries will benefit equally from tax coordination.²³ Apart from this, there is also empirical research on

²² Lockwood and Migali (2009) provide similar evidence for excise taxes.

²³ This finding seems to be confirmed by Heinemann and Osterloh (2013), who did a survey on members of the European Parliament, asking on whether they would support a minimum corporate tax

cross-border shopping within EU Member States, mainly considering the situation before the completion of the SEM. Relying on consumer surveys at sensitive borders with serious VAT differences (e.g., Ireland-UK or Denmark-Germany), they show that cross-border shopping does not much account on volumes of intra-EU consumption (see, e.g., FitzGerald, Johnston and Williams 1995, Copenhagen Economics 2007).

5. Conclusions

At the time the TEU was negotiated, Sinn (1990, p. 501) discussed the problems lying ahead with the next step of economic integration and came to the rather gloomy conclusion, that the “... *effect will be the death of Europe’s welfare states if the unmitigated competition of tax systems is allowed.*” Two and a half decades later, one might revisit the situation of tax competition in the European Union evaluating to which extent these fears were met. Indeed, we find that the integration process within Europe provides a fertile ground for tax competition, with increased mobility and reduced possibilities to tax foreign citizens. The call for tax coordination has been certainly around, but we observe a significant harmonization progress mainly for indirect taxes. For direct taxation, we have to conclude that Member States were reluctant to give up their tax autonomy and, therefore, it is not surprising that the harmonization process seems to be more or less suspended with regard to these taxes.

Absent significant harmonization in the area of direct taxation and with the increased factor mobility one would expect a strong downward trend in tax rates. This, however, is not really observed in the last two decades. While there was a period of strong corporate tax rate reductions, in particular around the time of the Eastern enlargement of the EU, this process has been slowed down significantly in recent years. This development is still consistent with the idea of tax competition taking place. If one looks at the world as a whole, this observation simply mirrors the fact that Europe became more competitive from a tax perspective. Taken into account that the completion of the SEM generally increased the attractiveness of Europe for international investment, it seems plausible that EU Member States can maintain their now moderate level of corporate taxation in the future.

rate. As expected, they find that such a proposal would be refused mainly by politicians from high-tax countries.

In some aspects, the predictions of Sinn (1990) are also borne out in reality. Tax competition has resulted in an observed shift away from capital and corporate taxation towards consumption taxes, which certainly creates winners and losers. However, in contrast to the prediction that landowners will be the losers because of higher taxes on immovable property, it appears that the burden currently falls on the next generation via excessive debt making.

References

- Baldwin, R.E. and P. Krugman, 2004, Agglomeration, Integration and Tax Harmonization, *European Economic Review* 48, 1-23.
- Bettendorf, L., Devereux, M.P., van der Horst, A., Loretz, S. and R. A. de Mooij, 2010, Corporate Tax Harmonization in the EU, *Economic Policy* 25, 537-590.
- Bird, R. and P.-P. Gendron, 2000, CVAT, VIVAT and Dual VAT: Vertical Sharing and International Trade, *International Tax and Public Finance* 7, 753-761.
- Bradford, D.F. and W.E. Oates, 1971, The Analysis of Revenue Sharing in a New Approach to Collective Fiscal Decisions, *The Quarterly Journal of Economics* 85, 416-439.
- Brennan G. and J. Buchanan, 1980, *The Power to Tax: Analytical Foundations of a Fiscal Constitution*, New York: Cambridge University Press.
- Brueckner, J.K., 1998, Strategic Interaction among Local Governments: An Overview of Empirical Studies, *International Regional Science Review* 26, 175-188.
- Bucovetsky, S., 1991, Asymmetric Tax Competition, *Journal of Urban Economics* 30, 167-181.
- Bucovetsky, S. and J.D. Wilson, 1991, Tax Competition with Two Tax Instruments, *Regional Science and Urban Economics* 21, 333-50.
- Cassette, A. and S. Paty, 2008, Tax Competition Among Eastern and Western European Countries: With whom do Countries compete? *Economic Systems* 32, 307-325.
- Cnossen, S., 2001, Tax Policy in the European Union: A Review of Issues and Options, *FinanzArchiv/Public Finance Analysis* 58, 466-558.
- Cnossen, S., 2006, Tobacco Taxation in the European Union, *CESifo Working Paper* No. 1718.
- Cnossen, S., 2007, Alcohol Taxation and Regulation in the European Union, *International Tax and Public Finance* 14, 699-732.
- Commission European Economic Community, 1963, *Report of the Fiscal and Financial Committee*, Brussels (Neumark Report).
- Commission of the European Community, 1970, *Corporation tax and individual income tax in the European Communities*, Competition – Approximation of legislation series 15, Luxembourg (van den Tempel Report).

- Commission of the European Communities, 1985, *Completing the Internal Market: White Paper from the EC Commission to the Council*, COM (85) 310 Final (June 1985).
- Copenhagen Economics, 2007, *Study on Reduced Vat Applied to Goods and Services in the Member States of the European Union*, Brussels, European Commission.
- Davies, R.B and J. Voget, 2010, Tax Competition in an Expanding European Union, *GEE Papers 0033*, Gabinete de Estratégia e Estudos, Ministério da Economia e da Inovação, Lisbon, Portugal.
- De Mooij, R.A. and S. Ederveen, 2003, Taxation and Foreign Direct Investment: A synthesis of Empirical Research, *International Tax and Public Finance* 10, 673-693.
- Devereux, M.P., 2007, The Impact of Taxation on the Location of Capital, Firms and Profit: A Survey of Empirical Evidence, *Working Paper No. 07/02*, Oxford University Centre for Business Taxation.
- Devereux, M.P. and R. Griffith, 1998, Taxes and the Location of Production: Evidence from a Panel of US Multinationals, *Journal of Public Economics* 68, 335-367.
- Devereux, M.P. and R. Griffith, 1999, The Taxation of Discrete Investment Choices, *The Institute for Fiscal Studies Working Paper Series W98/16*.
- Devereux, M.P., R. Griffith and A. Klemm, 1999, Corporate Income Tax Reforms and International Tax Competition, *Economic Policy* 17, 451-495.
- Devereux, M.P., B. Lockwood and M. Redoano, 2008, Do Countries Compete over Corporate Tax Rates? *Journal of Public Economics* 92, 1210-1235.
- Devereux, M.P. and S. Loretz, 2013, What Do We Know about Corporate Tax Competition? *National Tax Journal* 66, 745 -774.
- Diamond, P. and J. Mirrlees, 1971, Optimal Taxation and Public Production I: Production Efficiency, *American Economic Review* 61, 8-27.
- Dischinger, M. and N. Riedel, 2011, Corporate Taxes and the Location of Intangible Assets within Multinational Firms, *Journal of Public Economics* 95, 691-707.
- Ebrill, L.P., M. Keen and V.P. Summers, 2001, *The Modern VAT*, Washington D.C.: International Monetary Fund.
- Edwards, J. and M. Keen, 1996, Tax Competition and Leviathan, *European Economic Review* 40, 113-134.
- Egger P., W. Eggert, C. Keuschnigg and H. Winner, 2010, Corporate Taxation, Debt Financing and Foreign Plant Ownership, *European Economic Review* 54, 96-107.
- Egger P., W. Eggert and H. Winner, 2010, Saving Taxes Through Foreign Plant Ownership, *Journal of International Economics* 81, 99-108.
- Egger, P., C. Keuschnigg, V. Merlo and G. Wamser, 2014, Corporate Taxes and Internal Borrowing Within Multinational Firms, *American Economic Journal: Economic Policy* 6, 1-42.
- Egger, P., S. Loretz, M. Pfaffermayr and H. Winner, 2009, Bilateral Effective Tax Rates and Foreign Direct Investment, *International Tax and Public Finance* 16, 822-849.
- Egger, P., M. Paffermayr and H. Winner, 2005, Commodity Taxation in a Linear World: A Spatial Panel Data Approach, *Regional Science and Urban Economics* 35, 527-541.

- Egger, P., M. Pfaffermayr, and H. Winner, 2009, Competition in Corporate and Personal Income Taxation, *Unpublished Working Paper*, University of Innsbruck.
- European Commission, 1992, Report of the Committee of Independent Experts on Company Taxation, Luxembourg (Ruding Report).
- European Commission, 1996, *A Common System of VAT: A Programme for the Single Market*, COM 328(96) final, Brussels.
- European Commission, 1997, *A Package to Tackle Harmful Tax Competition in the EU*, COM(97) 564 final, Brussels.
- European Commission, 2001, *Company Taxation in the Internal Market*, COM (2001) 582 final, Brussels (Bolkestein Report).
- European Commission, 2009, *VAT Rates Applied in the Member States of the European Community*, Situation at 1th January 2014, Brussels.
- European Commission, 2014, *VAT Rates Applied in the Member States of the European Union*, Situation at 13th January 2014, Brussels.
- European Parliament, 2001, *Tax Coordination in the EU – The latest Position*, Working Paper, ECON 128, DG Research.
- Evers, L., H. Miller and C. Spengel, 2014, Intellectual Property Box Regimes: Effective Tax Rates and Tax Policy Considerations, *International Tax and Public Finance*, forthcoming.
- Feld, L.P. and J. Heckemeyer, 2011, FDI and Taxation: A Meta Study, *Journal of Economic Surveys* 25, 233-272.
- FitzGerald, J., J. Johnston and J. Williams, 1995, Indirect Tax Distortions in a Europe of Shopkeepers, *Working Paper No. 56*, Dublin, The Economic and Social Research Institute.
- Gibbons, S. and H.G. Overman, 2012, Mostly Pointless Spatial Econometrics, *Journal of Regional Science* 52, 172-191.
- Gresik, T.A., 2001, The Taxing Task of Taxing Transnationals, *Journal of Economic Literature* 39, 800-838.
- Grubert, H. and J. Mutti, 1991, Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making, *Review of Economics and Statistics* 73, 285-293.
- Haufler, A., 1996, Tax Coordination with Different Preferences for Public Goods: Conflict or Harmony of Interest?, *International Tax and Public Finance* 3, 5-28.
- Haufler, A., 2001, *Taxation in a Global Economy*, Cambridge NY: Cambridge University Press
- Hines, J.R., 1996, Altered States: Taxes and the Location of Foreign Direct Investment in America, *American Economic Review* 86, 1076-1094.
- Hines, J.R. and E.M. Rice, 1994, Fiscal Paradise: Foreign Tax Havens and American Business, *Quarterly Journal of Economics* 109, 149-182.
- Huizinga, H., L. Laeven and G. Nicodème, 2008, Capital Structure and International Debt Shifting, *Journal of Financial Economics* 88, 80-118.
- Kanbur, R., and M. Keen, 1993, Jeux sans frontières: Tax Competition and Tax Coordination when Countries Differ in Size, *American Economic Review* 83, 877-892.

- Karkinsky, T. and N. Riedel, 2012, Corporate Taxation and the Location of Patents within Multinational Firms, *Journal of International Economics* 88, 176-185.
- Keen, M., and K. Konrad, 2013, The Theory of International Tax Competition and Coordination, in Alan J. Auerbach, Raj Chetty, Martin Feldstein und Emmanuel Saez (eds.) *Handbook of Public Economics*, Volume 5, Amsterdam & Oxford: Elsevier, 257-328.
- Keen, M., and M. Marchand, 1997, Fiscal Competition and the Pattern of Public Spending, *Journal of Public Economics* 66, 33-53.
- Keen, M., and S. Smith, 1996, The Future of Value-added Tax in the European Union, *Economic Policy* 23, 375-411.
- Keuschnigg, C., 2009, Corporate Taxation and the Welfare State, *CESifo Working Paper* No. 2557.
- Keuschnigg, C. and M.P. Devereux, 2013, The Arm's Length Principle and Distortions to Multinational Firm Organization, *Journal of International Economics* 89, 432-440.
- Keuschnigg, C. and E. Ribi, 2009, Outsourcing, Unemployment and Welfare Policy, *Journal of International Economics* 78, 168-176.
- Kleven, H., C. Landais and E. Saez, 2013, Taxation and International Mobility of Superstars: Evidence from the European Football Market, *American Economic Review* 103, 1892-1924.
- Leibrecht, M. and C. Hochgatterer, 2012, Tax Competition as a Cause of Falling Corporate Tax Rates: A Survey of Empirical Literature, *Journal of Economic Surveys* 26, 616-648.
- Lockwood, B. and G. Migali, 2009, Did The Single Market Cause Competition in Excise Taxes? Evidence From EU Countries, *Economic Journal* 119, 406-429.
- Loretz, S., 2008, The Condition of Corporate Taxation in the OECD in a Wider Context, *Oxford Review of Economic Policy* 24, 639-660.
- McLure, C.E., 2000, Implementing Subnational Value Added Taxes on Internal Trade: The Compensating VAT (CVAT), *International Tax and Public Finance* 7, 723-740.
- Mintz, J. and H. Tulkens, 1986, Commodity Tax Competition between Members of a Federation: Equilibrium and Efficiency, *Journal of Public Economics* 29, 133-172.
- Mintz, J. and A. Weichenrieder, 2010, *The Indirect Side of Direct Investment*, Cambridge MA: The MIT Press.
- Nielsen, S.B., 2001, A Simple Model of Commodity Taxation and Cross-border Shopping, *Scandinavian Journal of Economics* 103, 599-623.
- Oates, W. E., 1972, *Fiscal Federalism*, New York: Harcourt Brace Jovanovich.
- OECD, 2014, *Revenue Statistics 2013*, Organization of Economic Co-operation and Development, Paris: OECD Publishing.
- Ohsawa, Y., 1999, Cross-border Shopping and Commodity Tax Competition Among Governments, *Regional Science and Urban Economics* 29, 33-51.
- Osterloh, S. and F. Heinemann, 2013, The Political Economy of Corporate Tax Harmonization - Why Do European Politicians (Dis)Like Minimum Tax Rates?, *European Journal of Political Economy* 29, 18-37.

- Parchet, R., 2013, Are Local Tax Rates Strategic Complements or Substitutes?, *Unpublished Working Paper*, University of Lausanne.
- Razin, A. and E. Sadka, 1991, International tax competition and gains from tax harmonization, *Economics Letters* 37, 69-76
- 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, 247-274.
- Tiebout, C., 1956, A Pure Theory of Local Expenditures, *Journal of Political Economy* 64, 416-424
- Tinbergen, J., 1953, *Report on Problems Raised by Different Turnover Tax Systems Applied within the Common Market*, High Authority of European Coal and Steel Community, Brussels (Tinbergen Report).
- Wildasin, D.E., 1988, Nash Equilibria in Models of Fiscal Competition, *Journal of Public Economics* 35, 229-240.
- Wilson, J.D. 1986, A Theory of Interregional Tax Competition, *Journal of Urban Economics* 19, 296-315.
- Wilson, J.D., 1991, Tax Competition with Interregional Differences in Factor Endowments, *Regional Science and Urban Economics* 21, 423-452.
- Wilson, J.D., 1999, Theories of Tax Competition, *National Tax Journal* 52, 269-304.
- Zodrow, G.R., 2003, Tax Competition and Tax Coordination in the European Union, *International Tax and Public Finance* 10, 651-671.
- Zodrow, G.R. and P. Mieszkowski, 1986, Pigou, Tiebout, Property Taxation and the Underprovision of Local Public Goods, *Journal of Urban Economics* 19, 356-370.

Table 1: VAT rates in EU Member States

Member State	VAT introduction	Specific rates				Standard rate		
		Zero rate	Super reduced	Reduced	Parking	2009	2014	Change
Austria	1973		-	10	12	20	20	0.0
Belgium	1971	yes	-	6 / 12	12	21	21	0.0
Bulgaria	1994		-	9	-	20	20	0.0
Croatia	1998		-	5 / 13	-	-	25	-
Cyprus	1992		-	5 / 9	-	15	19	4.0
Czech Republic	1993		-	15	-	19	21	2.0
Denmark	1967	yes	-	-	-	25	25	0.0
Estonia	1991		-	9	-	18	20	2.0
Finland	1994	yes	-	10 / 14	-	22	24	2.0
France	1954		2.1	5.5 / 10	-	19.6	20	0.4
Germany	1968		-	7	-	19	19	0.0
Greece	1987		-	6.5 / 13	-	19	23	4.0
Hungary	1988		-	5 / 18	-	20	27	7.0
Ireland	1972	yes	4.8	9 / 13.5	13.5	21.5	23	1.5
Italy	1973	yes	4	10	-	20	22	2.0
Latvia	1995		-	12	-	21	21	0.0
Lithuania	1994		-	5 / 9	-	19	21	2.0
Luxembourg	1970		3	6 / 12	12	15	15	0.0
Malta	1995	yes	-	5 / 7	-	18	18	0.0
Netherlands	1969		-	6	-	19	21	2.0
Poland	1993			5 / 8	-	22	23	1.0
Portugal	1986		-	6 / 13	13	20	23	3.0
Romania	1993			5 / 9	-	19	24	5.0
Slovak Republic	1993		-	10	-	19	20	1.0
Slovenia	1999		-	9.5	-	20	22	2.0
Spain	1986		4	10	-	16	21	5.0
Sweden	1969		-	6 / 12	-	25	25	0.0
United Kingdom	1973	yes	-	5	-	15	20	5.0
<i>Average</i>						<i>19.5</i>	<i>21.5</i>	<i>1.9</i>

Notes: All entries represent percentage rates.

Source: European Commission (2009, 2014).

Table 2: Status quo and recent development of direct taxation in EU Member States

Country	Corporate income tax rate			Personal income tax rate		
	statutory	effective	development	statutory	effective	development
Austria	25.00	18.56	B: → R: →	50.00 ^{b)}	49.12	B: → R: →
Belgium	33.99	22.62	B: → R: →	53.70	55.80	B: → R: →
Bulgaria	10.00	6.36	B: ∨ R: →	10.00	n.a.	R: →
Cyprus	12.50	8.62	B: ∨ R: ↗	35.00	n.a.	R: ↗
Croatia	20.00	12.91	B: → R: →	47.20	n.a.	R: ∨
Czech Republic	19.00	15.23	B: → R: →	22.00	42.38	B: → R: ↗
Denmark	24.50	18.72	B: ↗ R: ∨	55.60	38.24	B: ↗ R: ↗
Estonia	21.00	24.66	B: → R: →	21.00	39.90	B: → R: →
Finland	20.00	13.31	B: → R: ∨	51.50	43.12	B: → R: ↗
France	34.43 ^{a)}	24.00	B: → R: →	50.30	48.92	B: ∨ R: ↗
Germany	29.58	23.65	B: ↗ R: →	47.50	49.33	B: → R: →
Greece	26.00	20.42	B: ↗ R: ↗	46.00	41.56	B: ∨ R: ∨
Hungary	19.00	12.00	B: → R: →	16.00	49.03	B: ↗ R: ∨
Ireland	12.50	9.59	B: → R: →	48.00	26.60	B: ↗ R: ↗
Italy	27.50	24.28	B: → R: →	47.90	47.78	B: → R: ↗
Latvia	15.00	9.63	B: → R: →	24.00	n.a.	R: ∨
Lithuania	15.00	9.24	B: → R: →	15.00	n.a.	R: →
Luxembourg	29.22	20.00	B: → R: ↗	43.60	37.01	B: ↗ R: ↗
Malta	35.00	24.56	B: → R: →	35.00	n.a.	R: →
Netherlands	25.00	17.44	B: → R: ∨	52.00	36.94	B: ∨ R: →
Poland	19.00	15.30	B: → R: →	32.00	35.56	B: → R: →
Portugal	23.00	15.46	B: → R: ∨	56.50	41.15	B: ∨ R: ↗
Romania	16.00	11.31	B: → R: →	16.00	n.a.	R: →
Slovak Republic	22.00	16.12	B: → R: ↗	25.00	41.13	B: ↗ R: ↗
Slovenia	17.00	11.13	B: → R: ∨	50.00	42.34	B: → R: ↗
Spain	30.00	23.60	B: → R: →	52.00	40.66	B: → R: ↗
Sweden	22.00	15.66	B: → R: ∨	56.90	42.93	B: → R: ↗
United Kingdom	21.00	18.19	B: ↗ R: ∨	45.00	31.48	B: ∨ R: ∨

Notes: ^{a)} Including the temporarily levied 10.7 % surtax for entities with a sales turnover greater than 250 million Euros raises this R to approx. 38%. ^{b)} Taking into account the special tax treatment of the 13th and 14th salary the top statutory tax R is at 43.71%.

All rates are in percentages. "B" represents the tax base, "R" tax rates. "n.a." ... not available.

Effective corporate tax rates refer to a weighted EATR measure as proposed by Devereux and Griffith (1999) and are based on the same assumptions as in Loretz (2009). Effective Personal income tax rates are from the OECD taxing wages publication and refer to the tax burden including social security contributions of a single tax payer at the average earnings. Development refers to the change over the last five years. ∨ (↗) refers to a narrowing (broadening) of the tax base, which is defined as depreciation allowances for the CIT and the progressivity for PIT.

Working Papers in Economics and Finance

University of Salzburg

- 2014-04 **Christian Keuschnigg, Simon Loretz, and Hannes Winner.** Tax Competition and Tax Coordination in the European Union: A Survey
- 2014-03 **Koen Verhoest, Ole Helby Petersen, Walter Scherrer and Raden Murwantara Soeipto.** Policy commitment, legal and regulatory framework, and institutional support for PPP in international comparison: Indexing countries? readiness for taking up PPP.
- 2014-02 **Benjamin Furlan, Harald Oberhofer and Hannes Winner.** A Note on Merger and Acquisition Evaluation.
- 2014-01 **Jesus Crespo Cuaresma, Harald Oberhofer and Gallina A. Vincelette.** Institutional Barriers and Job Creation in Central and Eastern Europe. Published in *IZA Journal of European Labor Studies*.
-
- 2013-05 **Peter Huber, Harald Oberhofer and Michael Pfaffermayr.** Who Creates Jobs? Estimating Job Creation Rates at the Firm Level
- 2013-04 **Jürgen Janger and Klaus Nowotny.** Career Choices in Academia
- 2013-03 **Klaus Nowotny.** Institutions and the Location Decisions of Highly Skilled Migrants to Europe
- 2013-02 **Sebastian Rathner.** The Industry-Specific Relationships between Corporate Financial Performance and 11 Corporate Social Performance Dimensions: Taking a More Nuanced Perspective
- 2013-01 **Sebastian Rathner.** The Relative Performance of Socially Responsible Investment Funds. New Evidence from Austria.
-
- 2012-09 **Jörg Paetzold and Olaf van Vliet.** Convergence without hard criteria: Does EU soft law affect domestic unemployment protection schemes? Forthcoming in *Journal of Common Market Studies*.
- 2012-08 **Martin Gächter, Peter Schwazer, Engelbert Theurl and Hannes Winner.** Regional density of private dentists: Empirical evidence from Austria. Published in *Community Dentistry and Oral Epidemiology*
- 2012-07 **Klaus Nowotny and Dieter Pennerstorfer.** Ethnic Networks and the Location Choice of Migrants in Europe.
- 2012-06 **Benjamin Furlan, Martin Gächter, Bob Krebs and Harald Oberhofer.** Democratization and Real Exchange Rates.

- 2012-05 **Peter Huber, Harald Oberhofer** and **Michael Pfaffermayr**. Job Creation and the Intra-distribution Dynamics of the Firm Size Distribution. Published in *Industrial and Copororate Change*.
- 2012-04 **Jörg Paetzold**. The Convergence of Welfare State Indicators in Europe: Evidence from Panel Data. Published in *European Journal of Social Security*.
- 2012-03 **Sebastian Rathner**. The Performance of Socially Responsible Investment Funds: A Meta-Analysis. Published as The Influence of Primary Study Characteristics on the Performance Differential Between Socially Responsible and Conventional Investment Funds: A Meta-Analysis in *Journal of Business Ethics*.
- 2012-02 **Jesus Crespo Cuaresma** and **Matthias Stöckl**. The Effect of Marketing Spending on Sales in the Premium Car Segment: New Evidence from Germany.
- 2012-01 **Harald Oberhofer, Matthias Stöckl** and **Hannes Winner**. The Wage Premium of Globalization: Evidence from European Mergers and Acquisitions. Published as The Wage Premium of Foreign Ownership: Evidence from European Mergers and Acquisitions in *Economics: The Open-Access, Open-Assessment E-Journal*.
-

- 2011-06 **Peter Huber**. The self-selection of Commuters.
- 2011-05 **Martin Gächter, Peter Schwazer, Engelbert Theurl** and **Hannes Winner**. Physician Density in a Two-Tiered Health Care System. Published in *Health Policy*.
- 2011-04 **Jesús Crespo Cuaresma** and **Max Roser**. Borders Redrawn: Measuring the Statistical Creation of International Trade. Published in *The World Economy*.
- 2011-03 **Harald Oberhofer** and **Michael Pfaffermayr**. FDI versus Exports: Multiple Host Countries and Empirical Evidence. Published in *The World Economy*.
- 2011-02 **Andrea M. Leiter, Magdalena Thöni** and **Hannes Winner**. Duo Cum Faciunt Idem, Non Est Idem: Evidence from Austrian Pain and Suffering Verdicts. Published as Pricing damages for pain and suffering in courts: The impact of the valuation method in *Journal of Empirical Legal Studies*.
- 2011-01 **Harald Oberhofer** and **Michael Pfaffermayr**. Testing the One-Part Fractional Response Model against an Alternative Two-Part Model.
-

- 2010-16 **Harald Oberhofer, Tassilo Philippovich** and **Hannes Winner**. Firm Survival in Professional Football: Evidence from the German Football League. Forthcoming in *Journal of Sports Economics*.
- 2010-15 **Engelbert Theurl** and **Hannes Winner**. The Male-Female Gap in Physician Earnings: Evidence from a Public Health Insurance System. Published in *Health Economics*.

- 2010-14 **Martin Feldkircher**. Forecast Combination and Bayesian Model Averaging - A Prior Sensitivity Analysis. Published in *Journal of Forecasting*.
- 2010-13 **Jesús Crespo Cuaresma** and **Octavio Fernández Amador**. Business Cycle Convergence in EMU: A Second Look at the Second Moment. Published in *Journal of International Money and Finance*.
- 2010-12 **Martin Feldkircher** and **Stefan Zeugner**. The Impact of Data Revisions on the Robustness of Growth Determinants - A Note on 'Determinants of Economic Growth: Will Data Tell?'. Published in *Journal of Applied Econometrics*.
- 2010-11 **Andrea M. Leiter**, **Magdalena Thöni** and **Hannes Winner**. Evaluating Human Life Using Court Decisions on Damages for Pain and Suffering. Published in *International Review of Law and Economics*.
- 2010-10 **Harald Oberhofer**. Employment Effects of Acquisitions: Evidence from Acquired European Firms. Published in *Review of Industrial Organization*.
- 2010-09 **Christian Reiner**. Regionale Arbeitsmärkte in der „Großen Rezession“: Dynamik regionaler Arbeitslosenquoten in Deutschland, Frankreich und Großbritannien im Krisenjahr 2009. Published in *Zeitschrift für Wirtschaftsgeographie*.
- 2010-08 **Leonardo Baccini** and **Andreas Dür**. The New Regionalism and Policy Interdependence. Published in *British Journal of Political Science*.
- 2010-07 **Harald Oberhofer** and **Michael Pfaffermayr**. Firm Growth in Multinational Corporate Groups. Published in *Empirical Economics*.
- 2010-06 **Sven P. Jost**, **Michael Pfaffermayr** and **Hannes Winner**. Transfer Pricing as a Tax Compliance Risk. Forthcoming in *Accounting and Business Research*.
- 2010-05 **Christian Reiner**. Selling the Ivory Tower and Regional Development: Technology Transfer Offices as Mediators of University-Industry Linkages. Published as University policy and regional development: Technology transfer offices as facilitators and generators of university-industry linkages in *Berichte zur Deutschen Landeskunde*.
- 2010-04 **Matthias Stöckl**. Fremdkapitalquoten in Europa: Ein Ländervergleich. Published in *Wirtschaftspolitische Blätter*.
- 2010-03 **Jesús Crespo Cuaresma**, **Harald Oberhofer** and **Paul A. Raschky**. Oil and the Duration of Dictatorships. Published in *Public Choice*.
- 2010-02 **Matthias Stöckl** and **Hannes Winner**. Körperschaftsbesteuerung und Unternehmensverschuldung: Empirische Evidenz von europäischen Firmendaten. Published in *Journal of Economics and Statistics (Jahrbücher für Nationalökonomie und Statistik)*.
- 2010-01 **Andrea M. Leiter**, **Andrea M. Parolini** and **Hannes Winner**. Environmental Regulation and Investment: Evidence from European Country-Industry Data. Published in *Ecological Economics*
-

- 2009-06 **Sven P. Jost**. Transfer Pricing Risk Awareness of Multinational Corporations: Evidence from a Global Survey.
- 2009-05 **Hannes Winner**. Der Kampf gegen internationale Steuerhinterziehung: Die OECD Initiativen gegen "Steueroasen". Published in *Steuer und Wirtschaft*.
- 2009-04 **Michael Pfaffermayr, Matthias Stöckl and Hannes Winner**. Capital Structure, Corporate Taxation and Firm Age. Published in *Fiscal Studies*.
- 2009-03 **Simon Loretz and Pdraig J. Moore**. Corporate Tax Competition Between Firms. Published in *International Tax and Public Finance*
- 2009-02 **Ronald W. McQuaid and Walter Scherrer**. Changing Reasons for Public Private Partnerships. Published in *Public Money and Management*.
- 2009-01 **Harald Oberhofer, Tassilo Philippovich and Hannes Winner**. Distance Matters in Away Games: Evidence from the German Football League. Published in *Journal of Economic Psychology*.