Lisa K. Evers

Intellectual Property (IP) Box Regimes

Tax Planning, Effective Tax Burdens, and Tax Policy Options

Intellectual Property (IP) Box Regimes

Tax Planning, Effective Tax Burdens, and Tax Policy Options

Inauguraldissertation zur Erlangung des akademischen
Grades eines Doktors der Wirtschaftswissenschaften
der Universität Mannheim

Lisa Katharina Evers

Dekan:	Dr. Jürgen M. Schneider
Referent:	Prof. Dr. Christoph Spengel
Korreferent:	Prof. Dr. Ulrich Schreiber
Tag der mündlichen Prüfung:	25. November 2014

Preface

This doctoral thesis was written while I was working at the Centre for European Economic Research (ZEW) in Mannheim and was accepted by the faculty of Business Economics at the University of Mannheim in winter 2014. It benefited from several research projects I was involved in at the ZEW. I am especially indebted to my supervisor, Prof. Dr. Christoph Spengel, for his friendly and dedicated support and his valuable advice. I benefited and learnt a lot from working with him on numerous projects. I am also grateful to Prof. Dr. Ulrich Schreiber for his valuable comments on work in progress and for providing the second assessment of my doctoral thesis. I also thank the ZEW and my supervisor at the department of Corporate Taxation and Public Finance, PD Dr. Friedrich Heinemann, for the fruitful and supportive research environment.

My colleagues at the ZEW and the chair for Taxation II at the University of Mannheim have contributed a lot to the fact that I enjoyed the years I spent on my thesis. In particular, thanks to Prof. Dr. Jost Heckemeyer for discussing technical issues regarding effective tax rates with me and Prof. Dr. Katharina Finke for being a sympathetic listener and reading and commenting on my thesis.

I also wish to thank Helen Miller at the Institute for Fiscal Studies in London for her commitment to our joint project and our friendly collaboration. I am also indebted to Paloma Schwarz, Dr. Matthias Valta, Mauritz von Einem, and Johannes Becker for their legal expertise and reading and commenting on parts of my thesis. All the same I am grateful to Prof. Dr. Ekkehard Reimer and Prof. Dr. Hanno Kube for the opportunity to present my research at the seminar of the Institute for Financial and Tax Law at the University of Heidelberg and the fruitful discussions on these occasions. All the same I wish to thank Prof. Dr. Kai Konrad and Prof. Dr. Wolfgang Schön from the Max Planck Institute for Tax Law and Public Finance for the valuable opportunity to present and discuss my research.

I am also indebted to Edwin Brassem for taking his time to discuss the Dutch Innovation Box with me as well as Prof. Jaap Bellingwout for his support and interest in my research. All the same I want to thank Dr. Marco Felder, Martin de Graaf, Tom van Regenmortel, and Dinis Tracana for their support in clarifying some legal aspects regarding the IP Box regimes. I also wish to thank Jonathan Probst for research assistance and Marlene Helmer and Lara Verdugo for proofreading my thesis.

Most importantly, I wish to thank my parents, my sisters and Jochen for their unconditional and invaluable support and their constant encouragement.

Mannheim, February 2015 Lisa Katharina Evers

LIST OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Anon.	Unknown author
Art.	Article
AStG	Außensteuergesetz
BEPS	Base Erosion and Profit Shifting
Bio.	Billion
C. exp.	Current Expenditures
Cap. Exp.	Capital Expenditures
CAVE	Contribution on the added value of enterprises
CFC	Controlled foreign company
CGI	Code général des impôts (French Income Tax Code)
CIR	Code des impôts sur les revenus 1992 (Belgian Income Tax Code)
CTA 2009	Corporate Tax Act 2009 United Kingdom as amended by Finance Act 2013
CTA 2010	Corporate Tax Act 2010 United Kingdom as amended by Finance Act 2012
CUP	Comparable uncontrolled price method
DB	Declining-balance depreciation
EATR	Effective Average Tax Rate
EBIT	Earnings before interest and tax
EBILTDA	Earnings before interest, licenses, tax, depreciation, and amortisation
EBITDA	Earnings before interest, tax, depreciation, and amortisation
ECJ	European Court of Justice
EEA	European Economic Area
EFTA	European Free Trade Association
e.g.	For example
EMTR	Effective Marginal Tax Rate
EPO	European Patent Office
Et seq.	Et sequentes

EU	European Union
EU-25	Group of EU member states before the accession of Bulgaria, Croatia, and Romania
EU-27	Group of EU member states before the accession of Croatia
EUR	Euro
EV	Earnings value
Exp.	Expenditures
FDI	Foreign direct investment
FHTP	Forum on Harmful Tax Practices
G-20	Group of 20 major economies
GBP	British Pound
GewStG	Gewerbesteuergesetz
HM	Her Majesty
HMRC	Her Majesty Revenue and Customs
i.a.	Inter alia
IAS	International Accounting Standards
IBFD	International Bureau for Fiscal Documentation
IFA	International Fiscal Association
IFRS	International Financial Reporting Standards
IP	Intellectual Property
IRC	Imposto sobre o Rendimento das Pessoas Colectivas (Portuguese Corporate Income Tax)
IRS	Internal Revenue Service (United States of America)
ITA	Income Tax Code Malta
ITR	Income Tax Rules 1962 India
Y.	Year
KStG	Körperschaftsteuergesetz
LIR	Loi impôt sur le revenu des collectivités (Luxembourg Corporate Income Tax Law)
LIS	Ley del Impuesto sobre Sociedades (Spanish Corporate Income Tax Law)

Mio.	Million
NIC	National Insurance Contribution
NPV	Net present value
OECD	Organisation for Economic Co-operation and Development
PAYE	Pay as you earn (British payroll tax)
P.	Page
Pp.	Pages
RDA	Research and Development Allowance
R&D	Research and Development
R&D&I	Research, Development, and Innovation
SD	Super deduction
SL	Straight-line depreciation
SME	Small and medium-sized company
SPC	Special protection certificate
SteG	Gesetz vom 23. September 2010 über die Landes- und Gemeindesteuern vom 21. Dezember 2010 über die Landes- und Gemeindesteuern (Liechtenstein Federal and Municipal Tax Law)
SteV	Verordnung vom 21. Dezember 2010 über die Landes- und Gemeindesteuern (Liechtenstein Federal and Municipal Tax Regulation)
StG	Gesetz über die Steuern des Kantons und der Gemeinden (Nidwalden Cantonal and Municipal Tax Law)
TC	Tax credit
TFEU	Treaty on the Function of the European Union
UK	United Kingdom
UN	United Nations
US	United States (of America)
USA	United States of America
USD	US Dollar
Vpb	Wet op de vennootschapsbelasting 1969 (Dutch Corporate Income Tax Law of 1969)

LIST OF SYMBOLS

α	Share of the earnings value which constitutes the transfer price in the case of the disposal of IP/ Share of the return from the investment which constitutes the royalty fee and the contract R&D fee, respectively
$\hat{\alpha}$	Share of the earnings value which leaves the NPV of the investment unaffected from the disposal
A	Net present value of tax allowances
A_d	Net present value of periodical tax depreciation
A_S^{TP}	Net present value of tax allowances in the subsidiary's residence country based where the depreciable base equals the transfer price
$A_{sl,S}^{TP}$	Net present value of tax allowances in the subsidiary's residence country applying the straight-line depreciation method if the depreciable base equals the transfer price
b	Present value factor which forms part of the equation denoting the earnings value
β_S^r	Share of the royalties which are deductible from the profit tax base in the subsidiary's residence country
c	Present value factor in the formula denoting the net present value of tax allowances in the subsidiary's residence country
d	Mark-up applied to the R&D expenditures when determining the contract R&D fee
$\hat{d}$	Mark-up which leaves the NPV of the investment unaffected from the contract R&D arrangement
δ	Economic depreciation rate
EV	Earnings value of the IP
φ	Rate of periodical tax depreciation
φ_o	Share of the investment expenditures which are immediately deductible
φ_S	Rate of periodical tax depreciation in the subsidiary's residence country (source country)
F	Financing term which is added to the NPV of tax allowances if the investment is financed with debt instead of with equity

i	Nominal interest rate
p	Rate of return
$\tilde{p}$	Cost of capital
π	Inflation rate
r	Real interest rate
R	After-tax net present value (NPV) of the investment project in case of equity-financing
R^*	Pre-tax NPV of the investment project
ΔR	Difference between the after-tax net present values of a domestic investment and a cross-border investment involving IP tax planning
$R^{Domestic}$	After-tax NPV of a domestic investment of the parent company
$R^{Transfer}$	After-tax NPV of a cross-border investment involving the disposal of IP to a subsidiary
Roy	Royalty rate
τ	Statutory profit tax rate
$\tau_{IP\ Box}$	Statutory IP Box tax rate
τ_P	Statutory profit tax rate in the parent company's residence country
τ_S	Statutory profit tax rate in the subsidiary's residence country
$\Delta\tau$	Difference between the statutory profit tax rates applied in the parent's and the subsidiary's residence countries
T^{Exit}	Exit tax levied in the case of IP disposal
TP	Transfer price paid in the case of IP disposal
TP^{EV}	Transfer price based on the earnings value of the IP
ul	Useful life for tax purposes
v	Rate of a super deduction for R&D expenses
w	Rate of an R&D tax credit

1 Introduction

Intangible assets constitute a major value-driver for multinational companies. The related intellectual property (IP), most notably patents, trademarks, and copyrights, usually does not have a fixed geographical nexus[1] and can be relocated without significant (non-tax) costs. Multinational companies can use this flexibility to reduce their overall tax burden by allocating valuable IP to group companies resident in low-tax countries.[2] Indeed, recent empirical evidence shows that patent applications are responsive to corporate income tax[3] and that European companies' intangibles are more likely to be held by low-taxed subsidiaries.[4]

Tax planning involving intangible assets has become increasingly popular and recently received widespread attention, as it has been associated with strikingly low effective tax rates on foreign profits of high-tech multinationals such as Google and Apple.[5] This has triggered a debate on profit shifting by multinational companies through relocating valuable intangibles to low-tax countries.[6] As opposed to tax evasion, tax planning is legal and also widely perceived as legitimate because it first and foremost exploits international tax rate differentials and a lack of harmonisation in the field of direct taxes.[7] However, it is not desirable if it results in income not being taxed at all, so called non-taxation, as this creates a competitive disadvantage for companies which may not make use of sophisticated tax planning models, whether due to their size, their geographic focus or their business model.[8] The OECD has acknowledged the issues associated with base erosion and profit shifting (BEPS) and has initiated an action plan to fight back BEPS. This action plan comprises 15 actions which touch upon diverse fields in international taxation and are currently elaborated in detail.

---

1 See Lipsey (2010), p. 100.

2 See Darby and Lernaster (2007), Fuest et al. (2013), p. 308, Kang and Ngo (2012), Verlinden and Smits (2009).

3 See Griffith et. al. (2014), Karkinsky and Riedel (2012).

4 See Dischinger and Riedel (2011).

5 See Sullivan (2012), p. 655.

6 See Fuest et al. (2013), p. 309.

7 See Jacobs et al. (eds.) (2011), pp. 917 et seq., Kahle and Wildermuth (2013), p. 408, Kahle et al. (2014), p. 288 with further references.

8 See Fuest (2013), p. 318, Jacobs et al. (eds.) (2011), p. 4, Kahle and Wildermuth (2013), p. 408, p. 410, Kahle et al. (2014), p. 287.

Tax legislators in particular increasingly struggle to tax income from intangible assets in a way that prevents IP income from being shifted abroad. Moreover, policy makers are concerned that research and development (R&D) as well as innovative activities, which are associated with positive spillovers, are relocated to other countries for tax reasons. One policy response to profit shifting and tax base erosion involving intangible assets is to tighten transfer pricing rules and introduce targeted anti-avoidance provisions. For example, in 2008 Germany introduced anti-avoidance rules which govern the transfer of business functions (which may include valuable intangible assets).

The focus of this thesis is on a contrary approach which involves offering an attractive tax environment to retain or even attract IP income. In this regard, the most significant policy development in recent years has been the increasing popularity of Intellectual Property Box regimes.[9] They offer a substantially reduced corporate income tax rate for income derived from patents and often other kinds of intangible assets. France (in 2000) and Hungary (in 2003) were the first countries to adopt such policies. However, IP Boxes only received widespread attention when they were introduced by the Netherlands and Luxembourg in 2007. At the beginning of 2015, 11 member states of the European Union (EU)[10] as well as Liechtenstein and the Swiss Canton of Nidwalden operated an IP Box regime. Tax rates for eligible income vary between 0% (Malta) and 15%[11] (France). The specific design of the regimes, most notably the scope of eligible types of IP and IP income and the treatment of expenses (i.e. the IP Box tax base), differs significantly across countries.

It is interesting to note that many of the IP Box regimes in place in Europe have explicitly been introduced as innovation policies aimed at making the country a more attractive location for R&D activities which eventually give rise to intangible assets. This is also the tax policy aim pursued by 'traditional' R&D tax incentives such as R&D tax credits which are now in place in many developed countries, including 10 of the 13 European countries currently operating IP Box regimes. These policies target the cost-side of R&D investment, as they are linked to the amount of R&D expenditures, whereas IP Box regimes target the income-side.

---

9 Popular synonyms for these policies are 'Patent Box', 'Innovation Box' or 'License Box'. For generality, I refer to them as 'IP Box' regimes although the regimes are not generally limited to intellectual property.

10 In addition to France, Hungary, Luxembourg, and the Netherlands these are Belgium, Cyprus, Italy, Malta, Portugal, Spain, and the United Kingdom.

11 The IP Box rate is increased to up to 18.34% by additional surcharges and contributions.

With this doctoral thesis I want to contribute to the current discussion on how to tax IP income. In doing so, I focus on IP Box regimes and on the implications of IP tax planning. The contribution to the literature on the taxation of IP income is threefold. First, I provide a systematic overview of all IP Box regimes which are in place in Europe by the end of 2014.[12] In this regard, I consider several important elements of the regimes in addition to the statutory IP Box tax rate. In particular, I consider the scope of eligible IP, the scope of eligible IP income, the treatment of acquired IP, and the determination of the IP Box tax base which involves the treatment of expenses relating to IP income.

Second, I analyse IP Box regimes and popular IP tax planning models drawing on effective tax rates. For this purpose, I incorporate IP Box regimes and cross-border IP tax planning models into forward-looking measures of the cost of capital and the effective average tax rate. I build on the methodology put forward by Devereux and Griffith but focus on investments in self-developed intangible assets.[13] Effective tax rates go beyond the statutory tax rate by incorporating additional aspects of a tax system, inter alia the tax treatment of R&D expenses.

Effective tax rates serve as an analytical tool for exploring the potential effects of taxes on investment decisions. In this regard, effective tax rates may on the one hand reveal tax-induced distortions of investment decisions. On the other hand, they indicate incentive effects of tax provisions such as IP Box regimes and R&D tax incentives. Hence, by incorporating IP Box regimes and IP tax planning models into measures of effective tax rates, I extend the analytical tools available for analysing the potential effects of taxes on investment decisions, such as where to create and exploit intangible assets. Disregarding tax planning opportunities when determining effective rates may overstate the effective tax burden multinational companies face. In addition to this, a comparison of the effective tax burden of profitable investment projects allows for assessing the attractiveness of IP Box countries in terms of a location for investments in intangibles as well as in terms of a location for the exploitation of such assets. Finally, the effective tax rates presented in this thesis may serve as tax variables for empirically investigating the incentive effects of taxes on investment decisions.

Third, I contribute to the current tax policy debate on how to tax income from intangible assets by critically discussing the IP Box regimes in place in Europe in light of their underlying tax policy goals as well as in view of the initiatives to counteract harmful tax competition and the European State aid rules. In addition, I discuss possible reform options which aim at limiting the leeway for base

[12] This excludes the Italian regime which was introduced at the beginning of 2015.

[13] See Devereux and Griffith (1999, 2003).

erosion and profit shifting involving intangible assets. In doing so, I differentiate between the perspectives of the R&D country where IP is created, the source country where it is exploited, and the residence country of the ultimate parent of a group of companies. By means of an outlook, I additionally address the implications of the base erosion and profit shifting (BEPS) project of the Organisation for Economic Co-operation and Development (OECD) and briefly summarise the implications of the proposal for a Common Consolidated Corporate Tax Base (CCCTB) in the EU for IP tax planning.

The remainder of this thesis is structured as follows. Section 2 summarises the main features of the domestic and cross-border taxation of intangible assets and the fundamentals of IP tax planning. In this regard, section 2.1 gives a brief overview of the tax treatment of expenses incurred in the creation of intangible assets and the treatment of the income from exploiting such assets. In this respect, I focus on the taxation of corporations. The particularities of the taxation of permanent establishments and partnerships are beyond the scope of this thesis. Section 2.2 discusses the issues raised by the allocation of income and the allocation of taxing rights in case of intangible assets. This comprises a brief introduction to the transfer pricing rules applying to transactions involving intangible assets. In section 2.3 I sketch-out popular IP tax planning models.

In section 3, I provide a systematic overview of the IP Box regimes in place in Europe by the end of 2014.[14] The regimes' elements which are addressed in this survey inter alia comprise the IP Box tax rate, the scope of qualifying IP, the scope of eligible IP income, the determination of the IP Box tax base including the treatment of expenses relating to IP income, and cross-border aspects.

The focus of section 4 is on effective tax measures associated with the application of the IP Box regimes.[15] The amendments to the Devereux & Griffith model in order to incorporate the IP Box regimes are summarised in section 4.1. In section 4.2, I present effective tax rates for marginal and profitable investments in self-developed patents. In addition, I determine effective tax measures for R&D tax incentives and compare these to the results derived for IP Box regimes. Section 4.2 concludes by considering additional investment scenarios as a robustness test.

[14] This means that the IP Box regime recently introduced in Italy is not included in the survey. The survey, to a considerable extent, forms part of a joint paper with Helen Miller and Christoph Spengel (see Evers et al. (2014)).

[15] This section is mainly based on joint work with Helen Miller and Christoph Spengel (see Evers et al. (2014)).

In section 5, I present effective tax rates under IP tax planning.[16] I take into account the following IP tax planning models: the disposal of a patent to a low-taxed group company, intra-group licensing, and intra-group contract R&D. I point out how I incorporate cross-border IP tax planning models into the standard case of the Devereux & Griffith model in section 5.1. In section 5.2, I present and analyse effective tax rates under IP tax planning and point out under which conditions the IP tax planning models achieve their goal of reducing a multinational groups' overall effective tax burden.

In section 6, I address tax policy considerations. Section 6.1 provides a discussion of the IP Box regimes in relation to their tax policy aims, most notably incentivising innovation and retaining or attracting IP income. In this regard I also point out which design features of the regimes are likely to negatively affect any incentive effects of the regimes on an investment in a self-developed intangible asset.[17] In section 6.2, I assess the IP Box regimes against the EU's and OECD's criteria for identifying harmful tax practices and the EU State aid rules. In section 6.3, I point out and discuss reform options to counter profit shifting and tax base erosion through IP tax planning.

Section 7 finally summarises the main findings of this doctoral thesis.

[16] This section is based on joint work with Christoph Spengel (see Evers and Spengel (2014)).

[17] Section 6.1 is partly based on a joint paper with Helen Miller and Christoph Spengel (see Evers et al. (2014)).

2 Principles and Fundamentals of the Taxation of Intangible Assets and IP Tax Planning

Intangible assets are non-physical assets.[18] Their future economic benefit is usually highly uncertain.[19] Intangible assets may fulfil the characteristics of public goods,[20] which are non-excludability from consumption[21] and non-rivalry in consumption.[22] Knowledge arising from R&D activity constitutes such a public good and may give rise to positive spillovers.[23]

Intangible assets can be categorised by the kind of activity that led to their creation. Accordingly, the OECD transfer pricing guidelines differentiate between 'marketing intangibles' and 'trade intangibles'. Trade intangibles are "usually created through risky and costly R&D activities".[24] This category in particular comprises patents, software, designs, models, and trade secrets. In turn, 'marketing intangibles' comprise trademarks and trade names, customer lists, and distribution channels among others. It is important to make this difference in economic terms, as it is mainly R&D activity which is associated with positive spillovers. Due to the presence of spillovers, private markets tend to under-invest in R&D activities relative to the socially optimal level of investment.[25] This is the traditional policy rationale for tax incentives for R&D and innovation.

If we take the opposite perspective and focus on the future economic benefit, intangible assets can be categorised by the nature of the benefits they create. For example, they may either increase revenues or reduce costs.[26] Marketing intangibles create future economic benefits in the form of increased revenues. In turn, trade intangibles may either increase revenues (these are 'product-related intangibles') or save costs ('process-related intangibles').

---

18 See Boos (2003), p. 16.

19 See Carey et al. (2012), p. 3, Lev (2003), p. 37.

20 See Arrow (1962), p. 609, Jennewein (2005), pp. 107 et seq., Stiglitz (2000), p. 344.

21 Non-excludability implies that consumers cannot be excluded from the use of the good once it has been produced. See Batin and Ihori (2005), p. 2, Samuelson (1954, 1955), Stiglitz (2000), p. 128.

22 Non-rivalry in consumption (or put differently 'non-divisibility') implies that the consumption of the respective good by one consumer does not exclude the consumption by another consumer as the marginal costs of providing another individual with the good are zero. See Arrow (1962), Batin and Ihori (2005), p. 2, Samuelson (1954, 1955), Stiglitz (2000), p. 128.

23 Lev (2003), et seq., Hall (1996), Nelson (1959), Spengel and Wiegard (2011), pp. 9 et seq., Spengel (ed.) (2009), pp. 4 et seq.

24 OECD (2010a), recital 6.3.

25 For further details, see section 6.1.1.

26 See Boos (2003), pp. 34 et seq.

Another way of categorising intangible assets is to look at differences in their 'identifiability'. Patents, trademarks, designs, and copyrights may be registered and are legally protected.[27] The term 'intellectual property right' denotes this subset of intangible assets.[28] In turn, human capital, networks, relationships with suppliers and customers, and the collective knowledge of a company, despite creating value, are difficult to identify as they are embedded in a person or an organisation.[29] Therefore they are generally not considered 'assets' but instead referred to as 'intangible capital'.[30] The category of 'intangible assets'[31] thereby assumes a centre position between 'intangible capital' and 'intangible property' in terms of their degree of identifiability.[32]

Intellectual property law, accounting standards, national tax codes, and sources of bilateral and multilateral tax law all provide for their own definitions of intangible assets and special IP rights.[33] The broad definition and categorisation presented above, however, suffices for the purpose of this thesis.

27 See Bently and Shermann (2009), Haase (2012), Seville (2009).

28 See Henshall (2013), pp. 83 et seq., Verlinden and Smits (2009), p. 36.

29 See Boos, (2003), p. 19.

30 See Henshall (2013), pp. 82 et seq.

31 See Henshall (2013), p. 83.

32 For examples of types of intangibles which are associated with the three categories, see Henshall (2013), p. 82 figure 1.

33 See Verlinden and Smits (2009), pp. 30 et seq.

2.1 Fundamentals of the tax treatment of intangible assets

In the following, I summarise the tax treatment of R&D expenses and the taxation of income from intangible assets by focussing on the tax rules in place in the 12 European countries which operated an IP Box regime by the end of 2014.

2.1.1 Tax treatment of expenses incurred in the creation of intangibles

Current R&D expenses incurred for the creation of an intangible asset (i.e. materials and wages) as well as financing costs and expenses for managing and exploiting intangible assets are generally immediately deductible as business expenses. In contrast, capital expenditures, such as the acquisition costs for machinery and buildings used for R&D activity as well as for the acquisition of an intangible asset, are not immediately deductible. They are subject to capital allowances or, put differently, to tax depreciation.

It is rarely required to capitalise self-developed intangible assets for tax accounting purposes. Among the countries offering an IP Box, Cyprus and Portugal are the only ones where the regular tax system stipulates the capitalisation of costs incurred for the development of certain kinds of intangibles (in particular patents) upon qualifying as an intangible asset.[34] However, in order to benefit from the Luxembourg IP Box, a taxpayer must capitalise the respective intangible assets.[35] Among the remaining EU-27 Member States,[36] only Estonia,[37] Slovenia, and Sweden stipulate the capitalisation of self-developed intangibles upon meeting certain requirements which are similar or identical to International Financial Reporting Standards. In addition, in many countries the capitalisation of intangible assets is optional upon meeting certain requirements.[38]

---

[34] In Cyprus and Portugal, taxable profits are determined based on financial statements prepared in accordance with International Financial Reporting Standards (IFRS), subject to certain adjustments (see Spengel and Zöllkau (eds.) (2012), p. 19 figure 1).

[35] For details, see section 3.3.2.3.

[36] No information on the tax treatment of self-developed intangible assets in Croatia, whether capitalisation is required, optional or prohibited, could be obtained.

[37] In Estonia, profit determination under the distribution tax follows IAS 38 of the International Financial Reporting Standards which stipulates the capitalisation of self-developed intangible assets if certain requirements are fulfilled.

[38] These requirements are often similar to IAS 38: (i) identifiably, (ii) probability of future economic benefits and the power to obtain these benefits, (iii) ability to measure the costs of the asset reliably (see Verlinden and Smits (2009), pp. 46 et seq., 171 et seq.). In some cases, this only applies to development expenses whereas research expenses may not be capitalised. For an overview of the treatment of R&D expenses and capitalisation of self-developed intangible assets, see Endres et al. (eds.) (2007), pp. 36 et seq., Spengel and Zöllkau (2012), pp. 57 et seq., p. 65.

Capitalisation entails that the initial deduction of R&D expenses is offset and then spread over the useful life of the intangible asset by way of periodical depreciation. Taking into account the time value of money, from the perspective of the treasury it is favourable to delay the tax deduction of R&D expenses by way of capitalisation self-developed intangible assets, whereas it is unfavourable from the perspective of the taxpayer.

Today, the majority of EU Member states and many other industrialised countries offer tax incentives for investment in R&D in the form of tax credits and super deductions for R&D expenses. These are granted on top of the regular deduction of these expenses.[39] As a result, the tax deductions exceed the amount of expenses which have actually been incurred. For example, the 'research and development allowance' ('RDA') available in the Netherlands allows for an extra 60% of certain current R&D expenses to be deducted. In total, this results in a deduction of 160% of these expenses. Apart from this, some countries offer an immediate write-off or accelerated depreciation of assets used for R&D activity.

Table 1 provides an overview of R&D tax incentives in place in the twelve countries which implemented an IP Box by the end of 2014.[40] Among this group of countries only Cyprus, Liechtenstein, and the Swiss Canton of Nidwalden do not have R&D tax credits, super deductions, or accelerated depreciation for R&D assets in place. The most generous R&D tax incentives are available in Portugal (32.5% tax credit), France (30% tax credit for expenditures up to EUR 100 Mio.), and Spain (25% tax credit). Special tax incentives focussing on R&D staff are not taken into account in this survey.[41]

---

[39] See Bal and Offermanns (2012), p. 167, Deloitte (ed.) (2013), Elschner et al. (2011), Ernst & Young (ed.) (2013), OECD (2013c), p. 106, Spengel and Wiegard (2011), p. 17.

[40] For references, see Deloitte (ed.) (2013), Ernst (2012), Ernst & Young (ed.) (2013), European Commission (2014c), Eynatten (2008), Herbold (2009). *Belgium*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, sections 1.9.1, 1.9.2 and 1.9.5 (version November 2014), van Stappen et al. (2013a); *France*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, sections 1.5.1.5.2 (accelerated depreciation) and 1.9.3.2 (tax credit) (version November 2014), Katiya et al. (2007), Mayot and Juan (2009); *Hungary*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Hungary, sections 1.9.3.2 (version November 2014), László et al. (2007); *Luxembourg*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Luxembourg, sections 1.5.1 (accelerated depreciation) and 1.9.3 (tax credit) (version November 2014), Thomas et al. (2007); *the Netherlands*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis the Netherlands, section 1.9.8 (version November 2014), van den Berghe and Vrolijk (2011); *Spain*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Spain, section 1.9.1.1.1 (version November 2014), Bernales (2012); *Portugal*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.3 (version November 2014); *United Kingdom*: Articles 104J et seq. CTA 2009 as amended by Finance Act 2013, IBFD (2014), country chapter United Kingdom, sections 1.3.4 and 1.7.1, Wilman and Ward (2012).

[41] For an overview of such incentives, see European Commission (2014c), p. 58, Köpping (2014).

As depicted in table 1, some countries limit their super deductions and tax credits to either capital expenditure (Belgium, and Luxembourg) or current expenses (France, Hungary, Malta, and the United Kingdom). Current expenditures qualifying for the tax incentives usually comprise wages, expenses incurred for materials, and utilities. Only the Netherlands explicitly excludes wages from the scope of the super deduction as wages incurred for R&D personnel benefit from a separate tax incentive.[42]

[42] See van den Berg and Vrolijk (2011), p. 706, NL Agency (ed.) (2014).

Table 1: R&D tax incentives in the European IP Box countries (2014)

	Tax credits and super deductions				
	Type	Size	Qualifying assets	Qualifying Expenditures	Refund or carry forward
Belgium	TC[a]	4.59% [a]	Tangible & intangible assets[b]	Cap. exp.	Carry forward, refund after 4 y.
Cyprus	-	-	-	-	-
France	TC	30% up to EUR 100 Mio., 5% above	n.a.	C. exp.	Carry forward, refund after 3 y.
Hungary	SD	100%	n.a.	C. exp.	Carry forward/ backward within loss offset rules
Liechtenstein	-	-	-	-	-
Luxembourg	TC[c]	7% up to EUR 150,000, 2% above, 12% on exp. exceeding the 5-y.-average	Equipment & machinery	Cap. exp.	Carry forward 10 y.
Malta	SD	50%	n.a.	C. exp.	Carry forward within loss offset rules
The Netherlands	SD	60%	Equipment, machinery & buildings	Cap. exp. C. exp. excl. wages	Carry forward within loss offset rules
Portugal	TC	32.5%, 50% on exp. exceeding the 2-y.-average[d]	Equipment & machinery	Cap. exp. C. exp.	Carry forward 8 y.
Spain	TC	25%, 42% on exp. exceeding the 2-y.-average	n.a.	C. exp.	Carry forward 18 y.
		17%	n.a.	Wages	
		8%	Equipment & machinery	Cap. Exp.	
Nidwalden/ Switzerland	-	-	-	-	-
The United Kingdom	TC[e]	10% [e]	n.a.	C. exp.	Carry forward within loss offset rules, refund

Abbreviations: TC – tax credit; SD – super deduction; Cap. exp. – capital expenditures; C. exp. – current expenditures; y. – years; exp. – expenditures; Mio. – Million; n.a. – not applicable.

Notes: [a] Alternatively, a 13.5% super deduction or a 20.5% 'spread deduction' (added to the depreciable base) are available. The possibility to receive a refund after 4 years is only available if the tax credit option is used. [b] Assets must be environmental-friendly. [c] A general investment tax credit is available for capital expenditures incurred for investment in tangible assets excluding buildings. [d] With regard to the 50% incremental credit, a ceiling of EUR 1.5 Mio. applies. [e] Until 2016, the tax credit may be applied as an alternative to the 30% super deduction. The tax credit is subject to corporate income tax resulting in an effective tax credit rate of 7.9%.

Table 1 continued

	Accelerated depreciation	
	Size (%)	Qualifying assets
Belgium	SL 3 years	Equipment & machinery
Cyprus	-	-
France	DB 1.5 to 2.5-times SL rate	Equipment & machinery
Hungary	n.a.	n.a.
Liechtenstein	-	-
Luxembourg	DB 4-times SL rate, max. 40%	Equipment & machinery
Malta	n.a.	n.a.
The Netherlands	n.a.	n.a.
Portugal	n.a.	n.a.
Spain	n.a.	n.a.
Nidwalden/ Switzerland	-	-
The United Kingdom	100%	Equipment, machinery & buildings

Abbreviations: y. – years; SL – straight-line depreciation; DB – declining-balance depreciation.

In all countries referred to, except for the Netherlands and the United Kingdom, depreciation allowances for fixed assets used for R&D activities also benefit from the super deductions and tax credits respectively. Finally, in France, Malta, Portugal, Spain, and the United Kingdom, payments to contract R&D providers also qualify for the respective tax incentives but are subject to additional conditions or limitations.[43]

In order to comply with the fundamental freedoms codified in the Treaty on the Functioning of the European Union, none of the EU member states restricts the R&D tax incentives to domestic R&D investment.[44] However, the French tax credit is only available for expenses incurred for R&D activity which has been carried out in a member state of the European Economic Area (EEA) which has concluded a tax treaty with France containing a clause on administrative assistance.[45]

Whereas super deductions and accelerated depreciation are deducted from the corporate income tax base, tax credits directly reduce the company's corporate income tax liability in the year in which the expenditures are incurred. Most countries allow for a carry-forward of tax credits, which cannot be (fully) used in the year in which the R&D expenditures are incurred, against future corporate income tax liabilities of the company.

---

[43] In France, the expenses incurred for commissioning contract R&D qualifying for the tax credit are capped at an amount equal to 3-times the other qualifying expenses. In addition, an overall limit of 10 Mio. EUR applies. This limit is reduced to 2 Mio. EUR in case both parties are related (see Deloitte (ed.) 2013)). In Portugal, only expenses incurred for hiring R&D services from public or other reputable research entities qualify for the incentive (see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.3 (version November 2014)). In the UK, the tax incentive is only available for subcontracted expenses if the contract R&D provider is a qualifying body, an individual, or a company of which each member is an individual (see Article 104K CTA 2009 as amended by Finance Act 2013, HMRC, Corporate Intangibles Research and Development Manual, section CIRD84200, download: http://www.hmrc.gov.uk/manuals/cirdmanual/CIRD84200.htm, accessed 27 January 2015).

[44] In the case 'Laboratoires Fournier' (ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057), the ECJ concluded that the French R&D tax credit which was only available for R&D activities carried out in France violated the free movement of services (for further details, see Kniese (2013), pp. 157-167, Bal and Offermanns (2012), p. 169). In the case 'Commission vs. Spain' (ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057), the ECJ furthermore concluded that an R&D tax credit which is less favourable in respect to costs incurred abroad than costs incurred at home violates the freedom of establishment and the free movement of services (see Bal and Offermanns (2012), p. 169). Knieser points out the leeway for designing R&D tax incentives which are compatible with the fundamental freedoms (see Kniese (2013), pp. 171-177).

[45] See IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, section 1.9.3.2 (version November 2014).

Belgium,[46] France,[47] and the United Kingdom (since 2013)[48] even pay-out any unused tax credits (see table 1).[49] This is particularly important for small and medium-sized companies (SMEs) and start-ups. In case of a refund, the amount of any repayment might be capped by reference to the amount of corporate income tax paid in the past. For example, the UK limits the amount of any tax credit which is paid out[50] in case of losses to the company's payroll tax ('PAYE') and national insurance contributions ('NIC') liability in relation to staff engaged in qualifying R&D activities by the taxpayer himself or group companies in the respective accounting period. Any tax credits exceeding this PAYE/ NIC cap may still be carried forward to be offset against future corporate income tax. The refund rules for SMEs are more generous.[51]

[46] See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, section 1.9.5 (version November 2014).

[47] The refund is only available for small and medium-sized companies (SMEs). See IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, section 1.9.3.2 (version November 2014).

[48] See HM Treasury (2013), clause 34, schedule 14, IBFD Tax Research Platform, Corporate Taxation, Country Analysis United Kingdom, section 1.9.2 (version December 2014).

[49] In fact, refunds of R&D tax credits are rare. See Graetz and Doud (2013), p. 408 referring to Deloitte (ed.) (2012).

[50] As the tax credit itself, the refund is paid net of corporate income tax (see HM Treasury (2013), recital 42).

[51] See HM Treasury (2013), recitals 39 et seq., IBFD Tax Research Platform, Corporate Taxation, Country Analysis United Kingdom, section 1.9.2 (version December 2014).

2.1.2 Tax treatment of income from intangible assets

Income from the exploitation of intangible assets by way of internal use or by licensing-out is generally subject to the ordinary corporate income tax rate. However there are some exceptions. Ireland imposes a corporate tax rate of 12.5% for 'trading income'. To qualify as 'trading income', the underlying business activity needs to be characterised by a certain degree of substance. A higher rate of 25% is applied to income which does not qualify as trading income.[52] Companies managing IP rights may benefit from the lower trading income tax rate under certain conditions.[53]

IP Box regimes[54] constitute another exception as they provide a reduced tax rate for income from the exploitation of intellectual property such as royalties. Thirteen European countries currently offer some kind of IP Box regime for income derived from patents and, in many cases, from other forms of IP such as software or trademarks. These are, in chronological order with the financial year in which they were first applied given in brackets, France (2000), Hungary (2003), the Netherlands (2007), Belgium (2007), Luxembourg (2008), Spain (2008), Malta (2010), Liechtenstein (2011), the Swiss Canton of Nidwalden (2011), Cyprus (2012), the United Kingdom (2013),[55] Portugal (2014), and, most recently, Italy (2015). The most prominent feature of these regimes is the tax rate, which ranges from 0% in Malta to 16.76%[56] in France. Chapter 3 provides a detailed survey of these regimes as in place by the end of 2014.

---

52 See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Ireland, section 1.10.1 (version November 2014).

53 The income of an affiliate of a group exploiting IP may be considered to be trading income in case the company is responsible for the worldwide marketing, sales, operation, and support of the IP. Moreover the Ireland-based employees should have the relevant skills and expertise to manage the relevant intellectual property. If the IP company does not actively manage the IP, the royalty income is not considered to be trading income and is consequentially taxed at the higher corporate income tax rate of 25%. For further details, see Hickson (2011), pp. 22 et seq., Guidance on Revenue Opinions on Classification of Activities as Trading, download: http://www.revenue.ie/en/tax/ct/basis-charge.html, and the cases submitted to Irish Revenue for an opinion on the classification of activities as trading activities (cases no. 49, 58, 70, 71, 76, 82, 92, 94, 95, 99, 101, and 107), download: http://www.revenue.ie/en/about/publications/submitted-cases.html.

54 These policies are also referred to as 'Patent Box' (United Kingdom and other countries), 'Innovation Box' (the Netherlands) or 'License Box' (Swiss Canton of Nidwalden) regimes. The Belgian regime is labelled 'Patent Income Deduction'. I uniformly refer to them as 'IP Box regimes'.

55 The British Patent Box is phased in over a period of four years. In 2013, companies were only entitled to 60% of the full benefit, increasing to 70%, 80% and 90% in subsequent years. The Patent Box will fully be available in 2017.

56 Including additional surcharges and contributions levied on the income. For details, see section 3.1.

2.2 Allocation of income taxing rights relating to intangible assets

2.2.1 Issues raised by the increasing internationalisation of R&D activity

Multinational companies increasingly operate numerous R&D units around the world which work closely together allowing for 24/7 R&D activity.[57] As a result, the creation of intangibles often involves on-going movement of knowledge and people between the different entities of a multinational group of companies.[58] To give an example, software programmers working in India might be handing on the results of their day's work to employees in Germany who will further develop the programme code and then hand it on to colleagues in the United States.

The increasing integration of R&D activities of multinational firms makes it difficult if not impossible to identify the individual contributions of local units and to determine where the respective intangible assets in fact are created.[59] If the creation, the funding, and the use of intangible assets are carried out by individual entities of a multinational group of companies resident in different countries, this leads to the question of how to allocate the intangible-related returns between the jurisdictions involved. The country where the R&D activity is carried out ('R&D country'),[60] the country in which the entity financing and directing the R&D investment resides ('residence country'), and the country in which the intangible asset is exploited (for example within the scope of the production of goods) ('source country')[61] all hold convincing claims to tax the intangible asset's returns.[62]

Their claims are based on the consideration that the entities involved all contribute to the value of the intangible asset. They do so by way of R&D activity, by providing the funds and bearing the risks associated with the R&D investment, and by putting the resulting intangible asset to use.[63] Furthermore, the respective countries in which the entities reside contribute to the creation of the intangible

---

57 See Boos (2003), pp. 6 et seq., Jennewein (2005), pp. 133 et seq.

58 See Boos (2003), p. 6, Carey et al. (2012), p. 5.

59 See Roxworthy et al. (2013), p. 20, Schön (2009), p. 68.

60 In what follows, the focus is on trade intangible assets, which are the result of R&D activity, as opposed to marketing intangibles. In case of marketing intangibles, the entity carrying out the marketing activity ('marketing company') replaces the R&D company.

61 The term 'source country' denotes the country in which a corporation's profits are earned. This place may, however, be difficult to define (see Devereux and de la Feria (2014), p. 6, Kemmeren (2001), 33, Schön (2009), p. 68). In the case of intangible assets, the 'source country' is the country in which the intangible assets are used for the production of goods or the rendering of services. However, it is much more difficult to determine where the value of an intangible asset is actually created.

62 See Valta (2014), p. 515.

63 See Schön (2009), p. 91.

asset by providing public goods such as universities, research institutions, and infrastructure (R&D country), a legal system which protects capital as well as well-functioning capital markets (residence country), and infrastructure for producing goods and rendering services as well as a skilled labour force (source country).

There is no clear-cut solution to the problem of how to split the intangible-related income between the entities and the intangible-related taxing rights between the countries.[64] This situation is even more complicated if the intangible assets are held by an 'IP holding company' (and not by the parent company of the group) and if the products incorporating intangible assets are sold by yet another entity. In this case, the country in which the products and services incorporating the intangible asset are sold ('market country') and the residence country of the ultimate parent company of a multinational group of companies ('ultimate parent country') step in as fourth[65] and fifth player. A market country may argue that the customer base and the legal protection of IP rights in its market substantially contribute to the value of the intangible asset, as this enables the multinational to earn monopoly rents when exploiting the intangible asset.[66] The market country's claim is even more pronounced in the case of marketing intangibles, as the value of such intangible assets is, to a considerable extent, created through marketing activity in the market country.[67]

A starting point for determining the contributions of individual entities could be to split up the intangible-related income, such as royalty income, into the following four elements: (i) a compensation for R&D expenditures or rather for the amortisation of the intangible asset ('return of capital'[68]), (ii) a compensation for the provision of capital ('normal return to capital'), and (iii) a residual which constitutes a compensation for bearing the risks associated with the R&D investment and with exploiting the intangible on the market.[69] If the license involves the exclusive right to use the respective intangible asset, there is a fourth element involved: (iv) a compensation for the exclusivity of the right to use the intangible: a monopoly rent.

---

64 See Graetz and Doud (2013), p. 420, Schön (2009), p. 91.

65 See Schön (2010a), pp. 92 et seq., Sheppard (2013d), p. 12.

66 See Schön (2010a), p. 93.

67 See Vann (2010), p. 337.

68 See Lokken (1980), p. 241.

69 See Kemmeren (2001), p. 453, Lokken (1981), pp. 240 et seq., Tadmore (2008), p. 113, Schön (2010a), pp. 91 et seq.

Drawing on this, the entity providing the investment funds should receive an amount reflecting periodical depreciation of the intangible asset (the return *of* capital) and the normal return to capital. If the asset is created through contract R&D, the contractor (the R&D company) should be reimbursed by the commissioning party for the R&D expenditures incurred.[70]

The allocation of the residual reflecting the risk-bearing and any monopoly rents is subject to much debate.[71] Practical considerations may point to allocating these economic rents to the owner of the intangible asset.[72] This may seem sensible if the owner also bore the risk associated with the R&D investment.[73] However, legal ownership and risks can, to some extent, be freely allocated among group companies through intra-group contracts. If such contracts are in place and are decisive for allocating income between related parties, the allocation of profits to the jurisdictions involved is to a large degree at the discretion of the taxpayer.[74] The functional analysis promoted by the OECD transfer pricing guidelines highly emphasises the allocation of risks through intra-group contracts.[75] However, the OECD has by now become aware of this issue. In its Action Plan on Base Erosion and Profit Shifting it calls for measures which prevent base erosion[76] and profit shifting by transferring risks among the group members. In this regard, the action plan calls for transfer pricing rules or special measures which ensure that no group company receives an inappropriate amount of returns only because it assumed risks or provided capital by means of a contract.[77]

Instead of trying to allocate the excess profits earned by multinationals to individual entities, one can argue that economic rents relate to the business activity of a group of companies as a whole.[78] Economic rents often arise from risk-taking and R&D investments are particularly risky undertakings. Ault as well as Schön argue that a group of companies as a whole bears the risks associated

70 See Schön (2010a), p. 92.

71 See Lokken (1980), pp. 240 seq. Lokken does not explicitly differentiate between the normal return to capital and supra normal returns to capital (e.g. monopoly rents).

72 See Schön (2010a), p. 93.

73 See Schön (2010a), pp. 92 et seq.

74 See Kadet (2013), p. 1134, Schön (2014), p. 280, Vann (2010), p. 333.

75 See Vann (2010), p. 326.

76 It is interesting to note that neither the OECD report 'Addressing Base Erosion and Profit Shifting' (OECD (2013d)) nor the BEPS Action Plan (OECD (2013e)) defines the term 'base erosion'. Durst provides a detailed description of the phenomenon referred to as 'base erosion' (see Durst (2013a), p. 466).

77 See Action 9 of the Action Plan on Base Erosion and Profit Shifting (OECD (2013e), p. 20). This is discussed in more detail in section 6.3.5.1.

78 See Devereux (2008), p. 628, Kleinbard (2007), p. 553.

with business activity.[79] Sullivan also suggests that the residual profits, including those associated with intangible assets, should be allocated to all countries in which a multinational firm operates.[80] This takes into account that multinational groups of companies earn excess profits as they are highly integrated, operate internationally, and jointly exploit valuable intangible assets[81] and that these excess profits relate to the group as a whole and not to single assets and entities.[82] This brief overview of the issues associated with the increasing internationalisation of the creation and exploitation of R&D suffices for the purpose of this thesis. Resolving these issues is beyond the scope of this work.

[79] See Ault (2013), p. 1198, Schön (2009), pp. 77 and 93.

[80] See Sullivan (2013b), p. 13.

[81] See Coase (1937), Dunning (1973), Kleinbard (2011b), p. 149, Vann (2010), pp. 293 et seq.

[82] See Kleinbard (2011b), p. 149.

2.2.2 Transfer pricing rules for intangible assets

Transfer pricing rules assist in allocating income to the parties involved in related-party transactions. In doing so, they also affect the allocation of taxing rights to the countries involved.[83] Most Member States of the EU and the OECD have transfer pricing rules in place which require that intra-group transactions be in line with the arm's length standard.[84] This implies that intra-group transactions must be set by reference to what would have been agreed by unrelated parties in identical or at least comparable transactions.[85] Hence, transactions between associated companies involving intangible assets, such as the transfer or the licensing-out of intangible assets to another group company, may be challenged by transfer pricing rules. This involves two aspects: first, whether the transaction will be accepted in general and second, whether the transfer price agreed on by the parties involved reflects the price which would have been paid by unrelated parties in identical or comparable transactions under identical or comparable circumstances.[86]

In the following, I briefly[87] point out the basic transfer pricing implications of intra-group transfers of intangible assets, intra-group licensing agreements, as well as intra-group contract R&D arrangements focussing on the OECD transfer pricing guidelines. Although these constitute an instrument of 'soft law',[88] they serve as a foundation for transfer pricing rules in OECD member states and many non-OECD countries.[89]

---

83 See Schön (2010b), p. 230, Schön (2014), pp. 285 et seq.

84 For an overview, see Zinn et al. (2014), pp. 355 and 370.

85 See Article 9 (1) OECD Model Tax Convention on Income and on Capital, Boos (2003), p. 3, Cottani (2011), pp. 19 et seq., Henshall (2013), pp. 5 et seq. and 14 et seq., Macovei and Rasch (2011), p. 28.

86 Third, a third country might raise a claim to tax the intangible's returns arguing that the company entitled to the intangible's returns has its effective place of management and thereby its tax residency in the third country's jurisdiction. If only part of the business activity of the licensor is performed in another country, the activity taking place in the other country might nevertheless give rise to a permanent establishment, thereby establishing a link which allows the other country to tax the license income. See Huigbretse (2011), p. 4.

87 A detailed survey of the transfer pricing issues raised by intra-group transactions involving intangible assets is beyond the scope of this thesis. For a detailed overview of these issues, see Boos (2003), Haase (ed.) (2012), International Fiscal Association (ed.) (2007).

88 According to Thürer, the term 'soft-law' has been coined by Lord McNair and refers to "instruments with extra-legal binding effect" (Thürer (2014), recital 5). Guzman and Meyer define the term as referring to "legally non-binding commitments from which legal consequences flow" but point out that there is no universally accepted definition (Guzman and Meyer (2010), p.222). For a discussion of the OECD transfer pricing guidelines as soft law instrument, see Li (2012), pp. 78 et seq.

89 See Lohse and Riedel (2014), p. 358.

2.2.2.1 Entitlement to the intangible-related income

The first aspect - whether the transaction is accepted in general - points to situations where the recipient of the payment as specified in the underlying contract is not considered to be entitled to the income from the intangible asset.[90] The recent draft of the OECD guidelines' chapter six on the transfer pricing rules for intangible assets, which is currently under revision, stresses that "legal rights and contractual arrangements form the starting point for any transfer pricing analysis of transactions involving intangibles".[91] In a second step, the parties performing the functions related to developing, enhancing, maintaining, and protecting the intangible asset as well as using the assets and assuming the risks associated with these activities must be defined.[92] In this regard, three aspects are relevant to determine who is entitled to the returns from exploiting the intangible asset: (i) the functions performed, (ii) the assets used, and (iii) the risks assumed.[93]

Legal ownership serves as a reference point for determining which parties are entitled to the intangible's returns.[94] In case the legal owner does not perform any of the relevant intangible-related functions and does not assume any of the risks associated with these activities, he is not entitled to the returns attributable to the intangible asset.[95] The draft of chapter six specifies the important functions relating to the development, enhancement, maintenance and protection of the intangible asset which have special significance. They inter alia include the following: "design and control of research and marketing programmes, management and control of budgets, control over strategic decisions regarding intangible development programmes, important decisions regarding defence and protection of intangibles, and on-going quality control over functions performed by independent or associated enterprises that may have a material effect on the value of the intangible."[96]

---

90 See Miyatake (2007), p. 25, Huibregtse et al. (2011), p. 6.

91 OECD (2013b), recital 67, OECD (2014b), recital 6.35.

92 See OECD (2013b), recital 66, OECD (2014b), recital 6.34, Gosh et al. (2011), p. 16.

93 On this 'functional approach' which has gained a predominant position in the transfer pricing rules promoted by the OECD, see Vann (2010), pp. 326-339. For an example to illustrate this approach, see OECD (2013b), pp. 60 et seq., examples 11 and 12, OECD (2014b), pp. 110 et seq., examples 15 and 16.

94 See OECD (2013b), recital 73, OECD (2014b), recital 6.43.

95 See OECD (2013b), recital 73, OECD (2014b), recital 6.42, Huibregtse et al. (2011), p. 5. For an example, see OECD (2013b), pp. 61 et seq., examples 12 and 14, OECD (2014b), pp. 111 et seq., examples 16 and 18. For a discussion of this issue, see Sullivan (2013a).

96 OECD (2013b), recital 79, OECD (2014b), recital 6.56. The OECD transfer pricing guidelines also specify under which condition a party is considered to have control over the risks associated with the creation and exploitation of intangible assets. See OECD 2010, recitals 9.23, 9.24, and 9.26.

Not all of these functions have to be performed by employees of the legal owner of the intangible asset in order to secure his entitlement to the returns. If these functions are contracted out to another party, the commissioning party is still entitled to the intangible's returns if the functions are performed under its control.[97] However, the draft of chapter six stresses that if the legal owner outsources most or all of the aforementioned important functions to affiliates, it can be doubted whether he is still entitled to "any material portion of the return attributable to the intangibles."[98] This implies that 'passive' IP holding companies lacking personnel which is capable of managing, directing, and supervising the R&D activity, but simply serve as a corporate shell for the legal ownership of IP, are not entitled to the intangible-related income.[99]

If the allocation of risks plays an important role in the allocation of profits to individual entities of a multinational group, multinationals may exploit their freedom of contract by more or less flexibly assigning risks (and thereby profits) through contracts between affiliates.[100] The fact that entities must not physically perform the relevant functions facilitates this even more. Walsh refers to this as "painless tax planning".[101]

2.2.2.2 Examining the transfer price against transfer pricing rules

The second step of the transfer pricing assessment concerns the appropriateness of payments made in transactions involving intangible assets as laid down in the respective contracts (e.g. sales prices, license fees, and contract R&D fees). Such payments must be in line with the arm's length principle. Before describing the transfer pricing methods which are applied to them, I point out some general issues relating to the valuation of intangible assets.

The application of the arm's length principle to intra-group transactions involving intangible assets raises theoretical and practical issues.[102] Intangibles are rarely

---

97 See OECD (2013b), recital 76, OECD (2014b), recital 6.51, Huibregtse et al. (2011), pp. 5 et seq.

98 OECD (2013b), recital 80, OECD (2014b), recital 6.57.

99 See Huibregtse (2011), pp. 5 and 8. The draft of chapter six of the OECD transfer pricing guidelines provides some examples for such passive IP holding structures and stresses that in the cases at hand the IP holding is not entitled to the intangible-related income despite legal ownership (see OECD (2013b), pp. 61 et seq., examples 13 and 14, OECD (2014b), pp. 111 et seq., examples 17 and 18).

100 See Durst (2010), p. 249, Kadet (2013), p. 1134, Vann (2010), pp. 326 and 333.

101 See Walsh (2001).

102 For fundamental criticism expressed towards the arm's length principle, which serves as a foundation for most transfer pricing rules, arguing that it does not meet the reality of multinational firms, see Avi-Yonah and Benshalom (2011), pp. 378 et seq., Biegalski (2010), pp. 180 et seq., Bird (1998), p. 294, Boos (2003), pp. 12 et seq. and 164 et seq., Durst (2010), Durst (2012a), p. 124, Kleinbard (2007), p. 554, Luckhaupt et al. (2012), pp. 100 et seq., Schön (2010b), p. 233, Sullivan (2010), pp. 8 et seq.

traded on external markets due to their uniqueness and their central role in the generation of excess profits.[103] This particularly holds true for intangibles constituting the 'crown jewels' of a company which are usually not sold or licensed-out to unrelated parties.[104] The value of such assets usually only reveals itself ex-post. In addition, taxpayers often have inside knowledge with respect to the value of their intangibles.[105] Taxpayers may exploit this inside knowledge by systematically understating the value of intangible assets which are transferred to affiliates in low-tax countries. However, taxpayers face the risk that their transfer pricing arrangements be challenged by the tax administration. Moreover, it is important to note that the 'true value' of intangible assets is also unknown to the taxpayer.[106] The far-reaching issues relating to the determination of transfer prices for transactions involving intangible assets are also acknowledged by the OECD.[107] To account for this, the OECD is currently revising chapter six of the transfer pricing guidelines on the transfer pricing rules for intangible assets.[108]

In general, the transfer pricing methods put forward in chapter two of the OECD transfer pricing guidelines also pertain to transactions involving intangible assets: the 'comparable uncontrolled price method' (CUP), the 'resale price method', the 'cost-plus method', the 'transactional net margin method', and the 'transactional profit split method'.[109] The term 'traditional transaction methods' summarises the first three of the methods listed, whereas the latter two constitute 'transactional profit methods'.[110]

The CUP method compares the price agreed on in a controlled transaction to the price charged in a comparable uncontrolled transaction in comparable circumstances. It is considered to be the transfer pricing method which is "the most direct and reliable way to apply the arm's length principle", if it is "possible

---

Schön points out the conceptual differences between transfer prices for business purposes and tax transfer prices (see Schön (2012), pp. 53 et seq.). Keuschnigg and Devereux (2009) present a model illustrating that the application of the arm's length principle distorts transfer prices set for business purposes as well as organisational choices and production efficiency.

103 See Boos (2003), p. 12, Joint Committee on Taxation (2010), p. 110, Kleinbard (2007), p. 553, OECD (2010a), recital 6.26, OECD (2013b), recitals 156 and 164, OECD (2014b), recitals 6.135 and 6.143, Wittendorff (2012a), p. 935.

104 See Boos (2003), p. 181, Verlinden and Smits (2009), p. 57.

105 See Joint Committee on Taxation (2010), p. 110, Wittendorf (2012b), p. 91.

106 See Schön (2014), p. 292.

107 See Silberztein (2011).

108 See OECD (2013b), OECD (2014b).

109 See OECD (2010a), recital 6.13, OECD (2013b), recital 125, OECD (2014b), recital 6.140.

110 See OECD (2010a), recital 6.26.

to locate comparable uncontrolled transactions."[111] In the case of transactions involving intangibles, such comparable uncontrolled transactions rarely exist due to the uniqueness of intangible assets.[112]

Hence, the OECD concludes that the CUP method, the other two traditional transaction methods, and the transactional net margin method are often not suitable for valuing intangible assets due to the lack of comparables.[113] In such cases, the transfer pricing guidelines point to the application of the profit split method, but nevertheless indicate that this may also raise practical issues.[114] According to some commentators, the draft of chapter six of the guidelines on the transfer pricing rules for intangible assets encourages a broader use of the profit split method compared to the transfer pricing guidelines published in 2010.[115] Furthermore, the draft indicates that income-based valuation techniques, such as discounted cash-flow methods, might also be suitable to determine the value of intangible assets in the case of intra-group transfers.[116]

Rules of thumb such as the German 'Knoppe-Formula'[117] or the '25%-rule'[118], which may be popular among practitioners,[119] are explicitly discouraged by the recent draft of chapter six of the OECD transfer pricing guidelines.[120] Similarly, the costs incurred for creating intangibles are generally not considered to be an appropriate indicator for the value of intangible assets.[121] Hence, the application

111 OECD (2010a), recital 2.14.

112 See Boos (2003), pp. 7 and 24, Joint Committee on Taxation (2010), p. 110, Kleinbard (2007), p. 553, OECD (2010a), recital 6.26, OECD (2013b), recitals 156 and 164, OECD (2014b), recitals 6.135 and 6.143.

113 See OECD (2010a), recital 6.26, OECD (2013b), recital 159, OECD (2014b), recital 6.138.

114 See OECD (2010a), recital 6.26, OECD (2013b), recitals 166 et seq., OECD (2014b), recitals 6.145 et seq.

115 See Silberztein et al. (2013), p. 63, Sullivan (2013b), p. 15.

116 See OECD (2013b), recitals 163 and 171, OECD (2014b), recitals 6.142 and 6.150, Silberztein et al. (2013), p. 64. For the opposite position, see Durst (2012a), p. 127.

117 The 'Knoppe-Formula' proposes license rates between 25% and 33.33% of the licensee's pre-tax target profit ("vorkalkulierter Gewinn") (see Knoppe (1972), p. 102 referring to Neuberg (1956), p. 105). For details, see Vögele (ed.) (2011), pp. 1488 et seq., recital 525 et seq. For a critical review of the 'Knoppe-Formula', see Bauer (2000), pp. 283 et seq., Boos (2003), p. 204, Böcker (1991), p. 80, Vögele (ed.) (2011), p. 1489, recital 528.

118 See Fiaccadori et al. (2013), pp. 42, Goldschneider (2011), Goldscheider et al. (2002), Verlinden and Smits (2009), pp. 248 et seq.

119 See Henshall (2013), p. 102.

120 See OECD (2013b), recital 162, OECD (2014b), recital 6.141.

121 See OECD (2010a), recital 6.27, OECD (2013b), recital 160, OECD (2014b), recital 6.139.

of the cost-plus method to determine the value of intangibles based on the costs incurred for its development is generally discouraged.[122]

Any contract R&D fee paid to an affiliate must also be in line with the arm's length principle.[123] If the principal effectively bears the risks and chances associated with the R&D investment, the cost-plus method is generally considered appropriate to determine the contract R&D fee, provided a comparable uncontrolled price is not available.[124] This requires that the principal manage and control the party carrying out the R&D activity.[125] In order to do so, the principal must have the appropriate resources, including adequately skilled staff, to be able to effectively manage and control the R&D work.[126] When applying the cost-plus method, the mark-up should reflect an "appropriate profit in light of the functions performed and the market conditions."[127]

The draft for chapter six of the guidelines indicates that the profit split method or other methods may be more appropriate to determine contract R&D fees in certain cases. This is the case, for example, if the R&D company performs the relevant functions relating to developing, enhancing, maintaining, and protecting intangible asset and makes decisions regarding whether to pursue or terminate particular R&D projects.[128]

122 See OECD (2013b), recital 160, OECD (2014b), recital 6.139,Gosh et al. (2011), p. 18.

123 See (OECD 2010a), recitals 7.19 et seq., OECD (2013b), recitals 77 and 80, OECD (2014b), recital 6.52.

124 See OECD (2010a), recital 2.55, Russo (2007), p. 172. The OECD transfer pricing guidelines specify under which condition a party is considered to have control over the risks associated with the creation and exploitation of intangible assets (see OECD (2010a), recitals 9.23, 9.24 and 9.26). For the legal situation in Germany, see Vögele (ed.) (2011), p. 1305 recital 121.

125 See Sporken and Gommers (2006), p. 267.

126 See Russo (2007), p. 175.

127 OECD (2010a), recital 2.39.

128 See OECD (2013b), recital 80 and examples 13 and 14 on pp. 61 et seq., OECD (2014b), recital 6.57 and examples 17 and 18 on pp. 111 et seq.

2.2.3 Allocation of taxing rights in the context of intangible assets

Vis-à-vis the country in which the owner of the asset resides ('residence country' in what follows), the country where the asset is exploited ('source country' in what follows) holds the whip hand when it comes to the taxation of the income from exploiting intangible assets.[129] This is because by taxing royalty income at source by means of levying a withholding tax, the source country reduces the amount of income paid to the residence country and thereby the amount available for residence country taxation.[130] If the residence country provides for an option to credit the withholding tax against the recipient's domestic corporate income tax liability or at least to deduct the withholding tax from the corporate income tax base, the residence country's tax revenue is reduced to an even larger extent.

In the case of contract R&D arrangements, the R&D country is in the weakest position. This is because the income relating to intangible assets, whether constituting sales income from the sale of products incorporating intangibles or royalty income from licensing-out intangibles, does not have a link to the R&D country in terms of a transaction.[131]

How the 'cake' is split, in the end depends on how these countries settle their claims.[132] They first and foremost do so by signing double taxation treaties. As regards the OECD Model Tax Convention on Income and on Capital, the right to tax royalty income is assigned to the residence country[133] whereas the source country is first and foremost assigned the right to tax any business profits remaining after the deduction of license fees.[134]

In the following, I point out the status quo of the allocation of taxing rights concerning intangible-related income between the source country, the R&D country, the IP holding country, and the country of the ultimate parent of a group of companies. I also address the issues raised by the current allocation of taxing

---

129 See Caves (2007), p. 224.

130 See Bird (1988), p. 294, Green (1993), p. 31.

131 The R&D country could even go away empty handed if a group company resident in another jurisdiction simply registers intangible assets created by the R&D unit, thereby assuming legal ownership of the asset and subsequently receiving the intangible-related returns without compensating the R&D unit for the R&D activity. In such a situation, the R&D country can only rely on resolving this conflict by way of an agreement with the residence country of the entity which registered the intangible assets and assumed the legal ownership.

132 See Ault (2013), p. 1200.

133 See Article 12 (1) of the OECD Model Tax Convention on Income and on Capital.

134 See Articles 7 and 12 OECD Model Tax Convention on Income and on Capital, Devereux and de la Feria (2014), p. 6.

rights. In my view, it is important to distinguish between the perspectives of these countries, as they face different issues and therefore pursue different strategies. Of course, a country generally does not only serve as an R&D country, source country, or residence country. However, some countries are more suitable for one of these activities due to their economic environment such as low labour costs, an attractive infrastructure for R&D activity, or the availability of capital.

2.2.3.1 Source country perspective

As royalty payments qualifying as business expenses are generally deductible from the corporate income tax base, income and thereby tax base may be shifted from the source country to low-tax jurisdictions by way of intra-group licensing arrangements. Transfer pricing rules, to some extent, limit the scope for this type of profit shifting, as they ensure that the royalties paid to related parties are not completely out of proportion. In turn, non-existent or lax transfer pricing rules facilitate profit shifting by means of intra-group licensing arrangements.[135]

One exception to the general deductibility of royalty payments constituting business expenses is the restriction on the deduction of royalties (and interest) paid to low-taxed related corporations which has recently been implemented in Austria.[136] As of the first of March 2014, royalties paid by Austrian corporate tax residents to domestic or foreign related corporations[137] are not deductible from the Austrian corporate income tax base, in case the royalties are tax exempt in the hands of the licensor[138] or are subject to a tax rate or an actual tax burden of less than 10% due to a targeted tax relief.[139] The German trade tax which, in quantitative terms, may be as important as the corporate income tax,[140]

---

135 See Lohse and Riedel (2013).

136 See Article 12 (1)(10) KStG (Austrian corporate income tax law) as implemented by the 'Abgabenänderungsgesetz 2014' (Tax Code Amendment Act).

137 In detail, the restriction applies to payments to corporations which directly or indirectly belong to the group or which are directly or indirectly under the influence of the same shareholder or partner, respectively. Article 12 (1)(10)(b) KStG (Austrian corporate income tax law) reads: "Die empfangende Körperschaft ist unmittelbar oder mittelbar konzernzugehörig oder steht unmittelbar oder mittelbar unter dem beherrschenden Einfluss desselben Gesellschafters". For a discussion of this condition, see Peyerl (2014), pp. 575 et seq.

138 This comprises personal tax reliefs and exemptions, respectively, as well as non-personal ones such as the (partial) exemption of IP income granted under the IP Box regimes. See Article 12 (1)(10)(c) KStG (Austrian corporate income tax law), Peyerl (2014), p. 576, Trinks (2014), p. 215.

139 For further details, see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Austria, News 17 January, 2014, Peyerl (2014), p. 576, Trinks (2014), p. 215. In this regard, the beneficial owner of the royalty payment is decisive instead of the formal recipient, if both do not coincide (see Article 12 (1)(10) sentence 2 KStG (Austrian corporate income tax law), Peyerl (2014), p. 576).

140 See Spengel and Zinn (2011), p. 502.

constitutes another exception to the general deductibility of royalty payments. When determining the trade tax base, 6.25% of the royalties paid for the temporary assignment of IP rights have to be added back to the trade's profit.[141]

The conventional approach to tax royalty income at source is, however, by means of withholding taxes, although, the scope for doing so has been significantly limited in the past. First, according to the OECD Model Tax Convention on Income and on Capital, the right to tax royalty income is solely assigned to the residence country of the beneficial owner of the income.[142] However, several OECD member states have explicitly reserved the right to tax royalty taxes at source[143] by negotiating treaties which allow for source country taxation of royalty income.[144] For example, the tax treaties concluded by Brazil, China, and India generally provide for withholding tax rates of 15%, 10%, and 10% to 20%, respectively.[145]

The United Nations Model Double Taxation Convention provides for a shared allocation of the right to tax royalty income between the residence country and the source country.[146] This accounts for the perspective of developing and emerging countries as opposed to industrialised countries.[147] In particular Asian and South American countries levy withholding taxes on royalty income.[148]

Second, within the European Union, the Interest & Royalty Directive[149] under certain conditions excludes withholding taxes on intra-group royalty payments if

---

141 See Article 8 (1)(f) GewStG (German Trade Tax Law).

142 See Article 12 (1) OECD Model Tax Convention on Income and on Capital. Article 12 (2) of the Model Tax Convention defines the term 'royalties' as "payments of any kind received as a consideration for the use of, or the right to use, any copyright of literary, artistic or scientific work including cinematograph films, any patent, trade mark, design or model, plan, secret formula or process, or for information concerning industrial, commercial or scientific experience."

143 See Commentary on the OECD Model Tax Convention on Income and on Capital, Article 12, recitals 33-37.

144 See Brooks (2007) for an overview of the treaty practice of Australia and Canada (see Brooks (2007), pp. 195-197). For detailed information on the individual countries, see IBFD (2014), sections 6.3.5 of the respective country chapters.

145 See IBFD (2014), section 6.3.5 of the respective country chapters. See table 9 in Section 3.7.1 for withholding tax rates on royalties applied by the non-EU G-20 countries vis-à-vis the IP Box countries.

146 See Article 12 (2) United Nations Model Double Taxation Convention between Developed and Developing Countries.

147 See Schön (2010a), p. 91.

148 See Dutler (2013), p. 150. The treaties signed by EU member states with important emerging countries such as Brazil, Mexico, Russia, South Africa, and Turkey in most cases provide for withholding tax rates on royalty income. The treaties concluded by China and India also generally involve a shared taxing right with respect to royalty income. See table 9 in Section 3.7.1 for royalty withholding taxes levied by non-EU G20 countries on royalties paid to IP Box countries.

149 See Council Directive 2003/49/EC of 3 June 2003.

the beneficial owner of the royalties is a corporation resident in another member state. The Interest & Royalty Directives significantly limits the leeway for source taxation of royalties and facilitates profit shifting to low-tax EU member states through intra-group licensing arrangements.[150] Although multinationals may not freely relocate their intangible assets to low-tax countries due to transfer pricing or exit tax rules,[151] tax legislators increasingly struggle with the associated 'leak' in their tax system.

The Interest & Royalty Directive applies to payments between a parent company and its subsidiary as well as between two companies which are both held by the same parent company provided that a minimum participation of 25% is met in either case.[152] In addition, member states may further require a minimum holding period of 2 years to qualify for the exemption from withholding tax.[153] The directive accounts for transitional regimes which allowed some member states to levy withholding taxes at limited rates up to the end of 2014.[154]

An agreement between the European Union and Switzerland determines provisions which are very similar to those of the Interest & Royalty Directive. It applies to the royalty payments between a corporation resident in a member state of the EU and a Swiss resident corporation.[155] In contrast, comparable agreements entered into by the European Union with Andorra, Monaco, San Marino, and Liechtenstein do not apply to royalties.[156]

Although the Interest & Royalty Directive only provides for a withholding tax exemption in the case of intra-group royalty payments between EU resident companies, multinational companies may still shift profits to non-EU low-tax countries by way of re-routing them via EU member states which do not levy withholding taxes on royalty income according to their domestic tax provisions such as the Netherlands.[157] This recently received widespread attention in the

[150] See Terra and Wattel (2012), p. 777.

[151] See section 2.2.2.

[152] See Article 3 (b) of the Council Directive 2003/49/EC of 3 June 2003, Terra and Wattel (2012), pp. 768 et seq.

[153] See Article 1 (10) of the Council Directive 2003/49/EC of 3 June 2003, Terra and Wattel (2012), pp. 771 et seq.

[154] For further details, see Terra and Wattel (2012), pp. 767 et seq.

[155] See Article 15 (2) of the Agreement between the European Community and the Swiss Confederation providing for measures equivalent to those laid down in Council Directive 2003/48/EC on taxation of savings income in the form of interest payments of 26 October 2004. For further details, see Lang (2010), p. 564, Terra and Wattel (2012), pp. 782 et seq.

[156] See Lang (2010), p. 564, Terra and Wattel (2012), pp. 782 et seq.

[157] See Tax Research Platform, Corporate Taxation, Country Analysis the Netherlands, section 7.3.4.3 (version November 2014), Fuest et al. (2013), p. 312.

context of the 'Double Irish Dutch Sandwich', a tax planning structure i.a. used by Apple and Google.[158] In this regard, the Netherlands have been criticised for having created a 'leak' through which profits may be shifted to tax havens.[159] Please note that Hungary,[160] Latvia,[161] and Luxembourg[162] also do not levy a withholding tax rate on royalties paid to foreign resident companies.[163]

2.2.3.2 IP holding country perspective

An IP holding company which does not perform R&D activities with its own employees but instead commissions another party to carry out such activities on its behalf, may nevertheless be entitled to the returns from exploiting the created intangible assets. This is if it manages, directs, and supervises the R&D activities and actively manages and exploits the intangible asset.[164]

The claim of the residence country of an IP holding company ('residence country' in what follows) to tax the returns from exploiting intangible assets earned by an IP holding company is based on the fact that it provides a well-functioning capital market and legal protection of capital. In addition, the legal protection of IP rights may justify the residence country's claim to tax royalty income. In fact, the monopoly rents earned when exploiting intangible assets originate from the protection of IP rights.[165]

As already pointed out in the previous section, the OECD Model Tax Convention assigns the sole right to tax royalty income to the residence country of the

---

158 See Darby and Lernaster (2007), Fuest et al. (2013), pp. 310 and 312, Kleinbard (2011a), pp. 706 et seq., Kleinbard (2012), pp. 501 et seq., Pinkernell (2013a), Pinkernell (2012), Sandell (2012).

159 See Pinkernell (2012), p. 373, Pinkernell (2013a), p. 184.

160 See IBFD (2014), country chapter Hungary, section 6.3.3, p. 531.

161 The withholding tax was generally abolished as of 1 January 2014. Though, in case of royalties paid to companies resident in a non-EU country considered as tax haven, a 15% withholding tax rate still applies (see IBFD (2014), country chapter Latvia, section 6.3.3, p. 669, IBFD Taxation Platform, Corporate Taxation, Country Analysis Latvia, section 7.3.3.3 (version November 2014)). Among the IP Box countries, only Liechtenstein is considered a tax haven according to the 'blacklist' of tax havens (see IBFD Taxation Platform, Corporate Taxation, Country Analysis Latvia, section 7.3.4.4 (version November 2014)).

162 See IBFD (2014), country chapter Luxembourg, section 6.3.3, p. 711.

163 Sweden also does not levy a withholding tax rate on royalties but instead taxes such income by way of assessment. This involves that the net royalty income is subject to tax. If a tax treaty provides for a reduced tax rate, the gross royalty income is subject to this reduced tax rate instead (see IBFD (2014), country chapter Sweden, section 6.3.3, p. 1137).

164 See Huibregtse (2011), p. 8. For further details, see sections 2.2.2.2 and 2.3.2.1.

165 Though, the legal protection of IP rights offered in the market country is generally more important as this enables companies to exclude competitors from using the protected IP rights (see Lokken (1981), p. 242).

licensor, whereas the United Nations Model Tax Convention allows for shared taxing rights. Despite this, many tax treaties concluded between industrialised countries nevertheless involve that the taxing right be shared between the source and the residence country.[166] Within the European Union, the residence country's sole taxing right is again strengthened by the exemption of intra-group royalty payments from withholding tax according to the Interest & Royalty Directive.[167]

In addition, the OECD Model Tax Convention also assigns the right to tax capital gains arising from the disposal of intangible assets to the residence country of the alienator.[168] The UN Model Double Taxation Convention also assigns the sole taxing right to the residence country of the alienator.[169]

If a source country levies a withholding tax on royalty payments, the residence country generally provides for an option to credit the withholding tax against the recipient's corporate income tax liability or at least to deduct the withholding tax from the corporate income tax base.[170] The tax credit is generally limited to the domestic tax burden on the respective foreign income. If the domestic tax burden falls below the withholding tax paid, the withholding tax may not fully be credited giving rise to so called excess tax credits.[171]

Excess tax credits arise if the domestic tax rate is lower than the withholding tax rate, but even in cases where the domestic tax rate equals or exceeds the withholding tax rate, the fact that withholding taxes are generally levied on gross income and not on net income (involving the deduction of associated expenses) may also give rise to excess tax credits.[172]

To address the issue of excess tax credits, some countries allow for offsetting excess tax credits which arise in relation to a certain kind of income against the corporate income tax due on another category of income originating from the same country. An alternative is to offset excess tax credits against the corporate income tax due on the same category of income originating from another country.[173]

---

166 For further details, see section 2.2.3.1.

167 See section 2.2.3.1.

168 See Article 13 (5) OECD Model Tax Convention on Income and on Capital.

169 See Article 13 (6) UN Model Double Taxation Convention.

170 See Ault and Arnold (2010), p. 447, Jacobs et al. (eds.) (2011), pp. 10 et seq.

171 See Ault and Arnold (2010), pp. 447 and 454 et seq., Blanluet and Durand (2011), p. 41, Mintz and Weichenrieder (2010), p. 28. For an example see Jacobs et al. (eds.) (2011), p. 13.

172 See Mintz and Weichenrieder (2010), p. 28, Terra and Wattel (2012), pp. 757 et seq.

173 See Ault and Arnold (2010), pp. 455 et seq., Blanluet and Durand (2011), pp. 41 et seq., Jacobs (2011), p. 11.

As regards the IP Box regimes another question is whether they imply that the IP Box countries do not fully make use of their right to tax IP income. This is certainly the case if the IP Box provides full exemption of royalty income as in Malta.[174] However, most IP Box regimes only allow for a partial exemption of royalty income. Nevertheless, in cases where the source country levies a withholding tax, the application of the IP Box regime may leave the IP holding country empty-handed. As the withholding tax is applied to gross income whereas the corporate income tax applies to profits, this may even occur if the IP Box tax rate exceeds the withholding tax rate.[175] Still, as the partial exemption is first and foremost used to achieve a substantial reduction of the tax burden of royalty income vis-à-vis the corporate income tax rate, this cannot be understood as (partially) giving up the right to tax IP income.

Finally, vis-à-vis the R&D country, where the entity carrying out the R&D activity on behalf of the IP holding is residing, the IP holding country de facto also has to share the right to tax the income from exploiting the intangible asset. Transfer pricing rules require that the contract R&D provider be compensated for its services and the right to tax this income is generally assigned to the residence country of the contractor. This is discussed in detail in the subsequent section.

2.2.3.3 R&D country perspective

By providing R&D-favourable infrastructure such as public research institutions, universities, and a high-skilled labour force, the R&D country provides public goods which contribute to the success of R&D investments of companies and the value of any resulting intangible assets. Therefore, the benefit principle[176] is often perceived to support the R&D country in its claim to tax the income relating to intangible assets created in its jurisdiction.[177]

However, as the income arising from a certain activity is independent from the amount of public goods enjoyed in the course of this activity, the benefit principle is not suitable for determining which share of the intangible-related income should be attributed to the R&D country. Consequently, and although the benefit principle allows for establishing a general entitlement of the R&D country to the intangible-related income, it fails in quantifying this entitlement which would

[174] See Section 3.1.

[175] This is discussed in more detail in section 3.7.1 which addresses cross-border aspects of the IP Box regimes.

[176] See Schön (2009), pp. 75 et seq. with further references.

[177] See Boos (2003), p. 186. Kemmeren also stresses that the primary right to royalty income should be attributed to the country in which the intangible asset was created drawing on the principle of origin (see Kemmeren (2001), pp. 453 et seq.).

allow for weighing the R&D country's and the source country's claims in quantitative terms.[178]

In case intangible assets are transferred to another jurisdiction and subsequently exploited abroad, the R&D country's claim comes into conflict with the source country's claim to tax the income from the exploitation of intangible assets. If the transfer involves the sale of the asset by the R&D company, the case is usually straight-forward; that is both the OECD and the UN Model assign the exclusive right to tax the capital gains arising from the disposal of intangible assets to the residence country of the alienator.[179]

In the case of contract R&D, as pointed out in the previous section, the intangible-related returns are attributed to the principal provided it controls the R&D activity of the contractor and performs other important functions relating to maintaining and protecting the intangible.[180] However, the R&D country is assigned the right to tax the contract R&D fees.[181]

To what extent the R&D company and thereby the R&D country participate in the intangible-related income by way of the contract R&D fee mainly depends on the method applied for determining this fee. If the R&D company is reimbursed on a cost-plus basis, only a minor share of the (future) profits from exploiting the intangible asset is allocated to the R&D company and thereby the R&D country. In contrast, if the profit split method is applied to determine the contract R&D fee, the taxing rights are actually shared between the R&D country and the residence country of the company which commissioned the R&D. This indicates that countries which serve as locations for R&D activity of multinational companies have a substantial interest in promoting the application of the profit split method when it comes to determining transfer prices for contract R&D services. So far, only India has pushed in this direction. This is addressed in more detail in section 6.3.2 which discusses possible reform options from the perspective of the R&D country.

As pointed out in section 2.2.2.2, the OECD transfer pricing rules promote the application of the cost-plus method in case the R&D company performs the R&D activity on behalf of other entities without assuming the risks associated with the

178 See Schön (2009), pp. 75 et seq.

179 See Article 13 (5) OECD Model Tax Convention on Income and on Capital and Article 13 (6) UN Model Double Taxation Convention.

180 For further details, see section 2.2.2.1.

181 See Lokken (1980), p. 237, Schön (2010a), p. 93, Vann (2010), p. 331.

success or failure of the R&D investment.[182] In the opposite case, if the R&D company performs the relevant functions relating to developing, enhancing, maintaining, and protecting the intangible asset, the recent draft of chapter six of the OECD guidelines indicates that the profit split method or other methods may be more appropriate to determine the compensation of the contract R&D provider. This is also indicated by an example presented in the draft guidelines.[183]

2.2.3.4 Ultimate parent country perspective

The residence country of the ultimate parent company of a group generally only steps in when profits are distributed by the subsidiaries. All EU member states, except for Ireland, do not make use of their right to tax foreign dividend income[184] with respect to dividends from substantial participations (usually participations of at least 25% in the capital or the voting rights) but instead operate exemption systems.[185] Due to the wide-spread application of the exemption system, multinational companies may even largely avoid that those profit are taxed at all by transforming business profits into royalties by means of intra-group licensing[186] and subsequently distributing them as tax exempt dividends. This does, however, require that no withholding taxes be levied at source. As Sullivan points out "profits are stripped out of source countries, but no longer go to the real country of residence."[187] Instead, they may be accumulated in low-tax countries.

Only a few industrialised countries do not exempt foreign dividend income and apply the credit method (in particular the US). In this case, multinationals may shield foreign IP profits from taxation in the residence country of the ultimate parent by accumulating them at the level of an IP Holding.[188] This is possible as corporate income tax systems generally imply that income earned by subsidiaries is not taxed in the hands of the parents when it arises. Instead the taxation of such

[182] See OECD (2010a), recitals 2.55 and 7.41, Russo (2003), p. 172. The OECD transfer pricing guidelines specify under which condition a party is considered to have control over the risks associated with the creation and exploitation of intangible assets (see OECD (2010a), recitals 9.23, 9.24 and 9.26).

[183] See OECD (2013b), recital 80 and examples 13 and 14 on pp. 61 et seq., OECD (2014b), recital 6.57 and examples 17 and 18 on pp. 111 et seq.

[184] The OECD Model Tax Convention allows for both the exemption method (Article 23 A) and the credit method (Article 23 B).

[185] See Spengel et al. (2014), pp. A-23 et seq. table A-9. For a historical overview see Jacobs et al. (eds.) (2011), pp. 135, Kofler (2012), p. 82.

[186] See Kessler (2011), pp. 224 et seq.

[187] Sullivan (2013b), p. 12.

[188] See Blanluet and Durand (2011), p. 54, Fontana (2006), p. 259, Kessler (2011), pp. 226 et seq., Russo (2007), p. 65.

income is deferred until it is distributed.[189] The reason for this is that corporations are considered as separate tax entities.

In this context, controlled foreign company (CFC) rules[190] safeguard worldwide taxation by including dividends, interest income, royalties and other selected categories of income (often passive income), which is generated by controlled foreign subsidiaries resident in low-tax jurisdictions,[191] in the corporate income tax base at the point of time when such income is earned abroad (instead of at the point of time of the distribution of profits). CFC rules thereby overturn separate accounting. As a consequence, the income may no longer be shielded from taxation in the hands of the ultimate parent.[192] As a consequence, controlled company rules make tax planning structures in which profits are shifted to IP holding companies located in no-tax or low-tax countries less attractive. This is because such profits may no longer be shielded from the higher level of taxation in the residence country of the ultimate parent company.[193]

14 out of the 28 EU Member States operate CFC rules (Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Poland (since 2015), Portugal, Spain, Sweden, and the United Kingdom). Japan and the USA also have CFC rules in place.[194] However, in the past decade, the case law of the European Court of Justice (ECJ) significantly limited the leeway for operating CFC rules. As a reaction to the ECJ case law, with regard to intra-EU constellations, the EU member states largely limited their CFC rules to artificial arrangements.[195]

---

189 See Ault and Arnold (2010), p. 474, Dahlberg and Wiman (2013), p. 21, Lang (ed.) (2004), pp. 15 et seq., Newlon (2000), p. 217.

190 For a summary of the main features of controlled foreign company rules see Lang (ed.) (2004), pp. 17-25, Dahlberg and Wiman (2013).

191 The criterion of 'low taxation' is either specified by defining a tax rate (nominal or effective) which indicates that a jurisdiction is considered to be a low-tax jurisdiction or by drawing up a country list (so called 'black list'). See Arnold and Dibout (2001), pp. 45 et seq., Dahlberg and Wiman (2013), pp. 36 et seq., Fontana (2006), p. 260, Lang (ed.), (2004), pp. 19 et seq., Maisto and Pistone (2008), p. 508. On the German provision see Jacobs et al. (eds.) (2011), pp. 441 et seq.

192 See Ault and Arnold (2010), p. 477, Dahlberg and Wiman (2013), p. 25, Fontana (2006), pp. 259 et seq., Lang (ed.), (2004), p. 17, Maisto and Pistone (2008), p. 505, Terra and Wattel (2012), p. 219.

193 See Fuest et al. (2013), p. 317, Jacobs et al. (2011), p. 448, OECD (1996), p. 11.

194 See IBFD Corporate Tax Handbook (2014), section 10.4 of the respective country chapters. For a survey of CFC rules in EU Member States and other developed countries see Deloitte (ed.) (2014), Dahlberg and Wiman (2013), p. 25.

195 See Russo (2007), p. 179. In its 'Cadbury Schweppes' case the ECJ made clear that CFC rules must be targeted at 'wholly artificial arrangements' in order to comply with the freedom of establishment. This is discussed in detail in section 6.3.3.

2.3 IP tax planning

2.3.1 Fundamentals of IP tax planning

In a nutshell, tax planning[196] of multinationals aims at minimising the overall tax burden of the group given a certain level of profitability without violating the law.[197] The fact that intangible assets are important value drivers but lack physical substance facilitates tax planning. First, due to their intangible nature they do not have a clear geographical connection and can therefore be relocated without (non-tax) costs. Second, theoretically and all the more in practice it is very difficult to determine the value of intangible assets.[198] As comparables rarely exist, taxpayers face a considerable amount of discretion when it comes to valuing intangible assets for transfer pricing purposes. They may exploit this to their advantage. Third, as intangible assets are important value drivers, a relocation of intangibles entails that a significant share of the group's (future) profits is shifted. Tax planning with intangible assets therefore provides significant profit shifting potential in comparison to other profit shifting channels such as intra-group financing.[199]

It is helpful to differentiate between 'strategic' and 'tactical' tax planning. Strategic tax planning involves setting up a tax-efficient organisational structure. In turn, tactical tax planning takes the organisational structure of a group as a given.[200] Instead, it stretches the boundaries of transfer pricing rules by means of setting tax-efficient transfer prices for intra-group transactions.[201] This is possible because transfer pricing rules provide some discretion to determine the value of intangible assets. Strategic and tactical tax planning may also work hand

[196] In the following, I focus on tax planning which aims for a permanent reduction of the tax burden as opposed to temporary reductions of the tax burden which for example result from generous tax depreciation rules (see Russo (2007), p. 65).

[197] Non-tax factors which are relevant when choosing a location for a group's IP rights comprise strong legal protection of IP rights and skilled personnel and good infrastructure for an efficient management of IP. Skilled personnel and good infrastructure is even more decisive when it comes to the choice of a location for the creation of IP.

[198] See section 2.2.2.

[199] This in particular involves that financing companies resident in low-tax countries finance affiliates in high-tax countries with debt. In case the residence country of the ultimate parent company of the multinational group exempts foreign dividends income (as for example the case in all EU member states except Ireland, see section 2.2.3.4) and if controlled foreign company rules do not apply, the profits can be distributed without being subject to residence country tax. In contrast to transactions involving IP, intra-group debt financing has a much more limited profit shifting potential because these activities are generally associated with much lower rates of return and because comparable prices are usually available.

[200] See Boos (2003), p. 11, Gerken et al. (2000), p. 94 citing Kratz (1986), pp. 27 et seq.

[201] See Graetz and Doud (2013), p. 394, Kleinbard (2011a), p. 737.

in hand. To give an example, the long absence of statutory transfer pricing rules in Ireland[202] has facilitated tax planning models such as the 'Double Irish Dutch Sandwich'[203], a tax planning structure i.a. used by Apple and Google.[204] However, the focus of this section is on strategic tax planning.

Any tax planning considerations involving intangible assets should distinguish between the implications for the creation of intangible assets ('research phase') on the one hand and the subsequent exploitation of intangibles ('exploitation phase') on the other.[205] In the research phase, the focus should be on the tax deductions granted for R&D expenditures. The value of tax deductions increases with the corporate income tax rate. This points to deducting R&D expenditures in high-tax countries.[206] R&D tax incentives such as R&D tax credits and super deductions may further increase the value of tax deductions granted for R&D expenditures.[207] As R&D investments are generally characterised by large amounts of expenses over a long period of time, the availability of an unlimited loss carry-forward is of great importance.[208] Otherwise, tax deductions may be lost.[209]

In the exploitation phase, the tax rate applicable to income from the exploitation of intangible assets is decisive.[210] Hence, it is tax-efficient[211] to exploit intangible

---

[202] See Darby and Lemaster (2007), p. 12 with further references in footnote 38, Fuest et al. (2013), p. 311, Lohse and Riedel (2014), pp. 355 and 367, Sheppard (2009), p. 715. Within the scope of the Irish Finance Act 2010, the tax legislators have finally implemented the arm's length principle and detailed transfer pricing rules in domestic tax law (see Sandell (2012), p. 869). Before this, Irish tax law did, however, contain provisions governing special areas which made references to the arm's length principle (see Darby and Lemaster (2007), p. 15, footnote 39).

[203] See Darby and Lernaster (2007), Fuest et al. (2013), pp. 310 and 312, Kleinbard (2011a), pp. 706 e t seq., Kleinbard (2012), pp. 501 et seq., Pinkernell (2013a), Pinkernell (2012), Sandell (2012).

[204] See Darby and Lemaster (2007), p. 12 with further references in footnote 38, Fuest et al. (2013), p. 311, Sandel (2012), p. 869.

[205] See Ernst (2012), p. 64.

[206] See Marti and Ledergerber (2005), p. 191, Russo (2007), p. 174, Spengel and Elschner (2010), p. 10.

[207] See section 2.1.1.

[208] See Verlinden and Smits (2009), p. 113. Ideally, it should be possible to carry-forward losses without any time limit and without any restrictions regarding to the amount of losses which can be deducted in any future period.

[209] To counter this problem, companies may reroute other income to make use of the expenses. This points to another important feature of loss offset rules: it should be possible to offset expenses relating to one category of income (e.g. passive income) against income belonging to another category (e.g. active income).

[210] See Russo (2007), p. 171, Verlinden and Smits (2009), p. 113, Walsh (2001).

[211] The term 'tax-efficient' refers to minimising the overall effective tax burden of a group of companies all non-tax factors (including profitability) being equal.

assets in low-tax countries and to make use of beneficial tax regimes for income from intangible assets such as IP Box regimes.[212]

As pointed out by Walsh, three additional elements are required in order to maintain the low-taxation of the income achieved by exploiting intangible assets in a low-tax country. First, the income from exploiting intangible assets must be sheltered from source taxation in the country in which the income arises.[213] This points to the importance of a large network of double tax treaties which ensure no or very low withholding tax rates on royalty income.[214] In this regard, the Interest & Royalty Directive increased the attractiveness of EU member states as it prohibits levying withholding taxes on royalty payments paid to a fellow EU member state provided certain participation requirements are met.[215] Avoiding source taxation of the intangible-related income also involves that royalties are fully deductible from the income tax base in the source country.[216]

Second, the income must be sheltered from current taxation in the residence country of the parent.[217] This concerns the application of CFC rules which entail that income earned by foreign subsidiaries is taxed in the hands of the parents when it arises.[218] The ECJ's case law on CFC rules indirectly increased the location attractiveness of the EU member states as it significantly limited the scope for operating CFC rules. As a reaction to this case law, most EU countries narrowed the scope of their CFC legislation.[219]

Third, in case the income is subsequently repatriated as dividends, any additional tax burden must be avoided.[220] This calls for a location which does not levy any withholding taxes on dividends.[221] In addition, the dividends should be exempt in the residence country of the ultimate parent of the group.[222]

---

212 See Ault (2013), p. 1198, Grubert and Mutti (2009), p. 126, Karkinsky and Riedel (2012), pp. 177 et seq., Marti and Ledergerber (2005), p. 188, OECD (2013d), p. 73, Russo (2007), p. 171, Verlinden and Smits (2009), p. 113, Walsh (2001).

213 See Walsh (2001). Similar Ault (2013), p. 1198, OECD (2013d), p. 73.

214 See Russo (2007), p. 177.

215 See section 2.2.3.1.

216 See Verlinden and Smits (2009), p. 199. For details, see section 2.2.3.1.

217 See Walsh (2001). Similar Ault (2013), p. 1198, OECD (2013d), p. 73.

218 See Russo (2007), p. 177. For further details, see section 2.2.3.4.

219 This is discussed in more detail in section 6.3.3.2.

220 See Verlinden and Smits (2009), p. 116, Walsh (2001).

221 See Verlinden and Smits (2009), p. 116.

222 See Russo (2007), p. 177.

2.3.2 Disentangling the location of the creation and the location of the exploitation of intangible assets

Setting up a tax-efficient organisational structure is referred to as 'strategic tax planning'.[223] Both the tax aspects relating to the research phase and those concerning the exploitation phase should be taken into account. This calls for an integrated approach to strategic IP tax planning.[224] Many popular strategic tax planning models aim at disentangling the location of the creation and the location for the use of intangible assets. This may be necessary if the preferred locations for these two activities differ,[225] taking into account tax and non-tax factors.[226] In fact, one of the reasons why using intangible assets for tax planning purposes is so attractive is that the ownership of intangibles can be separated from the R&D activity. This allows locating the ownership with the objective of reducing tax liabilities without having to relocate the R&D activity as well.[227]

Empirical evidence suggests that R&D investment and patent ownership are indeed located in separate countries to a considerable extent. A study by Böhm et al., which exploits the European Patent Office's data on patent applications, indicates that this geographical split is to some extent driven by tax considerations. They find that countries which tax patent income at low rates[228] attract foreign-invented patents, whereas countries with high tax rates for patent income face the relocation of patents abroad.[229]

[223] See Boos (2003), p. 11, Gerken et al. (2000), p. 94 citing Kratz (1986), pp. 27 et seq.

[224] See Ernst (2011), p. 70.

[225] To give an example, the corporate income tax rates levied in France, Portugal, and Spain, which offer very generous R&D tax credits, amount to 33.99% (plus surcharges and additional contributions), 30% and 30%, respectively (see table 2 in section 3.1).

[226] See Russo (2007), p. 171 and Walsh (2001) for important non-tax factors. Criscuolo provides an overview of the literature (see Criscuolo (2009), pp. 4 et seq.).

[227] Transfer pricing rules may put limits to locating ownership of intangible assets in the tax-preferred jurisdiction. This is addressed in more detail in the following.

[228] They consider the lower of the corporate income tax rate and the IP Box tax rate.

[229] See Böhm et al. (2014).

2.3.2.1 IP holding companies and intra-group contract R&D

Strategic tax planning often involves setting up an IP holding company in a low-tax country which subsequently licenses-out valuable IP to operating affiliates of the group.[230] The tax planning strategies differ in how the location of the creation and the location of the exploitation are disentangled, whether by way of the sale of intangible assets, contract R&D or other kinds of transactions. In a second step, the IP holding licenses-out the intangibles to operating group companies.[231] In doing so, the basis for source taxation in the operating countries (e.g. where manufacturing or sales take place) is reduced, provided that the source countries do not levy withholding taxes. Ideally, in a third step, the funds accruing to the IP holding company may be distributed to the ultimate parent without being subject to any additional level of tax. This holds true if the source country does not levy any withholding tax on dividends and the parent's country of residence operates an exemption system.[232]

Figure 1 illustrates the first scenario of the sale of IP from an R&D company to an IP holding company which subsequently licenses-out the IP to an operation group company (e.g. a manufacturing company). Multinational firms may not freely transfer intangible assets between group companies without charging a price or a license fee. Transfer pricing rules generally require that the company which created the intangible assets receive a compensation for transferring the ownership of the asset. This compensation must be in line with the arm's length principle meaning that it must reflect what unrelated parties would have paid for the respective asset.[233]

---

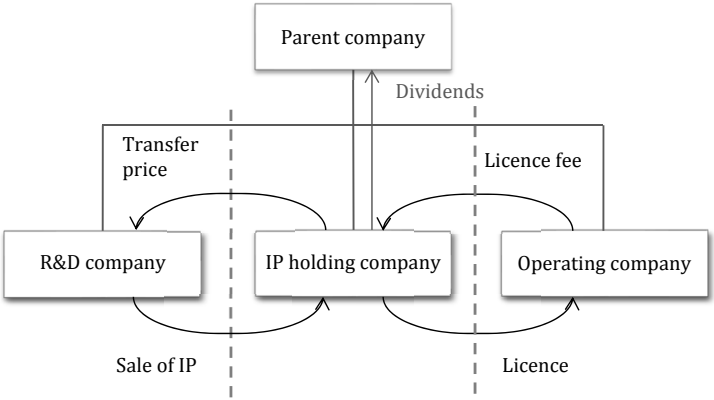
[230] See Ault (2013), p. 1198, Driscoll et al. (2013), p. 29, Ernst (2012), p. 70, Russo (2009), p. 172 et seq., Walsh (2001), Verlinden and Smits (2009), pp. 227 et seq., p. 235. For anecdotal evidence see Darby and Lernaster (2007), Pinkernell (2012), Simpson, Irish Subsidiary Lets Microsoft Slash Taxes in U.S. and Europe, *Wall Street Journal*, 7 November 2005, download: http://online.wsj.com/news/articles/SB113132761685289706.

[231] See Ernst (2012), p. 70, Graetz and Doud (2013), pp. 396 et seq., Joint Committee on Taxation (2010), p. 105. Graetz and Doud (2013) mention another way for de facto transferring an intangible asset to a low-taxed entity, namely by providing services using the intangible asset.

[232] Provided that the participation requirements are met, the EU Parent & Subsidiary Directive ensures the exemption from withholding taxes in case of dividends paid between corporations resident in the European Union. Except for Ireland, all EU Member States up until now exempt foreign dividend income from corporate income tax (see section 2.2.3.1). If dividends are subject to an extra layer of taxation, whether by way of a withholding tax on dividends or because foreign dividends are subject to residence country corporate income tax, the funds accumulated by the IP holding could instead be forwarded as debt capital to operating affiliates in order to finance investment.

[233] See section 2.2.2.2.

Figure 1: Sale of IP to an IP holding company



If this transfer price corresponds to the net present value of future income which is generated by exploiting an intangible asset, the future profits associated with the intangible are taxed in the R&D country upon the disposal of the asset. Thereby the transfer does not achieve its tax planning objective of shifting profits to low-tax countries.[234] The transfer of valuable intangible assets for profit shifting purposes only pays off if the transfer price significantly undercuts the asset's 'true' economic value. Therefore multinationals usually aim at transferring potentially valuable intangible assets to IP holding companies resident in low-tax countries at an early stage. That is when the economic benefits associated with the intangible have not yet manifested themselves and are highly uncertain. Hence a lower transfer price can be justifiable.[235] Tax legislators may counter this issue by requiring retroactive price adjustments.[236]

Transfer pricing rules also require that the conduct of the parties be consistent with the terms of the respective legal arrangement.[237] As pointed out in section 2.2.2.1, a company which does not perform the functions related to the management and exploitation of IP is not considered the beneficial owner of the IP and the IP income irrespective of the fact that it is the recipient of the IP income according to the contract. For this reason, model taxpayers may reduce

[234] See Russo (2007), p. 180, Walsh (2001). For further details on the transfer pricing issues associated with the transfer of intangible assets see section 2.2.2. For examples of tax-neutral transfers of intangible assets see Russo (2007), p. 181.

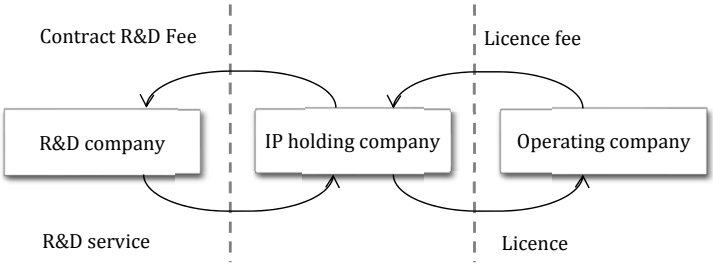
[235] See Sheppard (2012), p. 1093.

[236] This is addressed in detail in section 6.3.2 which discusses possible reform options.

[237] See OECD (2010a), recital 1.53, OECD (2013b), recital 66, OECD (2014b), recital 6.34.

the risks of the tax structure being challenged by the tax administration by aligning the tax structure with the company's business.[238]

Figure 2: Contract R&D arrangements as IP tax planning model



Alternatively, the intangible asset may be created through contract R&D on behalf of the entity which is intended to use the IP in the future.[239] This is illustrated in figure 2. In contrast to the former tax planning model, this involves that the IP holding obtains the legal ownership of the intangible assets created through the R&D activity.[240] In doing so, the multinational may avoid the transfer of intangible assets which would trigger some kind of exit taxation.[241] Existing intangible assets with a limited useful life can be integrated in this tax planning structure through a licensing arrangement between the owner of the asset and the IP holding. Over time, the existing IP will lose value. Eventually, all the income accruing to the IP holding will relate to newly created intangible assets. This will be reflected in declining royalty rates and, as a consequence, in higher shares of profits which accrue to the IP holding company.[242]

A key condition for implementing this tax planning structure successfully is that the IP holding company acting as the principal is considered the beneficial owner of the intangible-related income. In order to achieve this, it must perform the

[238] See Driscoll et al. (2013), p. 25.

[239] See Ault (2013), p. 1198, Ernst (2012), p. 71, Marti and Ledergerber (2005), pp. 192 et seq., Verlinden and Smits (2009), pp. 227 et seq.

[240] See OECD (2010a), recital 7.41, Vögele (ed.) (2011), p. 1304 recital 117.

[241] While avoiding the transfer pricing risks associated with the transfer of intangible assets, contract R&D arrangements have their own transfer pricing issues. Most notably, differing opinions of the tax administrations involved in the correct transfer price for contract R&D fees may give rise to double taxation. The current move of the Indian tax administration towards high mark-ups for contract R&D services or even the application of the profit split method instead of the cost-plus method gives rise to significant risks of double taxation (see section 6.3.2 for further details).

[242] See Marti and Ledergerber (2005), p. 193, Russo (2007), p. 181, Verlinden and Smits (2009), p. 202, Walsh (2001).

functions related to developing, enhancing, maintaining and protecting the intangible asset as well as assume the risks associated with these activities.[243] This implies that the principal has the financial and managerial capacities as well as sufficient adequately educated and skilled staff to direct and control the R&D activities performed by the R&D contractor.[244] However, as pointed out in section 2.2.2.1, it is not required that the principal perform the R&D activity through its own employees. Walsh even refers to this as 'painless tax planning'.[245]

Transfer pricing rules generally require that the group company performing the R&D activity receive a reimbursement for its services which is in line with the arm's length principle.[246] As pointed out in section 2.2.2.2, the application of the cost-plus method for determining the remuneration of the contract R&D company is generally considered appropriate as long as the contract R&D service provider only performs 'routine functions'.[247] The use of the cost-plus method generally involves that only a minor share of the intangible-related income is attributed to the R&D contractor, whereas the major share is attributed to the owner of the IP and thereby subject to low-taxation. Depending on the profitability of the investment, the application of the profit split method generally allows for attributing a larger share of the profits to the contract R&D service provider and thereby to the country in which it resides.[248]

2.3.2.2 Franchising and principal structures

Franchising models constitute a variant of the above sketched out licensing model as they go beyond the licensing of patents or trademarks by including know-how and the rendering of services (see figure 3).[249] Franchising enables the franchisee to make use of a full-fledged business model. As a consequence, franchising

[243] Joint Committee on Taxation (2010), p. 16, Russo (2007), pp. 172 et seq. For examples of tax planning structures involving contract R&D, see Joint Committee on Taxation (2010), pp. 62 et seq. and pp. 93 et seq. For further details, see section 2.2.2.

[244] See Russo (2009), pp. 175 et seq. If, in contrast to this, the R&D company makes the essential decisions with respect to the R&D activity, it is considered to assume managerial functions and the R&D company instead of the principal would be considered to be the owner of the assets. See section 2.2.2 for further details.

[245] See Walsh (2001).

[246] See section 2.2.2.

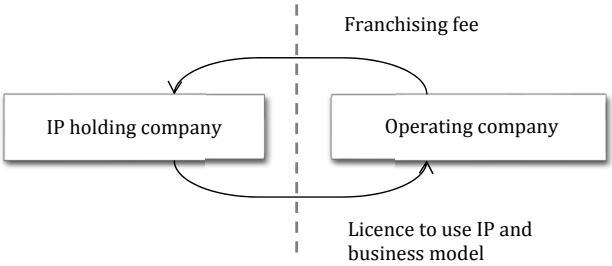
[247] Routine functions are those which can easily be outsourced to unrelated parties. See Vögele (ed.) (2011), p. 582 recital 18. Analogous to this, routine intangibles are those which can easily be replicated and can therefore be outsourced to third parties. See Vögele (ed.) (2011), p. 675 recital 138.

[248] This is discussed in detail in section 6.3.2.2.

[249] See Marti and Ledergerber (2005), p. 193, Verlinden and Smits (2009), pp. 228 et seq., Vögele (ed.) (2011), pp. 1518 et seq. recitals 582 and 584, Walsh (2001). Verlinden and Smits also point out possible down-sides of franchising models.

models have the potential to shift larger shares of the multinational's overall profits to the franchising company compared to only licensing-out single intangible assets.

Figure 3: Franchising arrangement



The so called principal or entrepreneur structures again take another step. They entail that a so called 'principal company' is set up in a low-tax country which then commissions operating affiliates to carry out the various operative business functions, including R&D, manufacturing, and sales, on the principal's risk and account (see figure 4).[250] Hence, the operative functions are carried out by low-risk entities which may, as a consequence, be compensated on a cost-plus basis reflecting the low-risk profile of their activities.[251] In turn, the risks are centralised in the hands of the principal company. By way of setting up such structures, multinational groups of companies aim at allocating the main share of the group's profit to low-tax countries where the principal company is set up.[252] However, this does not imply that such arrangements are not (also) driven by business considerations.[253] In addition, multinationals may make use of special

[250] See Andrus and Durst (2006), p. 959, Driscoll et al. (2013), p. 28, Marti and Ledergerber (2005), pp. 193 et seq., Obrist (2014), p. 814, Russo (2007), p. 77, Verlinden and Smits (2009), p. 229, Walsh (2001).

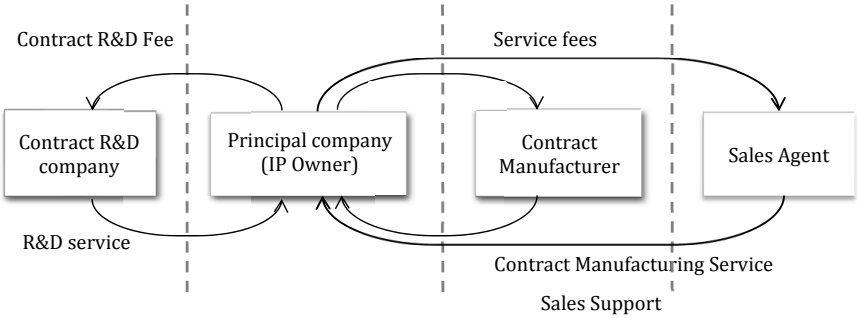
[251] See Andrus and Durst (2006), p. 959.

[252] See Widmer (2002), p. 935. As pointed out by Durst "tax professionals have become adept at designing contracts that consider specified members of commonly controlled groups, typically in low-tax countries, as 'entrepreneurs' that bear all the business risks of a set of transactions. Thereby they gain rights to the lion's share of income, with the activities in higher-tax countries designated under contract as 'limited risk' distribution or manufacturing attracting relatively little income (Durst (2010), p. 249)."

[253] See Andrus and Durst (2006), p. 692, Vögele (ed.) (2011), p. 1027 recital 1.

tax regimes targeting principal companies such as the principal company regime available in Switzerland.[254]

Figure 4: Principal/ entrepreneurship structure



Multinationals which operate principal structures risk being challenged by source countries which claim that the operative entities resident in their jurisdictions do not merely perform low-risk functions. The principal should therefore be equipped with a certain degree of economic substance in order to ensure that the arrangement is accepted by the tax administrations of the countries in which the operating group companies reside.[255]

2.3.2.3 Cost contribution/ cost sharing agreements

A similar result as in the case of setting up an IP holding which commissions out R&D may be achieved by cost contribution/ cost sharing agreements.[256] Figure 5 illustrates this tax planning model. Traditionally, such arrangements are set up in such a way that two or more parties jointly carry out and finance R&D investment and subsequently share the returns from exploiting the intangible assets.[257] As an IP tax planning model, they may involve a group company resident in a low-tax country which bears part of the R&D costs without performing any R&D activity

[254] See Eidgenössische Steuerverwaltung (2013), pp. 13 et seq., Eidgenössisches Steuerverwaltung (2014), pp. 11 et seq., Obrist (2014), p. 814, Vögele (ed.) (2011), pp. 1918 et seq. recitals 96 to 105, Widmer (2002).

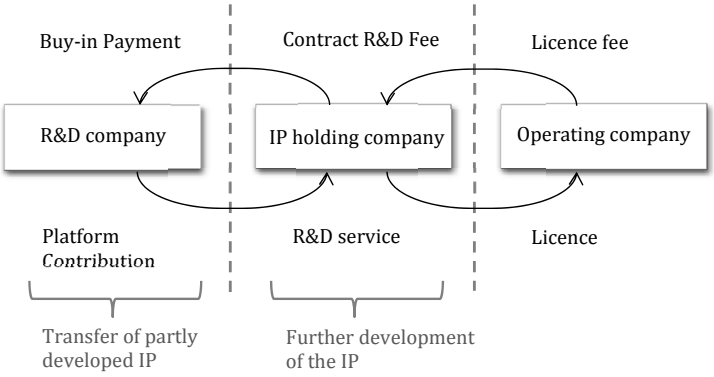
[255] See Andrus and Durst (2006), p. 961, Marti and Ledergerber (2005), p. 194.

[256] These two terms are synonyms. Whereas the US transfer pricing regulations use the term 'cost sharing agreement', the OECD transfer pricing guidelines use the term 'cost contribution agreement' (see Boos (2003), p. 139, Brauner (2010), p. 560, OECD (2010a), p. 25). In what follows, I use the term cost contribution agreement to refer to both. For an illustrating example of cost contribution agreements, see OECD (2013d), p. 74.

[257] See Brauner (2010), pp. 556 et seq. for a stylised example.

on its own.[258] In return for the funds contributed and the risks assumed, the low-taxed entity receives the exclusive right to exploit the resulting intangible assets in a defined geographical territory.[259]

Figure 5: Tax planning models entailing cost sharing/ cost contribution arrangements



In addition, cost contribution arrangements often entail that one party contributes existing IP which is then further developed within the scope of the arrangement (so called 'platform contribution'[260]).[261] In such cases, the entity contributing IP usually retains the right to exploit the IP it contributed to the agreement and any IP to be developed within the scope of the agreement in its domestic market.[262] Hence, by means of such agreements, multinational companies may (partly) allocate the ownership of intangible assets to a low-taxed affiliate without having to transfer intangible assets which are 'ready for the market'.[263] In addition, they can avoid that the income accruing to a low-taxed affiliate from exploiting the IP be reduced through license fees as cost contribution agreements usually involve that the entity which only contributes funds does not have to pay license fees to the R&D company for the use of the IP

[258] See Joint Committee on Taxation (2010), p. 21.

[259] See Darby and Lernaster (2007), p. 13, Joint Committee on Taxation (2010), pp. 21 and 111, Kleinbard (2011a), p. 736.

[260] The term 'platform contribution' generally refers to any "resource, capability, or right" that has been "developed, maintained or acquired" outside the scope of the cost contribution arrangement and which is considered to contribute to the development of intangible assets within the scope of the agreement (Joint Committee of Taxation (2010), p. 21, footnote 39 with reference to the Temporary Treasury Regulations, section 1.482-7T(c)(1)).

[261] See Brauner (2010), pp. 557 et seq.

[262] See Darby and Lernaster (2007), p. 13, Joint Committee on Taxation (2010), p. 21.

[263] See Grubert and Mutti (2009), p. 126, Quick and Day (2006), p. 16.

within its designated territory.[264] Arrangements like this have been popular among US high-tech multinationals.[265]

Transfer pricing rules require that the party contributing existing IP to the agreement be compensated by the other party to the agreement in the form of a 'buy-in payment'.[266] This requires valuing pre-existing intangible assets.[267] In this regard, the transfer pricing issues are similar to those raised by the transfer of intangible assets.[268] However, they are even more pronounced due to the fact that the arrangement takes place at a very early stage of the creation of the asset, so the valuation is fraught with an even larger degree of uncertainty.[269] In order to avoid having to pay a high buy-in payment, such arrangements may be set up at an early stage of the development process when the asset is not yet ready for the market and its value is still highly uncertain. If this pays off from the perspective of IP tax planning depends on whether the buy-in payment was priced 'correctly' or whether the taxpayer was successful in understating the value of the existing intangible vis-à-vis the tax administration.[270]

[264] See Kleinbard (2011a), p. 736, Quick and Day (2006), p. 16.

[265] See Bauer (2000), p. 455, Brauner (2010), p. 555, Darby and Kelsey (2007), p. 12, Ernst & Young (ed.) (2003), p. 3, Grubert and Mutti (2009), p. 112, Joint Committee on Taxation (2010), case studies B, E and F, pp. 64 et seq. and 93 et seq.

[266] See Brauner (2010), p. 558, Darby and Lemaster (2007), p. 13, Graetz and Doud (2013), p. 397, Joint Committee for Taxation (2010), pp. 105 and 111, Quick and Day (2006), pp. 16 et seq. For a definition of the term 'buy-in payment' see Joint Committee on Taxation (2010), p. 128.

[267] See Boos (2003), p. 143.

[268] For details, see Brauner (2010), pp. 559 et seq.

[269] See Fuest et al. (2013), p. 311.

[270] See Fuest et al. (2013), p. 311, Grubert and Mutti (2009), pp. 112 and 115, Joint Committee on Taxation (2010), p. 17.

3 Survey of IP Box Regimes in Europe*

Intellectual Property (IP) Box regimes constitute the most significant tax policy innovation in the field of IP taxation in recent years. Their main characteristic is that they offer a substantially reduced rate of corporate income tax on the income derived from IP.[271] IP Boxes first received widespread attention when the Netherlands announced the introduction of a Patent Box as of January 2007 and Belgium and Luxembourg quickly followed suit. By then, three other countries, Ireland (phased out in 2010), France, and Hungary, were already operating comparable regimes.

Up until now, 9 other European countries (Belgium, Cyprus, Italy, Liechtenstein, Malta, Portugal, Spain, the Swiss Canton of Nidwalden, and the United Kingdom (UK)) have implemented comparable regimes. In particular, the introduction of a Patent Box in the UK in 2013 received a lot of attention. At the beginning of the year 2015, Italy joined the group of European IP Box countries. This Italian provision could, however, not be accounted for in this survey.[272]

Switzerland plans to introduce a License Box on the cantonal level[273] to account for the possible repeal of the domicile and mixed company regimes which are

* This survey to a considerable extent forms part of a joint paper with Helen Miller and Christoph Spengel (see Evers et al. (2014)). The information presented corresponds to the legal status as of 30 November 2014.

271 These policies are often called Patent Box (e.g. the United Kingdom), Innovation Box (the Netherlands) or License Box (Liechtenstein and the Swiss canton of Nidwalden) regimes. For generality, I refer to them as IP Box regimes despite the fact that regimes are not generally limited to intellectual property.

272 The Italian regime involves a 50% exemption of income derived from the exploitation (via licensing-out or sale) or the direct use of a qualifying IP from corporate income tax and regional tax on productive activities (imposta regionale sulle attività produttive). Eligible types of IP comprise patents, trademarks functionally equivalent to patents (functional equivalence implies that development and maintenance of such trademarks entails R&D costs), intellectual works, processes, secret formulas, and industrial, commercial or scientific knowledge. To benefit from this partial exemption the taxpayer must carry out R&D activity. A recently published decree, which still has to be converted into law by the Italian parliament, extends the scope of eligible IP to commercial trademarks, designs, and models provided they are eligible for protection under Italian law. The IP Box is phased in over a period of three years. In 2015, companies are only entitled to a 30% exemption, increasing to 40% in 2016 and finally 50% as of 2017. See Art. 1 (37)-(45) Legge no. 190 ('Legge die Stabilità) (Stability Law) of 23 December, 2014, Decreto-Legge no. 3/2015 of 24 January 2015, Hoke (2015), IBFD Tax Research Platform, Corporate Taxation, Country Analysis Italy, section 1.9.3.1 (version December 2014), KPMG (ed.) (2014), KPMG (ed.) (2015), PricewaterhouseCoopers (ed.) (2014b).

273 See the draft of Article 24b Federal Law of 14 December 1999 concerning the harmonisation of the direct taxes of the Swiss cantons and municipalities (Bundesgesetz über die Harmonisierung der direkten Steuern der Kantone und Gemeinden) as amended by the Federal Law on tax measures to strengthen the competitiveness of the Swiss as a location for companies (Corporate Tax Act III) (Bundesgesetz über steuerliche Maßnahmen zur Stärkung der Wettbewerbsfähigkeit des Unternehmensstandorts Schweiz (Unternehmenssteuerreformgesetz III)), download:

under severe pressure from the EU.[274] The introduction of a Patent Box is also discussed in the United States.[275] Even the German Minister of Finance, who has been one of the sharpest critics of IP Box regimes,[276] is now considering the implementation of such a regime according to press reports.[277]

In contrast to this trend, in November 2010, Ireland abolished its IP regime which allowed for a full exemption of royalty income and had been in place since 1973 arguing that "the relief has not had the desired impact on innovation and R&D activity and that (…) it was not a particularly well-targeted measure providing good value for money."[278] However, the Irish Minister of Finance recently announced that he plans to put into place a 'best in class' 'knowledge development box' characterised by a competitive tax rate in order to attract foreign investment.[279]

The most prominent feature of IP Box regimes is the tax rate, which ranges from 0% in Malta, 2.5% in Cyprus and Liechtenstein to 12% in Spain and 15% in France (increased by various surcharges). The other key features that determine the generosity of the policies are: (i) the types of IP that are eligible; (ii) the scope of qualifying income; and (iii) the treatment of expenses relating to IP income.

---

http://www.news.admin.ch/NSBSubscriber/message/attachments/36627.pdf. For explanatory notes, see Eidgenössische Steuerverwaltung (2014), pp. 26 et seq. A steering committee originally proposed the introduction of a Licence Box on the federal level within the scope of the more comprehensive Corporate Tax Reform III (see Eidgenössische Steuerverwaltung (2013), p. 27, Obrist (2013), pp. 649 et seq., Obrist (2014), p. 815).

274 See Eidgenössische Steuerverwaltung (2014), pp. 25 et seq., Obrist (2013), pp. 648 et seq., Parillo (2014). For further details on the regimes, see Eidgenössische Steuerverwaltung (2001), Eidgenössische Steuerverwaltung (2013), p. 43, Eidgenössische Steuerverwaltung (2014), pp. 11 et seq., Obrist (2013), pp. 647, Obrist (2014), p. 813.

275 See Sapirie (2013), pp. 908 et seq. In June 2013, Congresswoman Allyson Schwartz introduced a bill in the House of Representatives to introduce a patent box (for the text of the bill, see https://www.congress.gov/bill/113th-congress/house-bill/2605/text). For recent reform proposals that have features similar to a Patent Box, see Sapirie (2014), pp. 1065 et seq.

276 Wolfgang Schäuble inter alia publicly criticised the regimes in the context of G-20 talks over how to prevent corporate profit shifting in July 2013. See Breidthardt, A., Germany calls on EU to ban "patent box" tax breaks, *Reuters UK*, download: http://uk.reuters.com/article/2013/07/09/uk-europe-taxes-idUKBRE9680KY20130709, Soong Johnston and Stewart (2013).

277 See Szent-Ivanyi, T., Lizenz zum Steuersparen, *Frankfurter Rundschau*, 29 July 2014, download: http://www.fr-online.de/wirtschaft/patentbox-lizenz-zum-steuersparen,1472780,27975480.html, Reiermann, C., Deutsches Schlupfloch, *Der Spiegel*, 15 September 2014, p. 72.

278 Houses of the Oireachtas, parliamentary debate 7 December 2010, written answers, download: http://debates.oireachtas.ie/dail/2010/12/07/unrevised2.pdf. For details, see Hickson (2011), p. 28, Graeth and Doud (2013), p. 374.

279 See Financial Statement of the Minister for Finance Mr. Michael Noonan of 14 October 2014, download: http://www.budget.gov.ie/Budgets/2015/FinancialStatement.aspx.

This chapter provides a comprehensive survey of the twelve IP Box regimes in place in Europe by the end of the year 2014.[280] By providing an overview of the key features of the regimes, the survey aims at identifying common practices and differences as well as trends in the design of IP Box regimes.

[280] The information on the IP Box regimes presented in this section mainly draws on the following sources: IBFD Tax Research Platform, IBFD Global Corporate Tax Handbooks (2000 - 2014), Bellingwout et al. (2012), Eynatten (2008), Merrill et al. (2012), Prendina Dutler (2013), PricewaterhouseCoopers (ed.) (2013a), Verlinden and Smits (2009); *Belgium*: Articles 205/1 to 205/4 Code des impôts sur le revenu 1992 (CIR) (Belgian Income Tax Code 1992), van den Berghe and Kelley (2008), Eynatten and Brauns (2010), Felder (2013), Warson and Claes (2010), Warson and Foriers (2008), Willems (2012); *Cyprus*: Aristotelous and Neocleous (2012), KPMG (ed.) (2012), Schaapman and Brekink (2012); *France*: Direction générale de la compétitivité de l'Industrie et des services (2012), pp. 13-18, Gelin and Bonnet (2009), Schlösser (2009); *Hungary*: Koka (2012), Vosse and Harcos (2012); *Liechtenstein*: Article 55 Gesetz vom 23. September 2010 über die Landes- und Gemeindesteuern (SteG) (Tax Law on the Federal and Municipal Taxes), Article 33 Verordnung vom 21. Dezember 2010 über die Landes- und Gemeindesteuern (SteV) (Ordinance on Federal and Municipal Taxes), Eicke (2014), Felder (2013), Hosp and Langer (2012), Steuerverwaltung Fürstentum Liechtenstein (2012), Wanger (2011); *Luxembourg*: Article 55bis Loi d'impôt sur le revenu des collectivités (LIR) (Corporate Income Tax Law), Circulaire du directeur des contributions (2009), Eynatten and Brauns (2010), Felder (2013), van Kuijk (2011), van Kuijk (2013), Mundendam and Chiarella (2008); *Malta*: Article 12 (1)(v) Maltese Income Tax Act (ITA), Cassar Torregiani (2010), Cassar Torregiani and Vroom (2012), East (2011); *the Netherlands*: Article 12b Wet op de vennootschapsbelasting 1969 (Vpb) (Corporate Income Tax Law of 1969), Eynatten and Brauns (2010), Felder (2013), Nijhof and Kloes (2010), Schellekens (2013), Sporken and Gommers (2007); *Portugal*: Article 50A Imposto sobre o Rendimento das Pessoas Colectivas (IRC) (Corporate Income Tax Code) as amended by Law 2/2014 of 16 January 2014, Neves (2013); *Spain*: Article 23 Ley del Impuesto sobre Sociedades (LIS) (Spanish Corporate Income Tax Law) as amended by Law 2/2014 of 28 September 2013, Gonzales and Salcedo (2009), Ibañez and Velasco (2013); *Swiss Canton of Nidwalden*: Article 85 (3) Gesetz über die Steuern des Kantons und der Gemeinden (StG) (Cantonal and Municipal Tax Law), Felder (2013), Hausmann et al. (2012), Kantonales Steueramt Nidwalden (2011), Schäuble and Giger (2012); *United Kingdom*: Part 8a Corporate Tax Act 2010 (CTA 2010) as amended by Finance Act 2012, Aquerreta et al. (2013), Gregory et al. (2013), HMRC (2012), Obuoforibo (2013), Scott and Ross (2012).

3.1 IP Box tax rate

As presented in table 2, statutory IP Box tax rates currently vary between 0% in Malta and 15% in France (increased by various surcharges to 16.76%).[281] Country practices differ with respect to how this tax rate is derived from the regular corporate income tax rate. Most countries either exempt part of the income or allow for a notional deduction of part of the IP income. These two approaches mainly differ in technical terms but are not substantially different.

Table 2: IP Box regimes in place in Europe – year of implementation and IP Box tax rate (%) (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Year	2007	2012	2000	2003	2011	2008	2010	2007	2014	2008	2011	2013
IP Box Rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.84	10
Main Rate	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21

Notes: The main rate includes the corporate income tax rate, surcharges levied on top of the corporate income tax rate, and other (local) income taxes.[282]

In most countries (Belgium, Cyprus, Liechtenstein, Luxembourg, the Netherlands, and the Swiss Canton of Nidwalden), the share of exempt or deducted income constitutes 80%. Malta stands out by fully exempting qualifying income. Spain recently increased the percentage of exempt income from 50% to 60% in order to

[281] In the Swiss Canton of Nidwalden, the partial exemption only concerns the cantonal profit tax (levied at a rate of 6%) but not the federal profit tax (levied at a rate of 8.5%). As the cantonal tax is deductible from the tax base of the federal profit tax, this results in a combined tax rate of approximately 8.8% under the IP Box regime.

[282] The main rate presented in table 2 includes the corporate income tax rate as well as the following surcharges and other income taxes: *Belgium*: 3% austerity surcharge levied on the corporate income tax, *France*: 3.3% social surcharge levied on the part of the corporate income tax exceeding EUR 763,000, contribution on the added value of enterprises (CAVE) levied at a rate of up to 1.5% on the turnover (in case the turnover exceeds EUR 152,500)); in contrast, the 10.7% exceptional tax surcharge levied on the corporate income tax liability which applies in case the turnover exceeds EUR 250 Mio. is disregarded, including this surcharge, the regular tax rate is 38.93% and the IP Box tax rate is 18.34%; *Luxembourg*: 7% surcharge for the employment fund levied on the corporate income tax liability, municipal business tax levied on taxable profits at a rate of 6.75% in the city of Luxembourg (rates ranging between 5.4% and 9%); *Portugal*: state surtax levied on taxable profits at a rate of up to 5% (applying to the taxable profits exceeding EUR 7.5 Mio.); *Swiss Canton Nidwalden*: cantonal profit tax at a rate of 6%, no additional tax is levied on the municipal level.

increase the attractiveness of the regime.[283] Only France explicitly stipulates a separate tax rate for IP income, namely 15%. This rate is further increased to 16.76% by surcharges and other taxes.[284] The British Patent Box is phased in over a period of four years. In 2013, companies were only entitled to 60% of the full benefit, increasing to 70%, 80% and 90% in subsequent years. The Patent Box will be fully available in 2017.[285]

In the past, some of the countries limited the benefit of the low IP Box tax rate by a cap. The most notable examples are the Dutch regime which was limited to four-times the R&D costs until 2009,[286] and the Spanish IP Box which until 2013 ceased to apply in the tax period which followed the one in which the qualifying IP income exceeded six times the costs of the IP.[287] Currently, Hungary limits the benefits of its IP Box to 50% of the overall profits.[288]

[283] This applies to license agreements signed on or after 29 September 2013. See Ibañez and Velasco (2013).

[284] A 3.3% social surcharge is levied on the part of the corporate income tax exceeding EUR 763,000. In addition, a contribution on the added value of enterprises (CAVE) is levied at a rate of up to 1.5% on the turnover (in case the turnover exceeds EUR 152,500. In contrast, the 10.7% exceptional tax surcharge levied on the corporate income tax liability, which applies in case the turnover exceeds EUR 250 Mio., is disregarded. Including this surcharge the main rate and the IP Box tax rate amount to 38.93% and to 18.34%, respectively.

[285] See HMRC (2012), p. 12 recital 1.36.

[286] See Sunderman (2007), p. 227.

[287] In this regard, the costs of the IP comprise capitalised expenses as well as expenses which have not been capitalised (see Ibañez and Velasco (2013), p. 789).

[288] See Vosse and Harcos (2012), pp. 3 et seq.

3.2 Qualifying IP

3.2.1 Types of eligible intangible assets

All European IP Box regimes apply to patents as depicted by table 3. In Belgium, France, and the UK, the scope is limited to patents, supplementary protection certificates (SPC),[289] and closely related rights.[290] The scope of the recently introduced Portuguese IP Box is similarly narrow. In addition to patents, only industrial designs and models benefit from the regime.[291]

The Dutch IP Box regime was also originally limited to patents. In 2008, the scope was widened by allowing intellectual property for which an R&D certificate[292] had been granted to benefit from the regime (which was called 'Innovation Box' from that day on to highlight the amended scope of the regime).[293] This opened the scope for intangibles which the taxpayer does not want to patent as well as other kinds of intangibles which are not patentable such as software and production processes but which nevertheless result from R&D activity that qualifies for the R&D certificate.[294]

[289] Supplementary Protection Certificates (SPC) are unique intellectual property rights which extend the duration of exclusive rights. They enter into force after the patent upon which they are based expires. SPCs are available for human or veterinary medicaments and plant protection products. For further details, see Seville (2009), pp. 158 et seq.

[290] *Belgium*: Article 205/2 (1) CIR, Warson and Claes (2010), pp. 320 et seq., Willems (2012), pp. 230; *France*: Direction générale de la compétitivité de l'Industrie et des services (2012), p. 13, IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, section 1.10.1.2 (version November 2014), Merrill (2012), p. 1667, Schlösser (2009), pp. 560 et seq.; *United Kingdom*: Article 357BB Corporate Tax Act 2010, HMRC (2012), pp. 18-21, Obuoforibo (2013), p. 484.

[291] See Article 50A (1) IRC, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.9 (version November 2014), Neves (2013).

[292] The R&D certificate is granted for development projects, technical-scientific research, analysis of the technical feasibility of own R&D projects, and process-oriented technical research. It is decisive that the R&D activity is aimed at giving rise to a technological innovation for the applicant. See NL Agency (2014), pp. 11 et seq., Baaijens and Breuer (2010), p. 2933.

[293] In order for the Dutch Innovation Box to apply, taxpayers must have developed an intangible asset themselves in relation to which either a patent was registered by the taxpayer (first 'entry ticket' to the regime) or an R&D certificate was issued to the taxpayer (second 'entry ticket') (see Article 12b (1) Vpb).

[294] See Eynatten and Brauns (2010), Felder (2013), p. 89, Hohage et al. (2010), p. 50.

Table 3: Scope of qualifying IP (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta[295]	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Patents	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPCs	✓		✓			✓						✓
Software		✓		✓	✓	✓	✓	(✓)[a]			✓	
Other Copyrights		✓		✓	✓		✓				✓	
Trademarks		✓		✓	✓	✓	✓				✓	
Designs		✓		✓[b]	✓	✓		(✓)[a]	✓[b]		✓	
Models		✓		✓[b]	✓	✓		(✓)[a]	✓[b]	✓	✓	
Utility models					✓	✓						
Secret formulas		✓		✓						✓	✓	
Secret processes				✓						✓	✓	
Domain names						✓	✓				✓	
Client lists		✓										
Know-how	(✓)[c]	✓		✓						✓[d]	✓	

Abbreviations: ✓- qualifies, SPC - supplementary protection certificate.

Notes: [a] Provided an R&D certificate has been obtained. [b] Only in the case of industrial IP. [c] If closely related to patents and special protection certificates.[296] [d] Rights relating to industrial, commercial or scientific know-how qualify for the IP Box regime. [e] In addition to patents, patentable inventions and manufacturing processes associated with patents also qualify.

As shown in table 3, other IP Boxes also apply to a wider set of intangible assets, commonly including trademarks and copyrights. Some countries include know-how, business secrets, and secret formulas or processes in the scope of the IP Box. The widest scope of eligible types of IP can be found in the Swiss canton of

[295] The Maltese regime originally applied to patents only. As of January 2012, the regime additionally applies to copyrights (Article 13 of the Budget Measures Implementation Act 2012) and trademarks (Article 22 of the Budget Measures Implementation Act 2013, retroactive application). The bills do not specify the terms copyright and trademark. To my knowledge, detailed rules in this regard are still pending. Reference can, however, be made to the Copyright Act of 14 August 2000 and the Trademarks Act of 1 January 2000 in order to define these terms.

[296] According to the Belgian General Tax Administration, know-how may qualify for the Belgian regime provided it is inherent in or inseparably linked to a patented product or a patented process. See Administration générale de la fiscalité, FAQ - Déduction pour revenus de brevets, download: http://www.fiscus.fgov.be/interfaoiffr/vragen/Deduction-pour-revenus-brevet/index.htm. The text reads: "D'autres droits de propriété intellectuelle, comme entre autres le savoir-faire, les marques, les droits d'auteur et droits de bases de données n'entrent pas en ligne de compte pour la déduction des revenus de brevets, sous réserve de ce qui est dit ci-dessous, concernant le savoir-faire inhérent ou indissociablement lié à un produit ou un procédé breveté"

Nidwalden, Cyprus, Hungary, Liechtenstein, and Luxembourg. The regimes in place in these countries are also available for designs, models, trademarks, copyrights (including software), and certain other types of intangibles.[297]

3.2.2 Ownership and registration requirements

3.2.2.1 Ownership requirements

In general, economic ownership as opposed to legal ownership is decisive in order to qualify for the IP Box regime.[298] Belgium, Cyprus, Malta, the Netherlands,[299] and Portugal require both legal and economic ownership.[300] In Hungary and Luxembourg, the taxpayer must be the exclusive owner of the IP,[301] whereas the regimes in Belgium, France and Hungary consider partial economic ownership to be sufficient.[302]

The ownership requirements of the British Patent Box are among the most flexible ones as one of the following is sufficient: legal ownership, an exclusive license, beneficial ownership of all rights relating to the IP (although the rights to protect, licence, and assign rights to the IP can be retained by another group company), and partial rights acquired by participating in a qualifying cost

[297] *Cyprus*: the scope of the regime includes the IP rights set out in the Patent Law of 1998 as amended, the Intellectual Property Rights Law of 1976 as amended and the Trademarks Law, Cap. 268 as amended (see Neocleous and Aristotelous (2012)), Ernst & Young (ed.) (2012), KPMG (ed.) (2012); *Hungary:* Koka (2012), Vosse and Harcos (2012); *Liechtenstein*: Article 55 SteG, Article 33 SteV, Felder (2013), pp. 190 et seq., Felder and Harmann (2013), pp. 74-79, Maute et al. (2013), pp. 418 et seq., Wanger (2011), pp. 180 et seq.; *Luxembourg*: Article 50bis (1) LIR, Circulaire du directeur des contributions (2009), Eynatten and Brauns (2010), van Kuijk (2013); *Malta*: Article 12 (1)(v) ITA, Cassar Torregiani and Vroom (2013), Cassar Torregiani and Vroom (2012), East (2011); *Spain*: Article 23 (1) LIS, Gonzales and Salcedo (2009), Ibañez and Velasco (2013); *Swiss Canton of Nidwalden*: Article 57a (2) StV, Felder (2013), p. 303.

[298] *France*: PricewaterhouseCoopers (ed.) (2013a); *Hungary*: Koka (2012), p. 346; *Liechtenstein*: Felder (2013), p. 213; *Luxembourg*: van Kuijk (2011), p. 141, Eynatten and Bruns (2010); *Nidwalden*: Felder (2013), pp. 304 et seq.

[299] The Dutch regime does not focus on the legal ownership but requires that the taxpayer be the one who has registered the patent (in addition to having self-developed the associated intangible asset).

[300] *Belgium*: Eynatten and Bruns (2010), Macovei and Rasch (2011), pp. 26 et seq. Opposed to this, van den Berghe and Kelley (2008), p. 375, Carr et al. (2011), p. 49; *Cyprus*: Ernst & Young (ed.) (2012); *the Netherlands*: Carr et al. (2010), p. 50, Eynatten and Bruns (2010), Felder (2013), p. 93, Macovei and Rasch (2011). For Malta and Portugal the relevant information was provided by local practitioners.

[301] *Hungary*: Koka (2012), p. 346; *Luxembourg*: Felder (2013), p. 52.

[302] *Belgium*: van den Berghe and Kelley (2008), p. 375, Warson and Claes (2010), 319; *France*: PricewaterhouseCoopers (ed.) (2013a); *Hungary*: Koka (2012), p. 346; *Liechtenstein*: Felder (2013), p. 212; *Nidwalden*: (2013), p. 304.

contribution arrangement under the condition that the UK company contributes to the development of the IP.[303]

3.2.2.2 Registration requirements

It is usually not required that the IP right be registered in the country of residence of the taxpayer. Instead, patents granted by the European Patent Office or another European Economic Area (EEA) member state's patent office generally also qualify for the IP Box regimes.[304] In some cases (e.g. in France, Malta, the Netherlands, and the United Kingdom), it is nevertheless required that the patentability and examination criteria applied by the foreign patent office be comparable to those applied by the domestic patent office.[305] Similarly, with respect to other IP rights such as trademarks and copyrights, it is also generally not necessary that they be registered with a domestic authority.

The geographical coverage of the IP right protection does not necessarily cover all the countries in which the products incorporating the respective IP are commercialised. Therefore it is of relevance whether income from the sale of goods incorporating IP and income from internal use of IP only benefit from the IP Box if the protection extends to the country in which the sales occur. For example, the Belgian and the British regimes apply to all sales income irrespective of whether or not a patent has also been granted in the country of commercialisation. Both regimes only require that the protection cover the country where the patented product is manufactured or the patented process is applied, that is in Belgium and the UK.[306]

---

303 See HMRC (2012), pp. 15 et seq., pp. 77 et seq., Obuoforibo (2013), pp. 484 et seq.

304 *Belgium*: van den Berghe and Kelley (2008), p. 375, van Stappen et al. (2007b), p. 292, Warson and Foriers (2008), p. 70; *Cyprus*: KPMG (ed.) (2012); *France*: PricewaterhouseCoopers (ed.) (2013a); *Lichtenstein*: Article 33 (1) SteV, Wanger (2011), p. 180; *the Netherlands*: Felder (2013), p. 87, Paardekooper (2006), Sunderman (2007), p. 228; *Portugal*: the legal text of the Portuguese provision does not specify the registering body (see Article 50A (1) IRC); *Spain*: the legal text of the Spanish provision does not mention any registration requirements (see Article 23 LIS); *Swiss Canton of Nidwalden*: Felder (2013), p. 303, *United Kingdom*: Article 357BB (1) CTA 2010.

305 *France*: PricewaterhouseCoopers (ed.) (2013a); *the Netherlands*: Felder (2013), p. 87, Paardekooper (2006), Sunderman (2007), p. 228; *United Kingdom*: Article 357BB (1)(c) CTA 2010, HMRC (2012), p. 5, Obuoforibo (2013), p. 484.

306 *Belgium*: Warson and Claes (2010), p. 321; *United Kingdom*: HMRC (2012), p. 33, Merrill (2012), p. 1670.

3.2.3 Development and active ownership requirements

3.2.3.1 Self-development requirement

Most regimes allow acquired in addition to self-developed IP to benefit from the IP Box treatment. However, in Luxembourg, IP acquired from directly related parties is excluded from the regime.[307] In France, acquired IP only benefits from the regime after a two-year holding period.[308]

Only Portugal strictly excludes acquired IP from its IP Box regime in all cases.[309] In turn, the regimes in place in Belgium, the Netherlands, and the UK do not generally apply to acquired IP, but offer some scope for acquired IP to benefit from the IP Box treatment. Originally, the Spanish regime also strictly applied to self-developed IP only. The self-development criterion was relaxed as part of a comprehensive reform of the regime in September 2013. Taxpayers are now solely required to bear at least 25% of the asset's development costs.[310]

Belgium and the Netherlands to some extent open the scope of their regimes to acquired IP under the condition that it is further developed.[311] In the case of the Dutch Innovation Box, an additional requirement is that the further development results in the creation of a new intangible asset which is patentable or is eligible for an R&D certificate.[312] In contrast, the Belgian regime does not require that the improvement of an acquired patent result in a new patent.[313] The IP Box benefit is, however, effectively limited to the 'added value' created by the taxpayer. This is because any remuneration paid to third parties as well as depreciation allowances relating to the acquired patent have to be deducted when determining the IP Box tax base.[314] However, the value of the acquired intangible will

[307] See Article 50bis (5) LIR, Circulaire du directeur des contributions (2009), Felder (2013), p. 55, van Kuijk (2013), p. 295, Muntendam and Chiarella (2008), p. 227. A company is considered to be a related party for the purpose of Article 50bis (5) LIR (i) if it holds at least 10% of the capital of the company receiving the IP income (parent company), (ii) if at least of 10% of its capital is held by the company receiving the IP income (subsidiary), or (iii) if another company holds at least 10% of its capital and the capital of the company receiving the IP income (sister company). Hence, only direct participations are of relevance. As a result, this restriction can be avoided by transferring IP between indirectly related parties.

[308] See Merrill et al. (2012), p. 1667, Schlösser (2009), p. 561.

[309] See Article 50A (3)(a) IRC, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.9 (version November 2014).

[310] See Article 23 (1)(a) LIS, Ibañez and Velasco (2013), p. 789, KPMG (ed.) (2013a).

[311] *Belgium*: Article 205/2 (1) CIR, van den Berghe and Kelley (2008), p. 379; *the Netherlands*: Schellekens (2013), p. 526.

[312] See Felder (2013), p. 91, Baaijens and Breuer (2010), p. 2933, Hohage et al. (2010), p. 51.

[313] See Warson and Claes (2010), p. 321.

[314] See Article 205/3 CIR, van den Berghe and Kelley (2008), p. 379.

eventually be fully depreciated and at some future point of time all of the income will relate to newly-developed intangibles.[315]

The Belgian regime furthermore requires that the R&D activity occur in a research centre forming a branch of activity of the taxpayer.[316] This research centre need not be located in Belgium.[317] The taxpayer may contract out the R&D activity, though it must supervise the R&D activities carried out by the contractor.[318]

In the United Kingdom, only patents acquired from group companies qualify under the condition that the respective group company developed the patent itself and that the acquiring taxpayer actively manages the patent subsequently.[319] This inter alia requires that the taxpayer "perform a significant amount of management activity" which implies "formulating plans and making decisions in relation to the development or exploitation of the rights."[320] Patents acquired from third parties also do not qualify for the British Patent Box in any case.

3.2.3.2 Treatment of IP derived via contract R&D or cost contribution agreements

Taxpayers may work around a strict self-development-requirement by contracting out R&D to an intra-group or external R&D service provider instead of acquiring IP from another party. If the R&D activity is performed on the risk and account of the principal, this party is generally considered to be entitled to the returns relating to the intangible asset resulting from the R&D activity.[321] This requires that the principal manage and control the party carrying out the R&D activity and that he has appropriate resources, including adequately skilled and educated staff to be able to do so. In order to determine whether this is the case in practice, the following activities are of importance: identifying areas of

315 See Niejhof and Kloes (2010), p. 71.

316 See Article 205/2 (1) CIR. This involves that the R&D centre is able to operate autonomously. For details, see Cops and de Haen (2008), Dirix (2013), p. 241, Eynatten (2008), p. 508, Eynatten and Brauns (2010), Felder (2013), pp. 20 et seq., Verlinden and Smits (2009), p. 337, Warson and Claes (2010), p. 320.

317 See van den Berghe and Kelley (2008), p. 374, Dirix (2013), p. 241, Felder (2013), p. 21, Warson and Claes (2010), p. 320.

318 See van Den Berghe and Kelley (2008), p. 376, Eynatten (2008), p. 508, Eynatten and Brauns (2010), van Stappen et al. (2007b), p. 292.

319 See Article 357BC (4) CTA 2010, HMRC (2012), p. 26, Obuoforibo (2013), p. 485.

320 See Article 537BE (2) and (3) CTA 2010.

321 For details, see section 2.2.2.1.

potentially commercially-successful R&D, planning, and budgeting.[322] In line with this, IP obtained by the taxpayer by way of contract R&D generally qualifies for the IP Box regimes, in case the principal manages the R&D activity and effectively bears the risk associated with the R&D investment.[323] The British Patent Box additionally requires that the R&D be carried out by a group company.[324]

To the best of my knowledge, contact R&D fees are not part of the scope of eligible IP income in any of the IP Box regimes.[325] Contract R&D service providers may therefore not benefit from the IP Box regimes. Instead, such income is subject to the regular tax rate.

Cost contribution agreements[326] may serve as an alternative to contract R&D arrangements where the ownership is supposed to be shared between two or more parties. IP obtained by way of a cost contribution arrangement may qualify for the IP Box if the respective ownership requirements of the regimes are met.[327]

---

322 See Russo (2007), p. 175. For the Netherlands, see Paardekooper et al. (2006), Sporken and Gommers (2006), pp. 267 et seq. Section 2.2.2 provides an overview of the requirements put forward by the OECD transfer pricing guidelines which form the basis of many domestic transfer pricing rules governing intra-group contract R&D arrangements.

323 See Luts (2014), p. 280. *Belgium*: van den Berghe and Kelley (2008), p. 376, Eynatten (2008), p. 508, van Stappen et al. (2007b), p. 292; *Liechtenstein*: Felder (2013), p. 212; *Luxembourg*: Neefs and Hoor (2009); *the Netherlands*: Schellekens (2013), p. 527, Sporken and Gommers (2006), p. 267 et seq., Sunderman (2007), p. 228; *Portugal*: Article 50A (3)(a) IRC, Neves (2013), p. 1238; *Spain*: Gonzalo and Salcedo (2009), Herbold (2009), p. 155.

324 See 357BC (4) CTA 2010, HMRC (2012), p. 24.

325 *Belgium*: Article 205/2 (2) (3) CIR, Cops and Lemaire (2009), IBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, section 1.9.7 (version November 2014), van Stappen et al. (2007b), p. 292; *the Netherlands*: Felder (2013), p. 93, Paadekooper (2006); *Spain*: Gonzalo and Salcedo (2009).

326 For details, see sections 2.2.2 and 2.3.

327 *Belgium*: Warson and Claes (2010), p. 320; *Luxembourg*: Felder (2013), p. 74; *the Netherlands*: Baaijens and Breuer (2010), p. 2933, Carr et al. (2011), p. 50, Felder (2013), pp. 108 et seq., Nijhof and Kloes (2010), p. 70, Sunderman (2007), p. 228.

3.2.3.3 Treatment of existing IP

A significant number of countries apply the IP Box to IP which was created and/or registered before the regime was implemented.[328] These are France, Hungary, Luxembourg (concerning acquired IP), Spain, the Swiss Canton of Nidwalden, and the UK. In Belgium, IP registered before the implementation of the regime also benefits if it was not used before.[329] In contrast, the regimes in place in Cyprus, Liechtenstein, the Netherlands, and Portugal only apply to IP created and registered from the day of the implementation onwards.[330]

3.2.3.4 Geographical restrictions

None of the IP Box regimes require that the R&D and innovation activity be carried out within national borders.[331] The former Irish patent income exemption used to be limited to patents which had been created in Ireland. This was challenged by the EU Commission[332] in reaction to which, as of 2008, Ireland extended the regime to income from patents for which the R&D activity had to be performed in the European Economic Area, but at the same time it limited the benefit to EUR 5 Mio.[333]

The Dutch regime also partly constitutes an exception to this. A certain degree of domestic activity is required in order to obtain the R&D certificate, which is the

---

328 *France*: Merrill et al. (2012), pp. 1667 et seq., PricewaterhouseCoopers (ed.) (2014a), p. 8; *Hungary*: Merrill et al. (2012), pp. 1667, PricewaterhouseCoopers (ed.) (2014a), p. 8; *Luxembourg*: Merrill et al. (2012), p. 1668; *Spain*: Merrill et al. (2012), pp. 1667, PricewaterhouseCoopers (ed.) (2013a); *Swiss Canton of Nidwalden*: Felder (2013), p. 303; *United Kingdom*: Merrill et al. (2012), pp. 1667. No conclusive information could be obtained with respect to Malta.

329 See van den Berghe and Kelley (2008), p. 381.

330 *Cyprus*: KPMG (ed.) (2012); *Liechtenstein*: Felder (2013), p. 194, Hosp and Langer (2010), p. 17, PricewaterhouseCoopers (ed.) (2014a), p. 9; *the Netherlands*: Merrill et al. (2012), pp. 1667; Warson and Foriers (2008), p. 72; *Portugal*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.9 (version November 2014).

331 See Graetz and Doud (2013), p. 374. In doing so, the IP Box countries avoid risking a violation of the fundamental freedoms codified in the Treaty on the Functioning of the European Union. This is discussed in more detail in section 6.1.4.

332 In March 2007, the EU Commission sent Ireland a reasoned opinion formally requesting Ireland to change its IP Box regime arguing that it is incompatible with the freedom of establishment and the free movement of services. The commission concluded this from the fact that the regime was only available if the associated research had been carried out in Ireland. In its assessment the EU Commission based its interpretation of primary European law on the ECJ's cases 'Laboratoires Fournier SA' (ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057) and 'Baxter and Others' (ECJ, 8 July 1999, C-254/97, 1999 ECR I-4809). See EU Commission Press Release IP/07/408 of 23 March 2007, download: http://europa.eu/rapid/press-release_IP-07-408_en.htm?locale=en.

333 See Graetz and Doud (2013), pp. 366 et seq., IBFD Tax Handbook (2014), country chapter Ireland, section 1.3.2, p. 582.

second entry ticket to the Dutch Innovation Box. First, the R&D certificate is only granted to companies which withhold Dutch wage tax and social security contributions in relation to R&D employees. As a result, the granting of an R&D declaration de facto depends on the presence of employees in the Netherlands. This limits the leeway for performing research outside the Netherlands. In fact, R&D activity performed only abroad does not qualify for the R&D certificate.[334] Second, if less than 50% of the R&D activity[335] is performed in the Netherlands the taxpayer must demonstrate that he coordinates and manages the R&D activities performed abroad. Companies which solely perform IP management activities, however, may not obtain an R&D certificate.[336] In addition, R&D carried out outside the European Union in full does not qualify for the R&D certificate in general.[337]

Linking the Innovation Box to the R&D certificate could be seen as a way of strengthening the link between the beneficial tax treatment and domestic R&D activity. As Schellekens points out, the link between the Innovation Box and the R&D certificate was partly established due to budgetary reasons. This link might, however, be challenged by the ECJ in the future.[338] Similarly, the 'research centre'-requirement of the Belgian regime was implemented with the aim of promoting R&D and innovation in Belgium.[339] However, this is counteracted by the fact that the research centre may be located abroad.[340]

[334] See Schellekens (2013), p. 528.

[335] This is, however, a qualitative criterion. See Felder (2013), p. 90.

[336] See Felder (2013), p. 90 with further references, Hohage et al. (2010), p. 51, Nijhof and Kloes (2010), p. 70, Schellekens (2013).

[337] See NL Agency (2014), p. 20.

[338] See Mang (2015), Schellekens (2013), p. 529.

[339] See van den Berghe and Kelley (2008), p. 375.

[340] See van den Berghe and Kelley (2008), p. 374, Dirix (2013), p. 241, Warson and Claes (2010), p. 320. This might be due to concerns that a restriction to IP generated in a Belgian research centre might violate the freedom of establishment.

3.3 IP Box tax base

3.3.1 Qualifying income

3.3.1.1 Types of eligible IP income

Regimes differ in the types of income that qualify for the IP Box treatment as depicted by table 4.[341] Royalty income is eligible in all 12 countries. In Belgium, Cyprus, Luxembourg, Portugal, and the UK, damages for infringements and other compensations additionally benefit from the IP Box treatment.[342] With the exception of Belgium, all other countries furthermore allow capital gains from the disposal of qualifying IP at least in certain circumstances to benefit from the IP

[341] *Belgium*: Felder (2013), pp. 33-36 with further references, pp. 114 et seq., Warson and Foriers (2008), p. 74; *Cyprus*: Aristotelous and Neocleous (2012), IBFD Tax Research Platform, Corporate Taxation, Country Analysis Cyprus, section 1.9 (version November 2014); *France*: Direction générale de la compétitivité de l'Industrie et des services (2012), pp. 13 and 17, Ernst & Young (ed.) (2013), p. 62, Merrill et al. (2012), p. 1667, PricewaterhouseCoopers (ed.) (2013a), p. 8, Schlösser (2009), p. 561; *Hungary*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Hungary, sections 1.4.6 and 1.7.5 (version November 2014), Eynatten and Schaffer (2013), p. 13, PricewaterhouseCoopers (ed.) (2013a); *Liechtenstein*: Felder, (2013), p. 296 et seq., IBFD Tax Handbook (2014), section 1.3.3, p. 685, Wanger (ed.) (2011), p. 181; *Luxembourg*: Article 50bis LIR, Felder, (2013), pp. 68-70 with further references, pp. 114 et seq., IBFD Tax Research Platform, Corporate Taxation, Country Analysis Luxembourg, section 1.2.3 (version November 2014), Muntendam and Chiarella (2008), p. 225 et seq.; *Malta*: Article 12 (1)(v) ITA, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Malta, Section 1.2.3 (version November 2014); *the Netherlands*: Felder (2013), pp. 102-105 with further references, pp. 114 et seq., Merrill et al. (2012), p. 1669, Schellekens (2013), *Portugal*: Article 50A (1) and (2) IRC, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.9 (version November 2014), Neves (2013), p. 1238; *Spain*: Article 23 (1) LIS, Gonzalo and Salcedo (2009), Ibañez and Velasco (2013), p. 789; *Swiss Canton of Nidwalden*: Felder, (2013), pp. 307-309, 338; *United Kingdom:* Felder (2013), pp. 114 et seq., HMRC (2012), pp. 9 et seq.

[342] *Luxembourg*: Circulaire du directeur des contributions (2009), p. 15, Felder (2013), p. 69; *Portugal*: Article 50A (2) IRC, Neves (2013), p. 1238; *United Kingdom*: Article 357CC (1)(d) and (8) Corporate Tax Act 2010, IBFD Tax Research Platform, Corporate Taxation, Country Analysis United Kingdom, section 12.3.2.1 (version December 2014). No conclusive assessment could be reached for France, Hungary, Liechtenstein, Malta, the Netherlands, and Spain. According to Felder, the Dutch, the Liechtenstein and the Swiss (Canton of Nidwalden) provisions can be interpreted as including damages for infringements although such income is not explicitly mentioned (see Felder (2013), pp. 103, 230, 308 et seq.). *Malta*: The Maltese provision applies to "royalties, advances and similar income derived from (i) patents in respect of inventions, and (ii) copyright (Article 12 (1)(v) ITA) which might include compensations for infringements. *Spain*: The Spanish regime applies to "rentas procedentes de la cesión del derecho de uso o de explotación de patentes, dibujos o modelos, planos, fórmulas o procedimientos secretos, de derechos sobre informaciones relativas a experiencias industriales, comerciales o científica (Article 23 (1) LIS)." It is unclear whether this comprises compensations for infringements.

Box treatment.[343] In Hungary, capital gains from the sale of IP are even fully tax-exempt since 2012.[344]

Table 4: Scope of qualifying income (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Royalties	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Compensations	✓	✓	*	*	*	✓	*	*	✓	*	*	✓
Capital gains		✓	✓[a]	✓[b]	✓	✓	✓	✓	✓	✓[a]	✓	✓
Sales income	✓	*		*	✓		*	✓				✓
Notional royalties	✓	*		*	✓	(✓)[c]	*	✓				✓

Abbreviations: ✓- qualifies.

Notes: * No conclusive assessment could be reached as the wording of the respective tax provisions governing the IP Box regimes does not explicitly address these categories of income. For details, see footnotes 349 and 354. [a] Capital gains from the disposal of qualifying IP rights benefit from the IP Box regime in case they are transferred to an unrelated party as defined by Article 42 of the Spanish Commercial Code. [b] In Hungary, capital gains from the sale of IP are even fully tax exempt. [c] In Luxembourg, notional royalty income only qualifies with respect to self-developed patents. In contrast, notional royalty income relating to patents which have been acquired or to other IP rights, whether self-developed or acquired, do not qualify.

A minority of IP Box regimes is also available in case eligible IP is used internally. In this regard it is helpful to differentiate two categories of income relating to internal use:[345] (i) income from the sale of products incorporating IP ('sales income') and (ii) 'notional royalty income'.

Sales income may comprise[346] the proceeds from (i) the sale of an item in respect to which a qualifying IP right held by the company was granted (so called 'qualifying item'), (ii) the sale of items incorporating one or more qualifying items, and (iii) items that are wholly or mainly designed to be incorporated into a

[343] In Malta, the exemption of capital gains arising from the disposal of copyrights, patents, trademarks, and trade names is not covered within the scope of the IP Box regime but by Article 5 (9) of the Income Tax Act. According to Article 5 (9) ITA, capital assets (which includes copyrights, patents, trademarks and trade names) falling under the capital gains provisions may be transferred tax-free within a group of companies (see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Malta, section 8.4 (version November 2014)).

[344] See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Hungary, section 1.7.5 (version November 2014).

[345] In doing so, I draw on the rules governing the UK Patent Box.

[346] In doing so, I follow the classification applied by the UK Patent Box. See Article 357CC (2) CTA 2010, HMRC (2012), p. 33 recital 3.22.

qualifying item or an item incorporating a qualifying item[347]. In the case of a patent, the term 'qualifying item' refers to the invention specified in the patent.[348] Sales income benefits from the regimes in place in Belgium, Liechtenstein the Netherlands, and the United Kingdom.[349]

The UK policy does not require identifying an arm's length remuneration with respect to sales income relating to individual patents. Instead, all sales income relating to a good or service that embeds a qualifying patent may be attributable to the IP Box as qualifying income.[350] To give an example, the entire sale proceeds of a car will qualify as long as it incorporates at least one patented item.[351] This makes the scope of the regime very wide. In contrast to the UK regime, the Dutch Innovation Box explicitly excludes income which only relates to patents in a minor way. It is required that at least 30% of the income can be attributed directly to patents.[352]

In turn, notional royalty income typically arises when qualifying IP such as patented processes, software, or know-how are used by the taxpayer in carrying

[347] The following example depicted in the technical notes issued for the UK Patent Box illustrates the latter two categories. "A patented printer cartridge is designed to be inserted in a printer and once installed not to be removed until empty, at which point it will be replaced. The printer cartridge will be incorporated in the printer. Income from the sale of a printer including the printer cartridge (whether the cartridge is installed or included separately in the box with the printer as part of a single package) can therefore qualify as RIPI, even if there were no patent over the printer itself. Conversely, if the printer includes a patented invention and the printer cartridge does not, then sales of the cartridges on their own will qualify as items wholly or mainly designed to be incorporated into the printer (HMRC (2012), p. 34)."

[348] See HMRC (2012), p. 33 recital 3.25.

[349] *Belgium*: Article 205/2 (2)(1) indent 2 CIR; *Lichtenstein*: Article 55 (3) SteG, *Liechtenstein*: Felder suggests interpreting Article 55 SteG to comprise sales income; *the Netherlands*: Art 12b Vpb; *France*: sales income is excluded from the regime, see Direction générale de la compétitivité de l'Industrie et des services (2012), p. 13; *Portugal*: Article 50A (1) IRC refers to income from contracts governing the disposal and licensing-out of IP and thereby excludes sales income; *Spain*: sales income is excluded from the regime, see Article 23 (1) LIS, Schäuble and Giger (2010), p. 714; *Swiss Canton of Nidwalden*: Article 57a StV explicitly excludes internal use and thereby sales income from the scope of the regime (see Felder (2013), p. 307); *United Kingdom*: Article 357CC (1) CTA 2010. No conclusive evidence could be obtained for Cyprus, Hungary, and Malta. *Malta*: The Maltese provision refers to 'royalties, advances, and similar income derived from patents and copyright' (Article 12 (1)(v) ITA) which might cover sales income. A report prepared by PwC indicates that 'embedded royalties' do not qualify in Hungary, Malta, and Portugal without specifying this term further (see PricewaterhouseCoopers (ed.) (2014a), pp. 8 et seq.).

[350] The final Patent Box tax base is, however, narrower than this as a return to routine functions and to marketing assets has to be deducted. This is discussed in detail in section 3.3.2.2.

[351] See Gregory et al. (2013), p. 112, HMRC (2011), p. 30.

[352] See Article 12b (2) Vpb, IBFD Tax Research Platform, Corporate Taxation, Country Analysis the Netherlands, section 1.9.7. (version November 2014), Bal and Offermanns (2012), p. 170, Nijhof and Kloes (2010), p. 70, Schellekens (2013), p. 526, Sporken and Gommers (2007), p. 199 .

out its business such as the production of goods or the rendering of services.[353] In contrast to 'sales income' this concerns cases where the eligible IP is not embedded in goods sold. Five countries (Belgium, Lichtenstein, Luxembourg, Netherlands, and the UK) explicitly include notional royalty income in the scope of their IP Box regimes.[354]

The amount of notional royalty from internal use is usually ascertained by drawing on the arm's length principle and determining the royalty the taxpayer would have received from an unrelated party had it licensed out the IP.[355] The UK policy stipulates that the taxpayer assumes the opposite perspective. Here, the notional royalty is the royalty the taxpayer would have been charged by an unrelated party had it licensed the IP.[356]

[353] The following example depicted in the technical notes issued for the UK Patent Box may help to illustrate this: "An airline company may develop a flight simulator using one or more patented components. The simulator is used both to train its own pilots, and also generates income by providing a training facility to pilots of other airlines. The airline's own ticket sales and the direct income from training facility provision are both non-RIPI income that for the purposes of the notional royalty provision will be 'IP- derived income' (HMRC (2012), p. 39)."

[354] *Belgium*: according to Felder, Article 205/2 (2)(1) indent 2 can be read as comprising notional royalty income from internal use (see Felder (2013), p. 36); *Lichtenstein*: Article 55 (3) SteG, Felder (2013), p. 233, Maute et al. (2013), p. 421; *Luxembourg*: Article 50bis (2) LIR, Felder (2013), p. 68; *the Netherlands*: Art 12b Vpb, Felder (2013), p. 102; *France*: notional royalty income is excluded from the regime, see Direction générale de la compétitivité de l'Industrie et des services (2012), p. 13; *Portugal*: Article 50A (1) IRC refers to income from contracts governing the disposal and licensing-out of IP and thereby excludes notional royalty income; *Spain*: notional royalty income is excluded from the regime, see Article 23 (1) LIS, Schäuble and Giger (2010), p. 714; *Swiss Canton of Nidwalden*: Article 57a StV explicitly excludes internal use and thereby notional royalty income from the scope of the regime (see Felder (2013), pp. 309 et seq., Maute et al. (2013), p. 421); *United Kingdom*: Article 357CC (1) CTA 2010, HMRC (2012), p. 33. No conclusive evidence could be obtained for Cyprus, Hungary, and Malta. The Maltese provision refers to 'royalties, advances, and similar income derived from patents and copyright' (Article 12 (1)(v) ITA); the phrase 'similar income' might cover notional royalty income from internal use. A report prepared by PwC indicates that 'embedded royalties' do not qualify in Hungary, Malta, and Portugal without specifying this term further (see PricewaterhouseCoopers (ed.) (2014a), pp. 8 et seq.).

[355] *Belgium*: Article 205/2 (2)(1) indent 2 CIR, van den Berghe and Kelley (2008), pp. 377 et seq., van Stappen et al. (2007b), pp. 293 et seq.; *Liechtenstein*: Article 55 (3) SteG; *Luxembourg*: Article 50bis (2) LIR, Muntendam and Chiarella (2008), p. 226.

[356] See Article 357CD (5) and (6) CTA 2010, HMRC (2012), p. 39.

3.3.1.2 Treatment of income from mixed sources

A practical issue is the treatment of income from mixed sources. Such payments are related to different intangibles. Some of those may qualify for the IP Box whereas others may not. This makes it difficult to determine IP Box income if the underlying contracts do not specify how the payment is to be split up between the various assets. The application of the Spanish IP Box is even completely excluded if any remuneration for accessory services not constituting qualifying income is not disclosed separately.[357] In contrast, the regimes in place in Belgium, Liechtenstein, Luxembourg, and the Swiss Canton of Nidwalden generally apply in such situations but require that the income be split-up in order to identify the income relating to qualifying IP.[358]

The scope of the Belgian Patent Income Deduction also includes the remuneration for know-how which is inherent in or inseparably linked to a patented product or a patented process, although know-how does not qualify for the Belgian regime on a stand-alone basis.[359] Similarly, under the British Patent Box, royalties relating to rights over non-patented items do not have to be split up but fully qualify provided "the purpose of granting those rights is the same as for the rights over the qualifying IP."[360] Several rights are considered to be granted for the same purpose if a license grants multiple rights required to produce or sell a single product. In contrast to this, several rights are not considered to be granted for the same purpose if they enable the sale or manufacture of multiple products.[361] In this case the income must be split up.[362]

---

[357] *Portugal*: Article 50A (4) IRC; *Spain*: Article 23 (1)(d) LIS, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Spain, section 1.9.1.1.6 (version November 2014).

[358] *Belgium*: Article 205/2 (2) (2) CIR, Cops and Lemaire (2009), Eynatten and Brauns (2010), p. 1, van den Berghe and Kelley (2008), p. 377; *Liechtenstein*: Felder (2013), pp. 236 and 297; *Luxembourg*: Circulaire du directeur des contributions (2009), Felder (2013), p. 72; *the Netherlands*: Vosse and Harcos (2012), p. 4, *Swiss Canton of Nidwalden*: Felder (2013), p. 310.

[359] See Administration générale de la fiscalité, FAQ - Déduction pour revenus de brevets, download: http://www.fiscus.fgov.be/interfaoiffr/vragen/Deduction-pour-revenus-brevet/index.htm (the text reads: "La rémunération pour savoir-faire inhérent ou indissociablement lié au brevet, qui est incluse dans le prix de vente, entre également en ligne de compte pour la déduction pour brevet."), Felder (2013), p. 15, Warson and Claes (2010), pp. 322 et seq.

[360] HMRC (2012), p. 36. See also Article 357CC (6)(c) CTA 2010. The following example depicted in the technical notes issued for the UK Patent Box may help to illustrate this: "The owner of the patent rights over a silicon chip licenses others to manufacture and sell products containing the chip. At the same time it licenses them to use designs, trademarks, know-how and technical information to allow them to manufacture and market those products effectively (HMRC (2012), p. 36)."

[361] See HMRC (2012), p. 36.

[362] See Article 357CF CTA 2010.

3.3.2 Determination of the tax base

The generosity of the IP Box regimes is significantly influenced by the way expenses relating to qualifying income are treated. This is of importance as tax deductions act to shield income from taxation. The value of the tax shield is determined by the tax rate at which the expenses are deductible.

There are different treatments with respect to current expenses, such as improvement, financing or IP management expenses, and historical R&D expenses incurred in the creation of the intangible asset. In both cases, a key factor is whether expenses are only deductible against IP Box income, or can be used to create a tax shield against regularly-taxed income.

3.3.2.1 Treatment of current expenses

With respect to the treatment of current expenses, IP Boxes take either a 'gross' or 'net approach'. Under the 'gross approach' current expenses are deductible from non-IP income, which is taxed at the regular corporate tax rate. This is associated with an asymmetric treatment of IP income and IP expenses. As long as the taxpayer has sufficient ordinarily-taxed non-IP income from which to deduct the IP expenses, this can produce a substantial tax advantage. Belgium,[363] Hungary, and Portugal adopt this approach (see table 5).[364] Though, Hungary effectively limits this tax advantage by restricting the 50% notional deduction of IP income under its IP Box to 50% of the of the company's overall profit.[365] Furthermore, in Belgium, in the case of acquired IP, the amount of the notional patent income deduction is reduced by depreciation allowances.[366]

On the other hand, there is the 'net income approach', which most of the European IP Box countries apply. It determines that current expenses have to be allocated to IP income and are thereby deducted at the lower IP Box rate.[367] This

[363] The provisions governing the Belgian patent income deduction stipulate that depreciation allowances for acquired IP, which benefits provided the taxpayer has further developed and improved the IP, be deducted from IP income when determining the amount of the notional deduction of patent income (see Article 205/3 (1) indent 1 CIR, Warson and Forniers (2008), p. 74).

[364] *Belgium*: Article 205/2 (1) CIR, Eynatten (2008), pp. 511, 515 et seq., Warson and Foriers (2008), p. 73; *Hungary*: Vosse and Harcos (2012), p. 3; *Portugal*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis, section 1.9.9 (version November 2014).

[365] See Vosse and Harcos (2012), pp. 3 et seq.

[366] See Article 205/3 (1) indent 1 CIR, Warson and Foriers (2008), p. 74.

[367] *Cyprus*: Schaapman and Brekink (2012), *France*: Direction générale de la compétitivité de l'Industrie et des services (2012), p. 14, Gelin and Bonnet (2009), Merrill et al. (2012), p. 1667, Schlösser (2009); *Liechtenstein*: Felder (2013), p. 215, Hosp and Langer (2012), Wanger (2011), pp. 180 et seq.; *Luxembourg*: Article 50bis recital 2 LIR, van Kuijk (2013), p. 293, Mundendam and Chiarella (2008), p. 224; *Malta*: East (2011); *the Netherlands*: IBFD Tax Research Platform, Corporate Taxation, Country

ensures that income and expenses are treated symmetrically. Hence, the tax value of the tax shield associated with these deductions depends on the lower IP Box tax rate. The UK applies a net approach for most expenses but effectively allows financing expenses to be deducted from non-patent income.[368]

Table 5: Determination of the IP Box tax base (2014)

	Treatment of current expenses	Treatment of R&D expenses incurred in the past
Belgium	Gross income	No recapture
Cyprus	Net income	Capitalisation of development costs according to the regular tax system
France	Net income	No recapture
Hungary	Gross income	No recapture
Liechtenstein	Net income	Recapture - threshold mechanism
Luxembourg	Net income	Recapture - capitalisation of development costs
Malta	Not deductible	Income not eligible if R&D costs have been deducted previously
Netherlands	Net income	Recapture - threshold mechanism
Portugal	Gross income	Capitalisation of development costs according to the regular tax system
Spain	Net income/ Gross income [a]	No recapture
Switzerland, Nidwalden	Net income	No recapture
United Kingdom	Net income before interest	Allocated to patent income on an overall basis

Notes: [a] In the case of self-developed intangibles not accounted for on the balance sheet, the IP Box tax base is irrefutably assumed to correspond to 80% of the IP income. As a consequence, expenses relating to such income are deductible from non-IP income.

It is interesting to note that Spain moved from a 'gross-income' to a 'net-income approach' as part of the comprehensive reform of the IP Box implemented in September 2013 (Law 14/2013 of 27 September 2013). However, this change of system does not apply to income relating to self-developed intangibles which have not been accounted for on the balance sheet. With respect to income from

Analysis the Netherlands, section 1.9.7 (version November 2014), Schellekens (2013), p. 527; *Portugal*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, section 1.9.9 (version November 2014), Neves (2013), p. 1238; *Spain*: Article 23 (1) and (2) LIS, Ibañez and Velasco (2013), p. 789, KPMG (ed.) (2013a); *Swiss Canton of Nidwalden*: Article 85 StG, Felder (2013), p. 305, Kantonales Steueramt Nidwalden (2011); *United Kingdom*: Article 357C (1) CTA 2010, Aquerreta et al. (2013), p. 968, HMRC (2012), p. 29, Gregory et al. (2013), p. 113, Obuoforibo (2013), pp. 485 et seq.

[368] See Article 357CG (3) CTA 2010, Gregory et al. (2013), p. 114, HMRC (2012), p. 43.

such intangibles, the IP Box tax base is irrefutably assumed to correspond to 80% of the IP income.[369] This has two implications. First, current expenses do not have to be allocated to IP income as under the 'gross income approach'. Second, only 80% of the IP income is taken as a basis when determining the IP income which may be deducted from the corporate income tax base under the IP Box regime. This corresponds to an effective nominal tax rate of 15.6%[370] for income from self-developed intangibles which are not capitalised.

Finally, in Malta, the IP Box treatment is only granted on the condition that all associated expenses (current and past) are not deducted.[371] Hence, both IP income and IP expenses are disregarded when the corporate income tax base is determined.

3.3.2.2 The British Patent Box's approach to determining the tax base

Under the UK Patent Box, the taxpayer is not required to determine the actual profits associated with individual patents.[372] Instead, the tax base of the UK Patent Box is determined in a three-step procedure.[373] The starting point (step one) is the share of the company's overall profit which relates to the ratio of qualifying income to the overall gross income ('relevant IP profit'). Alternatively, the taxpayer may choose to determine the relevant IP profit by allocating all expenditures incurred on a 'just and reasonable' basis to either qualifying IP income or non-qualifying income (so called 'streaming approach').[374] In both cases, financing income and expenses are disregarded and are taxed and deducted, respectively, at the regular tax rate.[375]

The first approach is less exact than the second one, as it assumes that activities resulting in qualifying income and other kinds of activities of the taxpayer, which

---

[369] See Article 23 (2)(2) LIS, Ibañez and Velasco (2013), IBFD Tax Research Platform, Corporate Taxation, Country Analysis, section 1.9.9 (version November 2014), PricewaterhouseCoopers (ed.) (2013b). These changes apply to license agreements signed on or after 29 September 2013.

[370] 80% of the IP income is subject to the 60% notional deduction. Hence, taking the corporate income tax rate of 30% as a basis the effective tax rate amounts to 15.6%.

[371] See East (2011).

[372] Notional royalty income from internal use constitutes the only exception to this. Such income must be calculated drawing on the arm's length principle (see Article 357CD (5) and (6) CTA 2010, HMRC (2012), p. 39).

[373] See Article 357C (1) CTA 2010. For an overview and further details, see Aquerreta et al. (2013), p. 969, Gregory et al. (2013), pp. 112-114, HMRC (2012), pp. 28 et seq., Obuoforibo (2013), pp. 485-488.

[374] See Article 357D CTA 2010, Gregory et al. (2013), p. 114, HMRC (2012), pp. 59-68, Obuoforibo (2013), p. 488.

[375] See Articles 357CA (2) and 357CG (3) and (4) CTA 2010, Gregory et al. (2013), p. 114, HMRC (2012), p. 10.

result in non-patent income, are equally profitable. This might not necessarily hold true in practice. Yet, allocating each item of expenditures to either qualifying or non-qualifying income as required by the 'streaming approach' is probably more complex.[376]

The relevant IP profit derived by this first step still comprises profits which do not relate to patents. The example of the proceeds from the sale of a car illustrates this. They constitute 'income from the sale of items incorporating a qualifying item' (a qualifying item is one in relation to which a patent is granted), and thereby fully qualify for the Patent Box. In this case, in addition to profits directly relating to patents, the qualifying profits derived from step one comprise profits from routine functions (e.g. manufacturing and general administration) and profits from non-qualifying IP such as trademarks.[377] These profits are eliminated from the Patent Box tax base by step two and three described in the following.

The second step involves a deduction of the return to routine functions in order to derive the 'qualifying residual profit'. This is the profit a business is expected to make if it does not have access to unique IP. The return to routine functions is set at 10% of routine expenses. These exclude financing expenses and R&D expenses (such that firms are able to benefit fully from any R&D tax credits they are eligible for[378]).[379]

Third, a return to marketing assets is deducted to account for the use of marketing intangibles (e.g. trademarks) that are explicitly excluded from the regime. The value of the deduction should be set as the arm's length notional marketing royalty.[380] This is at the discretion of the taxpayer but must reflect the actual facts and circumstances and must meet the requirements of the arm's length principle.[381] It nevertheless constitutes a leeway for shifting profits into the Patent Box. Please note that the so called 'small claims' benefit from a simplified procedure with respect to calculating the marketing return.[382]

---

376 See Aquerreta et al. (2013), p. 968.

377 See Obuoforibo (2013), p. 487.

378 See Aquerreta et al. (2013), p. 967, Gregory et al. (2013), p. 113, Scott and Ross (2013), p. 56.

379 See Article 357CI CTA 2010, HMRC (2012), pp. 11, 46 et seq.

380 See Article 357CN to 357CO CTA 2010.

381 See Gregory et al. (2013), p. 113, HMRC (2012), pp. 50 set seq., Obuoforibo (2013), pp. 487 et seq.

382 For small claims, the taxpayer may simply deduct 25% of the qualifying residual profit as the marketing royalty. The small claims treatment is available if the qualifying residual profit is below GPB 1 Mio. as well as if the qualifying residual profits are below GBP 3 Mio. and certain further requirements are met (see Article 357CL and 375 CM CTA 2010, HMRC (2012), pp. 48-50, Obuoforibo (2013), pp. 487).

In cases where the deductions for routine functions and marketing assets do not fully capture the returns to non-patent-related activities, the UK regime can be substantially broader in the scope of eligible income than those that allocate IP expense to IP income on a per-asset basis.[383] However, if the company does not earn any profits in excess of 10% of its routine expenses, it does not benefit from the regime because in this case the Patent Box tax base amounts to zero.[384]

3.3.2.3 Treatment of R&D expenses incurred in the past

With respect to the treatment of historical R&D expenses there are also (broadly) two approaches. One group of countries aligns the treatment of R&D expenses incurred in the past with the treatment of IP income by recapturing previously claimed deductions for R&D expenses. The other group of countries does not stipulate any recapture of previously-deducted R&D expenses. To the best of my knowledge, these are Belgium, France, Hungary, Spain,[385] and the Swiss Canton of Nidwalden.[386] As a result, the original deduction of R&D expenses at the higher regular corporate income tax rate is not offset. This can result in a particularly generous tax treatment for an investment in self-developed intangible assets.

Liechtenstein, Luxembourg, and the Netherlands are among the countries that require the recapture of development expenses deducted in the past. They do so by using different mechanisms. Luxembourg requires self-developed intangible assets to be capitalised when opting for the IP Box regime.[387] In contrast, the Netherlands and Liechtenstein only apply the IP Box rate to (net) income exceeding the historical development expenses and, in the case of Liechtenstein, the expenses for applied research[388] (so called 'threshold mechanism'). Hence, IP

383 See Graetz and Doud (2013), p. 409.

384 See Gregory et al. (2013), p. 113.

385 Recall, in case of self-developed IP not accounted for on the balance sheet the IP Box tax base is, however, irrefutably assumed to correspond to 80% of qualifying income as sketched out in section 3.3.2.1.

386 *Belgium*: van den Berghe and Kelley (2008), p. 379, Warson and Forriers (2008), p. 73; *Hungary*: Koka (2012), p. 346; *Spain*: Ibañez and Velasco (2013); *Swiss Canton of Nidwalden*: Felder (2013), p. 313. The provisions governing the regime in place in Cyprus do not explicitly require that previously deducted R&D expenses are recaptured when opting for the IP Box treatment. As the regime is relatively new this issue has, however, not been fully clarified so far.

387 See Article 50bis (4)(2) LIR, Muntendam and Chiarella (2008), p. 225, Neefs and Hoor (2009), Vosse and Harcos (2012), p. 4. For the scope of expenses which are subject to capitalisation, see Circulaire du directeur des contributions (2009), recital 5.2.

388 See Felder (2013, pp. 95 et seq.) for details on what comprises development expenses for the purpose of the Liechtenstein provision.

income up to the development expenses is subject to the regular tax rate.[389] Under the Dutch regime, the calculation of whether the IP income exceeds the threshold is done jointly for all assets.[390] However, the taxpayer may opt for the IP Box treatment separately for each intangible asset.[391] This allows taxpayers to opt for the Innovation Box treatment in the year in which the intangible asset generates (considerable) returns. In doing so, they may avoid that the threshold be increased by the development costs incurred in the development of intangibles which turn out to earn only low rates of return. This would delay the application of the lower IP Box tax rate to income from other, more profitable intangible assets. In contrast, the rules governing the Liechtenstein regime stipulate that the IP tax base, and thereby the recapture of development expenses, be determined separately for each eligible intangible asset.[392]

The threshold mechanism is generally more beneficial for the taxpayer than the capitalisation approach. This is because the latter entails that the intangible asset's development costs be added to the tax base when the IP Box is opted for. Thereby, the initial deduction of the development costs is offset except for a positive interest effect stemming from the time value of money as no adjustment for inflation is required.[393]

Under the Luxembourg IP Box regime which requires capitalisation of expenses incurred for the development of IP when opting for the IP Box treatment, the taxpayer may turn out to be worse off compared to the regular tax system if the IP eventually does not earn its development cost. At the point of time when the IP Box regime is opted for, this may not yet be foreseeable. It is interesting to see

---

389 *The Netherlands*: Art 12b (5) Vpb, Dikmans (2007), p. 162, IBFD Tax Research Platform, Corporate Taxation, Country Analysis the Netherlands, section 1.9.7 (version November 2014), Sporken and Gommers (2007), p. 199, Sunderman (2007), p. 227. Technically speaking, the Dutch Innovation Box does not apply until the development costs are recaptured. *Liechtenstein*: Article 55 (2) SteG stipulates that for determining the amount of notionally deductible net IP income under the Liechtenstein IP Box regime expenses associated to IP income have to be deducted from IP income even if such expenses have been incurred in several tax assessment periods. For details, see Felder (2013), pp. 239 et seq., Steuerverwaltung Fürstentum Liechtenstein (2012), Wegeleitung zur Steuererklärung 2012 für juristische Personen, p. 18, download: http://www.llv.li/pdf-llv-stv-ste_jp_wegleitung.pdf.

390 See Dikmans (2007), p. 162, Felder (2013), p. 95.

391 See Dikmans (2007), p. 162, Felder (2013), p. 84.

392 See Felder (2013), p. 216.

393 The immediate deduction of the R&D expenses brings about immediate tax savings given that the expenses can effectively be offset against other taxable income. This immediate tax saving during the investment phase implies that, in economic terms, the taxpayer receives an interest-free loan from the government as the taxable profit falls short of the true economic profit, as economically the investment is of a capital nature. In case the intangible asset is eventually capitalised the initial deduction is offset which also implies that the implicit loan is paid back. Yet, the taxpayer retains the interest saved on this notional interest-free loan.

that a draft version of the rules governing the Dutch IP Box also prescribed the capitalisation of intangible assets in order to benefit from the regime. This received a lot of criticism and in the final version of the provision governing the IP Box regime the capitalisation requirement was replaced by the threshold mechanism.[394]

Both the threshold mechanism and capitalisation ensure that the treatment of R&D expenses and IP income is aligned ex-post when opting for the IP Box regime. In contrast, under the IP Box regimes in place in Malta and the UK, the treatment of R&D expenses and IP income is aligned ex-ante. In Malta, the full exemption of royalty income is only available if historical R&D expenses associated with the royalty income have not been deducted in the past.[395]

In the UK, R&D expenses incurred and deducted before the IP Box is applied for the first time do not have to be recaptured. Once a company has opted into the regime, R&D expenses are indirectly allocated to IP income in line with the ratio of qualifying income to total income. Conversely, they are allocated to individual items of IP income according to the streaming approach as sketched-out in the previous section.[396] Both approaches ensure that for R&D projects carried out after the regime was first opted for, IP income and R&D expenses are treated symmetrically.

Cyprus and Portugal are the only IP Box countries where the regular tax system stipulates the capitalisation of costs incurred for the development of intangibles upon qualifying as an intangible asset.[397] As Portugal applies the IP Box tax rate to gross income, the depreciation allowances are nevertheless deductible at the regular tax rate. This implies that the investment expenditures and the IP income are treated asymmetrically. In turn, in Cyprus depreciation allowances have to be allocated to IP income according to the 'net income approach' ensuring symmetrical treatment of investment expenditures and IP income.

[394] See Bruinhorst and Wetemans (2009).

[395] See East (2011). According to information provided by local practitioners, it is not possible to recapture historical R&D expenses which have been deducted in the past in order to benefit from the IP Box treatment.

[396] See Gregory et al. (2013), p. 113.

[397] In Cyprus and Portugal, taxable profits are determined based on financial statements prepared in accordance with international financial reporting standards (IFRS), subject to certain adjustments (see Spengel and Zöllkau (eds.) (2012), p. 19 figure 1). Until 2007, capitalisation of self-developed intangibles was also mandatory in the Netherlands (see Baaijens and Breuer (2010), p. 2936).

3.3.2.4 The Dutch administrative practise to determine the Innovation Box tax base for self-developed intangibles

The provision governing the Dutch Innovation Box requires that, in order to determine the Innovation Box tax base, income and expenses be allocated to single intangible assets.[398] If intangible assets are used internally (e.g. in manufacturing), this is difficult to put into practice.[399] For this reason, Dutch tax payers may apply for an alternative procedure for calculating the amount of Innovation Box profits. It involves that separate accounting on a per-asset-basis be replaced by a formulaic approach, the so called 'afpelmethode' or 'indirect method'. The underlying idea is to determine the Innovation Box profits as a share of the earnings before interest and tax (EBIT) which relates to the R&D function.

Only companies whose business involves R&D as a core function may benefit from this alternative approach.[400] It is available by means of an administrative ruling which is binding to both the taxpayer and the treasury.[401] Although it is well-known among taxpayers and their advisors, hardly any official documentation of this practice on behalf of the treasury is publicly available. The Dutch tax administration only recently published a decree on the application of the Innovation Box which includes a brief description of the 'afpelmethode'.[402]

Within the scope of the 'afpelmethode' the profits which qualify for the partial exemption under the Innovation Box are determined as the EBIT-share, which relates to the R&D function of the taxpayer's business.[403] This requires carrying out a functional analysis[404] which is to some extent similar to the functional analysis set out in the OECD transfer pricing guidelines.[405] This functional analysis first involves identifying the 'core functions' of an undertaking and second determining the value contributions of each core function as percentage shares.[406]

---

398 See Dikmans (2007), p. 162, Felder (2013), p. 84.

399 See Baaijens and Breuer (2010), p. 2937, van der Lande (2012), p. 66.

400 If the R&D activity is only a routine function, the income eligible for the Innovation Box may instead be determined based on the cost-plus method. See Belastingdienst (2014), p. 12, van der Lande (2012), p. 78.

401 For details, see van der Lande (2012), pp. 80 et seq.

402 See Belastingdienst (2014), p. 12, section 6.3.4.

403 See Belastingdienst (2014), p. 12, section 6.3.4.

404 See Baaijens and Breuer (2010), p. 2938.

405 See van der Lande (2012), p. 74.

406 See Belastingdienst (2014), p. 12, section 6.3.4.

The core functions are those business functions which are essential to achieve the objective of the business. Entrepreneurship (so called 'het ondernemerschap' or 'corporate excellence') and R&D are considered to be such core functions. In contrast, as the term suggests, 'supporting functions' support the core function in achieving this goal.[407] Depending on the business model, production, marketing and sales, logistics, and other functions either constitute core functions or supporting functions.[408]

Within the scope of the 'afpelmethode', the Innovation Box profit is calculated in a two-step procedure. This is illustrated by the example depicted in table 6. The first step involves calculating the return to supporting functions and deducting this return from EBIT to arrive at the amount of EBIT relating to the core functions.[409] The return to supporting functions is generally determined based on the cost-plus method (e.g. in the case of the production function) or the resale–minus method (in the case of the sales function).[410] If part of the R&D activity is not associated with the creation of eligible intangible assets, a return to this kind of R&D activity must also be deducted within the scope of this first step.[411]

Table 6: Calculation of the Innovation Box tax base under the 'afpelmethode'

	2014	2015	2016	2017	2018
EBIT	30,000	20,000	28,000	30,000	36,000
- Return to supporting functions (1)	-10,500	-11,800	-10,500	-12,250	-13,200
- Return to R&D not associated with eligible IP (2)	-625	-750	-750	-875	-925
= EBIT related to core functions *(step 1)*	18,875	7,450	16,750	16,875	21,875
- EBIT related to entrepreneurship function (3)	-5,663	-2,235	-5,025	-5,063	-6,563
= EBIT related to R&D function *(step 2)*	13,213	5,215	11,725	11,813	15,313
- Exempt amount	-10,570	-4,172	-9,380	-9,450	-12,250
= Taxable EBIT related to R&D function (4)	2,643	1,043	2,345	2,363	3,063
Corporate income tax base (1)+(2)+(3)+(4)	19,430	15,828	18,620	20,550	23,750
Tax burden	4,858	3,957	4,655	5,138	5,938

Notes: This example draws on an example presented by van der Lande (2012), pp. 120 et seq.

407 For an example, see van der Lande (2012), p. 74.

408 For examples, see van der Lande (2012), pp. 77 et seq.

409 See Belastingdienst (2014), p. 12, section 6.3.4.

410 See the numerical example in van der Lande (2012), pp. 120 et seq.

411 See Belastingdienst (2014), p. 12, section 6.3.4. See van der Lande (2012), p. 120 for an illustration of this.

As part of the second step, the EBIT-share stemming from the R&D function is calculated by applying the percentage share reflecting the value contribution of the R&D function to the amount of the EBIT stemming from core functions.[412] The example presented in table 6 is based on the assumption that the business is characterised by only two core functions, entrepreneurship and R&D, and that the value contribution of the entrepreneurship function constitutes 30% whereas the value contribution of the R&D function amounts to 70%.

3.4 Additional aspects

3.4.1 Treatment of losses

In cases where the tax base is IP Box profits, the question arises whether IP Box losses may only be offset against (future) IP Box profits or whether they may also be offset against non-IP Box profits which are subject to the higher regular corporate income tax rate. Under the British regime, losses may not be offset against other profits. Any excess Patent Box losses may only be carried forward separately and offset against future Patent Box profits of the same company or other group companies.[413] Luxembourg, the Netherlands, and the Swiss Canton of Nidwalden allow for a deduction from other income. However, they require that the losses eventually be recaptured at the regular tax rate if the respective intangible assets generate profits in subsequent years[414] or, in the case of Luxembourg, when the IP is disposed of.[415] The regime in Cyprus is characterised by the most generous treatment of IP losses as these may be offset against other income or carried forward.[416]

In the context of IP Boxes which follow the 'gross income approach', IP losses in general do not arise. Nevertheless, in cases where the IP Box regime provides for a notional deduction (instead of a partial exemption of IP income), this raises the question whether this notional deduction may be used to create an overall loss and whether any unused notional deduction maybe carried forward. To give an example, the Patent Income Deduction in place in Belgium may neither be used to create a loss nor may any unused amount be carried forward.[417] In contrast to

[412] See Baaijens and Breuer (2010), p. 2938.

[413] See Articles 357E to 357EC CTA 2010, HMRC (2012), pp. 69 et seq., Obuoforibo (2013), p. 488.

[414] *Liechtenstein*: Felder (2013), pp. 239 et seq.; *Swiss Canton of Nidwalden*: Felder (2013), pp. 311-313, Kantonales Steueramt Nidwalden (2011), recital 3.6; *the Netherlands*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis the Netherlands, section 1.9.7 (version November 2014), Merrill et al. (2012), p. 1669.

[415] See Article 50bis (3) LIR, Muntendam and Chiarella (2008), p. 226, Neefs and Hoor (2009).

[416] See Aristotelous and Neocleous (2013).

[417] See Merrill et al. (2012), p. 1666, Warson and Foriers (2008), p. 71.

this, under the Liechtenstein regime, any excess deduction may create or increase a tax loss, which can then be carried forward and offset against future taxable profits.[418]

3.4.2 Integrating IP Box regimes in the corporate income tax

The integration of IP Box benefit in the calculation of the corporate income tax base is not only a technical issue but may also affect the effectiveness of the benefit and its interaction with other tax incentives. IP Box regimes which apply the 'net income approach' generally require separate accounts. This entails that all items of income and expenses are allocated to either the regular account or the IP Box account. In Liechtenstein, this also involves that the notional interest deduction available in the case of equity-financing[419] be proportionally allocated.[420] As a consequence, the value of the tax shield associated with the notional interest deduction partly depends on the lower IP Box tax rate.

As the Belgian regime does not allow for the patent income deduction to create or increase a loss nor offers a carry forward of unused deduction amounts, it is of relevance that the deduction takes place after the so called 'dividends-received deduction' (the Belgium participation exemption), but before the deductions that can be carried forward. These are the 'notional interest deduction',[421] the deduction of losses which have been carried-forward, and the 'investment deduction'.[422] In contrast to this, in Liechtenstein the notional deduction of IP income takes place after the notional interest deduction, but this is less problematic, as the notional deduction of IP income may be used to create or increase a loss which is then carried forward without time limit.[423]

The IP Box regimes may also interact with R&D tax incentives (e.g. tax credits, super deductions, and accelerated depreciation). Of the 12 European countries providing IP Box regimes by the end of the year 2014, 9 also offer R&D tax

---

418 See Felder (2013), p. 224.

419 In Lichtenstein, a notional interest deduction is available as a percentage of a company's share capital and reserves representing own assets (see Article 54 in conjunction with Article 5 SteG, Wanger (2011), pp. 176 et seq.). For the financial year 2014, the rate is 4% (see Article 2 Finance Law for the year 2014 of 7 November 2013 in conjunction with Article 2 Tax Law of 23 September 2010).

420 See Felder (2013), pp. 217 et seq. and p. 222.

421 In Belgium, a notional interest deduction is available at a rate of 2.63% for the financial year 2014 (see IBFD (2014), country chapter Belgium, section 1.7.4 p. 113).

422 See van den Berghe and Kelley (2008), p. 379. The investment deduction involves that a certain percentage of the investment expenditures incurred for certain assets may be deducted from the corporate income tax base. See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, section 1.9.2 (version November 2014))

423 See Felder (2013), p. 224.

incentives. In general, taxpayers who make use of the IP Box regimes are not excluded from the benefits of R&D tax incentives.[424] Malta is the only exception to this, as the royalty income exemption only applies if no R&D expenditures relating to the patent which gives rise to tax exempt income were deducted in the past.[425] This also excludes the application of the 50% super deduction which is available for current R&D expenses.

Even if the application of the IP Box regime and the R&D tax incentive are not mutually exclusive, possible interactions between the IP Box regimes and R&D tax incentives may arise under the IP Box regimes which apply a 'net income approach'. This is because they require that expenses be allocated to IP income. In case this requirement is extended to super deductions granted for R&D expenditures, the tax value of this kind of R&D tax incentive would be determined by the lower IP Box rate. This is, however, not the case in any of the countries under consideration. Similarly, when calculating the basis for the deductions of the return from routine functions under the British Patent Box (the second step of the three-step procedure as sketched out in section 3.3.2.2), R&D expenses are explicitly excluded.[426] The application of the IP Box regimes may nevertheless indirectly affect the use of R&D tax incentives. As IP Box regimes result in a lower tax liability, R&D tax credits may come to nothing.

3.5 Summary and comparison of the main features of IP Box regimes in Europe

Table 7 summarises the main features of the IP Box regimes discussed in the previous sections. These are (i) the IP Box tax rate, (ii) the scope of eligible types of IP, (iii) whether acquired IP qualifies or not ('treatment of acquired IP'), (iv) whether IP created/ registered before the implementation of the IP Box regime qualifies or not ('treatment of existing IP'), (v) the scope of qualifying kinds of income, and (vi) the treatment of expenses relating to IP income.

[424] *Spain*: Neves (2013), p. 1239; *United Kingdom*: Aquerreta et al. (2013), p. 967, Gregory et al. (2013), p. 113, HMRC (2012), p. 10.

[425] See East (2011).

[426] See Article 357CK (1)(b) and (3) CTA 2010, Gregory et al. (2013), p. 113, HMRC (2012), pp. 11 and 46 et seq., Scott and Ross (2013), p. 56.

Table 7: Main features of IP Box regimes in Europe (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Year	2007	2012	2000	2003	2011	2008	2008	2007	2014	2008	2011	2013
IP Box Rate (%)	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.8	10
Main Rate (%)	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21
Eligible IP												
Existing IP		✓	✓	✓		(✓)[a]	*			✓	✓	✓
Acquired IP	[b]	✓	✓	✓	✓	(✓)[c]	✓	[b]			✓	(✓)[d]
Types of IP (excerpt)												
Patents	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Software		✓		✓	✓	✓	✓	(✓)[e]			✓	
Other Copyrights		✓		✓	✓		✓				✓	
Trademarks		✓		✓	✓	✓	✓				✓	
Designs		✓		(✓)[f]	✓	✓		(✓)[e]	(✓)[f]	✓		
Models		✓		(✓)[f]	✓	✓		(✓)[e]	(✓)[f]	✓	✓	
Secret formulas		✓		✓						✓	✓	
Know-how	(✓)[g]	✓		✓							✓	
Eligible types of IP income (excerpt)												
Royalties (roy.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Capital gains		✓	✓	✓	✓	✓	✓	✓	✓	✓[h]	✓	✓
Sales income	✓	*		*	✓		*	✓				✓
Notional roy.	✓	*		*	✓	(✓)[i]	*	✓				✓
Determination of the tax base												
Current expenses	G	N	N	G	N	N	n.a.	N	G	N/G[j]	N	N[k]
Recapture of R&D expenses		C[l]			T	C	n.a.	T	C[l]			n.a.

Abbreviations: ✓- qualifies, G – gross income approach, N – net income approach, T – threshold mechanism, C – capitalisation, n.a. – not applicable.

Notes: For the composition of the main rate see notes to table 2. * No conclusive assessment could be reached. For details, see footnotes 349 and 354 in section 3.3.1. [s] IP created before the introduction of the regime qualifies if it has been acquired after the date of implementation. [b] Acquired IP benefits from the regime if it is further developed and improved (for details see section 3.2.3). [c] Acquired IP benefits from the regime provided it has not been acquired from directly related parties. [d] Acquired IP benefits from the regime under the condition that the IP has been acquired from another group company which has developed the IP. [e] Provided an R&D certificate has been obtained. [f] Only in the case of industrial IP. [g] If closely related to patents and special protection certificates. [h] Capital gains from the disposal of qualifying IP rights benefit from the IP Box regime in case they are transferred to an unrelated party. [i] notional royalty income only qualifies with respect to self-developed patents. [j] In the case of self-developed intangibles not recognised on the balance sheet the tax base is simply assumed to correspond to 80% of IP income. [k] Financing expenses are not allocated but are deducted from regular income. [l] Capitalisation of self-developed patents and some other intangible assets is mandatory under the regular tax system if certain conditions are fulfilled.

In the following, the 12 IP Box regimes are compared with respect to these six main features by means of radar charts (also referred to as 'web chart' or 'spider chart'). To this end the variables need to be converted into ordinal measures and scaled in a uniform way.

- (i) the variable 'IP Box tax rate' may assume values between zero (Malta) and 16.76 (France);
- (ii) the variable 'scope of eligible types of IP' focuses on the following seven types of IP: patents, software, other copyrights, trademarks, designs & models, secret formulas, and know-how. Hence, the variable may assume values between zero (only patents) and six;
- (iii) the variable 'treatment of acquired IP' assumes the value one if acquired IP benefits from the regime, and zero in the opposite case;
- (iv) the variable 'treatment of existing IP' assumes the value one if IP created or registered before the implementation of the IP Box regime benefits. In the opposite case, it assumes the value zero;
- (v) the variable 'scope of eligible income' takes into account the following four kinds of income: royalties, capital gains from the disposal of IP, sales income from the sale of patented products, and notional royalty income from internal use of qualifying IP.[427] Hence, this variable may assume values between zero (only royalties) and three.
- (vi) the variable 'treatment of expenses relating to IP income' assumes the value zero if the 'net income approach' applies with respect to current IP expenses and if historical R&D expenses have to be recaptured. If either the 'gross income approach' applies or if historical R&D expenses do not have to be recaptured, the variable assumes the value one. Finally, it assumes the value two if both the 'gross income approach' applies and R&D expenses do not need to be recaptured.

Each of these variables is plotted on one spoke of the radar chart. In order to scale the six variables in a uniform way, the value 100% is always assigned to the largest value.[428] The larger the area in-between the lines which are drawn to connect the values for each spoke, the more generous and thereby the more attractive the respective IP Box regime is. This is based on the assumption that all

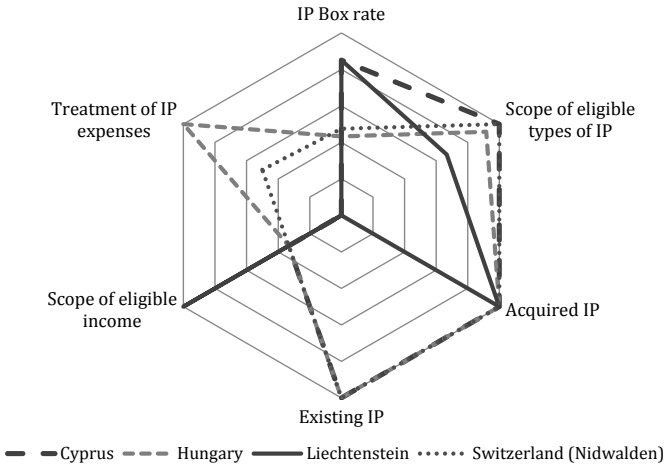
[427] Compensations for infringements are not taken into account, as it was not possible to obtain conclusive information for all IP Box countries.

[428] To give an example, the variable 'scope of eligible types of IP' assumes the value 100% if all seven types of IP benefit from the regime. If, in contrast to this, the regime is limited to patents, the variable assumes the value 0%. With respect to the first variable, the 'IP Box tax rate', the lowest tax rate (0% in Malta) is assigned the value 100% and the highest tax rate (16.76% in France) is assigned the value 0%.

six variables are considered to be equally important and are thereby weighted equally.

Figure 6 compares the four countries on top of the country ranking. The Hungarian IP Box regime is the most generous regime, followed by the regimes in place in the Swiss Canton of Nidwalden and Cyprus (see figure 6). These three countries rank first because of their regimes' comparably wide scope of eligible IP. All of the seven selected IP types as well as acquired and existing IP qualify for these three countries' regimes. Hungary is ranked first just before Nidwalden and Cyprus despite its slightly higher tax rate. This is due to its very generous treatment of expenses (no recapture and application of the 'gross income approach').

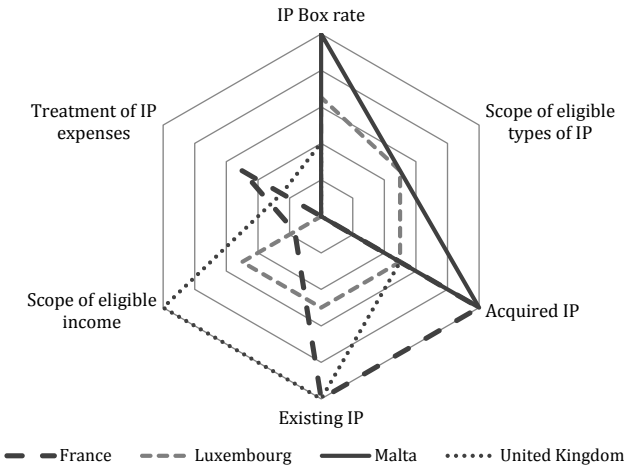
Figure 6: Comparison of the IP Box regimes in place in Hungary, Nidwalden, Cyprus, and Liechtenstein



Liechtenstein is ranked fourth behind these three countries in terms of the variables 'scope of eligible types of IP', 'treatment of existing IP' (which does not benefit from the Liechtenstein regime), and 'treatment of expenses' ('net income approach' and recapture of R&D expenses). Only the scope of eligible types of income is wider compared to the other three countries, as all four considered kinds of income benefit from the regime, whereas only royalties and capital gains benefit from the IP Box regimes in place in Cyprus, Hungary, and the Swiss Canton of Nidwalden.

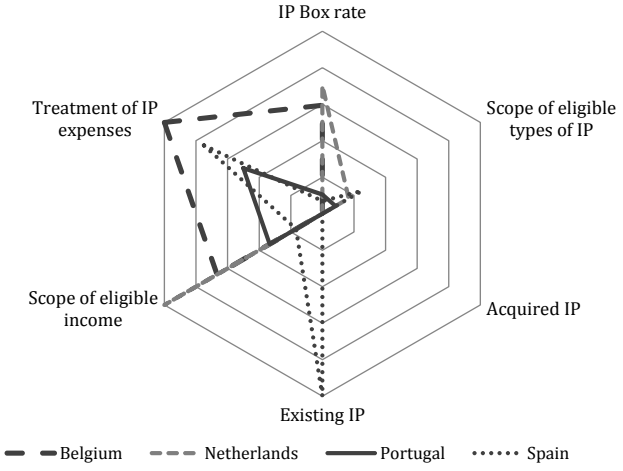
Figure 7 compares the countries which occupy ranks 5 to 8 in terms of their IP Box regimes' generosity. These are the UK, Luxembourg, France, and Malta. The UK offers a wide scope when it comes to eligible income as all four considered types of income qualify for the regime. In contrast to this, the scope of eligible IP types is very narrow as the regime is mainly limited to patents. However, none of the four regimes has a very broad scope of eligible types of IP. Luxembourg holds a centre position with respect to all variables except for the treatment of IP expenses which is less generous than in the other three countries. R&D expenses incurred in the past are recaptured by way of capitalisation and the 'net income approach' is applied with respect to current R&D expenses. France positively stands out as both acquired and existing IP qualify for the regime. In addition, R&D expenses do not need be recaptured. However, the scope of qualifying income and types of IP of the French regime is comparably narrow and the tax rate is the highest among all twelve countries. Finally, Malta's position is mainly due to the fact that its IP Box tax rate is the lowest of the twelve countries whereas in terms of most other variables Malta's IP Box is comparably unattractive.

Figure 7: Comparison of the IP Box regimes in place in the UK, Luxembourg, France, and Malta



Belgium, Spain, the Netherlands, and Portugal occupy the rear of the country ranking as depicted in figure 8. All four countries have a very narrow scope of eligible types of IP. In addition, neither acquired nor existing IP (with the exception of Spain) benefit. Belgium positively stands out as its treatment of expenses is more generous than in any other of the 12 countries with the exception of Hungary. Namely, R&D expenses do not need to be recaptured and the 'gross income approach' is applied with respect to current IP expenses. However, the scope of eligible IP types is comparably narrow and neither existing nor acquired IP (which is not further developed) benefit from the regime. The Dutch regime positively stands out in terms of the scope of eligible types of IP income. All four kinds of IP income considered benefit from the Dutch IP Box. Yet, this may not compensate for the very narrow scope of qualifying IP. Finally, Portugal comes last due to a comparably high tax rate, a very narrow scope of eligible types of IP, and the exclusion of existing and acquired IP. These shortcomings may not be compensated by the fact that the IP Box tax rate applies to gross IP income implying that current expenses are deductible from regularly-taxed income which is a rare feature of the IP Box regimes. Only the regimes in place in Belgium and Portugal also have this feature.

Figure 8: Comparison of the IP Box regimes in place in Belgium, Spain, the Netherlands, and Portugal



3.6 Main changes over time

Since their implementation, most IP Box regimes have been fairly stable. Only the Dutch and the Spanish regimes were subject to fundamental changes. Table 8 reports the statutory IP Box tax rates applicable in previous years. Changes to other features of the regimes as to, for example, the scope of qualifying or the treatment of expenses are summarised in table 9.

Table 8: Development of the IP Box tax rate over time (including surcharges and other income taxes on IP Box income)

	Belgium	Nidwalden, Switzerland	Cyprus	Spain	France	Hungary	Portugal	Liechtenstein	Luxembourg	Malta	Netherlands	United Kingdom
2000	-	-	-	-	21.53	-	-	-	-	-	-	-
2001	-	-	-	-	20.77	-	-	-	-	-	-	-
2002	-	-	-	-	20.20	-	-	-	-	-	-	-
2003	-	-	-	-	20.20	8.00	-	-	-	-	-	-
2004	-	-	-	-	20.20	8.00	-	-	-	-	-	-
2005	-	-	-	-	15.72	8.00	-	-	-	-	-	-
2006	-	-	-	-	15.50	8.00	-	-	-	-	-	-
2007	6.80	-	-	-	15.50	8.00	-	-	-	-	10.00	-
2008	6.80	-	-	15.00	15.50	8.00	-	-	5.93	-	10.00	-
2009	6.80	-	-	15.00	15.50	8.00	-	-	5.72	-	10.00	-
2010	6.80	-	-	15.00	16.76	9.50	-	-	5.72	0.00	5.00	-
2011	6.80	8.84	-	15.00	16.76	9.50	-	2.50	5.76	0.00	5.00	-
2012	6.80	8.84	2.00	15.00	16.76	9.50	-	2.50	5.76	0.00	5.00	-
2013	6.80	8.84	2.50	12.00	16.76	9.50	-	2.50	5.84	0.00	5.00	10.00
2014	6.80	8.84	2.50	12.00	16.76	9.50	15.00	2.50	5.84	0.00	5.00	10.00

Remarks: In the United Kingdom, the Patent Box is phased in over a period of 4 years. In 2013, companies were only entitled to 60% of the full benefit, increasing to 70%, 80% and 90% in subsequent years. The Patent Box will fully be available in 2017.

The Spanish regime underwent a fundamental reform in 2013.[429] This included in particular a reduction of the amount of exempt IP income from 50% to 60% thereby lowering the IP Box tax rate from 15% to 12%.[430] Besides Spain, two

[429] See Article 26 Ley 14/2013 de apoyo a los emprendedores y su internacionalización of 27 September 2014 (Law to support entrepreneurs and their internationalisation), Ibañez and Velasco (2013), p. 789, KPMG (ed.) (2013a).

[430] This reduced tax rate applies to income relating to license agreements signed on or after 29 September 2013. The higher rate still applies to income relating to arrangements concluded before that date.

other countries also reduced their IP Box tax rates. In 2005, the IP Box tax rate of the French regime was reduced from 19% to 15%. In turn, the changes in the years 2000 to 2004, 2006 and 2010 are due to changes of the rate of surcharges and additional taxes levied on top of the French corporate income tax rate.[431] In 2010, the Dutch IP Box tax rate was lowered from 10% to 5%. In contrast to this, the changes to the IP Box tax rate depicted for Cyprus, Hungary, and Luxembourg are simply due to adjustments of the main rate (corporate income tax plus surcharges, where applicable), which affected the IP Box tax rate.[432]

Within the scope of the fundamental reform of the Spanish IP Box regime in the year 2013, the definition of the IP Box tax base was revised. Current expenses now have to be allocated to IP income in order to determine the IP Box tax base according to the 'net income approach'. However, regarding self-developed intangibles which are not accounted for on the balance sheet, an irrefutable assumption was introduced setting the IP Box tax base to 80% of the IP income.[433] This has two implications. First, (current) expenses do not have to be allocated to IP income ('gross income approach'). Second, only 80% of the IP income is now taken as a basis when determining the IP income which may be deducted from the corporate income tax base under the IP Box regime. This corresponds to an effective nominal tax rate of 15.6%[434] for income from self-developed intangibles which are not capitalised (as opposed to 15% before the reform). Hence, setting the IP Box tax base to 80% of the IP income more than compensates for the reduction of the IP Box tax rate.

---

431 The following surcharges are taken into account: 2000: 10% surcharge, 2001: 6% surcharge, 2002 to 2004: 3% surcharge, 2005: 1.5% surcharge; 2000 to 2014: 3.3% 'large company surcharge' levied on the part of the corporate tax which exceeds EUR 763,000. Since 2010, a 1.5% contribution on the added value of enterprises (CAVE) is additionally levied on the turnover (in case the turnover exceeds EUR 152,500). In contrast, the 'exceptional tax surcharge' levied on the corporate income tax liability (in case the turnover exceeds EUR 250 Mio.) is disregarded (5% in 2012 and 2013, 10.7% in 2014). See IBFD Corporate Tax Handbook (2000 – 2013), country chapter France, section 1.6.1.

432 *Cyprus*: in 2013, the corporate income tax rate was increased from 10% to 12.5% (see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Cyprus, section 1.10.1 (version November 2014)); *Hungary*: in 2010, the corporate income tax rate was increased from 16% to 19% (see IBFD (2010), country chapter Hungary, section 1.6.1, p. 449); *Luxembourg*: In 2009, the corporate income tax rate was reduced from 22% to 21% resulting in a reduction of the overall profit tax rate (including a surcharge and the municipal income tax) from 29.63% to 28.59% (see IBFD (2009), country chapter Luxembourg, section 1.6.1, p. 588). In 2011, the surcharge was increased from 4% to 5% increasing the overall profit tax rate to 28.8% (see IBFD (2011), country chapter Luxembourg, section 1.6.1, p. 626). Since 2013, the overall profit tax rate is 29.22% due to an additional increase of the surcharge to 7% (see IBFD (2013), country chapter Luxembourg, section 1.6.1, p. 670).

433 See section 3.3.2.1.

434 As 80% of the IP income is subject to the 60% notional deduction the effective tax rate amounts to 15.6%.

Table 9: Further important changes since the implementation of the regimes

	Year	Nature of the amendment of the IP Box regime
France	2008	Scope of qualifying income is extended to capital gains from the disposal of qualifying IP.[435]
Hungary	2012	Introduction of a 100% exemption of capital gains from the disposal of qualifying IP.[436]
Malta	2012	Scope of eligible IP is extended to copyrights and trademarks.[437]
Netherlands	2008	Scope of eligible IP is extended to non-patented intangible assets resulting from R&D activities for which an R&D certificate has been received.[438]
	2010	Ceiling which limited the amount of qualifying income to four-times the R&D investment expenditures is abolished.[439]
Spain	2013	'Net income approach' replaces 'gross income approach' regarding the treatment of current expenses relating to IP income. IP Box tax base of self-developed IP not recognised on the balance sheet is irrefutably assumed to equal 80% of IP income. Scope of qualifying income is extended to capital gains from the disposal of qualifying IP to unrelated parties. Self-development criterion is relaxed.[440] Cap of the IP Box benefit to six-times the costs of the IP is abolished.

Furthermore, the scope of the Spanish regime was widened in three respects. First, capital gains from the disposal of eligible IP to unrelated parties are now included.[441] Second, the self-development criterion was relaxed. It is now sufficient that the taxpayer bears at least 25% of the assets development costs.[442] Third, the IP Box no longer ceases to apply in the tax period which follows the one in which the qualifying IP income exceeds six-times the costs of the IP.[443]

435 See Taieb (2008), p. 1.

436 See IBFD (2012), country chapter Hungary, section 1.4, p. 483.

437 See Cassar Torregiani and Vroom (2012), p. 1014, Cassar Torregiani and Vroom (2013), p. 860.

438 See Eynatten and Brauns (2010).

439 See van den Bruinhorst and Wetermans (2009), Eynatten and Brauns (2010), Nijhof and Kloes (2010), p. 69.

440 For all amendments, see Ibañez and Velasco (2013), p. 789, KPMG (ed.) (2013a).

441 See Article 23 (1) sentence 2 LIS.

442 See Article 23 (1)(a) LIS, Ibañez and Velasco (2013), p. 789, KPMG (ed.) (2013a).

443 See Ibañez and Velasco (2013), p. 789. Article 23 (2) LIS in the form of LEY 16/2007 de reforma y adaptación de la legislación mercantil en materia contable para su armonización internacional con base en la normativa de la Unión Europea of 4 July 2007 (Law on the reform and adaptation of commercial accounting law for international harmonisation based on the regulations of the European Union) has been abolished.

3.7 Cross-border considerations and tax planning under IP Box regimes

3.7.1 Interaction of IP Box regimes with source country taxation

All IP Box regimes apply to foreign, in additional to domestic, royalty payments. The application of the Portuguese and the Spanish regimes is, however, explicitly excluded if the licensee is resident in a jurisdiction which does not levy taxes or is considered a tax haven.[444] In Spain, this requirement does not apply if the licensee is resident in a fellow EU member state and the taxpayer can prove that the license agreement is based on valid economic reasons.[445]

In case foreign royalty income is subject to withholding taxes levied by the licensee's resident country, the application of the IP Box regime may not achieve the intended low-taxation of IP income due to excess tax credits.[446] This is because tax credits for foreign-withholding taxes granted by the residence country are usually limited to the domestic tax on the respective foreign income (see section 2.2.3.2 for details). Most IP Box regimes stipulate that the partial exemption and the notional deduction, respectively, be taken into account when determining the maximum amount of tax credits granted for foreign withholding taxes.[447] Hence, the amount of tax against which the foreign withholding tax may be credited is reduced by the application of the IP Box making. Similarly, in the case of the French regime which applies a reduced tax rate, foreign withholding taxes relating to qualifying income may only be credited against the tax liability which has been derived by applying the reduced rate.

In most IP Box countries, foreign withholding taxes may only be offset within one category of income (so called 'per-income-limitation).[448] Hence, excess tax credits arising with respect to one category of income (e.g. royalty income) may not be

---

444 For Portugal, see Article 50A (3)(d) IRC.

445 See Article 23 (1)(c) LIS, IBFD Tax Research Platform, Corporate Taxation, Country Analysis Spain, section 1.9.1.1.6 (version November 2014).

446 For a detailed discussion of the issue of excess tax credits, see section 2.2.3.2.

447 *Belgium*: Felder (2013), p. 44, Warson and Foriers (2008), p. 76; *France*: Schlösser (2009), p. 561 et seq.; *Hungary*: Vosse and Harcos (2012), p. 5; *Liechtenstein*: Felder (2013), pp. 248 et seq.; *Luxembourg*: Gouvernement du Grand-Duché de Luxembourg (2009), p. 21, Felder (2013), pp. 76 et seq. with further references; *the Netherlands:* Baaijens and Breuer (2010), p. 2937, van den Bruinhorst and Wetermans (2009), Felder (2013), pp. 109 et seq. with further references; *Portugal*: Article 50A (5) IRC; *Spain*: Gonzalo and Salcedo (2009), Merrill (2012), p. 1670, Neves (2013), p. 1239; *Swiss Canton of Nidwalden*: Felder (2013), p. 315; *United Kingdom*: Merrill et al. (2012), p. 1672. No information could be obtained for Cyprus.

448 *Cyprus*: IBFD (2014), country chapter Cyprus, section 6.1.4, p. 269; *France*: Schlösser (2009), p. 561 et seq.; *Hungary*: IBFD Tax Handbook (2014), country chapter Hungary, section 6.1.4, p. 530; *Malta*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Malta, section 7.2.6 (version November 2014); *United Kingdom*: IBFD (2014), country chapter United Kingdom, section 6.1.4, p. 1249.

offset against the net tax liability (domestic tax less tax credit) of another category of income (e.g. interest income). Some countries additionally determine the maximum foreign tax credits separately for each source country (so called 'per-country-limitation').[449]

Table 10: Withholding tax rates on royalties relating to patents (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherland	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
IP Box tax rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.8	10
Argentina	10	28	18	28	28	28	28	10	28	10	28	15
Australia	10	30	10	10	30	30	10	10	30	10	10	10
Brazil	15	15/ 25[a]	15	15	15/ 25[a]	15	15/ 25[a]	15	15	12.5	15/ 25[a]	15/ 25[a]
Canada	-	10	-	10	25	-	10	-	10	10	-	-
China	10	10	10	10	10	10	10	10	10	10	10	10
India	20	15	20	10	10	10	15	30	10	20	15	15
Indonesia	10	20	10	15	20	12.5	20	10	10	10	10	15
Japan	10	20	0	10	20	10	20	-	5	10	10	0
Mexico	10	30	10	10	30	10	30	10	10	10	10	10
Russia	-	-	-	-	20	-	20	-	10	5	-	-
Saudi Arabia	15	15	15	7	15	15	7	7	15	8	8	8
South Africa	-	12	-	-	12	-	10	-	10	6	-	-
South Korea	10	20	10	0	20	15	0	10	10	10	5	2
Turkey	10	20	10	10	20	10	10	10	10	10	10	10
United States	-	-	-	-	30	-	10	-	10	10	-	-

Notes: The withholding tax rate depicted in the table is the lower of the tax rates stipulated by the domestic tax rate and the bilateral tax rate depicted in the respective tax treaty, in case such a treaty exists. Information was collected from the IBFD Tax Research Platform, sections 7.3.4 and 7.4.1.3. Information available up to May 1, 2014 was taken into account. [a] The tax rate of 25% applies in the case of royalty payments made to beneficiaries located in low-tax jurisdictions.[450]

[449] *Hungary*: IBFD Tax Handbook (2014), country chapter Hungary, section 6.1.4, p. 530; *Luxembourg*: IBFD Tax Handbook (2014), country chapter Luxembourg, section 6.1.4, p. 710, *Malta*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Malta, section 7.2.6 (version November 2014); *Portugal*: IBFD Tax Research Platform, Corporate Taxation, Country Analysis Portugal, sections 7.2.6.3 and 7.2.6.1 (version November 2014), *Spain*: IBFD (2014), country chapter Spain, section 6.1.4, p. 1122, *United Kingdom*: IBFD (2014), country chapter United Kingdom, section 6.1.4, p. 1249.

[450] A low-tax country is inter alia classified as such if it (i) tax exempts income or taxes it at a rate of less than 20%, (ii) grants tax advantages to a non-resident entity without asking the taxpayer to carry out a substantial economic activity in the country (additional criteria apply which may characterise a jurisdiction as 'low-tax jurisdictions'). It is unclear how IP Box regimes are classified in this respect. In addition, a 'black list' of countries characterised as 'low-tax jurisdictions' is in place. The following IP Box countries are included in the black list: Cyprus, Liechtenstein, Malta, and Switzerland. Though, with respect to Switzerland, effects are currently suspended due to a request filed by the Swiss

In light of excess tax credits, IP Box regimes (partly) lose their appeal. Table 10, which provides an overview of the withholding tax rates on royalties applied by the non-EU G-20 countries vis-à-vis the IP Box countries, demonstrates that this is in fact an issue. Table 10 shows that withholding tax rates on patent royalties between 10% and 20% are common thereby exceeding the majority of IP Box tax rates. This issue is furthermore aggravated by the fact that withholding taxes are generally levied on gross income whereas most IP Boxes apply a 'net income approach'. Hence, excess tax credits may also arise where the nominal IP Box tax rate exceeds the withholding tax rate.

3.7.2 Leeway for IP tax planning within the scope of IP Box regimes

3.7.2.1 Leeway for making use of IP holding companies

The IP Box regimes are generally available for IP holding companies which do not perform any R&D activity on their own. First, as pointed out in section 3.2.3, acquired IP which is not further developed by the taxpayer is eligible for the IP Box regimes in place in Cyprus, France, Hungary, Liechtenstein, Malta, and the Swiss Canton of Nidwalden without any limitations. The regimes in the UK, Luxembourg, and Spain also apply to acquired IP which is not further developed in case additional requirements are met.

Second, the IP Box treatment is generally open to intangible assets created via contract R&D. However, in order for an IP holding to be considered the beneficial owner of intangible assets (and thereby the intangible-related returns) created on its behalf, certain substance requirements must be met as pointed out in section 2.3. In short, the principal should effectively bear the risk of the R&D investment and actively manage and control the R&D activity performed by the contracting party.

In addition, none of the IP Box regimes are limited to intangible assets (exclusively) created at home.[451] Hence, IP holding companies which have commissioned out the creation of intangible assets to foreign affiliates may benefit from the IP Box regimes, provided the respective substance requirements are met. As a consequence, multinational companies have a great leeway to make use of the beneficial IP Box treatment as part of the IP tax planning strategies

government. See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Brazil, sections 7.3.4.3 and 10.6.1 (version June 2014).

[451] Only the Netherlands require some amount of domestic activity with respect to IP which qualifies for the IP Box thanks to the issuance of an 'R&D certificate' (the second 'entry ticket' of the Dutch IP Box regime) (see section 3.2.3). This requirement resembles the substance requirements to which IP holding companies are subject in case of contract R&D arrangements.

involving geographical separation of the creation and the exploitation of intangible assets.

The detailed conditions for the application of certain regimes may, however, place limits on the use of certain IP tax planning structures. As pointed out in section 3.2.2, some IP Box regimes require both economic and legal ownership of IP. Hence, in cases where the taxpayer is the economic owner but is not considered the legal owner, he may not benefit from these regimes.[452] This limits the leeway for separating legal and economic ownership. Such a separation of ownership may also be driven by economic considerations e.g. by reasons of bank covenants or guarantees.[453] In addition, multinationals may want to centralise legal ownership of IP in order to exploit economies of scale in the processes associated with the management of IP rights (e.g. the registration of IP rights).[454]

The legal ownership requirement may also involve that the IP Box treatment not be available for companies which sub-license IP and thereby do not hold the legal ownership or did not register the IP right, respectively.[455] In contrast, the regimes in place in Liechtenstein and the United Kingdom are explicitly available in case the taxpayer is not the legal owner but holds an exclusive license in relation to qualifying IP rights.[456]

Several IP Box regimes have active ownership conditions in place which exclude IP holding companies with little or no substance from the IP Box treatment. In contrast, the Liechtenstein and Swiss (Canton of Nidwalden) IP Box regimes do not require that the taxpayer performs a considerable amount of management activity in relation to eligible IP rights.[457]

Irrespective of whether the respective IP Box regime involves an active ownership condition or not, transfer pricing rules[458] limit the leeway for benefitting from the IP Box in the case of IP holding companies with no or only

[452] See Paardekooper et al. (2006).

[453] See Macovei and Rasch (2011), pp. 25 et seq.

[454] See Karkinsky and Riedel (2012), p. 179.

[455] See Schaffner et al. (2009), p. 382.

[456] *Liechtenstein*: Felder (2013), pp. 212 et seq.; *United Kingdom*: Article 357B (2)(b) CTA 2010, Obuoforibo (2013), pp. 484 et seq.

[457] See Felder (2013), pp. 212 and p. 304.

[458] Almost all IP Box countries already have transfer pricing rules in place that are based on or consider the OECD transfer pricing guidelines. Malta constitutes an exception to this. In the case of Luxembourg, transfer pricing rules are not codified in domestic law. Instead, a circular refers to the application of the OECD guidelines. See IBFD (2014), section 7.2 of the country chapters for Belgium, Cyprus, France, Hungary, Liechtenstein, Luxembourg, Malta, the Netherlands, Portugal, Spain, Switzerland, and the United Kingdom.

very little substance. In order for the IP holding to be considered the beneficial owner of the IP income for transfer pricing purposes, it must actively manage the IP in order to be recognised as the beneficial owner of the royalty income.[459] In the case of IP holding companies which are pure letterbox companies, a foreign country might claim the right to tax the income received by the IP holding company arguing that a company resident in its jurisdiction is in fact the beneficial owner of the income. This shows how important it is to identify first whether the taxpayer is entitled to the IP income based on transfer pricing rules before considering whether he is eligible for the IP Box treatment. If a second country in addition to the IP Box country taxes the IP income claiming jurisdiction to tax this results in double taxation.

Another problem is that making use of an IP Box may trigger controlled foreign company (CFC) rules[460] in place in the residence country of the ultimate parent of a group. This may be the case if the respective CFC rules takes into account the tax rate deduction granted by the IP Box when assessing whether the IP Box country is considered to be a low-tax country. Given the thresholds currently operated by many CFC rules it is a legitimate concern that the application of the IP Box tax rate triggers CFC rules.[461]

However, within the European Union and the European Economic Area CFC rules have become largely ineffective in counteracting tax planning (as opposed to tax evasion) due to ECJ case law. In the 'Cadbury Schweppes' case, the ECJ argued that in order to not violate the freedom of establishment, CFC rules must be targeted at 'wholly artificial arrangements'. This involves that member states should not apply their CFC rules in case of 'genuine economic activity' where CFCs resident in another member state of the EU or the EEA are concerned.[462] As a result, IP tax planning structures making use of the IP Box regime of a member state of the EEA are generally not negatively affected by CFC rules in place in another EEA member states.[463]

Finally, the scope of eligible types of IP and IP income also puts limits to making use of IP Box regimes for IP tax planning purposes. The larger the scope of an IP

[459] See sections 2.2.2 and 2.3.

[460] For details, see section 2.2.3.4.

[461] See Dalhberg and Wiman (2013), p. 37.

[462] This is discussed in detail in section 6.3.3.1.

[463] Whether a specific case at hand triggers CFC rules or not requires a case-by-case assessment as member states' and countries' practices differ. Member states designed their CFC rules to account for the ECJ case law in different ways. Not all CFC rules of the EU member states are considered to comply with the requirements of primary European law as specified in the 'Cadbury Schweppes' case (see Möller (2010)).

Box regime, the larger the potential for reducing the overall tax burden of a multinational group by shifting income to a group company benefitting from an IP Box by means of intra-group licensing or franchising agreements. A wide scope of eligible types of IP income furthermore allows companies to remain flexible with respect to how they exploit their IP, whether by licensing-out, sale, or internal use.

3.7.2.2 Leeway for inflating the IP Box tax base

The fact that IP Box regimes offer a considerably reduced tax rate for certain categories of income provides incentives to inflate the IP Box tax base. This could be done by (i) overstating intra-group royalty payments, (ii) overstating the fraction of income from mixed sources[464] which is attributable to the use of eligible IP at the expenses of income which is not eligible, or (iii) overstating notional royalty fees in the case of internal use of IP. This also indicates that the IP Box regimes which are characterised by a wide scope of eligible IP income are characterised by the widest leeway for tactical tax planning.

All three approaches may be encountered by the IP Box countries by drawing on transfer pricing rules[465] but result in additional administrative burden for the taxpayer and the tax administration. With respect to notional royalties and the split of income from mixed sources, this involves applying transfer pricing rules to purely intra-company transactions in addition to inter-company transactions.

Finally, in case the IP Box tax rate is applied to IP profits, the IP Box tax base may also be inflated by allocating current IP expenses (such as IP management or financing costs) to non-IP income.

3.7.2.3 Leeway for reducing the overall tax burden by co-locating IP-related and non-IP-related functions

IP Box regimes which allow deducting expenses relating to IP Box income from regularly-taxed non-IP income make it possible to reduce the overall tax burden levied on IP-related activity and non-IP-related activity by co-locating investment giving rise to non-IP Box income alongside investment giving rise to IP Box income. This proposition is based on the following considerations.

Expenses which are deductible from the tax base act to shield income from taxation, with the value of the tax shield being determined by the tax rate at which the expenses are deductible, meaning the higher the tax rate at which the IP expenses are deductible the higher the tax shield associated with the tax

[464] See section 3.3.1.

[465] See section 3.3.1.

deduction. The possibility to deduct expenses associated with IP income from non-IP income comes to nothing if the taxpayer does not earn sufficient non-IP income from which to deduct the IP expenses. As a consequence, the value of the tax shield is determined by the lower IP Box tax rate even if the IP Box tax base is determined based on the 'gross income approach'. However, in this case, multinational companies may increase the value of the tax shield associated with the deduction of IP expenses by shifting non-IP income to the affiliate benefitting from the IP Box regime. This entails that non-IP Box income is shielded from taxation thereby reducing the group's overall effective tax burden.

This provides an incentive to co-locate non-IP activities such as manufacturing, distributions, or intra-group financing in order to generate non-IP income against which IP expenses may be offset. This implies that IP Box regimes applying the 'gross income approach' are particularly well suited for tax planning structures which make use of a principal company. Such structures imply that risks are centralised in the hands of the principal company. As a consequence, they allow for allocating a significant share of the overall profits of a group of companies to the principal company, as transfer pricing rules, to a large extent, allocate income to group entities based on risk-allocation.[466] Not all of the income allocated to a principal company will constitute income which is eligible for the IP Box treatment. Due to the possibility of deducting expenses relating to IP Box income from regularly-taxed non-IP income, the respective IP Box regimes nevertheless make it possible to achieve an overall tax burden of the principal which is lower than the weighted average[467] of the regular tax rate and the IP Box tax rate.

[466] For details, see section 2.3.2.1.

[467] Weighed by the shares of the profits derived from activities eligible for the IP Box treatment and activities which are not eligible.

4 Analysis of IP Box Regimes drawing on Effective Tax Rates*

In this section, the European IP Box regimes are incorporated into measures of effective tax rates. Effective tax rates serve as an analytical tool for identifying the effects of taxes on investment decisions. They point out distortions of taxes on investment decisions and indicate possible effects of tax incentives. Effective tax rates go beyond the statutory tax rate by incorporating additional aspects of a tax system, i.a. tax allowances. Hence, an analysis of the IP Box regimes which draws on effective tax rates goes beyond the nominal statutory IP Box tax rate. It also takes into account the treatment of the R&D investment expenditures and financing costs.

4.1 Effective tax rates methodology

4.1.1 The Devereux & Griffith Model for calculating effective tax rates

I apply the methodology put forward by Devereux and Griffith[468] when modelling the impact of IP Boxes on the effective tax burden. The Devereux & Griffith model assumes a forward-looking perspective in the sense that it models the tax burden as perceived by companies facing a hypothetical investment decision. It assumes that companies invest in capital as long as the (decreasing) marginal returns cover the marginal costs, the cost of capital. The cost of capital is the minimum required pre-tax real rate of return on the investment, given a post-tax real rate of return of an alternative investment on the capital market required by the investor ('financial investment' in what follows). In line with neoclassical investment theory, this approach rests on the assumption of a perfect capital market under certainty and that the real investment is successful.

The cost of capital is used to analyse the effects of tax on marginal investment decisions, and therefore on the scale of investment. In turn, the effective average tax rate (EATR) demonstrates the effects of tax on a profitable investment project. The EATR is calculated as the percentage difference in the net present value (NPV) of an investment in both the absence and presence of tax. This measure is therefore relevant for exploring how tax affects companies' choices between different profitable investment opportunities. Discreteness of investment decisions can arise for example when investment funds are limited, so

* This section is mainly based on joint work with Helen Miller and Christoph Spengel (see Evers et al. (2014)). Please note that the effective tax measures presented here for Belgium and Liechtenstein slightly deviate from the results presented in Evers et al. (2014), as the notional interest deduction available for equity capital in these two countries is modelled in a slightly different way.

468 See Devereux and Griffith (1999, 2003). They build on the work of Jorgenson (1963), Hall and Jorgensen (1967) and King and Fullerton (1984).

that not all profitable investment projects can be carried out. Deciding in which country to carry out a profitable investment project i.a. constitutes a discrete investment decision. A comparison of the EATR therefore allows for assessing the attractiveness of IP Box countries in terms of a location for investment in R&D giving rise to intangible assets and in terms of a location for the exploitation of such assets.

The standard case of the Devereux & Griffith Model refers to an operating company that invests in five different kinds of assets. These are machinery, industrial buildings, inventory, financial assets, and acquired patents. Furthermore it differentiates between three ways of financing: retained earnings, new equity, and debt.[469]

For the purpose of determining effective tax rates associated with the IP Box regimes, I refer to an R&D investment giving rise to a self-developed patent. Hence, in contrast to the standard case of the Devereux & Griffith Model, I focus on a single asset, a self-developed patent. In doing so, I assume that all investment costs are current in nature (e.g. wages for R&D staff or materials). Current expenses generally account for the largest share of R&D expenditures.[470]

Equation (1) represents the after-tax NPV of an investment in a self-developed patent financed with equity. The model considers a hypothetical investment that takes place in one period and generates a return in the next period. In line with previous literature, the R&D investment is modelled based on the decisive assumption that the R&D expenditures' value is not realised immediately but accrues over several periods.[471] In what follows, I take the perspective of a large multinational company which raises investment funds on the international capital market. Therefore the taxation of the individual investors is disregarded in what follows.[472]

$$R = \underbrace{-(1-A)}_{term\ 1} + \underbrace{\frac{(p+\delta)(1+\pi)}{1+i}(1-\tau)}_{term\ 2} + \underbrace{\frac{(1-\delta)(1+\pi)}{1+i}(1-A)}_{term\ 3} \qquad (1)$$

Profit taxes, most notably corporate income taxes, affect the NPV of the R&D investment in two ways. First, the tax allowance granted for R&D expenses acts as a tax shield which shields part of the investment return from taxation. This is because all countries considered here allow current R&D expenses incurred in

469 See Devereux and Griffith (1999, 2003), Schreiber et al. (2002), Spengel (2003), pp. 68 et seq.

470 See Cameron (1996), Dougherty et al. (2007), OECD (2012b).

471 See Hall and van Reenen (2000), p. 451, McKenzie (2008).

472 In this case, it is reasonable to assume that due to the lack of information concerning the tax treatment of the marginal shareholder the taxation at the shareholder level is not taken into account for investment decisions.

the creation of a self-developed intangible asset to be expensed immediately when they are incurred. This reduces the investment outlay in period 1 (first term of equation (1)).

$$A = \underbrace{\varphi_0 \tau}_{Immediate\ deduction} - \underbrace{\varphi_0 \tau}_{Capitalisation} + \underbrace{\varphi\tau\{\frac{1}{1+i}^{1} + \cdots + \frac{1}{1+i}^{ul}\}}_{\text{Periodical depreciation}} \quad (2)$$

Only very few countries stipulate the capitalisation of self-developed intangible assets. Among the countries considered here only Portugal and Cyprus require capitalisation of self-developed patents upon meeting certain requirements.[473] Equation (2) denotes the NPV of tax allowances in this case. The first term of equation (2) illustrates the immediate deduction of &D expenditures; variable φ_0 reflects the share of R&D expenditures which may be immediately deducted, usually 100%. The second term of equation (2) depicts the capitalisation of the patent which compensates for the immediate deduction. Please note that I make the simplifying assumption that the immediate deduction and subsequent capitalisation occur in the same period.[474] Hence, the first two terms of equation (2) cancel out each other. The third term accounts for the subsequent depreciation of the patent. Variable φ represents the depreciation rate and ul denotes the useful life of the asset. Variable i depicts the nominal capital market interest rate.

If self-developed intangibles do not have to be capitalised, as is the case in most of the countries considered here, the NPV of the tax allowances equals the first term of equation (2). In this case the NPV of the tax allowances is equal to the profit tax rate (A=τ).

A second tax consequence, the return generated from exploiting the patent which accrues in the second period, is subject to profit tax at the rate τ (second term of equation (1)). This return comprises the real financial return of the investment (p) and the one-period wear-off of the patent (variable δ denotes the economic depreciation rate). The variable π reflects the inflation rate. The third term of equation (1) finally reflects that the model considers a one-period perpetuation of the capital stock instead of a permanent capital stock increase.[475]

[473] For details, see section 2.1.1, footnote 34.

[474] As a consequence, there are no timing effects resulting from the fact that R&D expenses remain deductible until a self-developed intangible asset is created. Within this two-period framework, the alternative is to assume that capitalisation and exploitation happen in the second period. However, this would not lead to significantly different results. Since the model considers a perturbation of the capital stock assuming that an investment is antedated by one period, the actual length of the R&D investment is irrelevant.

[475] For a more detailed discussion of the methodology, see Devereux and Griffith (1999, 2003), Spengel and Lammersen (2001), and Schreiber et al. (2002).

The cost of capital (denoted by equation (3)) is derived from equation (1) by setting the after-tax NPV of the investment equal to zero, and rearranging the equation to isolate the rate of return *p*.

$$\tilde{p} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau)} - \delta \tag{3}$$

The EATR is defined as the difference between the NPV of the investment in the absence of taxes (denoted by R^* where $R^* = (p+r)/(1+r)$) and in the presence of taxes (R) put in relation to the NPV of the pre-tax total income stream net of depreciation (the rate of return). This is depicted by equation (4).

$$EATR = (R^* - R)/(\frac{p}{(1+r)}) \tag{4}$$

For debt-financed investment, a financing term (depicted by equation (5')) must be added to the net present value of the investment denoted by equation (1). The underlying idea is that, in the case of equity financing by way of retained earnings, the investment reduces the funds which may be distributed to the shareholders. This is reflected by the first term of equation (1). If, in contrast to this, the investment is financed with debt, these funds may be distributed in period one. This is depicted by the first term of equation (5). In turn, the distribution available in period 2 is reduced by the amount of the loan repayment and the interest expenses (i is the nominal interest rate) as illustrated by the second term of equation (5).

$$F^D = (1 - \tau\varphi_0) - \frac{(1-\tau\varphi_0)\big(1+i(1-\tau)\big)}{1+i} \tag{5}$$

$$F^D = \frac{(1-\tau\varphi_0)\big(i-i(1-\tau)\big)}{1+i} \tag{5'}$$

The interest expenses are deductible from the corporate income tax base (see second term of equation (5)). Hence, in the case of debt-financing of investment, the marginal return is shielded from profit taxation as interest payments are generally tax-deductible. The value of the tax shield is equals to the product of the nominal interest rate and the profit tax rate.

Equation (6) depicts the cost of capital for debt-financed investments. Please note that equation (6) only differs from the equation depicting the cost of capital of equity-financed investment (equation (3)) with respect to the third term, which is added.

$$\tilde{p}^D = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau)} - \delta - \frac{(1-\tau\varphi_0)(i-i(1-\tau))}{(1+\pi)(1-\tau)} \tag{6}$$

For equity-financed investment, a financing term must only be added if taxpayers may deduct notional interest expenses (so called 'notional interest deduction'). Equations (7) and (8) depict the financing term and the costs of capital for this

case. As in the case of debt-financed investment, the marginal return is fully shielded from profit taxation if the rate of the notional interest deduction, denoted by i_{NID}, equals the capital market interest rate.

$$F^{NID} = \frac{(1-\tau\varphi_0)\tau i_{NID}}{(1+i)} \tag{7}$$

$$\tilde{p}^{NID} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau)} - \delta - \frac{(1-\tau\varphi_0)\tau i_{NID}}{(1+\pi)(1-\tau)} \tag{8}$$

4.1.2 Incorporating IP Box regimes into measures for effective tax rates

Most evidently, when incorporating the IP Box regimes into the effective tax measures, the IP Box tax rate takes the place of the regular profit tax rate in the second term of equation (1) which illustrates the after-tax NPV of the investment. In addition, the IP Box regimes may affect the treatment of the R&D expenditures as well as the treatment of financing costs. In the following, the adjustments to the Devereux & Griffith Model are described in detail.[476]

4.1.2.1 IP Box treatment of R&D investment expenses

The treatment of the R&D investment expenses under the IP Box regimes is reflected in the NPV of tax allowances denoted by variable A. In line with previous literature, I assume that the taxpayer generates sufficient other income in order to immediately benefit in full from any tax deductions (i.e. taxpayers are not tax-exhausted).[477] The assumption of no tax exhaustion is most appropriate in the case of large mature companies that also generate income from other investment projects.[478]

Recall, all countries considered here do not require capitalisation of self-developed patents under the regular tax system, except for Portugal and Cyprus. This implies that the NPV of tax allowances equals the regular tax rate ($A=\tau$). This is also the relevant value of tax allowances in countries that require no recapture of R&D expenses within the scope of their IP Box regimes (Belgium, France, Hungary, Spain, and Switzerland). This is the most generous treatment of R&D expenses under the IP Box regimes. The treatment of R&D expenses in the other countries is modelled in one of four ways which are described in the following.

[476] The analysis does not take into consideration expenses incurred in the on-going management of IP as these do not constitute investment expenditures.

[477] See Devereux and Griffith (1999, 2003), Spengel and Lammersen (2001), Schreiber et al. (2002), Spengel (2003), pp. 68 et seq.

[478] If, in contrast to this, the taxpayer is tax-exhausted, the tax benefits associated with tax allowances are delayed. As a consequence, the NPV of tax allowances is lower and thereby the effective tax rates are higher than in the case of no tax exhaustion. See Devereux et al. (2002).

For the UK, I assume an investment project that is undertaken after the IP Box regime was first opted for.[479] The NPV of allowances is therefore based on the IP Box tax rate and is best reflected by equation (9).[480]

$$A = \tau_{IP\ Box} \tag{9}$$

In contrast, the tax treatment of R&D investment projects which are undertaken before the IP Box is first opted for is more generous. This is because the deduction of the R&D costs from regularly-taxed income does not have to be recaptured whereas the investment returns are subject to the IP Box tax rate.

Liechtenstein, Luxembourg, and the Netherlands explicitly require that (research and) development expenses be recaptured when the IP Box is opted for. They operate two different methods to do so: capitalisation and the 'threshold mechanism'.

In Luxembourg, development expenses have to be recaptured by means of capitalisation. The intangible asset is subsequently subject to periodical depreciation applying the straight-line depreciation method. Again, I make the simplifying assumption that the immediate deduction and subsequent capitalisation occur in the same period. As the IP Box in place in Luxembourg applies to IP profits ('net income approach'), the IP Box tax rate is decisive for the NPV of the periodical depreciation allowances. Equation (10) denotes the overall value of the allowances for R&D expenditures under the Luxembourg regime, where the variable φ_0 reflects the share of R&D expenditures which may be immediately deducted (usually 100%), φ represents the depreciation rate (equal to 1 for immediate deduction), and n is the useful life of the asset.

$$A = \underbrace{\varphi_0 \tau}_{Immediate\ deduction} - \underbrace{\varphi_0 \tau}_{Capitalisation} + \underbrace{\varphi \tau_{IP\ Box} \{\frac{1}{1+i}^1 + \cdots + \frac{1}{1+i}^n\}}_{Periodical\ depreciation} \tag{10}$$

In Cyprus and Portugal, capitalisation of the development costs of self-developed patents is mandatory under the regular tax system as well as when applying the IP Box regime. The asset is subsequently subject to tax depreciation.[481] Under the Cypriot IP Box, which applies to IP profits, the depreciation allowances are

[479] Recall, once the British Patent Box is first opted for, all R&D expenses are indirectly allocated to IP income in line with the ratio of qualifying income to total income, or allocated according to the streaming approach. See section 3.3.2.2.

[480] When implementing the UK regime in the model, I assume that the return to the self-developed patents fully constitutes eligible income. Hence, no return to routine functions is deducted when implementing the IP Box into the model, as R&D expenses are explicitly excluded from the routine deductions. Furthermore, assuming that the return of investment reflects a return net of expenses for marketing intangibles, no return to marketing assets is deducted.

[481] For details, see sections 2.1.1 and 3.3.2.3.

deductible at the IP Box tax rate. Hence, the NPV of tax allowances is modelled as in the case of the Luxembourg IP Box regime (see equation (10)). In contrast, the regime in place in Portugal applies to gross IP income. Depreciation allowances are therefore deductible at the regular tax rate. [482] In this case, the NPV of tax allowances under the IP Box regime equals the NPV under the regular tax system which is depicted by equation (2).

In the Netherlands and Liechtenstein, the recapture mechanism involves that IP income up to the development expenses be taxed at the general profit tax rate. Only income exceeding the development expenses benefits from the lower IP Box rate ('threshold mechanism'). Hence, the IP Box tax rate does not necessarily apply immediately when IP income is earned. This variant of the recapture of R&D expenses cannot be precisely modelled in the two-period framework of the Devereux & Griffith model.[483] I therefore model this approach analogous to the approach applied for the UK (equation (9)). I consider this to be the most reasonable approximation to the threshold mechanism with respect to aligning the tax treatment of IP expenses and IP income. It is, however, slightly less generous than the threshold mechanism.

Finally, I account for the fact that the IP Box treatment under the Maltese regime is only granted on the condition that no associated expenses (current and past) are deducted. I do so by setting the NPV for tax allowances equal to zero ($A = 0$).

4.1.2.2 IP Box treatment of financing expenses

In the case of debt-financed investment, tax-deductible interest payments give rise to a tax shield equal to the product of the nominal interest rate and the profit tax rate. The same holds true for equity-financed investment if taxpayers may deduct notional interest expenses within the scope of a notional interest deduction.

In case the IP Box regime requires financing expenses (including notional interest expenses) to be allocated to IP income ('net income approach'), the value of the tax shield depends on the IP Box tax rate ($i * \tau_{IP\ Box}$). Equations (11) and (12) illustrate the financing term and the cost of capital, respectively, in this case.

$$F^D = \frac{(1-\tau\varphi_0)\left(i-i(1-\tau_{IP\ Box})\right)}{1+i} \tag{11}$$

$$\tilde{p} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_{IP\ Box})} - \delta - \frac{(1-\tau\varphi_0)(i-i(1-\tau_{IP\ Box}))}{(1+\pi)(1-\tau_{IP\ Box})} \tag{12}$$

[482] See section 3.3.2.1 for further details.

[483] Assuming a rate of return of 20% and an economic depreciation rate of the self-developed patent of 15.35%, the income from exploiting the patent only exceeds the investment expenditures in period three.

In the opposite case that financing expenses may be deducted from other income ('gross income approach'), the tax value of the interest deduction is determined by the higher regular corporate income tax rate ($i * \tau$).[484] This means that the value of the interest tax shield is not affected by the IP Box regime. As a consequence, the financing term equals equation (5) above. Equation (13) depicts the cost of capital which results from this.

$$\tilde{p} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_{IP\ Box})} - \delta - \frac{(1-\tau\varphi_0)(i-i(1-\tau))}{(1+\pi)(1-\tau_{IP\ Box})} \quad (13)$$

The treatment of financing expenses under the IP Box regimes is also of relevance in case a notional interest deduction is available for equity-financed investment. Equations (14) and (15) denote the financing term and the cost of capital for an equity-financed investment which benefits from a notional interest deduction in case the 'net income approach' applies. This implies that the lower IP Box tax rate is decisive for the notional interest tax shield.

$$F^{NID} = \frac{(1-\tau\varphi_0)*i_{NID}*\tau_{IP\ Box}}{(1+i)} \quad (14)$$

$$\tilde{p} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_{IP\ Box})} - \delta - \frac{(1-\tau\varphi_0)*i_{NID}*\tau_{IP\ Box}}{(1+\pi)(1-\tau_{IP\ Box})} \quad (15)$$

In turn, equations (16) and (17) denote the financing term and the cost of capital under the 'gross income approach'. In this case, the regular tax rate determines the value of the notional interest tax shield.

$$F^{NID} = \frac{(1-\tau\varphi_0)*i_{NID}*\tau}{(1+i)} \quad (16)$$

$$\tilde{p} = \frac{(1-A)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_{IP\ Box})} - \delta - \frac{(1-\tau\varphi_0)*i_{NID}*\tau}{(1+\pi)(1-\tau_{IP\ Box})} \quad (17)$$

[484] For details, see section 3.3.2.1.

4.1.3 Incorporating R&D tax incentives into measures for effective tax rates

R&D tax incentives are also incorporated in the model through their effect on the NPV of tax allowances. Equation (18) represents the NPV of R&D tax incentives including any immediate write-offs of investment expenditures (first term), accelerated depreciation of R&D assets (second term), super deductions (third term), as well as tax credits (fourth term). The variable φ_0 again reflects the share of the expenditures which may be immediately deducted. The variables v and w refer to the rate of the super deduction and the rate of the tax credit, respectively.

$$A_c = \underbrace{\varphi_0 \tau}_{\substack{Immediate \\ deduction}} + \underbrace{A_d}_{\substack{Accelerated \\ depreciation}} + \underbrace{v * \tau}_{Super\ deduction} + \underbrace{w}_{Tax\ credit} \tag{18}$$

4.2 Effective tax rates associated with IP Box regimes

4.2.1 Main results - investment in a self-developed patent generating licensing income

Table 11 presents the cost of capital and the EATR for a domestic, equity-financed investment in a self-developed patent which is licensed out and generates royalty income. The results presented for the regular tax system serve as a benchmark for analysing the effects of the IP Box regimes on the effective tax burden. Possible implications of cross border investments are discussed at the end of section 4.2.1.2. In addition, results for other types of IP and other kinds of IP income are presented in section 4.2.3.2.

The results are based on the following assumptions: the capital market real interest rate (r) is 5%, the inflation rate (π) is 2% (such that the nominal interest rate (i) is 7.1%), profitable investments earn a uniform pre-tax rate of return (p) of 20%, and the economic depreciation rate for a self-developed patent is 15.35%.[485]

4.2.1.1 Marginal investment

The cost of capital depicted in table 11 demonstrates the effect of tax on a marginal investment, which is one that just breaks even. When the after-tax cost of capital is 5% and thereby equal to the assumed real market rate of interest, taxation does not affect the investment decision. An effective marginal tax rate (EMTR) can be straightforwardly computed as the difference between the cost of capital and the real market rate of interest, divided by the cost of capital.[486] I do, however, not present the EMTRs as they cannot be interpreted when the cost of capital is negative as is the case in some IP Box countries.[487]

[485] Analogous to acquired patents following Devereux et al. (2008), p. 5, Spengel et al. (2014), p. B-1 table B-1.

[486] See Devereux & Griffith (2003), p. 111.

[487] As illustrated by equation (4), the EMTR is calculated by dividing the difference between the cost of capital and the market interest rate by the cost of capital. Under this mode of calculating the EMTR, a negative cost of capital results in very large, positive effective marginal tax rates. Hence, this mode of calculation is not applicable when the cost of capital is negative.

Table 11: Cost of capital for an equity-financed investment in a self-developed patent (2014)

	Belgium	Cyprus[488]	France[489]	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal[490]	Spain[491]	Switzerland, Nidwalden	United Kingdom[492]
IP Box treatment of R&D expenses												
	A	S	A	A	S	S	S	S	A	A	A	S
Tax rates (%)												
Main rate	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21
IP Box rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.84	10
Cost of Capital (%)												
Regular tax system	4.12	5.53	5.00	5.00	4.51	5.00	5.00	5.00	7.62	5.00	5.00	5.00
IP Box	-1.56	5.10	0.44	2.86	4.90	5.23	5.00	5.00	3.57	1.53	4.15	5.00

Abbreviations: A – Asymmetrical, S – Symmetrical, Y – Yes, N – No.

Assuming that the costs incurred in creating a patent are current in nature and that patents do not need to be capitalised[493] (as is the case in the countries under consideration with the exception of Cyprus and Portugal), the immediate deduction of R&D expenses under the regular tax system involves that marginal investments are unaffected by taxation. In Belgium and Liechtenstein, the

[488] In Cyprus, the regular tax system stipulates the capitalisation of costs incurred for development of intangibles upon qualifying as an intangible asset. As depreciation allowances have to be allocated to IP income in order to determine the IP Box tax base ('net income approach') they are deductible from the IP Box tax rate. As a consequence, R&D expenses and IP income are treated symmetrically.

[489] The results presented for France are based on the assumption that the 10.7% surcharge applicable to companies with a turnover exceeding EUR 250 Mio. does not apply. Including this surcharge the main rate and the IP Box tax rate amount to 38.93% and to 18.34%, respectively. This is associated with cost of capital of -0.13 if the IP Box regime applies.

[490] In Portugal, the regular tax system stipulates the capitalisation of costs incurred for development of intangibles upon qualifying as an intangible asset. As Portugal applies the IP Box tax rate to gross income, the depreciation allowances are nevertheless deductible at the regular tax rate. As a consequence, R&D expenses and IP income are treated asymmetrically.

[491] In case of self-developed intangibles that are not capitalised, the Spanish Patent Box does not require associated R&D expenses to be recaptured, but assumes that the amount of IP income eligible for the IP Box treatment equals 80% of the gross IP income.

[492] I assume that the Patent Box is already fully available instead of being phased in over a period of 4 years. I furthermore assume that the Patent Box was opted for before so R&D expenses for new R&D projects are deductible only at the Patent Box tax rate (symmetrical treatment). For investment projects which already took place and were expensed at the regular corporate tax rate, the cost of capital would be 2.06%.

[493] I assume that the taxpayer does not make use of any option to capitalise the investment expenses of the self-developed patent. This minimises the effective tax burden. For details, see section 2.1.1.

application of a notional interest deduction for equity capital reduces the cost of capital below the market interest rate.[494] In contrast to this, the requirement to capitalise self-developed intangible assets drives the cost of capital above the capital market interest rate in Cyprus and Portugal.[495]

The results presented in table 11 show that IP Box regimes can substantially lower the cost of capital. This effect results entirely from the IP Box tax base. When R&D expenses are not recaptured and thereby remain deductible at the ordinary corporate tax rate, the value of the tax shield associated with the deduction of R&D expenses is higher than the tax levied on the corresponding income. This drives the cost of capital below the market interest rate. In this case, the cost of capital decreases in the regular tax rate. This is because the value of the tax interest tax shield increases with the tax rate.

Cost of capital below the capital market interest rate indicates that the respective investment is treated in a more tax-beneficial manner than a financial investment, which serves as a benchmark. Under the Belgian IP Box, the mismatch of R&D expenses and IP income is sufficient to produce negative cost of capital.

The examples of Liechtenstein and Luxembourg show that the IP Box may also be associated with higher cost of capital than under the regular tax system. This implies that an investment in a self-developed patent is unfavourable compared to the financial investment due to the application of the IP Box. In the case of Liechtenstein, this is because the notional interest deduction has to be partially attributed to IP income which reduces the value of the notional interest deduction. In the case of Luxembourg, the cost of capital exceeds the capital market interest rate because the regime requires that R&D expenses be capitalised.

In the case of the UK, I assume that the investment is undertaken by a company that already opted for the IP Box. That means the value of the tax deduction of R&D expenses is determined by the IP Box tax rate.[496] The regime provides a more generous treatment for investment projects that were carried out before the IP Box was first opted for and which were expensed at the regular corporate

[494] For the financial year 2014, the rates for the notional interest deduction are 2.63% in Belgium and 4% in Liechtenstein.

[495] This effect is more pronounced in Portugal than in Cyprus, as the depreciation rate for tax depreciation of patents is lower in Portugal. This effect is intensified by the comparably high Portuguese profit tax rate of 30%.

[496] Once a company has opted into the regime, R&D expenses are either indirectly allocated to IP income in line with the ratio of qualifying income to total income or they are allocated to individual items of IP income according to the streaming approach. See section 3.3.2.2 for details.

tax rate. In such cases the cost of capital amounts to 2.06% and is thereby below the capital market interest rate.

4.2.1.2 Profitable investment projects

The EATR serves as an indicator for a country's attractiveness for investment. The EATRs presented in table 12 are based on the assumption that the investment project generates a rate of return of 20%. As shown in table 12, all IP Box regimes result in a significant reduction of the EATR when compared to the regular tax system.

Table 12: Effective average tax rate (EATR) of an equity-financed investment in a self-developed patent (2014)

	Belgium	Cyprus	France[497]	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
IP Box treatment of R&D expenses												
	A	S	A	A	S	S	S	S	A	A	A	S
Tax rates (%)												
Main rate	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21
IP Box rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.84	10
EATR (%)												
Regular tax system	22.60	11.69	26.56	14.25	7.23	21.92	26.25	18.75	31.68	22.50	9.50	15.75
IP Box	-25.46	2.34	-6.41	-2.54	1.40	5.47	0.00	3.75	5.17	-2.95	2.74	7.50

Abbreviations: A – Asymmetrical, S – Symmetrical, Y – Yes, N – No.

For four of the countries, the asymmetric treatment of R&D expenses and IP income results in a negative EATR (Belgium, France, Hungary, and Spain). This implies that the after-tax NPV of the R&D investment is larger than the pre-tax NPV. As R&D expenses do not have to be recaptured, the regular profit tax rate is decisive for the NPV of the tax allowance, whereas the return is taxed at the lower IP Box tax rate. This drives the EATR below zero in these countries. Please note that, as the profitability of the project increases, the EATR eventually become positive for all countries, and approaches the IP Box rate.[498]

[497] The results presented for France are based on the assumption that the 10.7% surcharge applicable to companies with a turnover exceeding EUR 250 Mio. does not apply. Including this surcharge, the main rate and the IP Box tax rate amount to 38.93% and to 18.34%, respectively. This is associated with an EATR of 29.20% under the regular tax system and an EATR of -7.19% if the IP Box regime applies.

[498] Table 15 in section 4.2.2 shows EATRs for investment earning a rate of return of 40%. All IP Box regimes, except for Belgium, are associated with a positive EATR in this case. The EATR associated with the Belgian regime turns positive, when the rate of return is approximately 100%.

The negative EATRs indicate that the company may shelter non-IP income from taxation due to the asymmetric treatment of IP income and R&D expenses.[499] Please note that this is based on the assumption that the company generates sufficient other income to make use of the possibility to deduct R&D expenses from regularly-taxed income. If this assumption does not hold true, the IP Box tax rate becomes the decisive factor for the effective average tax burden. As a result the EATR is higher than depicted in table 12.

In summary, the results show that IP Boxes substantially reduce the effective tax burden of profitable investment projects and, in most cases, also of marginal investment. Another key finding is that the treatment of expenses may be more decisive than the statutory IP Box tax rate in determining the effective tax burden. Malta, Cyprus, and Liechtenstein offer by far the lowest statutory IP Box rates. However, it is the regimes in Belgium and France followed by Spain and Hungary that can provide the most generous treatment for marginal investments. Belgium and France also offer the most generous treatment of profitable projects. In the case of a relatively high regular tax rate, the lack of a requirement to recapture historical R&D expenses can provide large tax benefits of investment in self-developed patents compared to a financial investment.

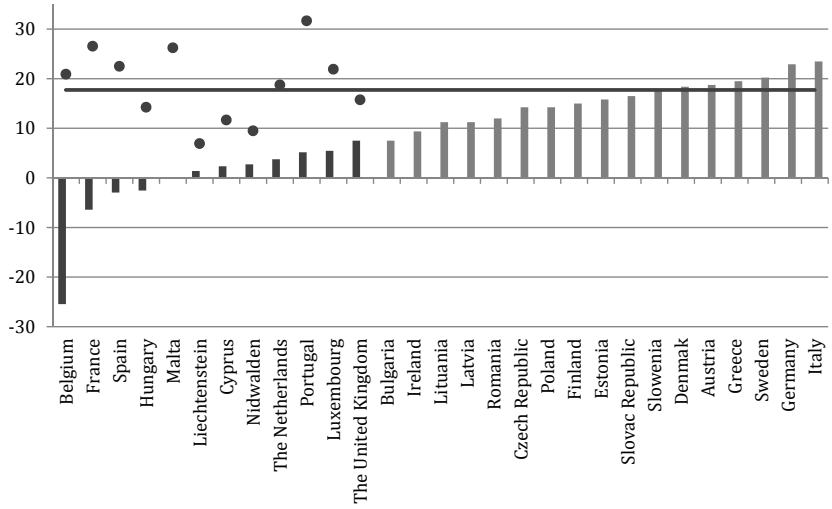
To put these results into a wider perspective, figure 9 compares the EATRs to the remaining EU-member states.[500] IP Box countries lead the country ranking. This is mainly because IP Box regimes offer nominal tax rates below the regular tax rates in other countries. However, this is not always the case. For example, the IP Box rates in France (16.76%), Portugal (12.3%), and Spain (12%) are higher than the regular rate in Bulgaria (10%). However, in these cases the possibility to deduct the R&D expenses at the higher regular profit tax rate ensures that the EATR associated with the IP Box regimes in place in these three countries is still lower than the EATR reported for Bulgaria.

For IP Box countries, the dots in figure 9 show the EATR under the regular tax system. Figure 9 shows, that the implementation of IP Box regimes significantly improves the positions of the IP Box countries in comparison to their fellow EU member states. In Belgium, France, Spain, Malta, Portugal, and Luxembourg, the IP Box regimes reduce the EATR to levels below the EU-27 average EATR (depicted by the horizontal line).

[499] See Graetz and Doud (2013), p. 410.

[500] Only Croatia is disregarded as no information on the treatment of self-developed patents could be obtained.

Figure 9: Ranking of EATRs in 2014 for the EU-27 Member States, Switzerland (Nidwalden) and Lichtenstein (equity-financed investment in a self-developed patent, IP Box regime if applicable)



Notes: With the exception of Estonia, Slovenia, and Sweden, none of the non-IP Box countries under consideration requires that self-developed patents be capitalised for tax purposes. Hence, the R&D expenses are subject to immediate expensing. For Estonia, which levies a distribution tax, the investment is assumed to be financed with retained earnings.

The results presented above only consider domestic investment projects where both the R&D activity and the exploitation of the resulting intangible assets are located in one jurisdiction. In practice, R&D activities and the commercialisation of intangible assets may be located in different jurisdictions. In order to comply with primary European law, the IP Box regimes do not require that the R&D activity giving rise to eligible IP be carried out within national borders. This allows companies to benefit from the IP Box treatment with respect to IP created abroad.

8 of the 12 IP Box countries offer the IP Box treatment for acquired IP without requiring that such IP be further developed by the taxpayer. In addition, all IP Box regimes are applicable to IP generated via contract R&D provided certain substance requirements are met.[501] Hence, in the case of cross-border R&D investment involving contract R&D, multinationals may achieve effective tax rates as low as the ones presented for domestic investment, provided certain substance

[501] For details, see sections 2.3.2.1 and 3.7.2.

requirements are met. If multinational companies earn IP income in an IP Box country and at the same time exploit generous R&D tax incentives granted by another country, they can achieve even lower EATRs than the ones reported in table 12.

4.2.1.3 Historical development of the EATRs associated with the IP Box regimes

Table 13 shows how the EATRs associated with IP Boxes have changed since the implementation of the first regime in 2000. In general, the regimes have been fairly stable. Only the IP Box regimes in France and the Netherlands changed significantly in quantitative terms. In 2010, the Dutch IP Box tax rate was lowered from 10% to 5% resulting in a decrease of the EATR from 7.5% to 3.75%. In 2005, the French IP Box tax rate was reduced from 19% to 15%. This resulted in a reduction of the EATR from -0.35% to -7.76%. The changes reported for France for the years 2000 to 2004, 2006 and 2010 are solely due to changes in the rate of surcharges and additional taxes levied on top of the corporate income tax rate.[502]

The Spanish regime underwent a fundamental reform in 2013. First and foremost, this included a reduction of the IP Box tax rate from 15% to 12% due to an increase of the exempt amount from 50% to 60%. In addition, the definition of the IP Box tax base was revised. First, with regard to current expenses the 'gross income approach' was replaced by the 'net income approach'. Second, in the case of self-developed intangibles not accounted for on the balance sheet, an irrefutable assumption was introduced setting the IP Box tax base to 80% of the IP income.[503] The latter has two implications. First, current expenses do not have to be allocated to IP income. Hence, the 'gross income approach' prevails with respect to self-developed intangibles not accounted for on the balance sheet. Second, only 80% of the IP income is taken as a basis when determining the amount of IP income which is eligible for the 60% deduction from the corporate income tax base under the IP Box regime. This corresponds to an effective nominal tax rate of 15.6%[504] for income from self-developed intangibles which

[502] The following surcharges were applied to the corporate income tax liability in France: 2000: 10% surcharge, 2001: 6% surcharge, 2002 to 2004: 3% surcharge, 2005: 1.5% surcharge; 2000 to 2014: 3.3% large company surcharge levied on the part of the corporate tax which exceeds EUR 763,000. Since 2010, a 1.5% contribution on the added value of enterprises (CAVE) is additionally levied on the turnover (in case the turnover exceeds EUR 152,500). I disregard the exceptional tax surcharge levied on the corporate income tax liability in case the turnover exceeds EUR 250 Mio. (5% in the years 2012 and 2013, 10.7% since the year 2014).

[503] See section 3.3.2.1.

[504] As 80% of the IP income is subject to the 60% notional deduction the effective nominal tax rate amounts to 15.6%.

are not capitalised (as opposed to 15% before the reform). Hence, setting the IP Box tax base to 80% of the IP income more than compensates for the increase of the exemption amount from 50% to 60%. As a consequence, the reform of the Spanish IP Box regime is associated with a small increase of the EATR from -4.01% to -2.95.

Table 13: Historical development of the EATR under the IP Box regimes (equity-financed investment in a self-developed patent)

	Belgium	Nidwalden, Switzerland	Cyprus	Spain	France	Hungary	Portugal	Liechtenstein	Luxembourg	Malta	Netherlands	United Kingdom
2000	-	-	-	-	-0.37	-	-	-	-	-	-	-
2001	-	-	-	-	-0.36	-	-	-	-	-	-	-
2002	-	-	-	-	-0.35	-	-	-	-	-	-	-
2003	-	-	-	-	-0.35	-2.41	-	-	-	-	-	-
2004	-	-	-	-	-0.35	-2.14	-	-	-	-	-	-
2005	-	-	-	-	-7.76	-2.14	-	-	-	-	-	-
2006	-	-	-	-	-7.64	-2.14	-	-	-	-	-	-
2007	-26.72	-	-	-	-7.64	-2.14	-	-	-	-	7.50	-
2008	-27.30	-	-	-4.01	-7.64	-2.14	-	-	5.54	-	7.50	-
2009	-27.48	-	-	-4.01	-7.64	-2.14	-	-	5.35	-	7.50	-
2010	-26.75	-	-	-4.01	-6.41	-2.54	-	-	5.35	0.00	3.75	-
2011	-26.33	2.74	-	-4.01	-6.41	-2.54	-	1.40	5.39	0.00	3.75	-
2012	-25.87	2.74	1.87	-4.01	-6.41	-2.54	-	1.40	5.39	0.00	3.75	-
2013	-25.58	2.74	2.34	-2.95	-6.41	-2.54	-	1.40	5.47	0.00	3.75	7.50
2014	-25.46	2.74	2.34	-2.95	-6.41	-2.54	5.17	1.40	5.47	0.00	3.75	7.50

Remarks: For the UK, I assume that the Patent Box is already fully available instead of being phased in over a period of 4 years.

The small changes reported in table 13 for Cyprus, Hungary, and Luxembourg are due to adjustments of the main rate, which also affected the IP Box tax rate.[505]

[505] *Cyprus*: In 2013, the corporate income tax rate was increased from 10% to 12.5% (see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Cyprus, section 1.10.1 (version November 2014)); *Hungary*: In 2010, the corporate income tax rate was increased from 16% to 19% (see IBFD (2010), country chapter Hungary, section 1.6.1, p. 449); *Luxembourg*: In 2009, the corporate income tax rate was reduced from 22% to 21% resulting in a reduction of the overall profit tax rate from 29.63% to 28.59% (including a surcharge and the municipal income tax) (see IBFD (2009), country chapter Luxembourg, section 1.6.1, p. 588). In 2011, the surcharge was increased from 4% to 5% which led to an increase of the overall profit tax rate to 28.8% (see IBFD (2011), country chapter Luxembourg, section 1.6.1, p. 626). Since 2013, the overall profit tax rate is 29.22% due to an additional increase of the surcharge to 7% (see IBFD (2013), country chapter Luxembourg, section 1.6.1, p. 670).

Finally, the variation in the Belgian EATR results from periodical adjustments of the interest rate underlying the notional interest deduction.[506]

4.2.2 Comparison to R&D tax incentives

France, Hungary, Malta, the Netherlands, Portugal, Spain, and the United Kingdom offer R&D tax incentives for current R&D expenditures in the form of super deductions and R&D tax credits which vary in their generosity.[507] As already shown by other authors, R&D tax incentives can substantially reduce the cost of capital and the effective tax burden.[508] Here, I therefore compare IP Boxes to R&D tax incentives available for current R&D expenses.

The results presented in table 14 show that R&D tax incentives tend to reduce the cost of capital to a larger extent than IP Box regimes. This is not surprising, as R&D tax incentives are explicitly designed to reduce the tax base whereas IP Box regimes essentially constitute income-based tax benefits. The tax credits in place in France, Portugal, and Spain and the super deduction available in Malta are even associated with negative costs of capital.

For profitable investment projects, IP Box regimes tend to reduce the effective tax burden to a larger extent than R&D tax incentives. Assuming that the investment earns a rate of return of 20%, this holds true for the IP Box regimes available in France, Malta, and the United Kingdom whereas the R&D tax incentives available in Hungary, the Netherlands, Portugal, and Spain still result in lower EATR than the respective IP Box regimes. However, as the profitability increases, the tax rate becomes more important for determining the effective tax burden than the tax base and the IP Boxes eventually reduce the EATR by more than R&D tax incentives in all cases. This is depicted by table 15 which shows EATRs for an investment project earning a rate of return of 40%.

---

[506] The following interest rates applied in the respective financial years and were taken as a basis: 2007: 3.781%, 2008: 4.307%, 2009: 4.472%, 2010: 3.8%, 2011: 3.425%, 2012: 3%, 2013: 2.742%, 2014: 2.63% (see IBFD Corporate Tax Handbook (2007-2014), country chapter Belgium, section 1.7.4).

[507] *France*: 30% tax credit for expenses up to EUR 100 Mio. and 5% for expenses above this threshold (the figures presented for France in table 14 are based on the assumption that the qualifying expenses are below the EUR 100 Mio. threshold); *Hungary*: 100% super deduction; *Malta*: 50% super deduction; *the Netherlands*: 60% super deduction; *Portugal*: 32.5% volume-based tax credit, additionally 50% of the expenses exceeding the 2-year average; *Spain*: 25% volume-based tax credit, additionally 42% of the expenses exceeding the 2-year average; *UK*: 10% tax credit (7.9% after-tax). Belgium and Luxembourg offer R&D tax incentives for capital expenditures, but not for current expenditures. For further details and references, see table 1 in section 2.1.1.

[508] See, for example, Hall and van Reenen (2000), Lester et al. (2007), McKenzie (2008), Warda (2001), (2006).

Finally, it should be pointed out that, except for Malta, all countries observed allow both R&D tax incentives and IP Boxes to be applied in combination. This can result in even lower effective tax rates.

Table 14: Comparison of the effective tax burden under IP Box regimes and R&D tax incentives (equity-financed investment in a self-developed patent, 2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
R&D tax incentives for current expenditures												
	N	N	Y	Y	N	N	Y	Y	Y	Y	N	Y
IP Box treatment of R&D expenses												
	A	S	A	A	S	S	S	S	A	A	A	S
Cost of Capital (%)												
Regular tax system	4.12	5.53	5.00	5.00	4.51	5.00	5.00	5.00	7.62	5.00	5.00	5.00
IP Box	-1.56	5.10	0.44	2.86	4.90	5.23	5.00	5.00	3.57	1.53	4.15	5.00
R&D tax incentives	-	-	-4.45	0.23	-	-	-0.48	0.93	-3.24	-3.46	-	2.97
EATR (%)												
Regular tax system	22.60	11.69	26.56	14.25	7.23	21.92	26.25	18.75	31.68	22.50	9.50	15.75
IP Box	-25.46	2.34	-6.41	-2.54	1.40	5.47	0.00	3.75	5.17	-2.95	2.74	7.50
R&D tax incentives	-	-	-3.97	-5.08	-	-	8.44	3.49	-6.33	-7.09	-	7.71

Abbreviations: A – Asymmetrical, S – Symmetrical, Y – Yes, N – No.

Table 15: Comparison of the EATR under IP Box regimes and R&D tax incentives - 40% rate of return (self-developed patent, equity-financing, 2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
R&D tax incentives for current expenditures												
	N	N	Y	Y	N	N	Y	Y	Y	Y	N	Y
EATR (%)												
Regular tax system	28.30	12.10	30.99	16.63	9.87	25.57	30.63	21.88	30.84	26.25	11.08	18.38
IP Box	-9.33	2.42	5.18	3.48	1.95	5.66	0.00	4.38	10.09	6.32	5.79	8.75
R&D tax incentives	-	-	15.72	6.96	-	-	21.72	14.24	11.83	11.45	-	14.36

Abbreviations: Y – Yes, N – No.

4.2.3 Additional scenarios

4.2.3.1 Debt-financed investment in a self-developed patent

In the case of debt-financed investment, the deduction of interest payments from taxable income creates a tax shield. The tax shield's size increases according to the tax rate. Analogous to disregarding the taxation of dividends in the hands of individual shareholders in the case of an equity-financed investment, I also do not consider the taxation of the interest in the hands of the lender. As a consequence, already under the regular tax system, debt-financing results in lower cost of capital than equity financing due to the deduction of interest expenses from the corporate income tax base. This becomes visible when comparing the cost of capital associated with the general tax system in the case of debt-financed investment presented in table 16 to those reported for equity-financing (see table 11 in section 4.2.1.1).[509]

If financing expenses have to be allocated to IP income ('net income approach'), the value of the tax shield associated with the interest deduction is lower than under the regular tax system. As a result, the cost of capital associated with the IP Box is generally higher than under the regular tax system. This is true except in cases where the lack of a recapture rule for historical R&D expenses drives the cost of capital significantly below the capital market interest rate as depicted in table 16.[510] This is the case in France and the Swiss Canton of Nidwalden.

In contrast to this, if the IP Box regime requires that financing expenses associated with IP income be deductible at the regular tax rate instead of the lower IP Box tax rate ('gross income approach'), the cost of capital decreases in the tax rate as under the regular tax system. This is the case in Belgium, Hungary, Portugal, and Spain.[511]

---

[509] As my analysis focuses on the tax consequences on the company level, personal taxation at the level of the investor is disregarded (see section 4.1.1 for details). Hence, the taxation of the return of the alternative investment (the capital market investment) is not accounted for. Please note that when additionally taking into account shareholder taxation the advantageous treatment of interest at the level of the corporation may (partly) be offset by the taxation of interest income.

[510] As depicted in table 11 in section 4.2.1, this is also the case for equity-financed investment under the Liechtenstein IP Box as the regime requires that notional interest expenses be allocated to qualifying IP income when determining the IP Box tax base. As a consequence, the tax value of the notional interest deduction depends on the IP Box tax rate.

[511] Although, since the reform of the regime in September 2013, the Spanish regime generally applies to IP profits, the determination of the IP Box tax base in case of self-developed intangible assets not accounted for on the balance sheet (such as a self-developed patent which are considered here) corresponds to the 'gross income approach'. In case of such assets, the IP income which qualifies for the partial exemption under the IP Box regime is assumed to equal 80% of gross IP income. Hence,

Table 16: Effective tax burden of debt-financed investment in a self-developed patent (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
IP Box treatment of R&D expenditures												
	A	S	A	A	S	S	S	S	A	A	A	S
IP Box treatment of financing expenses												
	G	N	N	G	N	N	N	N	G	G*	N	G
Tax rates (%)												
Main rate	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21
IP Box rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.84	10
Cost of Capital (%)												
Regular tax system	2.63	4.54	2.54	3.68	4.13	2.97	2.56	3.26	4.64	2.91	4.12	3.54
IP Box	-2.61	4.92	-0.47	1.68	4.83	4.80	5.00	4.65	1.11	-0.20	3.56	3.54
EATR (%)												
Regular tax system	17.68	7.34	18.60	8.89	5.57	14.72	18.33	12.22	21.24	15.19	5.65	9.98
IP Box	-30.38	1.47	-10.18	-7.90	1.03	3.43	0.00	2.10	-5.27	-10.26	0.06	0.92

Abbreviations: G – gross income approach, N – net income approach (see section 3.3.2.1), exp. - expenses.

Notes: * In the case of self-developed intangibles that are not capitalised, financing expenses are deductible from regularly taxed income but the amount of IP income eligible for the IP Box treatment is assumed to equal 80% of the gross IP income.

Finally, when considering a profitable investment project financed with debt, the IP Box treatment again results in a lower effective tax burden compared to the regular tax treatment in all 12 countries. This is because any detrimental effect associated with the requirement to allocate financing expenses to IP income on the value of the interest tax shield is of minor importance in the case of profitable investment projects.

financing expenses remain deductible from regularly-taxed income. For further details, see section 3.3.2.1.

4.2.3.2 Effective tax burden for additional types of IP income and acquired patents

The results presented in section 4.2.1 strictly apply to the case of licensing income from the exploitation of self-developed patents. The scope of most IP Box regimes is, however, much wider than this, and includes additional types of IP and IP income.[512] Here, I additionally present results for income from internal use of patents and for income from internal and external use of acquired patents. The scope of many IP Box regimes also includes additional types of IP such as software or trademarks which I do not consider here. However, a calculation of precise tax rates for additional kinds of IP other than patents would only present slightly different figures due to different assumed economic depreciation rates.

Table 17 shows the cost of capital and EATR for income from internal use (sales income and notional royalty income) where such income qualifies for the IP Box treatment. If income from internal use benefits from the IP Box treatment, the same measures for the cost of capital and the EATR apply as in the case of royalty income. If this is not the case, the tax measures associated with the regular tax system as reported in tables 11 and 12 apply.

Table 17: Effective tax burdens associated with the IP Box regimes in the case of internal use (self-developed patent, equity-financing, 2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Cost of capital (%)												
Royalties	-1.56	5.10	0.44	2.86	4.90	5.23	5.00	5.00	3.57	1.53	4.15	5.00
Sales income	-1.56	*	-	*	4.90	-	*	5.00	-	-	-	5.00
Notional roy.	-1.56	*	-	*	4.90	5.23	*	5.00	-	-	-	5.00
EATR (%)												
Royalties	-25.46	2.34	-6.41	-2.54	1.40	5.47	0.00	3.75	5.17	-2.95	2.74	7.50
Sales income	-25.46	*	-	*	1.40	-	*	3.75	-	-	-	7.50
Notional roy.	-25.46	*	-	*	1.40	5.47	*	3.75	-	-	-	7.50

Notes: * No conclusive assessment could be reached whether these categories qualify for the IP Box treatment as the wording of the respective tax provisions governing the IP Box regimes do not explicitly address these categories of income. For details, see footnotes 349 and 354 in section 3.3.1.

[512] See sections 3.2 and 3.3 for details. See table 7 in section 3.5 for an overview.

Most IP Box regimes also apply to acquired IP without requiring that such assets be further developed by the taxpayer. In contrast to self-developed IP, acquired IP is generally accounted for on the balance sheet and subject to periodical depreciation. Table 18 depicts the cost of capital and the EATR for acquired patents differentiating between licensing-out and internal use. The results show that the scope of most IP Box regimes either includes acquired IP or income from internal use of IP. In Luxembourg, income from internal use of acquired patents is explicitly excluded from the scope of the IP Box regime.[513] Only the regimes in place in Liechtenstein and the UK apply to income from internal use of acquired IP.

Table 18: Effective tax burdens associated with the IP Box regimes in the case of acquired patents (equity-financing, 2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
Acquired IP	[a]	✓	✓	✓	✓	(✓)[b]	✓	[a]			✓	(✓)[c]
Depreciation allowances	SL 20%	SL 20%	SL 20%	SL 20%	SL 20%	SL 20%	-[d]	SL 20%	SL 10%	SL 10%	PD 40%	SL 10%
Cost of capital (%)												
Royalties	-	5.10	5.75	3.28	4.99	5.23	5.00	-	-	-	5.30	7.26
Sales income	-	*	-	*	4.99	-	*	-	-	-	-	7.26
Notional roy.	-	*	-	*	4.99	-[e]	*	-	-	-	-	7.26
EATR (%)												
Royalties	-	2.34	15.67	-0.66	1.85	5.47	0.00	-	-	-	7.99	17.68
Sales income	-	-	-	-	1.85	-	*	-	-	-	-	17.68
Notional roy.	-	-	-	-	1.85	-[e]	*	-	-	-	-	17.68

Abbreviations: SL – straight-line depreciation, PD – Pool depreciation;

Notes: * No conclusive assessment could be reached. For details see footnotes 349 and 354 in section 3.3.1. [a] In Belgium and the Netherlands, acquired IP only qualifies for the IP Box treatment if it is further developed and improved by the taxpayer (see section 3.2.3). [b] In Luxembourg, acquired IP only benefits from the regime if it was not acquired from a directly related party (see section 3.2.3). [c] In the UK, acquired IP benefits from the regime if it was acquired from a related party which self-developed the IP (see section 3.2.3). [d] In Malta, the application of the IP Box excludes the deduction of expenses associated with IP income such as depreciation allowances (see section 3.3.2.1). [e] In Luxembourg, income from internal use only qualifies with respect to self-developed patents.

[513] See sections 3.2.3 and 3.3.1.

4.2.3.3 Investment in a mix of R&D assets

As a robustness check and in line with the standard approach taken when incorporating R&D tax incentives into measures of effective tax rates, I present cost of capital and EATRs for a mix of R&D assets, comprising machinery and buildings used for R&D in addition to current R&D expenses. In doing so, I use the following weights: 90% for current R&D expenses, 3.6% for R&D buildings, and 6.4% for R&D machinery.[514] Furthermore I apply the following assumed economic depreciation rates: 3.6% for R&D buildings, 12.3% for machinery used for R&D, and 30% for current R&D expenditures.[515]

The results depicted in table 19 show that this alternative approach does not considerably change the effects of the IP Box regimes on the cost of capital and the EATR. The IP Boxes significantly reduce the effective average tax burden of profitable investment projects, whereas the effect on marginal investment depicted by the cost of capital depends on the treatment of the R&D investment expenses. The figures do, however, differ in absolute terms from the main results presented in section 4.2.1 for an investment in the form of current R&D expenses. I point out what drives these differences in the following.

[514] See Bloom et al. (2002).

[515] See Bloom et al. (2002).

Table 19: Effective tax burden of equity-financed investment in a set of R&D assets (2014)

	Belgium	Cyprus	France	Hungary	Liechtenstein	Luxembourg	Malta	Netherlands	Portugal	Spain	Switzerland, Nidwalden	United Kingdom
R&D tax incentives for current or capital expenditures												
	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	Y
IP Box treatment of R&D expenses												
	A	S	A	A	S	S	S	S	A	A	A	S
Tax rates (%)												
Main rate	33.99	12.5	35.41	19	12.5	29.22	35	25	30	30	12.66	21
IP Box rate	6.8	2.5	16.76	9.5	2.5	5.84	0	5	15	12	8.84	10
Cost of Capital (%)												
Regular tax system	4.24	5.07	5.19	5.08	4.56	5.15	5.26	5.16	5.15	5.17	5.05	5.38
IP Box	-5.14	5.01	-2.23	1.62	4.91	5.02	5.00	5.02	-0.69	-0.48	3.67	5.16
R&D tax incentives	4.12	-	-9.63	-2.31	-	5.07	-3.48	-1.43	-8.19	-8.17	-	1.85
EATR (%)												
Regular tax system	22.98	9.69	27.16	14.57	7.44	22.43	27.08	19.33	23.03	23.10	9.72	17.24
IP Box	-42.16	1.94	-17.53	-8.19	1.44	4.49	0.00	3.87	-12.91	-11.41	0.57	8.21
R&D tax incentives	22.58	-	-20.70	-15.36	-	22.15	-1.30	-5.36	-23.67	-23.61	-	3.31

Abbreviations: A – Asymmetrical, S – Symmetrical, Y – Yes, N – No.

A key difference with this approach, as opposed to focussing on current R&D expenses, is that the effect of IP Boxes on the treatment of capital assets is taken into account. Current R&D expenses are immediately tax deductible (except for the case that self-developed intangibles have to be capitalised for tax purposes) and thereby leave marginal investment unaffected by taxation as demonstrated in section 4.2.1. In contrast, machinery and buildings are generally subject to periodical tax depreciation. Also under the regular tax system, this raises the cost of capital to levels above the capital market interest rate as depicted by table 19. This applies to all countries, except for Belgium and Liechtenstein. In these two countries, the notional interest deduction drives the cost of capital below the capital market interest rate.

IP Boxes reduce the cost of capital and the EATR to a larger extent for investments in a mix of R&D assets than for investments in self-developed intangible assets. This can mainly be attributed to the different economic depreciation rates assumed for these assets. The average economic depreciation

rate of the mix of R&D assets amounts to approximately 28% in contrast to 15.35% for the patent. Both the cost of capital and the EATR are decreasing in the asset's economic depreciation rate.[516]

Finally, there are differences in the availability and generosity of R&D tax incentives for R&D machinery, R&D buildings, and current R&D expenses.[517] In particular, Belgium and Luxembourg, which do not offer R&D tax incentives for current R&D expenses, do have tax incentives for capital R&D expenditures in place.

[516] See equation (3) for the cost of capital and equation (1) for the net present value of the investment project which forms the basis for the effective average tax rate.

[517] In addition to R&D tax incentives available for current R&D expenses (see footnote 507 in section 4.2.2), the following R&D tax incentives available for capital R&D expenditures are accounted for: *Belgium*: accelerated straight-line depreciation for R&D plant and machinery over 3 years and 13.5% super deduction for capital expenditures relating to plant and machinery as well as buildings used for R&D; *France*: accelerated depreciation for R&D plant and machinery and 30% tax credit for depreciation allowances for plant and machinery as well as buildings used for R&D up to EUR 100 Mio. and 5% for expenses above this threshold; *Luxembourg*: accelerated depreciation for R&D plant and machinery and 2% volume-based tax credit for capital expenditures relating to R&D plant and machinery (7% for expenditures up to EUR 150.000), additionally 12% of the expenditures exceeding the 5-year average; *Malta*: 50% super deduction of depreciation allowances in case of plant and machinery as well as buildings used for R&D; *the Netherlands*: 60% super deduction for capital expenditures relating to plant and machinery as well as buildings used for R&D; *Portugal*: 32.5% volume-based tax credit for capital expenditures relating to R&D plant and machinery, additionally 50% of the expenses exceeding the 2-year average. For further details and references, see section 2.1.1 table 1.

5 Effective Tax Rates under IP Tax Planning*

In practice, R&D activities, commercialisation of intangible assets, and the resulting income flows may be located in different jurisdictions. Multinational companies might choose different locations when it comes to R&D investment on the one hand and exploiting the resulting intangible assets on the other. This way they can make use of an attractive research infrastructure and generous R&D tax incentives in one country and benefit in another from low tax rates on IP income. As indicated in section 3.7.1, companies can benefit from IP Box regimes even if they carry out the related R&D activity in another country.

Disregarding tax planning opportunities when determining effective rates may overstate the effective tax burden of multinational companies. Strikingly low effective tax rates reported on the balance sheets of certain multinational companies such as Apple, Google, and Cisco point to this.[518] For this reason, I incorporate cross-border tax planning models which involve intangible assets into forward-looking measures of the cost of capital and the EATR. In doing so, I again build upon the methodology put forward by Devereux and Griffith.[519]

My motivation for doing so is threefold. First, it allows me to point out how IP tax planning models affect the effective tax burden. My aim is to extend the analytical tools for determining effective tax burdens on investments in intangible assets to better reflect economic reality; that the creation and exploitation of intangible assets is increasingly located in separate jurisdictions. Furthermore, it allows for the comparison of the effective tax burdens of cross-border investment under tax planning with the effective tax burdens of purely domestic companies. That way the competitive advantages of multinational companies associated with tax planning opportunities become apparent.

Second, my interest is to point out which features of the tax system drive the effective tax burden if companies may make use of IP tax planning. In particular, I highlight under which conditions the IP tax planning models are associated with a tax advantage compared to domestic investment. This also provides some orientation on which features of tax systems are most relevant when it comes to reducing the tax planning leeway of multinational companies.

* This section is based on joint work with Christoph Spengel (see Evers and Spengel (2014)).

518 See Sullivan (2012), p. 655.

519 See Devereux and Griffith (1999, 2003). The OECD also proposes a model for determining effective tax rates that incorporates cross-border tax planning. In some respects (e.g. the calculation of the EATR), this model differs from the Devereux and Griffith model (see OECD (2013a), pp. 135 et seq.).

Third, I aim at highlighting and analysing potential incentive effects of taxes on investment decisions, such as where to exploit the resulting intangible assets, in case multinational companies face IP tax planning opportunities.

5.1 Incorporating IP tax planning into measures for effective tax rates

5.1.1 The standard case of the Devereux & Griffith Model for calculating cross-border effective tax rates

When considering cross-border investment projects, the framework of the Devereux & Griffith model assumes that the investment is carried out by an operating subsidiary. This investment is financed by funds provided by its foreign parent company. By assuming that all funds are eventually distributed to the parent, it is possible to take into account both the subsidiary and the parent level.

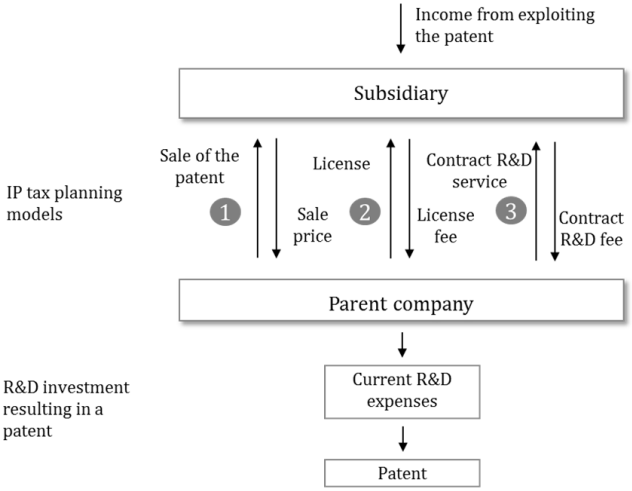
In the previous section, the Devereux & Griffith model framework is extended to an R&D investment that results in a self-developed patent. In this section, the model framework is again amended to cover cross-border R&D investments where the creation of the patent by means of R&D activity and the exploitation of this asset are located in different jurisdictions.

Such a separation of functions may be driven by non-tax factors and tax factors. With regard to location factors, such as infrastructure and market access, the ideal R&D location might not also be the preferred location for exploiting the created intangible asset. As already highlighted in section 2.3 that deals with IP tax planning, different aspects are relevant in order to determine the tax efficient location for R&D investments on one hand and for the exploitation of intangible assets on the other. Whereas maximising the value of tax deductions for R&D expenses, including making use of input-oriented R&D tax incentives, is at the heart of the first decision, low profit tax rates for income from exploiting intangible assets are pivotal to the second.

The extension of the standard model framework to cross-border R&D investment is based on the assumption that the parent carries out the R&D investment leading to a patent which is subsequently exploited by an operating subsidiary. In the following, I consider three different IP tax planning strategies, which make use of valuable intangible assets and are characterised by the location of the R&D activity and the exploitation of the IP being in different jurisdictions. These include (i) the intra-group disposal of IP from the parent to an operating subsidiary, (ii) intra-group licensing, and (iii) intra-group contract R&D where the operating subsidiary commissions the parent to perform R&D activity on the subsidiary's risk and account.

Figure 10 illustrates the structure of the model incorporating these three IP tax planning models. In all of these three models it is the parent company which performs the R&D activity and the subsidiary which exploits the patent within the scope of its operating activity. However, with respect to the ownership of the patent, the models differ. The disposal entails that the legal and economic ownership is transferred from the parent to the subsidiary. In contrast to this, the licensing arrangement entails that the parent retains the legal ownership of the patent and that the subsidiary solely obtains a license constituting a right to temporarily exploit the patent. The case is again different under the contract R&D arrangement. Assuming that the R&D is carried out on the risk and account of the commissioning subsidiary, the subsidiary is considered to be the initial legal and economic owner. A transfer of the ownership is therefore not required.[520] In the following, I show how the baseline equation for the NPV of the investment is amended to consider cross-border R&D investment incorporating the IP tax planning models. Based on this, I analytically point out how the IP tax planning models affect the effective tax burden.

Figure 10: Structure of the model incorporating IP tax planning



[520] For further details on these tax planning models, see section 2.3.2.1.

5.1.2 Tax planning model 1: Disposal of a patent to an operating subsidiary

5.1.2.1 Incorporating the disposal in the model

Equation (19) illustrates the after-tax NPV of an equity-financed R&D investment giving rise to a patent, which is subsequently transferred to an operating subsidiary.[521]

$$R = -\underbrace{(1-\varphi_0\tau_P-A_S^{TP})}_{term\ 1}-\underbrace{\tau_P TP}_{term\ 2}+\underbrace{\frac{(p+\delta)(1+\pi)}{1+i}(1-\tau_S)}_{term\ 3}+\underbrace{\frac{(1-\varphi_0\tau_P-A_S^{TP}+\tau_P TP)(1-\delta)(1+\pi)}{1+i}}_{term\ 4} \quad (19)$$

The disposal has three tax consequences. First, it triggers taxation of the transfer price paid by the subsidiary at the level of the parent (second term of equation (19)). This is referred to as 'exit taxation' in what follows. Second, the transfer price forms the basis for tax depreciation in the source country, provided the source country accepts the transfer price paid. This entails a 'step-up' if the transfer price exceeds the historical costs of creating the patent (depicted by variable A_S^{TP} in the first term of equation (19)). Third, the income from exploiting the patent is subject to the source country tax rate instead of the residence country tax rate (third term of equation (19)). I discuss these elements in detail below.

As in the domestic case, the last term of equation (19) showcases that the model considers a one-period perpetuation of the capital stock instead of a permanent increase of the capital stock.

First tax consequence: exit taxation at the level of the parent company

The disposal triggers taxation of the transfer price received by the parent in the residence country, denoted by T^{Exit} (second term of equation (19)). This 'exit tax' reduces the NPV of the investment project. Assuming that the self-developed patent does not have to be capitalised for tax purposes (which is the case in most EU countries)[522] and therefore has a tax book value of zero, the tax base of the

[521] Please note that I assume that dividends are exempt from withholding tax at source and from corporate income tax in the hands of the parent. This assumption in particular holds true for multinational groups of companies resident in the EU where the Parent & Subsidiary Directive ensures that dividends are exempt from withholding taxes upon meeting certain participation requirements. In addition, except for Ireland, all EU member states exempt foreign dividends in relation to substantial participations from corporate income tax (see Spengel et al. (2014), pp. A-23 et seq. table A-9).

[522] Only Cyprus, Estonia, Portugal, and Sweden stipulate the capitalisation of self-developed patents and certain other intangible assets provided certain recognition conditions are fulfilled (see section 2.1.1., footnote 34, and section 4.2.1.2, notes to figure 4).

exit tax equals the transfer price. If the transfer price does not fall below the initial investment expenditures incurred by the parent, the exit tax offsets the original deduction of the R&D investment expenditures (depicted by $\tau_p \varphi_0$ in the first term of equation (19)). In order to integrate the disposal of the patent in the two-period framework of the Devereux & Griffith model, I assume that the transfer occurs in the same period as the creation of the asset by way of the R&D investment.

Second tax consequence: step-up at the level of the subsidiary

Variable A_S^{TP} in the first term of equation (19) depicts the second tax consequence of the disposal. Provided the subsidiary's residence country ('source country' in what follows) accepts the transfer price paid for the acquisition of the patent, this price will form the basis for tax depreciation in the source country. As a consequence, the disposal is associated with a 'step-up' in the depreciable base in cases where the transfer price exceeds the R&D investment expenditures. Hence, transferring the patent to the subsidiary offers the possibility to deduct more than the historical costs from the source country tax base by means of tax depreciation.[523] In case the patent is transferred to a low-tax country, this effect is, however, mitigated by the fact that the tax value of the depreciation allowances is determined by the lower source country tax rate.

Equation (20) illustrates the NPV of the tax allowance granted by the source country, assuming straight-line depreciation.[524] Variable φ_S denotes the periodical depreciation rate and variable ul depicts the useful life for tax purposes where $ul = 1/\varphi_S$.

$$A_{sl,S}^{TP} = \tau_S * TP * \varphi_S \ * \left(\frac{1}{(1+i)^1} + \cdots + \frac{1}{(1+i)^{ul}}\right) = \tau_S * TP * \frac{\varphi_S}{i}\left(1 - \frac{1}{(1+i)^{ul}}\right) \qquad (20)$$

[523] As in section four, I assume that the parent as well as the subsidiary generate sufficient other income that they may immediately fully make use of any tax deductions (i.e. taxpayers are not tax-exhausted). This assumption is most appropriate in the case of large mature companies that generate income from other investment projects. If, in contrast to this, the taxpayer is tax-exhausted, the tax benefits associated with tax allowances are delayed. As a consequence, the NPV of tax allowances is lower and thereby the effective tax rates are higher than in the case of no tax-exhaustion. See Devereux et al. (2002).

[524] This is the most common tax depreciation method for intangibles. For the EU member states, see Spengel et al. (2014), pp. A-21 set seq. table A-8. For additional countries, see CBT Tax Database, download: http://www.sbs.ox.ac.uk/ideas-impact/tax/publications/data.

Equation (20) is further simplified to equation (20') by making use of the present value factor c. For the case of straight-line depreciation, the present value factor c is reflected by equation (21).[525]

$$A_S^{TP} = \tau_S * c * TP \tag{20'}$$

$$c = \frac{\varphi_S}{i}\left(1 - \frac{1}{(1+i)^{ul}}\right) \tag{21}$$

Analogous to the immediate deduction of the R&D investment expenditures granted by the residence country (denoted by the term $\varphi_0 \tau_P$ in the first term of equation (19)), the step-up increases the after-tax NPV of the investment project. In fact, the step-up may partly compensate for the exit tax's negative effect on the NPV. This is analysed in more detail later on.

It is interesting to note that the recapture of the immediate deduction of the R&D investment expenses caused by the exit taxation and the subsequent step-up in the source country entails a switch from a cash-flow tax (immediate deduction of investment expenditures) to a profit tax (periodical depreciation of investment expenditures).

Third tax consequence: taxation of the investment returns in the residence country of the subsidiary instead of in the parent country

As a third tax consequence of the disposal, the returns from exploiting the patent are subject to corporate income tax in the source country at the rate τ_S. This is reflected by the third term of equation (19). Hence, by transferring the patent to a subsidiary resident in a lower-tax country, the multinational company is able to reduce the tax burden on the returns from exploiting the patent. This positively affects the after-tax NPV of the investment project.

5.1.2.2 Determining the transfer price and the exit tax base

As pointed out in section 2.2.2, transfer pricing rules generally require that the subsidiary pay a transfer price according to the arm's length principle. However, due to the uniqueness of intangible assets, comparable prices from transactions with unrelated parties ('market approach') as required by the arm's length principle are rarely available.[526] The 'cost approach' and the 'income approach' constitute two alternative approaches to the 'market approach' on which transfer pricing rules are based. The 'cost approach' approximates the value of an asset by referring to the costs of its creation. However, it is perceived that the costs

[525] Corresponding factors may be derived for other depreciation methods such as declining-balance depreciation.

[526] I will not address the theoretical issues associated with the arm's length principle here. For details, see Boos (2003), p. 12, Biegalskie (2010), Durst (2010), p. 249, Devereux and Keuschnigg (2009).

incurred in the creation of an intangible asset are unsuitable as indicators for the value of intangible assets.[527] The 'income approach' estimates the value of an intangible asset by referring to the estimated value of the future economic benefits which the asset is expected to generate during its economic lifetime.[528]

According to the current discussion on the draft of chapter six of the OECD transfer pricing guidelines, income-based techniques such as valuation techniques drawn from financial valuation practice may, depending on the circumstances, be used as part of one of the five methods approved by the OECD or as an independent transfer pricing method.[529]

I do not address the complex issues associated with the choice and the application of the various transfer pricing methods proposed in the OECD transfer pricing guidelines for intangible assets.[530] Instead, I generalise this issue by assuming that the transfer price is based on the earnings value (EV) of the patent. This value can be determined based on the economic parameters of the model.[531] As depicted by equation (22), the earnings value is determined as the present value of the sum of future cash-flows generated by exploiting the patent $(p + \delta)$.[532]

$$EV = \sum_{s=1}^{\infty} \frac{(p+\delta)(1+\pi)^s(1-\delta)^{s-1}}{(1+i)^s} \quad (22)$$

Assuming that $(1 + r) = (1 + i)/(1 + \pi)$ (so called 'Fisher effect'[533]), equation (22) can be simplified to the following:

$$EV = \sum_{s=1}^{\infty} \frac{(p+\delta)(1-\delta)^{s-1}}{(1+r)^s} \quad (22')$$

Rearranging equation (22') yields:

$$EV = (p + \delta) * \frac{(1+\pi)}{i+\delta(1+\pi)-\pi} \quad (22'')$$

[527] See Boos (2003), p. 77.

[528] See Boos (2003), p. 81.

[529] For details, see section 2.2.2.2.

[530] See Boos (2003), p. 11-14.

[531] The transfer price stipulated by tax provisions may also exceed the earnings value as determined from the perspective of the selling party. To give an example, the business restructuring provisions introduced in Germany in 2008 require that when determining transfer prices for whole business units, synergies generated by the acquiring party as well as profits associated with lower operating costs in the residence country of the acquiring party also be taken into account. See Wolter (2011), p. 356.

[532] See Klemm (2012).

[533] See Fisher (1930).

This can be further simplified so the earnings value equals the sum of future cash-flows multiplied by a present value factor denoted by variable b ($b = (1+\pi)/(i+\delta(1+\pi)-\pi)$).

$$EV = (p+\delta) * b \tag{22'''}$$

As discussed in section 2.3, multinational companies face some leeway when it comes to valuating their IP for transfer pricing purposes. This leeway might enable multinational firms to get away with systematically under-evaluating the value of intangible assets that are sold to affiliates in low-tax countries for tax purposes. I take this into account by assuming that the transfer price only equals a share of the full earnings value depicted by α. This is illustrated by equations (23) and (23') denoting the transfer price.

$$TP^{EV} = \alpha * EV = \alpha * \frac{(1+\pi)}{i+\delta(1+\pi)-\pi}(p+\delta) \tag{23}$$

$$TP^{EV} = \alpha * EV = \alpha * b(p+\delta) \tag{23'}$$

Inserting $A_S^{TP} = \tau_S * TP^{EV} * c$ (equation (20')) and $TP^{EV} = \alpha b(p+\delta)$ (equation (23')) in equation (19) allows me to specify the after-tax NPV in the case that the earnings value is taken as a basis in determining the transfer price. This yields equation (24).

$$R = -\big(1-\varphi_0\tau_P-\tau_S*\alpha bc(p+\delta)\big)-\tau_P*\alpha b(p+\delta)+\frac{(p+\delta)(1+\pi)}{1+i}*(1-\tau_S)$$
$$+\frac{(1-\delta)(1+\pi)}{1+i}*\big(1-\varphi_0\tau_P-\tau_S*\alpha bc(p+\delta)+\tau_P*\alpha b(p+\delta)\big) \tag{24}$$

From this, the cost of capital is derived by setting equation (24) equal to zero and isolating the rate of return p, yielding equation 25. Equation (25) deviates from the standard formula for a domestic investment where the parent both creates and exploits the patent[534] with respect to the second term of the denominator. The EATR is determined by drawing on equation (24) following the same approach as in section 4.1 for domestic investments.

$$\tilde{p} = \frac{(1-\varphi_0\tau_P)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_S)+ab(c\tau_S-\tau_P)(i+\delta(1+\pi)-\pi)} - \delta \tag{25}$$

[534] See equation (4) in section 4.1.2.

5.1.2.3 Disentangling the tax effects associated with the disposal

The three tax consequences of the disposal of the patent, the exit tax, the step-up, and the taxing of the returns at the source country tax rate all affect the after-tax NPV of the cross-border investment and the effective tax burden in different ways. The exit tax negatively affects the after-tax NPV of the investment, whereas the step-up granted by the source country positively affects it. The effect of the application of the source country (instead of the residence country) tax rate on the patent income tax burden depends on the tax rate differential. If the source country tax rate is lower than the residence country tax rate, the after-tax NPV is positively affected. A higher source country tax rate has the opposite effect.

In the following section, I examine the individual tax effects in order to point out the conditions under which the disposal of a patent to a low-tax country achieves its tax planning objective of reducing the group's overall tax burden, compared to a domestic investment of the parent. I show that in the case where the disposal of a patent to a lower-tax country triggers an exit tax on the full earnings value, the overall effect on the after-tax NPV of the investment is generally negative. This implies that the disposal does not achieve the tax planning objective. In contrast to this, if only a share of the earnings value is subject to the exit tax, the disposal may result in a lower after-tax NPV compared to a domestic investment of the parent company indicating that the disposal achieves its tax planning objective.

5.1.2.3.1 Effects of the disposal if the transfer price equals the full earnings value

In order to point out whether the disposal positively or negatively affects the after-tax NPV and thereby the effective tax burden, I determine the difference between the after-tax NPV of a cross-border investment and the after-tax NPV of a purely domestic investment of the parent. This is denoted by variable ΔR and illustrated by equation (26). Drawing on the equation for the EATR,[535] a positive effect of the disposal on the after-tax NPV (illustrated by $\Delta R>0$) leads to a reduction of the effective average tax burden stemming from the disposal.

$$\Delta R = R^{Transfer} - R^{Domestic} \tag{26}$$

$$\Delta R = \underbrace{A_S^{TP} - A_S^{TP}\frac{(1-\delta)(1+\pi)}{1+i}}_{Effect\ of\ the\ step-up} \underbrace{-\tau_P TP + \tau_P TP\frac{(1-\delta)(1+\pi)}{1+i}}_{Effect\ of\ the\ exit\ tax} + \underbrace{(\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i}}_{Effect\ on-going\ tax\ burden} \tag{26'}$$

[535] See equation (4) in section 4.1.2.

By replacing A_S^{TP} by $\tau_S * TP * c$ (see equation (17')), equation (26') can be further simplified to the following:

$$\Delta R = -(\tau_P - \tau_S c) * TP * \left(1 - \frac{(1-\delta)(1+\pi)}{1+i}\right) + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} \quad (27)$$

In the following, I assume that the full earnings value is taken as a basis for the sale price of the patent. Inserting equation (23) where *α=1* results in equation (28).

$$\Delta R = -(\tau_P - \tau_S c) * (p+\delta)\frac{(1+\pi)}{i+\delta(1+\pi)-\pi} * \left(1 - \frac{(1-\delta)(1+\pi)}{1+i}\right) + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} \quad (28)$$

This can be further simplified to equations (28') and (28'').

$$\Delta R = -(\tau_P - \tau_S c) * \frac{(p+\delta)(1+\pi)}{(1+i)} * \left(\frac{i+\delta(1+\pi)-\pi}{i+\delta(1+\pi)-\pi}\right) + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} \quad (28')$$

$$\Delta R = -(\tau_P - \tau_S c)\frac{(p+\delta)(1+\pi)}{1+i} + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} < 0 \quad (28'')$$

As $c \in (0; 1)$, equation (28'') shows that the disposal of a patent triggering an exit tax on the full earnings value reduces the after-tax NPV of the investment as opposed to a domestic investment of the parent. This finding is independent from whether the tax rate differential is positive or negative. Hence, the disposal also reduces the NPV if the source country tax rate exceeds the residence county tax rate. The after-tax NPV is only unaffected by the disposal in the case where the source country tax rate is zero.

The reason for the general negative effect of the disposal of a patent to a low-tax affiliate on the NPV in case the transfer price corresponds to the full earnings value is that the negative effect of the parent country's exit tax overcompensates the positive effect of the lower on-going tax burden and the higher depreciable base in the source country.

In summary, if the full earnings value is subject to the exit tax, the disposal of a patent to a low-taxed subsidiary does not achieve the tax planning objective of reducing the group's effective average tax burden compared to a domestic investment of the parent. In fact, the opposite is the case: the disposal increases the effective average tax burden. This finding is also holds true for the case of a disposal to a high-taxed affiliate.

5.1.2.3.2 Effects of the disposal if the transfer price falls below the full earnings value

However, the disposal may result in a higher after-tax NPV in cases where the transfer price only corresponds to a fraction of the earnings value (implying $\alpha<0$). The reason for this is that the lower the transfer price, the smaller the (negative) effect of the exit tax. If the transfer price is low enough, the combined effect of the step-up and the application of lower source country tax rate on the investment return may over-compensate the exit tax effect.

This indicates that if the tax administration of the parent company's residence country is not able to enforce a transfer price which equals the full earnings value upon the disposal of intangible assets, it is possible for multinational groups to reduce their overall tax burden by shifting intangible assets and thereby profits to low-tax countries.

In the following, I determine the share of the earnings value which leaves the after-tax NPV of the investment unaffected from the disposal (implying $\Delta R=0$). This is denoted by variable $\hat{\alpha}$ which is derived by inserting equation (23') in equation (27) (yielding equation (29)) and then isolating variable α.

$$\Delta R = -\alpha(\tau_P - \tau_S c)\frac{(p+\delta)(1+\pi)}{1+i} + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} = 0 \quad (29)$$

$$\hat{\alpha} = \frac{(\tau_P - \tau_S)}{(\tau_P - \tau_S c)} \quad (30)$$

For $\alpha < \hat{\alpha}$, the disposal to a lower-tax country is associated with a positive effect on the after-tax NPV and thereby a reduction of the effective tax burden of the group. The larger the (positive) tax rate differential, the larger the share of the earnings value which is still associated with a tax advantage of the disposal.

5.1.3 Tax planning model 2: Licensing-out the patent to an operating subsidiary

Instead of transferring the legal ownership of the patent, the parent may transfer the right to temporarily exploit the asset by way of a licensing-arrangement, thereby retaining the legal ownership. Equation (31) illustrates the after-tax NPV of an equity-financed cross-border R&D investment giving rise to a patent, which is then licensed-out to a foreign subsidiary.

$$R = \underbrace{-(1-\varphi_o\tau_P)}_{term\ 1} - \underbrace{(1-\tau_S\beta_S^r)\frac{Roy}{1+i}}_{term\ 2} + \underbrace{(1-\tau_P)\frac{Roy}{1+i}}_{term\ 3} + \underbrace{(1-\tau_s)\frac{(p+\delta)(1+\pi)}{1+i}}_{term\ 4} + \underbrace{\frac{(1-\varphi_o\tau_P)(1-\delta)(1+\pi)}{1+i}}_{term\ 5} \tag{31}$$

The licensing arrangement has the following tax consequences. First, the royalty payment (denoted by Roy) is tax deductible at the level of the subsidiary (second term of equation (31)). This deduction gives rise to a tax shield equal to the product of the royalty payment and the profit tax rate. Here, variable β_S^r denotes the share of the royalties that may be deducted. If royalty payments are fully tax deductible, β_S^r is one and the value of the royalty tax shield equals the source country tax rate.

Second, at the level of the parent, the royalty payment is subject to corporate income tax (third term). I assume that the royalties are not subject to source country withholding tax. This assumption in particular holds true for multinational groups of companies resident in the EU where the Interest & Royalty Directive ensures that royalties are exempt from withholding taxes upon meeting certain participation requirements.

Third, the return from exploiting the patent is subject to corporate income tax in the source country at the rate τ_S (fourth term).[536] As in the case of the disposal of the patent, the licensing arrangement enables the multinational company to make use of lower foreign tax rates. Also with respect to the first and the second tax consequences, parallels can be drawn between the disposal of a patent and licensing-out of a patent. The taxation of the royalty income in the residence country corresponds to the exit tax levied upon the disposal of a patent, whereas the deduction of the royalty payment from the source country profit tax base corresponds to the step-up in the depreciable base granted by the source country. There is, however, a timing difference between these two tax planning strategies.

[536] As in the domestic case, the last term of equation (31) reflects that the model considers a one-period perpetuation of the capital stock instead of a permanent increase.

Whereas the royalties are taxed on a staggered basis, the exit tax is generally fully due upon disposal.

As illustrated by equation (32), the license fee (Roy) is determined as a share of the overall return, analogous to the case of a disposal of the patent. This leads to equation (33).

$$Roy = \alpha(p+\delta)(1+\pi) \tag{32}$$

$$R = -(1-\varphi_o\tau_P) + (\alpha(\beta_S^r\tau_S - \tau_P) + (1-\tau_s))\frac{(p+\delta)(1+\pi)}{1+i} + \frac{(1-\delta)(1+\pi)}{1+i}\,(1-\varphi_o\tau_P) \tag{33}$$

When abstracting from any current expenses that might be incurred at the level of the subsidiary in the course of its business, the overall return denoted by $(p+\delta)(1+\pi)$ equals the turnover of the subsidiary. Hence, determining the license fee as a share of the overall return from exploiting the patent corresponds to determining the license fee based on turnover as promoted by the OECD transfer pricing guidelines.[537]

In the following, I examine in which cases the licensing-out of a patent to a low-taxed subsidiary increases the after-tax NPV of the investment (ΔR>0) and thereby reduces the effective average tax burden of the group. Equation (34) denotes the difference between the after-tax NPV of a cross-border investment involving the licensing-out of a patent to the subsidiary and the after-tax NPV of a domestic investment of the parent. The first term illustrates the combined effect of the royalty tax shield at the level of the subsidiary and the tax burden on the royalties in the hands of the parent. The effect of the licensing arrangement on the on-going tax burden is reflected by the second term of equation (34).

$$\Delta R = -\alpha\frac{(p+\delta)(1+\pi)}{1+i}(\tau_P - \beta_s^r\tau_S) + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} \tag{34}$$

If the royalty is fully deductible from the source country profit tax base ($\beta_s^r = 1$) and the royalty equals the full return ($\alpha = 1$), this difference is zero as depicted by equation (35). From this follows that a licensing arrangement leaves the after-tax NPV unaffected if it involves that the return from exploiting the patent is fully shifted from the subsidiary to the parent through a royalty payment. This furthermore implies that the licensing arrangement does not achieve its tax planning objective of reducing the group's overall tax burden compared to a domestic investment of the parent.

$$\Delta R = -(\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{1+i} = 0 \tag{35}$$

[537] See OECD (2010a), recital 6.16.

In turn, if the royalty equals only a share of the overall return generated by exploiting the patent ($\alpha < 1$), the effect of the licensing arrangement depends on the tax rate differential between the source and the residence country. Licensing-out the patent to a lower-tax country increases the after-tax NPV of the investment. Thereby it reduces the group's effective tax burden compared to a domestic investment of the parent. In the opposite case, the licensing arrangement reduces the after-tax NPV and thereby increases the effective tax burden.

As a result, if the goal is to reduce the group's overall effective average tax burden by means of licensing intangible assets to low-taxed subsidiaries, it is necessary to set the royalty payment to less than the overall return generated from exploiting the patent ($\alpha < 1$).

Equation (36) finally depicts the cost of capital for the case of intra-group licensing. This equation deviates from the standard formula for a domestic investment where the parent both creates and exploits the patent[538] with respect to the second term of the denominator. The EATR is determined by drawing on equation (33) following the same approach as in section 4.1 for domestic investments.

$$\tilde{p} = \frac{(1-\varphi_o\tau_P)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_S)+(1+\pi)\alpha\left(\beta_S^r\tau_S-\tau_P\right)} - \delta \qquad (36)$$

[538] See equation (3) in section 4.1.2.

5.1.4 Tax planning model 3: Contract R&D

As a third tax planning model, I finally look at the case that the subsidiary commissions the parent to perform R&D activity on its behalf giving rise to a patent. As a consequence, the subsidiary becomes the legal owner of the patent. In turn, the parent receives a contract R&D fee from the subsidiary as reimbursement for its services.

From the perspective of the subsidiary, the contract R&D fee constitutes the production costs for creating a self-developed intangible asset.[539] As these expenses are current in nature, they are immediately tax deductible. Among the EU member states, the vast majority of countries do not require the capitalisation of self-developed intangible assets.[540] Hence, the tax treatment of the contract R&D fee equals the treatment of current expenses incurred with respect to internal R&D activity.[541]

5.1.4.1 Application of the cost-plus method when reimbursing the contractor

Equation (37) illustrates the after-tax NPV of an equity-financed cross-border R&D investment, which gives rise to a patent by way of contract R&D. In case the principal bears the risks associated with the R&D activity and the commercial exploitation of the intangible assets, the cost-plus method is generally considered to be appropriate for determining the contract R&D fee. The cost-plus method entails that this contract R&D fee equals the R&D costs incurred by the contract R&D service provider increased by a mark-up. The latter should reflect an appropriate profit earned by the contractor, taking into account the functions performed by him as well as the market conditions.[542] Variable d in equation (37) denotes this mark-up. The contract R&D fee therefore amounts to $1 + d$.

$$R = \underbrace{-(1-\varphi_0\tau_P)}_{term\ 1} \underbrace{-(1+d)(\tau_P-\tau_S)}_{term\ 2} + \underbrace{\frac{(p+\delta)(1+\pi)}{(1+i)}(1-\tau_S)}_{term\ 3} + \underbrace{\frac{(1-\varphi_0\tau_P+(1+d)(\tau_P-\tau_S))(1-\delta)(1+\pi)}{(1+i)}}_{term\ 4} \quad (37)$$

[539] See Vögele (ed.) (2011), p. 1303 recital 115.

[540] See section 2.1.1.

[541] See Vögele (ed.) (2011), p. 1303 recital 115.

[542] For details on the application of the cost-plus method to determine the contract R&D fee, see sections 2.2.2 and 2.3.2.1.

The contract R&D arrangement has the following tax consequences. First, the contract R&D fee is subject to corporate income tax in the residence country. Second, the fee is tax deductible at the level of the subsidiary. These two aspects are reflected by the second term of equation (37). Third, the returns from exploiting the patent are subject to corporate income tax in the source country at the rate τ_S instead of at the parent country tax rate (see term three of equation (37)).[543]

In the following, I point out in which cases the contract R&D arrangement increases the after-tax NPV of investment and thereby reduces the effective average tax burden of the group. Equation (38) depicts the difference between the after-tax NPV of a cross-border investment involving contract R&D and the after-tax NPV of a domestic investment of the parent. The first term reflects the net effect of the taxation of the contract R&D fee in the residence country and the tax deduction of the contract R&D fee in the source country.

$$\Delta R = -(1+d)(\tau_P - \tau_S)\left(1 - \frac{(1-\delta)(1+\pi)}{(1+i)}\right) + (\tau_P - \tau_S)\frac{(p+\delta)(1+\pi)}{(1+i)} \tag{38}$$

Whether the contract R&D arrangement positively or negatively affects the after-tax NPV of the investment depends on the mark-up which enters the contract R&D fee, and on the tax rate differential between the source and the residence country.

In the case of a positive tax rate differential (denoted by $\Delta\tau = \tau_P - \tau_S > 0$), the contract R&D arrangement results in a lower on-going tax burden as opposed to a domestic investment of the parent (illustrated by the second term of equation (38)). In contrast to this, the net effect of the taxation of the contract R&D fee in the residence country and the tax deduction granted by the source country (illustrated by the first term of equation (38)) is negative. In case the tax rate differential is negative, the effects have the opposite algebraic sign.

It will depend on the size of the mark-up which effect finally prevails and whether the contract R&D arrangement as a consequence results in an overall negative or positive effect on the after-tax net present value. Equation (39) defines the mark-up for which both effects exactly offset each other and thereby leave the after-tax NPV of the investment unaffected (denoted by $\hat{d}$). Please note that this is independent from the tax rates in the source and the residence country.

$$\hat{d} = \frac{(p+\delta)(1+\pi)}{(i+\delta(1+\pi)-\pi)} - 1 \tag{39}$$

[543] Again, the last term of equation (37) reflects that the model considers a one-period perpetuation of the capital stock instead of a permanent increase.

In case the mark-up falls below the critical mark-up denoted by $\hat{d}$, a positive tax rate differential ($\tau_P > \tau_S$) is generally associated with a positive effect of the contract R&D arrangement on the after-tax NPV of the investment which implies that the contract R&D arrangement achieves a reduction of the group's overall effective tax burden.

Equation (40) finally illustrates the cost of capital in case the parent is reimbursed for its contract R&D services based on the cost-plus method.

$$\tilde{p} = \frac{(1-\varphi_0\tau_P)(i+\delta(1+\pi)-\pi)+(1+d)(\tau_P-\tau_S)(i+\delta(1+\pi)-\pi)}{(1+\pi)(1-\tau_S)} - \delta \qquad (40)$$

Equation (40) deviates from the standard formula for a domestic investment where the parent both creates and exploits the patent[544] with respect to the second term in the numerator.

5.1.4.2 Application of the profit split method when reimbursing the contractor

According to the OECD transfer pricing guidelines, the transactional profit split method, instead of the cost-plus method, is generally considered to be the most appropriate method to determine an arm's length price in the case of transactions concerning intangible assets where both parties contribute unique and valuable intangibles and both perform relevant functions relating to developing, enhancing, maintaining, and protecting intangible assets and making decisions regarding whether to pursue or terminate R&D projects.[545]

Hence, the advocates of the profit split method generally claim that, in the situation at hand, contract R&D does not merely constitute a 'routine function'. In particular, the Indian Department of Revenue has promoted the application of the profit split method with respect to the pricing of contract R&D services arguing that the R&D service providers perform economically significant functions.[546] Drawing on the OECD transfer pricing guidelines, the crucial point in assessing the appropriateness of the profit split method in the context of contract R&D is whether the contract R&D is carried out on the risk and account and under the direction and supervision of the principal or whether the contractor carries out the essential functions for creating the intangible assets.[547]

In the following, I point out how the application of the profit split method affects the after-tax NPV of investment and thereby the incentive to create intangible

[544] See equation (3) in section 4.1.2.

[545] See OECD (2010a), recital 2.109, OECD (2014b), recital 6.199.

[546] See Mitra et al. (2013). This is discussed in more detail in section 6.3.2.2.

[547] This is discussed in detail in sections 2.2.2.1.1 and 2.3.2.1.

assets by way of intra-group contract R&D on behalf of a low-taxed subsidiary. In order to incorporate the profit split method, the same approach is applied as in the case of disposal of the patent.

Equation (41) presents the after-tax NPV for the case of contract R&D assuming that gross profits from exploiting the patent (amounting to $(p+\delta)(1+\pi)$), instead of the operating profits, are split between the parent and the subsidiary.[548] Variable α denotes the share of gross profit attributed to the parent company carrying out the R&D activity by means of the profit split method. This equation largely corresponds to the after-tax NPV in the case of a domestic investment of the parent denoted by equation (1) in section 4.1.1. The only difference is that part of the overall return is subject to the source country tax rate as illustrated by the second term of equation (41).

$$R = -(1-\varphi_0\tau_P) + \frac{(p+\delta)(1+\pi)}{(1+i)}(1-(1-\alpha)\tau_S - \alpha\tau_P) + \frac{(1-\delta)(1+\pi)}{(1+i)}(1-\varphi_0\tau_P) \quad (41)$$

A contract R&D arrangement where the contract R&D fee equals the full return of the patent (implying $\alpha = 1$) leaves the after-tax NPV of the investment unaffected because the return earned at the level of the subsidiary is fully shifted to the parent company by means of the contract R&D fee. This is analogous to the findings in the case of licensing-out analysed in the previous section.

If the profit is in fact split between the parent and the subsidiary (implying $\alpha < 1$), the contract R&D arrangement always reduces the after-tax NPV of the investment compared to a domestic investment of the parent. This is demonstrated by equation (42) which depicts the difference between the after-tax NPV of a cross-border investment involving contract R&D and the after-tax NPV of a domestic investment of the parent. For positive tax rate differentials ($\tau_P > \tau_S$), this difference is always positive.

$$\Delta R = \frac{(p+\delta)(1+\pi)}{(1+i)}(1-\alpha)(\tau_P - \tau_S) \quad (42)$$

Equation (43) finally illustrates the cost of capital in case the parent is reimbursed for its contract R&D services based on the profit split method. It deviates from the standard formula for a domestic investment[549] with respect to the denominator. The EATR is determined by inserting equation (41) in equation (4) depicted in section 4.1.1.

$$\tilde{p} = \frac{(1-\varphi_0\tau_P)(i+\delta(1+\pi)-\pi)}{(1-(1-\alpha)\tau_S-\alpha\tau_P)(1+\pi)} - \delta \quad (43)$$

[548] See OECD (2010a), recital 2.131, Vögele (ed.), p. 338 recital 332.

[549] See equation (3) in section 4.1.2.

5.2 Effective tax rates on IP income under IP tax planning

Here, I present cost of capital and effective average tax rates (EATR) for an equity-financed cross-border investment in a self-developed patent involving the IP tax planning models discussed above. As a benchmark for analysing the effects of the IP tax planning strategies on the effective tax burden, I present figures for a purely domestic investment of the parent. The effective tax measures allow me to illustrate the conclusions drawn in the analytical analysis presented in sections 5.1.2 to 5.1.4 above. In addition, I point out in detail the tax parameters which are associated with a lower overall tax burden of the multinational company, implying that the tax planning objective is achieved. I focus on the scenario that the source country tax rate is lower than the residence country tax rate. In doing so, I only vary the tax rate levied by the source country and keep the residence country tax rate fixed.

The economic and tax parameters applied are presented in table 20. I assume that current R&D expenses[550] are subject to immediate deduction in both the residence and the source country and that self-developed intangible assets do not have to be capitalised in both countries. This holds true for the majority of EU Member States.[551] I furthermore assume that the source country does not levy any withholding tax on dividends or royalties paid to the parent company due to the application of the Parent & Subsidiary Directive and the Interest & Royalty Directive and that the residence country exempts foreign dividends from profit tax.

Table 20: Economic parameters and tax parameters of the numerical example

Economic parameters				Tax parameters	
i	7.1%	p	20%	τ_p	30%
π	2%	δ	15.35%	φ_s^d	10%
r	5%	EV	174%	ul	10 years

Abbreviations: i – nominal interest rate, π – inflation rate, r – real interest rate, p – rate of return, δ – economic depreciation rate, EV – earnings value, τ_p – residence country tax rate, φ_s^d – straight-line depreciation rate, ul – useful life for tax purposes.

[550] Recall, in modelling the investment giving rise to a self-developed patent I assume that all investment costs are current in nature (e.g. wages for R&D staff or materials) as current expenses generally account for the largest share of R&D expenditures (see Cameron (1996), Dougherty et al. (2007), OECD (2012b)).

[551] Cyprus, Estonia, Portugal, Slovenia, and Sweden are an exception to this. For details, see section 2.1.1.

5.2.1 Disposal

Table 21 reports the cost of capital and the EATR for cases in which the patent is transferred from the parent to the subsidiary and therefore triggers exit taxation. Recall that the cost of capital demonstrates the effect of tax on a marginal investment, which is one that just breaks even. In the case of domestic investment, the immediate deduction of the R&D investment expenditures, which are presumably fully current in nature, leads to cost of capital equal to the real market interest rate of 5%. This indicates that taxation does not affect the scale of the investment. In turn, cost of capital above the real interest rate of 5% implies that the respective investment (here the R&D investment) is treated in a less beneficial way than a financial investment which serves as a benchmark for analysing the incentive effects of taxes on real investment, such as R&D investment.

The EATR demonstrates the effects of tax on profitable investment. This measure is therefore relevant when exploring how profit taxation influences a multinational company's decision on where to carry out a profitable investment project and how to structure cross-border investment (e.g. by way of the IP tax planning models).

Table 21: Cost of Capital and EATRs (%) in the case of disposal of the patent (equity-financing)

	Cost of Capital				Effective average tax rate (EATR)			
τ_s	Domestic investment	α			Domestic investment	α		
		1	0.8	0.6		1	0.8	0.6
0	5.00	5.00	3.39	2.02	22.50	22.50	11.90	1.29
5	5.00	5.45	3.95	2.66	22.50	25.16	15.79	6.42
10	5.00	5.91	4.55	3.35	22.50	27.82	19.68	11.55
20	5.00	6.91	5.85	4.89	22.50	33.14	27.47	21.81
30	5.00	8.01	7.34	6.71	22.50	38.45	35.26	32.07

Abbreviations: τ_s – source country tax rate, α – share of the earnings value which is taken as a basis when determining the transfer price for the exit tax.

In the following, I analyse the effects of a potential leeway in determining the earnings value of the patent for transfer pricing purposes and of a variation in the strictness of transfer pricing rules which govern the transfer of valuable IP. In order to do so, I vary the share of the earnings value α which is taken as a basis when determining the transfer price and forms the tax base of the exit tax levied at the level of the parent company.

The results presented in table 21 confirm the hypotheses drawn in section 5.1.2. The disposal of the patent which triggers an exit tax on the full earnings value

(implying $a = 1$), is associated with higher cost of capital and a higher EATR than a purely domestic investment of the parent, except if the source country tax rate is zero. In that case, the cost of capital and the EATR are unaffected by the disposal because the effect of the lower on-going tax burden exactly offsets the exit tax burden.

The results furthermore confirm that the parent faces an incentive to underreport the value of the patent when transferring it to a lower-taxed subsidiary (implying $a < 1$). This is because the parent may thereby achieve a lower effective tax burden compared to the domestic investment. To cite an example, if the source tax rate amounts to 20% as opposed to a residence country tax rate of 30%, the disposal of a patent which triggers an exit tax on 60% of the earnings value ($a = 0.6$) is associated with an EATR of 11.55%, as opposed to 22.50% in the domestic case.

These results point to the attractiveness of transferring the patent at an early stage of the development process when its value is still uncertain. The intangible could then subsequently be further developed on the risk and account of the acquiring low-taxed subsidiary. The results also show that if the source country tax rate is significantly lower than the residence country tax rate, transfer prices close to the full earnings value are nevertheless associated with lower effective tax burdens. For example, in the case of a source country tax rate of 5%, as opposed to a residence country tax rate of 30%, the disposal of the patent triggering an exit tax on 80% of the earnings value is associated with an effective average tax burden of the R&D investment of 15.79%, as opposed to 22.50% in the case of a domestic investment of the parent. As presented in section 3.1, IP Box regimes offer these low tax rates for royalty income and in some cases for other kinds of income from exploiting patents (e.g. 0% in Malta, 2% in Cyprus, 2.5% in Liechtenstein, 5% in the Netherlands, and 5.84% in Belgium).

Table 22 reports the values of $\hat{\alpha}$ for different tax rate differentials. Recall, this is the share of the earnings value that leaves the after-tax NPV of the investment unaffected by the disposal. The larger the tax rate differential, the higher $\hat{\alpha}$.

Table 22: Share of the earnings value which leaves the effective tax burden unaffected of the disposal

τ_s (%)	0	5	10	15	20	25	30
$\hat{\alpha}$ (%)	100.00	96.49	91.65	84.59	73.30	52.34	0.00

Abbreviations: τ_s – source country tax rate, $\hat{\alpha}$ – share of the earnings value taken as a basis when determining the transfer price for the exit tax which leaves the effective tax measures unaffected.

5.2.2 Licensing-out

Table 23 reports the cost of capital and the EATR for the case where the patent is licensed-out to the subsidiary instead of transferred on a permanent basis. The results show that, similar to the case of disposal, licensing arrangements only reduce the effective tax burden of the group if the royalty only corresponds to a faction of the return generated by exploiting the patent. In turn, if the royalty corresponds to the full return (implying $\alpha = 1$), the individual tax consequences of the licensing arrangement[552] exactly offset each other and thereby leave the effective tax burden unaffected. As a consequence, the cost of capital and the EATR equal the measures reported for a domestic investment of the parent, namely 5% and 22.5%, respectively. This holds true irrespective of the tax rate differential. Again, the results from the numerical example confirm the findings of section 5.1.3.

If, however, the royalty rate falls below the full return (implying $\alpha < 1$), the licensing arrangement is associated with a lower effective tax burden compared to a domestic investment of the parent.

Table 23: Cost of Capital and EATRs (%) in case the patent is licensed-out (equity-financing)

	Cost of Capital				Effective average tax rate (EATR)			
τ_s	Domestic investment	α 1	α 0.8	α 0.6	Domestic investment	α 1	α 0.8	α 0.6
0	5.00	5.00	3.39	2.02	22.50	22.50	11.90	1.29
5	5.00	5.00	3.64	2.46	22.50	22.50	13.66	4.83
10	5.00	5.00	3.90	2.91	22.50	22.50	15.43	8.36
20	5.00	5.00	4.44	3.90	22.50	22.50	18.97	15.43
30	5.00	5.00	5.00	5.00	22.50	22.50	22.50	22.50

Abbreviations: τ_s – source country tax rate, α - *share* of the overall return generated by exploiting the patent which is taken as a basis when determining the license fee.

The licensing arrangement is generally associated with lower cost of capital and lower EATRs than the disposal (except in the case where the source country tax rate is zero). To give an example, assuming that the source country tax rate is 20% and that *alpha* is 60%, the licensing arrangement is associated with an EATR of 15.43% whereas the EATR in the case of disposal is 21.81%. This is due to the following considerations. The disposal entails that the immediate deduction of R&D expenses incurred for the creation of the patent is offset as the R&D

[552] Recall, these are the taxation of the royalty in the hands of the parent, the royalty tax shield at the level of the subsidiary and the lower on-going tax burden on the patent income because this income is subject to tax in the source country instead of in the residence country.

expenses form part of the exit tax base (provided the transfer price does not fall below the R&D costs) and the patent is subsequently subject to periodical depreciation in the source country. As opposed to this, the royalties are immediately deductible in the source country. This ensures that the licensing arrangement does not affect the effective tax burden provided that the royalty corresponds to the overall return.

5.2.3 Contract R&D

Table 24 finally reports the cost of capital and the EATRs for the scenario of a contract R&D arrangement. This tax planning model differs from the case of a disposal to the extent that the application of the cost-plus method for determining the contract R&D fee is widely accepted, provided certain conditions are fulfilled.[553] This is of importance because in case the contract R&D performer is reimbursed on a cost-plus basis, the returns generated from exploiting the patent largely accrue to the subsidiary instead of being shifted to the parent. As a result, the parent only receives a small share of the profits corresponding to the mark-up on the R&D investment expenses.

In order to point out the effect of the size of the mark-up on the cost of capital and the EATR, I vary the mark-up between 5% and 30%. I consider this to be a reasonable range of possible mark-ups due to the following considerations. Drawing on a survey carried out by PricewaterhouseCoopers, the EU Joint Transfer Pricing Forum (JTPF) indicates that the mark-ups for low value-adding services generally fall within a range of 3 to 10%, and often amount to around 5%.[554] Tax administrations may, however, argue that contract R&D services do not constitute low-value services and thereby apply higher mark-ups than the ones indicated by the EU JTPF in practice.[555] A recent survey of transfer pricing rules in selected industrialised countries furthermore indicates that mark-ups for contract R&D services vary between 0% and 17.5%, the median being 7.5%.[556]

The Indian Finance Ministry's Central Board of Direct Taxes recently issued safe harbour rules for intra-group contract R&D services carried out on behalf of non-resident associated enterprises. Taxpayers may apply for the application of the

[553] The application of the cost-plus method when determining fees for contract R&D services requires that the subsidiary exercise control over the development, enhancement, maintenance or protection of intangible assets and bear the risks and cost associated with these functions. For details, see sections 2.2.2.2 and 2.3.2.1.

[554] See EU Commission (2010), recital 67, Suffer and Reichl (2010). Vögele claims that the bandwidths of mark-ups determined through database research often range between 1.5% and 12%. See Vögele (ed.) (2011), p. 1306 recital 122.

[555] See Schoppe and Voltmer-Darmanyan (2012), p. 1254.

[556] See Richter (2015), section 5.3.3 table 5.4 ('Descriptive Statistics and Correlations').

safe harbour ratios, provided that the contractor only assumes insignificant risks.[557] For contract R&D services that wholly or partly relate to software development, the safe haven ratio is 30% of operating expenses. The respective ratio is 29% for contract R&D services that wholly or partly relate to generic pharmaceutical drugs.[558] Tax practitioners stress that the safe harbour ratios issued by the Indian Finance Ministry's Central Board of Direct Taxes may considerably exceed mark-ups which correspond to the arm's length principle.[559] Nevertheless, I apply a mark-up of 30% as the upper boundary of a range of plausible mark-ups for contract R&D fees.

Table 24: Cost of Capital and EATRs (%) in the case of intra-group contract R&D (application of the cost-plus method, equity-financing)

	Cost of Capital						EATR					
τ_s	Domestic investment	d					Domestic investment	d				
		0.05	0.1	0.15	0.2	0.3		0.05	0.1	0.15	0.2	0.3
0	5.00	5.31	5.61	5.92	6.22	6.83	22.50	1.53	3.05	4.58	6.11	9.16
5	5.00	5.27	5.54	5.80	6.07	6.61	22.50	5.02	6.29	7.57	8.84	11.38
10	5.00	5.23	5.45	5.68	5.90	6.36	22.50	8.52	9.54	10.55	11.57	13.61
20	5.00	5.13	5.25	5.38	5.51	5.76	22.50	15.51	16.02	16.53	17.04	18.05
30	5.00	5.00	5.00	5.00	5.00	5.00	22.50	22.50	22.50	22.50	22.50	22.50

Abbreviations: τ_s – source country tax rate, d – mark-up applied to the R&D investment expenditures for determining the contract R&D fee applying the cost-plus method.

As depicted in table 24, for marginal investments a contract R&D arrangement involving the application of the cost-plus method results in an increase in the cost of capital compared to domestic investments. The reason for this is that the residence country levies tax on the mark-up even if the investment turns out to be unprofitable.

For profitable investment projects, the contract R&D arrangement is associated with a reduction of the effective tax burden if the source country tax rate falls below the residence country tax rate. For example, in the case of a source country tax rate of 10% as opposed to a residence country tax rate of 30%, a mark-up of 10% is associated with an EATR of 9.54% as opposed to an EATR of 22.50% in the case of a domestic investment of the parent. A mark-up as high as 30% is still

[557] Circular No. 6/2013, issued on 29 June 2013, specifies the conditions for identifying development centres engaged in contract R&D services with insignificant risk. For further details, see section 6.3.2.2.

[558] See Articles 10TA-10TG ITR as amended on 19 September 2013, Gandhi (2013), p. 1261.

[559] See Stewart (2013b), Chawla (2013), p. 247.

associated with an EATR which is significantly lower than the EATR for domestic investment projects, namely 13.61% as opposed to 22.50%.

Whether the contract R&D arrangement results in a reduction of the EATR of the group as a whole depends on the size of the mark-up applied. Drawing on equation (39) in Section 5.1.4 which defines the mark-up that leaves the after-tax NPV of the investment unaffected (denoted by $\hat{d}$) and assuming the economic parameters depicted in table 20, the contract R&D arrangement is associated with lower EATRs compared to the domestic investment of the parent if the mark-up is lower than approximately 73.7%.[560]

This shows that contract R&D arrangements, whereby the commissioning party is considered to be entitled to the intangible-related returns according to transfer pricing rules as it legally and economically exercises control over the R&D activity and bears the risks and the costs associated with the R&D investment, have a significant potential to shift profits to low-taxed subsidiaries.

The situation is different when assuming that the contractor does not merely perform a 'routine function' but instead performs economically significant functions. In this case, the profit split method is generally considered more appropriate than the cost-plus method. In the case of the application of the profit split method, the cost of capital and the EATR correspond to the measures presented for the licensing arrangement as illustrated by the results presented in table 25. Table 25 gives a comparison of the cost of capital and the EATRs under the three different tax planning scenarios when determining the transfer price, the license fee, and the contract R&D fee based on the return from exploiting the patent.

Even if a larger share of the profit is attributed to the parent company carrying out the R&D activity than to the subsidiary commissioning the R&D activity ($a > 0.5$), this is still associated with a considerable reduction of the EATR, provided that the source country tax rate is significantly lower than the parent company tax rate. For example, in the case of a source country tax rate of 10% and a 60/40 profit split ($a = 0.6$), the EATR is 8.36% in contrast to 22.50% in the case of a domestic investment by the parent. The contract R&D arrangement is still associated with a considerable reduction of the EATR from 22.5% to 15.43% if as much as 80% of the profit is allocated to the parent ($a = 0.8$) (again given a source country tax rate of 10%).

[560] As illustrated by equation (39) the mark-up which leaves the after-tax NPV of the investment unaffected is independent from the size of the tax rate differential.

Table 25: Cost of Capital and EATRs (%) in the case where the profit split method is applied to determine the contract R&D fee (equity-financing)

		Cost of Capital				Effective average tax rate (EATR)			
		Domestic investment	α			Domestic investment	α		
			1	0.8	0.6		1	0.8	0.6
0	Disposal	5.00	5.00	3.39	2.02	22.50	22.50	11.90	1.29
	License		5.00	3.39	2.02		22.50	11.90	1.29
	Contract R&D		5.00	3.39	2.02		22.50	11.90	1.29
5	Disposal	5.00	5.45	3.95	2.66	22.50	25.16	15.79	6.42
	License		5.00	3.64	2.46		22.50	13.66	4.83
	Contract R&D		5.00	3.64	2.46		22.50	13.66	4.83
10	Disposal	5.00	5.91	4.55	3.35	22.50	27.82	19.68	11.55
	License		5.00	3.90	2.91		22.50	15.43	8.36
	Contract R&D		5.00	3.90	2.91		22.50	15.43	8.36
20	Disposal	5.00	6.91	5.85	4.89	22.50	33.14	27.47	21.81
	License		5.00	4.44	3.90		22.50	18.97	15.43
	Contract R&D		5.00	4.44	3.90		22.50	18.97	15.43
30	Disposal	5.00	8.01	7.34	6.71	22.50	38.45	35.26	32.07
	License		5.00	5.00	5.00		22.50	22.50	22.50
	Contract R&D		5.00	5.00	5.00		22.50	22.50	22.50

Abbreviations: τ_s – source country tax rate, α – share of the earnings value and the overall return generated from exploiting the patent, respectively, which is taken as a basis when determining the transfer price, the license fee, and the contract R&D fee, respectively.

5.2.4 Interim conclusion

The analytical and quantitative findings presented above show that the disposal of a patent to a lower-taxed subsidiary only achieves the tax planning objective of reducing the effective tax burden of the group if the taxpayer is able to understate the value of IP to a certain extent. In contrast, the disposal of a patent which triggers an exit tax on the full earnings value increases the group's tax burden and thereby does not achieve its tax planning objective. This implies that if the country in which the R&D activity has been carried out (which gives rise to a patent) succeeds in levying an exit tax on the full earnings value of the patent, multinational groups of companies do not face an incentive to relocate intangible assets to low-tax countries.

Analogous to this, licensing-out a patent by the parent company to a low-taxed subsidiary is associated with a lower effective average tax burden of the group if the full return from exploiting the patent in the hands of the subsidiary is siphoned off to the owner of the patent (the parent company) through a royalty payment. Licensing-out a patent to a low-taxed subsidiary only results in a reduction of the group's effective tax burden if the royalty payment corresponds to only a fraction of the return from exploiting the patent.

In contrast, contract R&D arrangements which entail that the low-taxed subsidiary commission the parent company to carry out R&D on its behalf may generally achieve a reduction of the group's effective average tax burden if the contractor is reimbursed on a cost-plus basis. According to transfer pricing rules, the cost-plus method is indeed an appropriate method for determining an arm's length contract R&D fee under the condition that the commissioning party bear the risks and the costs of the R&D investment and direct and supervise the R&D activity.

In such a setting, the allocation of functions and risks fundamentally differs from the case of disposals and licensing arrangements as in these cases the subsidiary assumes the risk associated with the R&D investment. My findings support the notion that by rearranging functions and risks among the members of the group, multinational companies may shift profits to low-tax countries and achieve a reduction of their overall EATR.

If, by contrast, the residence country of the parent company requires that the parent be reimbursed based on the profit-split method, the picture is fundamentally different and largely corresponds to the case of the disposal of the asset or the licensing arrangement. I demonstrate above, that applying the profit-split method for determining contract R&D fees significantly reduces the leeway for profit shifting by means of intra-group contract R&D arrangements, provided

a considerably share of the profits is allocated to the contractor. These findings are of importance given a possible move towards the profit split method in certain countries such as India[561] or even under the OECD transfer pricing rules for intangible assets which are currently under revision.[562]

Summing up, provided that the cost-plus method may be applied when determining the fee for intra-group contract R&D, the leeway for shifting profits to low-tax subsidiaries is widest under contract R&D arrangements. In contrast, transferring intangible assets to low-taxed subsidiaries, whether on a permanent or a temporary basis, only achieves a reduction of the effective tax burden if the value of the patent is understated.

In order to address the profit shifting leeway which is associated with the possibility to understate the value of IP which is sold to affiliates, the US and Germany introduced retroactive adjustment clauses, which might help to reduce the incentive to shift intangible assets to low-tax countries for profit shifting purposes. This is discussed in more detail in section 6.3.2.1 addressing possible options to reform the taxation of IP income.

[561] For details, see section 6.3.2.2.

[562] The drafts of chapter six of the guidelines on the transfer pricing rules for intangible assets (see OECD (2013b) and OECD (2014b)) are perceived to encourage a broader use of the profit split method compared to the transfer pricing guidelines published in 2010 (see Silberztein et al. (2013), p. 63, Sullivan (2013b), p. 15).

6 Tax Policy Considerations

In this section, I address tax policy considerations related to the taxation of intangible assets. This comprises three parts. First, I discuss the IP Box regimes in light of their tax policy objectives, most notably incentivising R&D activity and retaining or attracting IP income. Whereas the first objective views IP Boxes as tax incentives for real investments, the second objective relates to the issue of tax competition. Second, I assess the IP Box regimes against the EU State aid rules and the EU's and OECD's criteria for identifying harmful tax practices. Third, I point out and discuss reform options which aim at countering profit shifting and tax base erosion through IP tax planning.

6.1 Discussion of tax policy aims of IP Box regimes*

Whether IP Box regimes are appropriate tax instruments depends on the underlying policy goal and how IP Boxes compare with other tax instruments in achieving this goal. In this regard, their revenue cost and the distortions they create are also of relevance. There are two main reasons that have motivated governments to introduce IP Box regimes: (i) to incentivise firms to increase investment in R&D and innovation and to attract or retain such investment in the country's territory, and (ii) to raise or retain tax revenue on mobile IP income. Whereas the first aspect views IP Box regimes as innovative policies, the second aspect implies that IP Boxes may serve as a means to attract or retain IP income. In the following, I discuss these policy objectives with reference to the regimes' specific design features.

6.1.1 IP Box regimes as innovation policies

Many of the IP Box regimes in place in Europe were explicitly introduced as a tax policy tool for incentivising domestic R&D investment.[563] In this regard, their tax policy objective overlaps with R&D tax incentives such as R&D tax credits which are now in place in the majority of OECD and EU member states.[564]

The traditional policy rationale for using the tax system to incentivise investment in R&D and innovation is the presence of spillovers that accrue from the creation of knowledge and lead the private market to under-invest in such activities relative to the socially optimal level of investment thereby resulting in market failure.[565] The reason for this is that the private return to R&D investment generally falls below the social return.[566] Governments may also seek to affect the location of innovative activities because evidence suggests that, despite the existence of international spillovers,[567] geographical proximity facilitates knowledge spillovers between researchers.[568]

---

* This section is partly based on a joint paper with Helen Miller and Christoph Spengel (see Evers et al. (2014)).

563 *Belgium*: Chambre des Représentants de Belgique (2007a), pp. 37 et seq.; *Cyprus*: Aristotelous and Neocleous (2012a); *France*: Taieb (2008); *Liechtenstein*: EFTA Surveillance Authority, 1 June 2011, case no. 69131, decision no. 177/11/COLL, p. 2, section I.2.1, download: http://www.eftasurv.int/media/state-aid/Decision_177_11_COL.pdf, EFTA Surveillance Authority, 12 December 2012, case no. 71725, decision no. 480/12/COLL, recital 2, download: http://www.eftasurv.int/media/decisions/480-12-COL.pdf; *Luxembourg*: Chambres des Députés (2007a), p. 20 recital 7, Chambres des Députés (2007b), p. 11 recital 3.6, Muntendam and Chiarella (2008), p. 223, Schaffner et al. (2009), p. 381; *Spain*: European Commission (2008), recital 11, Nárdiz (2008); *United Kingdom*: HMRC (2011), pp. 3 and 5.

564 See Deloitte (2013), Department of Finance (2013), pp. 63-65, Elschner et al. (2011), Ernst (2012), Ernst & Young (ed.) (2013), European Commission (2014c), pp. 19, 51 et seq., OECD (2013c), p. 106, Spengel and Wiegard (2011), p. 17.

565 See Arrow (1962), p. 619, Griliches (1992), Jones and Williams (1998), Nelson (1959), p. 302, Spengel (ed.) (2009), pp. 4 et seq., Spengel and Wiegard (2011), p. 9 et seq.

566 See Arrow (1962), Bloom et al. (2013), Hall (1996), Griliches (1979), Griliches (1992), Nelson (1959). For a recent review of the literature on measuring private and social returns to R&D, see Hall et al. (2010).

567 International spillovers are positively affected by the openness of a country (see Coe and Helpman (1995)).

568 See Coe and Helpman (1995), Fracasso and Vittucci Marzetti (2012), Jaffe et al. (1993), Keller (2002), Lychagin et al. (2010). As pointed out by Cantwell and Piscitello (2005), this first and foremost holds true for intra-industry spillovers or specialisation externalities, associated with the presence of a broad range of firms active in the same sector, and inter-industry spillovers or diversity externalities, associated with the co-presence of firms working in different fields. Their research indicates that in turn geographical distance plays a much smaller role for science–technology spillovers (arising from the interaction with universities and research laboratories) as well as for externalities stemming from the presence of an attractive scientific and educational infrastructure.

IP Box regimes and R&D tax incentives might affect R&D investment in two ways. First, they might increase the overall amount of investment. Second, they might attract R&D investment which would be carried out in another jurisdiction thereby affecting the location of R&D investment. As pointed out in chapter four, the effect of taxes on the size of investment may be analysed by drawing on the cost of capital. In turn, the effective average tax rate, which assumes that investment projects are profitable, points to the effects on the decision as to where to locate profitable investment projects.

Empirical evidence indeed suggests that traditional R&D tax incentives such as R&D tax credits can be effective in increasing the amount of R&D investment. Two strands of literature can be identified in this regard which are characterised by different approaches in analysing the effectiveness of R&D tax incentives: (i) studies calculating price elasticities, thereby measuring the percentage-change in R&D investment in response to a 1%-change in the after-tax cost of R&D investment[569],[570] and (ii) studies drawing on benefit-cost ratios, thereby additionally taking into account the revenue losses associated with R&D tax incentives.[571]

Although there is substantial evidence that R&D tax incentives do increase the amount of R&D investment, studies' estimations of the effect's intensity vary considerably. In addition, empirical evidence indicates that R&D tax incentives might mainly induce R&D investment to be shifted between different locations instead of increasing the overall level of investment.[572] If domestic and foreign R&D investments are substitutes, the introduction of R&D tax incentives might constitute a 'beggar-thy-neighbour' tax policy and all countries might be worse off in the end in competing for more attractive R&D tax incentives.[573] This is a concern which is also raised with respect to IP Box regimes.

---

[569] The cost of R&D investment is usually measured by way of the so called B-Index. For further details, see Warda (2001, 2006).

[570] See Bloom et al. (2002), Guellec and van Pottelsberghe de la Potterie (2001), Hall (1993), Hines (1994), Jaffe and Hines (2001). For an overview of the literature, see European Commission (2014c), pp. 27 et seq., Graetz and Doud (2013), pp. 357 et seq., Hall and van Reenen (2000), pp. 459 et seq., 460-466, HMRC (2010), pp. 15 et seq., Parsons and Phillips (2007), pp. 3-9, Spengel (ed.) (2009), p. 15.

[571] For an overview, see European Commission (2014c), p. 41, Graetz and Doud (2013), pp. 357 et seq., Hall and van Reenen (2000), pp. 456 et seq., 460-466, HMRC (2010), pp. 15 et seq., Parsons and Phillips (2007), pp. 13 et seq., Spengel (ed.) (2009), p. 15.

[572] See Bloom and Griffith (2001), Hines (1995), Wilson (2009). This has recently been confirmed for European multinationals by Baumann et al. (2015). By contrast, a study by Hines and Jaffe (2001) comes to the opposite conclusion.

[573] See Wilson (2009).

The substantial reductions in the EATR reported in section four indicate that IP Box regimes encourage locating the creation and exploitation of intangible assets in an IP Box country. The results presented in section four furthermore indicate that some IP Boxes may also have a positive effect on the level of investment in innovative activities by reducing the cost of capital.[574]

So far, there is, however, no empirical evidence on how IP Box regimes affect the amount of R&D investment although some studies address this question. A study by Ernst et al. which uses data on patent applications takes into account the IP Box regimes in place up to the year 2007 but does not provide evidence on the effects of a reduced tax rate for IP income on the amount of R&D investment in a certain location. They consider cases where firms co-locate patents in the country in which the respective inventors that created the technology reside and provide evidence that lower rates of tax on patent income can attract particularly innovative projects with high earning potential.[575] Hansson and Brokelind investigate the effects of tax incentives for R&D on investment. They do, however, not differentiate between cost-based R&D tax incentives (e.g. tax credits) and IP Box regimes. They also don't point out the isolated effects on R&D investment as they use 'gross fixed capital formation' as a measure for investment which includes other kinds of investment in addition to R&D investment.[576] Finally, drawing on the Innovation Union Scoreboard 2010, Atkinson and Andes provide a descriptive comparison of the R&D expenditures in IP Box countries and non-IP Box countries. They point out that between 2008 and 2009, R&D increased at a slightly higher rate in IP Box countries compared to non-IP Box countries, namely by 4% in contrast to 3.8%. However, their findings do not indicate any causal effects.[577]

Additional empirical analysis is required to shed light on the question whether a reduced tax rate on IP income is successful in stimulating (domestic) R&D investment. Any possible incentive effects will depend on the actual design of the IP Box regimes. In the following, I therefore discuss the design of IP Box regimes against the aim to incentivise R&D investment.

[574] Recall, this occurs when there is an asymmetric treatment of IP income and IP expenses and the taxpayer generates other income (which is subject to the regular tax rate) from which to deduct the R&D expenses.

[575] See Ernst et al. (2014).

[576] See Hansson and Brokelind (2014).

[577] See Atkinson and Andes (2011).

6.1.1.1 The design of IP Box regimes in light of the spillover argument

When discussing whether an IP Box is an appropriate policy tool to incentivise investment in spillover-generating activities, a key concern is that the policy is not targeted at such activities.[578] Spillovers are likely to be largest at the point of research.[579] This includes research that increases knowledge but fails commercially. Spillovers can also arise from knowledge gained in incorporating innovations in the production of commercial products,[580] or from network externalities that arise when the value of a new idea or product is dependent on the development of related technologies.[581]

IP boxes provide a tax reduction for the income from successful projects and not for the underlying research.[582] The correlation between the extent of any spillovers and the resulting income stream could be positive because both are driven by the quality of an idea. But they could also be negative because returns are higher when firms are able to maintain the exclusivity of an idea. Besides this, the returns from exploiting intangible assets will also reflect any market power associated with intellectual property, such that the size of the tax break is not directly linked to the scale of spillovers from the underlying innovative activities. Summing up, the market failure argument, which supports traditional R&D tax incentives, does not unconditionally apply to IP Box regimes which involve a beneficial tax treatment of the returns from successful investment.[583]

In addition, several IP Box regimes are not limited to intangibles which are created via R&D but also apply to marketing intangibles such as trademarks. However, as regards marketing intangibles, companies are more likely to capture the benefits of commercialisation activities.[584] Therefore, the market failure argument does not equally apply to tax incentives for investments in marketing intangibles.

---

578 For further discussion in the context of the UK IP Box, see Griffith and Miller (2011).

579 See Congressional Budget Office (2007), p. 10, Spengel (ed.) (2009), p. 4, Spengel (2013), pp. 581 et seq., Spengel and Wiegard (2011), p. 9.

580 See OECD (2013a), p. 132. The IP Box regime in place in Belgium explicitly aims at stimulating the production of goods incorporating or making use of patents (see Chambre des Représentants de Belgique (2007a), pp. 37 et seq.).

581 See Lev (2003), pp. 26 et seq.

582 See Graetz and Doud (2013), p. 409, Griffith and Miller (2011), p. 232.

583 See European Commission (2014c), pp. 22 and 45, Griffith and Miller (2011), p. 232.

584 See Griffith and Miller (2011), p. 232.

6.1.1.2 The design of IP Box regimes in light of the aim of incentivising (domestic) R&D investment

The reductions of the cost of capital and the EATR associated with the IP Box regimes presented in section four are not limited to domestic investment in self-developed intangible assets. Depending on the exact design of the respective IP Box regimes, comparable reductions of the cost of capital and the EATR can also be achieved for intangible assets created abroad as well as for acquired intangibles and assets created and/ or registered before the implementation of the IP Box regime. These design features of the regimes will likely affect the magnitude of the regimes' incentives to undertake additional R&D investments and the ways in which companies are likely to respond e.g. by creating an R&D unit in the IP Box country or by contracting out R&D to a foreign contract R&D service provider instead.

For example, the UK approach for calculating income which is eligible for the IP Box involves that an additional patent can have little effect on the amount of qualifying income.[585] This reduces the incentive to invest in new patentable technologies. However, it may also encourage complementary investments that increase the income from commercialising patents in order to increase the amount of income benefitting from the IP Box treatment.

In addition, many of the regimes are available for IP which has been created or was registered before the implementation of the IP Box regimes.[586] This is associated with windfall gains for projects which were carried out before the introduction of the regimes. The support of projects which would have been undertaken in the absence of a tax relief is associated with a deadweight loss.

The fact that in most IP Box countries companies can benefit from the IP Box treatment by acquiring intellectual property without further developing it similarly reduces the incentive to invest in R&D and innovation.[587] In contrast, the

[585] Most notably, sales income relating to the sale of products which incorporate at least one patented item fully qualifies for the IP Box (notwithstanding the deductions for returns to routine functions and to marketing assets). To give an example, one patent is sufficient for the income from a car to fully qualify for the IP Box regime. For further details, see section 3.3.2.2.

[586] These are Cyprus, France, Hungary, Spain, the Swiss Canton of Nidwalden, and the United Kingdom. In addition, the Luxembourg regime is available for IP registered before the regime's implementation date provided that it has been acquired after the implementation. For further details, see section 3.2.2.

[587] These are Cyprus, France, Hungary, Liechtenstein, Luxembourg (except IP acquired from directly related parties), Malta, the Swiss Canton of Nidwalden, and the United Kingdom (provided the IP has been developed by a group company). For further details, see section 3.2.3 and table 7 in section 3.5. The fact that the transfer of IP out of a country usually triggers capital gains taxation or special exit taxes may, however, render the transfer of IP to an IP Box country less attractive. For details, see sections 2.2.3 and 2.3.

regimes in place in Belgium and the Netherlands are only available for acquired IP provided it is further developed by the taxpayer. In the Netherlands it is even required that this result in the creation of a new intangible asset which is patentable or that the R&D activity of the Dutch taxpayer be eligible for an R&D certificate.[588] This requirement to further develop acquired intangibles and the fact that depreciation allowances have to be deducted from IP income when determining the IP Box tax base for acquired IP might help to ensure that some real activity be associated with the IP Box tax relief.

However, even in the countries where acquired IP is excluded from the IP Box benefit, multinational companies may still benefit from the IP Box treatment with respect to intangibles created by another entity via contract R&D arrangements. Intangible assets created by another party via contract R&D generally benefit from the IP Boxes, provided certain substance requirements are met (see section 3.2.3 for details).[589] Hence, taxpayers may benefit from the IP Box treatment without performing any R&D activity on their own.

It is also not required that the R&D activity giving rise to the eligible intangibles be carried out domestically.[590] As a consequence, the large reductions in EATRs associated with the IP Box regimes presented in section four may also be achieved in case intangible assets are created abroad via contract R&D.[591]

Summing up, a closer look at the design of the regimes raises doubts as to whether IP Box regimes are effective means for stimulating (domestic) R&D activity, which is one of the stated goals of IP Box regimes as pointed out in the beginning of this section. First, IP Boxes provide a tax reduction for the income from successful projects and not for the underlying research. Hence, the market failure argument, which supports traditional R&D tax incentives, does not generally apply to IP Box regimes. Second, in most IP Box countries companies may benefit from the IP Box treatment by way of allocating IP and IP income to IP Box countries without also locating the underlying R&D activity there. Whether the policies succeed in attracting real activities largely depends, in the end, on the extent to which companies will choose to co-locate real activities alongside IP and IP income. It is not per se excluded that companies' real activities are changed by IP Boxes. Empirical analysis is therefore required to assess whether a reduced tax rate on IP income stimulates (domestic) R&D investment.

588 For details, see section 3.2.3.

589 See section 3.2.3 and table 7 in section 3.5.

590 This refers to acquired IP as well as IP created via contract R&D. Also, the Dutch and the Belgian regimes do not require that the further development of acquired IP is carried out domestically.

591 Provided that the substance requirements of domestic tax law and transfer pricing rules are fulfilled so that the contractor is considered to be eligible to the intangible-related income (see section 2.2.2.1).

6.1.2 IP Box regimes as a means to attract IP and IP income

The second main reason to operate a preferential rate for income from intellectual property is to attract or retain IP income.[592] Such income is presumed to be particularly mobile and thereby tax-sensitive. Indeed, empirical evidence suggests that the holding of patents within multinational groups is negatively affected by the size of the income tax rate.[593] Using data on patent applications by corporations to the European Patent Office (EPO), Böhm et al. show that countries with low statutory tax rates for patent income (including IP Box tax rates) attract foreign-invented patents. This, in particular, holds true for high-quality patents[594] which are associated with a high earnings potential. They also show that inventor countries which levy high tax rates on patent income are faced with the transfer of high-quality patents abroad.[595] This is confirmed by Karkinsky and Riedel, who show that the corporate tax rate as well as the corporate tax rate differential vis-à-vis other affiliates of the same multinational group negatively affect the number of patent applications.[596] Similarly, using balance sheet data for the EU-25 member states, Dischinger and Riedel show that the amount of intangible assets held by an affiliate of a multinational group is negatively affected by its corporate tax rate relative to other group affiliates.[597]

In a simulation exercise, Griffith et al. find that IP Boxes work to attract patents, and that those with a high expected value are particularly responsive to tax.[598] The study does, however, also indicate that with further countries following suit, longstanding IP Box countries likely lose some of the IP and IP income they

---

592 *Cyprus*: Aristotelous and Neocleous (2012a); *France*: Taieb (2008); *United Kingdom*: HMRC (2011), p. 5.

593 Dischinger and Riedel (2011) find that the lower the statutory tax rate faced by a subsidiary compared to all other affiliates of a multinational group, the larger the amount of intangible assets held by this subsidiary. The fact that multinational companies strategically locate high-value patents in low-tax countries, as shown by Karkinsky and Riedel (2012), also points in this direction.

594 The quality of a patent is measured drawing on the patent's family size (i.e. the number of countries in which the company files for patent protection), the number of forward citations and the number of technology classes (see Böhm et al. (2014), pp. 7 et seq.).

595 See Böhm et al. (2014).

596 See Karkinsky and Riedel (2012). These results are confirmed when they additionally consider withholding tax rates on royalty income. However, when considering the effects of the corporate income tax rate and withholding tax rates separately, no effect for the latter can be demonstrated. They interpret this as indicating that foreign royalty withholding taxes in most cases fall short of the corporate tax liability on foreign royalty income. In this case, the foreign withholding tax can be fully credited and does not result in an extra tax burden.

597 See Dischinger and Riedel (2011). They take IP Box tax rates into account where applicable.

598 See Griffith et al. (2014). They identify high-quality patent applications as those where a related patent application has been filed at each of the European Patent Office, the US Patent and Trademark office, and the Japan Patent Office (so called 'triadic patent families').

attracted when they originally introduced their regimes.[599] All these studies do, however, only cover some of the IP Box regimes. So far, no comprehensive empirical analysis of the IP Box regimes on IP and IP income is available.

The design of several of the IP Box regimes suggests that the focus of the regimes is indeed on attracting IP holding companies instead of stimulating R&D investment and innovative activity. Under the regimes in place in Cyprus, France, Hungary, Liechtenstein, Luxembourg,[600] Malta, the Swiss Canton of Nidwalden, and the United Kingdom, acquired IP qualifies for the IP Box treatment even if it is not further developed by the taxpayer.[601] The IP Box regimes in Cyprus, France, Hungary, Malta, and the Swiss Canton of Nidwalden focus on royalty income and capital gains, but do not apply to income from internal use of eligible IP by the taxpayer.[602] In addition, some of these regimes do not have active ownership conditions in place which require that the taxpayer perform a significant amount of management activity in relation to eligible IP rights.[603] The regimes in place in these countries are therefore particularly attractive for IP holding companies that licence-out IP. Notably, Cyprus, Malta, Liechtenstein, and Switzerland are known to operate a range of other corporate tax policies that are attractive to mobile income, including corporation tax rates that are significantly lower than EU and OECD averages.[604]

For the sake of completeness, it should be pointed out that by offering a reduced tax rate for IP income, countries hope to attract business activity which is associated with the management of IP rights. This rests on the assumption that such activity is associated with high-value jobs and an increased demand in professional services.[605] However, it is unclear whether this hope is confirmed.

---

599 However, this rests on the assumption that the total level of patenting activity of European firms is not affected by the introduction of IP Box regimes. In fact, IP Box regimes might attract IP from non-EU countries. In order to simulate these affects, the tax rate changes in third countries would also have to be taken into account.

600 IP acquired from directly related parties is excluded from the regime. For details, see section 3.2.3.

601 For details, see section 3.2.3.

602 For details, see section 3.3.1.

603 Felder points this out with respect to the Liechtenstein and Swiss (Canton of Nidwalden) IP Box regimes. See Felder (2013), pp. 212 et seq., p. 304.

604 See Spengel et al. (2014), pp. A-1 et seq. table A-1. Switzerland is popular for its cantonal tax regimes such as the holding company regime, the mixed company regime, and the domiciliary company regime. For details, see Obersou and Hull (2006), pp. 60 et seq. section 1.4.3 and 1.4.4, Obrist (2013), Weigell et al. (2012), pp. 19 et seq.

605 See Dischinger and Riedel (2011), p. 700.

6.1.3 IP Boxes as a means for differentiating tax rates on mobile and less mobile income and potential revenue effects

Applying a reduced tax rate for a certain category of income rests on the following considerations. First, if corporate income taxes are considered as some kind of compensation for public goods enjoyed by companies, it may be reasonable to take into account to what extent a certain type of investment makes use of public expenditures when determining the tax rate to be applied to the respective kind of income. This way the expected revenue streams and the public expenditures can be balanced. [606] These considerations may support low tax rates for income from acquired intangible assets which have been created abroad.

A second reason for operating a preferential rate for IP income is that it might be used as a means to reduce distortions that are currently present in the tax system. Corporate income taxes distort both the level and the location of investment,[607] so that any reduction in the corporate income tax is likely to reduce distortions in at least some dimensions. In principle, it may be more efficient to explicitly tax more mobile activities at a lower rate than less mobile activities.[608] This could alleviate some distortions with respect to the location of real activity. However, this relies on the fact that IP income is a good proxy for mobile income, and measurable independently from other forms of income. By favouring certain kinds of investments, IP Boxes also introduce new distortions that must be weighed against any benefits. They create another boundary in the tax system between eligible and non-eligible types of income. On the one hand this distorts companies' decisions, and on the other hand it requires measures which prevent the IP Box tax base from being inflated, which in turn involves administrative and compliance costs.[609]

A key issue of preferential rates, which was also raised by the 'harmful tax' initiatives of the EU and the OECD,[610] is their potential negative effect on government revenues from corporate income taxes.[611] The findings of the theoretical literature about the effects of preferential rates on tax revenues are

[606] See Schön (2009), p. 77.

[607] See Auerbach et al. (2010). For an overview of empirical evidence, see Feld and Heckemeyer (2013), Heckemeyer and Overesch (2012).

[608] See Griffith et al. (2010), p. 928.

[609] See Klemm (2010).

[610] This is discussed in more detail in the subsequent section 6.2.

[611] See Pantaleo et al. (2013), p. 5. Raising revenue does not need to be the primary goal of the corporate tax system (though it is a goal of the tax system as a whole). However, if governments are choosing between different policies, then the revenue consequences are important.

mixed.[612] In a simulation exercise, Griffith et al. estimate that the introduction of IP Boxes in the Benelux countries and the UK is associated with a reduction of revenue raised from IP, as the policies do not attract sufficient additional income to offset the effect of the lower tax rate. The revenue loss for all countries increases when additional IP Boxes are introduced. This result is in line with the UK government's estimate that the IP Box will lead to a revenue loss of GBP 1.1 Bio. a year in steady state.[613]

IP Boxes may produce offsetting positive revenue effects in other parts of the tax system (e.g. personal taxes) if there is an increase in real activities,[614] or if setting a preferential rate on mobile income allows a higher rate of corporate income tax to be maintained on less mobile income. However, an overall revenue gain would likely require a substantial increase in these other sources of tax revenue. Those countries with relatively small domestic tax bases may be the most likely to see a positive overall revenue effect. Indeed, theoretical literature suggests that smaller countries have a greater incentive to introduce generous tax treatments of mobile income because the amount of such income which may potentially be attracted from abroad exceeds their domestic tax base many times.[615] Put differently, theoretical literature indicates that own tax elasticities are relatively high for small countries.[616] This is supported by empirical evidence presented by Griffith et al. which show that own tax elasticities are higher for the Benelux countries

[612] Keen (2001) presents a model with two tax bases which are both imperfectly mobile and fixed in the aggregate and shows that a ban of preferential tax regimes is associated with a reduction of tax revenue. He concludes that preferential tax regimes reduce the scope of tax competition rendering it "less harmful" as they allow countries to limit tax competition to particular parts of the tax system, in which they operate preferential tax regimes. In contrast to this, Janeba and Peters (1999) present a model with a perfectly mobile and an immobile tax base and show that preferential tax regimes, as opposed to the case where such policies are banned, are associated with lower tax revenue. Janeba and Smart (2003) aim at reconciling the apparently conflicting results presented by Janeba and Peters (1999) and Keen (2001). They present a general condition under which a restriction of preferential tax regimes is desirable. They conclude that the elasticities of the aggregate bases are decisive. Haupt and Peters (2005) apply the same model as Keen (2001) but account for home bias of investors. They show that in such a setting, restricting preferential regimes may raise tax revenue. Gaigné and Wooton (2011) additionally take into account trade costs and conclude that high trade costs reduce the elasticity of the mobile tax base so discriminatory tax policies which make use of preferential tax regimes are associated with lower tax revenue than uniform tax policies. For an overview and a discussion of theoretical results, see Wilson (2006).

[613] See HMRC (2011), p. 29.

[614] See Pantaleo et al. (2013), p. 6. They doubt that the mere ownership of IP rights entails much economic activity or gives rise to supporting activities.

[615] See Bucovetsky and Haufler (2007).

[616] See Wilson (1999).

than for Germany and France.[617] This might be the reason why smaller countries seem to be more inclined to reduce their corporate tax rate and to introduce IP Box regimes. The higher the country's own tax elasticity, the larger the change in the share of IP and IP income which is induced by a tax rate reduction.

6.1.4 Intermediate conclusion and suggestions on how to amend the IP Box regimes

As IP Boxes provide a tax reduction for the income from successful projects and not for the underlying research, the market failure argument, which supports traditional R&D tax incentives, does not generally apply to IP Box regimes. In addition, it is questionable whether the regimes will succeed in stimulating domestic R&D activity, as companies may easily benefit from the IP Box regimes without carrying out R&D activity in the IP Box country. However, it is not per se excluded that companies' real activities are positively affected by IP Boxes. It is therefore necessary to conduct further empirical research on how they affect the size, quality, and location of R&D investment.

Despite these fundamental concerns, countries might provide an incentive for domestic R&D activity more effectively by restricting the IP Box treatment to intangible assets created on national territory.[618] However, this would bring IP Box regimes into conflict with the freedom of establishment (in the case of in-house R&D) and the free movement of services (in the case of contract R&D).[619] The Irish IP regime which was in place until November 2010 was restricted to patents which had been created in Ireland. This induced the EU Commission to request the Irish tax legislators to amend its regime arguing that the Irish provision was incompatible with the freedom of establishment and the free movement of services.[620] It is doubtful whether the ECJ would find a restriction of

[617] In contrast to this, the own tax elasticity they report for Switzerland is similar to the elasticity reported for France and Germany. See Griffith et al. (2014), pp. 20 et seq.

[618] Merrill et al. propose that a US Patent Box should be restricted to IP created in the US (see Merrill et al. (2012), p. 1672). In contrast, Pantaleo et al. claim that IP created abroad should benefit from an IP Box regime arguing that the domestic further-development and exploitation of such IP is associated with economic benefits for the domestic economy (see Pantaleo et al. (2013), p. 8).

[619] Knieser points out the leeway for designing R&D tax incentives which are compatible with the fundamental freedoms (see Knieser (2013), pp. 171-177).

[620] In its assessment the EU Commission based its interpretation of primary European law on the ECJ's cases 'Laboratoires Fournier SA' (see ECJ, 10 March 2005, C-39/04, ECR I-2057) and 'Baxter and Others' (see ECJ, 8 July 1999, C-254/97, ECR I-4809). See EU Commission Press Release IP/07/408 of 23 March 2007, download: http://europa.eu/rapid/press-release_IP-07-408_en.htm?locale=en.

the IP Box benefit to income from intangibles created through domestic R&D activity to be justified.[621]

The relevant case-law of the ECJ on R&D tax incentives may also provide some insights on whether a restriction of the IP Box regimes to intangible assets created in the respective IP Box country might violate primary EU law.[622] The restrictions of the French and the Spanish R&D tax incentives to R&D activity carried out domestically were challenged by the ECJ in the case 'Laboratoires Fournier'[623] and the case 'Commission vs. Spain'.[624] Subsequently, these restrictions were abolished by the two member states.[625]

Despite general concerns that IP Box regimes might not be very effective in incentivising R&D, there is still some leeway to amend the design of the regimes to strengthen the link between the tax benefit and real activity, other than by limiting the IP Box to IP created through domestic R&D activity. First, it seems sensible to exclude marketing intangibles from the scope of the regimes. Second, acquired IP and IP which was created before the implementation of the IP Box should not benefit from the IP Box regimes as this is associated with windfall gains for taxpayers. Third, in some countries there is room for stricter active ownership conditions and tighter substance requirements for IP created via contract R&D in order to ensure that only taxpayers which actively supervise and manage the R&D activity carried out on their behalf benefit from the IP Box regime. Both measures may work in ensuring that taxpayers benefitting from the IP Box carry out genuine economic activity with substance in the IP Box country. Fourth, tax legislators should consider extending the scope of IP income eligible for the IP Box treatment to income from internal use, namely sales income and notional royalty income. Internal use of IP, for example in the production of goods

621 Possible grounds of justification are the 'objective of promoting research' and the 'need to ensure effective fiscal supervision' (see Mang (2015)). The French government referred to these two grounds of justification in the 'Laboratoires Fournier SA' case which dealt with the French R&D tax credit (see ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057). The ECJ argued that 'the promotion of R&D' cannot justify a national measure as this contradicts the objective of the Community policy on research and technological development (see ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057, recital 23). In relation to the second possible ground of justification, which is the 'need to ensure effective fiscal supervision', the Court concluded that taxpayers may not a priori be excluded from providing the "relevant documentary evidence enabling the tax authorities of the Member State of taxation to ascertain, clearly and precisely, the nature and genuineness of the research expenditure incurred in other member states (recital 25 of the judgement)."

622 See Bal and Offermanns (2012), p. 169, Knieser (2013), chapter 4 B.II.

623 See ECJ, 10 March 2005, C-39/04, 2005 ECR I-2057.

624 See ECJ, 13 March 2008, C‑248/06, 2008 ECR I-47.

625 For France, see Kniese (2013), pp. 157-167, Bal and Offermanns (2012), p. 169. For Spain, see Bal and Offermanns (2012), p. 169.

and the rendering of services, is likely to be associated with real activity in the IP Box country. In addition, internal use of IP (e.g. in the production of goods) may also be associated with positive spillovers.

With regard to attracting or retaining IP income, empirical evidence suggests that IP Boxes are effective. However, it is unclear whether they actually result in higher tax revenue from IP income compared to the benchmark case of operating a uniform tax rate for all kinds of income. In this regard, countries should be aware that any positive effects on tax revenue, whether by attracting additional income or by only mitigating tax base erosion, is not likely to last as other countries follow suit.

Finally, the strikingly low effective average tax rates (EATRs) associated with some of the regimes raise the question whether some IP Box regimes are too generous. This first and foremost concerns the regimes which are characterised by an asymmetric treatment of IP income and IP expenses.[626]

[626] See table 12 in section 4.2.1.

6.2 IP Box regimes in light of the EU State aid rules and the initiatives to counter harmful tax practices

The Code of Conduct of business taxation requires the EU member states not to implement harmful tax practices. The OECD's project on harmful tax practices involves comparable requirements for the OECD countries. The increasing popularity of IP Box regimes in Europe has stirred up a discussion about whether these regimes constitute harmful tax measures. In addition, there is doubt whether the IP Box regimes comply with the prohibition of state aid within the EU.

Compliance with the State aid rules which are codified in the Treaty on the Functioning of the European Union is binding for the EU member states. In contrast, the commitment of EU and OECD member states not to operate harmful tax measures is only of a political nature. Nevertheless, experience has shown that the EU's and the OECD's initiatives to counter harmful tax practices have encouraged countries to amend or abolish harmful tax practices. In this section, I therefore assess the IP Box regimes against the EU State aid rules and the EU's and OECD's criteria for identifying harmful tax practices.

6.2.1 State Aid Rules

6.2.1.1 Fundamentals of the EU State aid rules

Article 107 of the Treaty on the Functioning of the European Union (TFEU) prohibits State aid which (potentially) distorts competition and affects trade by favouring certain undertakings or the production of certain goods unless such state aid serves certain purposes of public interest. In doing so, the State aid rules move within an area of conflict between their objective mandated by Article 107 (1) TFEU to protect competition and the member states' freedom to pursue policy goals inter alia through tax measures. Balancing these two aspects lies at the heart of the State aid assessment. [627]

The criteria for identifying State aid are addressed in more detail in the subsequent section. Here, I briefly sketch out the scope and the technical details of the assessment of tax measures under the State aid rules. In contrast to the procedure governing restrictions of the fundamental freedoms, member states are obliged to notify the EU Commission of any plans to grant or alter State aid (Article 108 (3) TFEU). Among the IP Box countries, Spain is the only EU member state which has so far formally notified the EU Commission with regard to the planned introduction of its IP Box regime. The reason for this is probably that the

[627] See Bartosch (2010), p. 751.

other countries did not consider their regimes to potentially be in breach of the State aid rules. The Netherlands originally briefed the EU Commission on their intention to introduce an IP Box but later withdrew it.[628]

The evaluation of tax measures under the State aid rules first of all falls upon the EU Commission (Article 108 (2) TFEU). The Commission notice on the application of the State aid rules to measures in the field of direct business taxation provides some guidance on how the Commission interprets Article 107 TFEU.[629] If the member state concerned does not abolish or alter a measure which is classified as State aid by the EU Commission, the Commission or any member state may refer the matter to the ECJ (Article 108 (2) TFEU). In case a measure is definitely identified as prohibited State aid, the aid must be recovered from the taxpayer with interest.[630] This gives particular weight to State aid issues.

Only EU member states are bound by the State aid rules of Articles 107 et seq. TFEU. However, Article 61 of the Agreement on the European Economic Area (EEA) ('EEA Agreement') sets out almost identical rules for the European Free Trade Association (EFTA) member states Iceland, Liechtenstein, and Norway.[631] Compliance of the EFTA states with the EEA State aid rules is monitored by the EFTA surveillance authority. In this regard, the powers of the EFTA surveillance authority mirror those of the EU commission.[632] According to Article 109 (2) of the EEA Agreement, the EU Commission and the EFTA Surveillance Authority are held to cooperate, exchange information, and consult each other on surveillance policy issues and individual cases with the aim to ensure a uniform application of the rules in the EU and EFTA member states. Appeals concerning decisions taken by the EFTA Surveillance Authority are dealt with by the EFTA Court (Article 108 (2)(b) EEA Agreement).[633]

Switzerland, which is also a member state of the EFTA, rejected the EEA agreement in a national referendum on 6 December 1992.[634] However, Article 23 (1)(3) of the Agreement between the European Economic Community and the

[628] See Mundendamm and Chiarella (2008), p. 231.

[629] See European Commission (1998), commission notice on the application of the State aid rules to measures relating to direct business taxation, 98/C 384/03, OJ C 384/3.

[630] See ECJ, 20 March 1997, C-24/95, 'Land Rheinland-Pfalz v. Alcan Deutschland', 1997 ECR I-1591, recital 54, Pérez Bernabeu (2014), p. 184, Terra and Wattel (2012), pp. 242 et seq.

[631] See Agreement on the European Economic Area of 3 January 1994, OJ L1/3, Pérez Bernabeu (2014), p. 189. For details of the EFTA State aid rules, see Joris (2013), pp. 423 et seq.

[632] See Joris (2013), p. 423. For further details on the EFTA surveillance authority, see Joris (2013), pp. 420 et seq.

[633] For details on the EFTA Court, see Joris (2013), pp. 421 et seq.

[634] See Felder (2013), p. 121, Pérez Bernabeu (2014), p. 189.

Swiss Confederation of 22 July 1972 ('Free Trade Agreement' (FTA)) sets out comparable rules. It prohibits public aid which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods as far as this aid may affect trade between the Community and Switzerland.[635] State aid matters between the EU and Switzerland are dealt with by the 'joint committee' comprising representatives of the EU and Switzerland (Article 27 (3)(a) FTA). The joint committee acts based on mutual agreement (Article 30 FTA). In contrast to the Treaty on the Functioning of the European Union and the EEA Agreement, the Free Trade Agreement does not provide for a legal institution or a mechanism to resolve conflicts regarding the interpretation of the State aid rules of the agreement.[636]

6.2.1.2 Evaluation of IP Box regimes against the State aid rules

In order to identify a tax measure as State aid, the following set of cumulative criteria is applied.[637] First, the measure must offer aid recipients "an advantage which relieves them of charges that are normally borne from their budgets".[638] The measure must secondly be granted through state resources and thirdly (potentially) distort competition and affect trade between member states.[639] Finally, the measure must be selective "in that it favours certain undertakings or the production of certain goods."[640] In the following, I discuss the IP Box regimes against these criteria.

6.2.1.2.1 Advantage granted through state resources which distorts competition and affects trade in the European Union

IP Box regimes allow for a reduced tax burden of certain IP income through a partial exemption, a notional deduction, or a reduced nominal tax rate. In doing so, they relieve taxpayers of "charges that are normally borne from their budgets" and thereby constitute a tax advantage.[641] The Commission notice explicitly

635 See Article 23 (1)(3) of the Agreement between the European Economic Community and the Swiss Confederation of 22 July 1972, OJ L300/189.

636 See Felder (2013), p. 155.

637 For an overview, see European Commission (1998), recitals 9 to 12, Pérez Bernabeu (2014), pp. 183 et seq., Terra and Wattel (2012), p. 244.

638 European Commission (1998), recital 9.

639 See European Commission (1998), recitals 10 and 11.

640 European Commission (1998), recital 12.

641 See Felder (2013), p. 129, Micheau and de la Brousse (2012), pp. 155 et seq. On the Spanish regime, see European Commission (2008), recital 14. On the Liechtenstein IP Box regime, see EFTA Surveillance Authority, 1 June 2011, case no. 69131, decision no. 177/11/COLL, p. 3, recital 1.2, download: http://www.eftasurv.int/media/state-aid/Decision_177_11_COL.pdf, EFTA Surveillance Authority, 12 December 2012, case no. 71725, decision no. 480/12/COLL, recital 20, download:

mentions special reductions of the tax base and total or partial reduction in the amount of tax.[642]

One might come to a different conclusion in case the IP Box country operates a scheduler tax system which sets different tax rates for different kinds of income, not only for IP income. In France, the reduced tax rate of 15% not only applies to royalties and capital gains from the disposal of certain intangibles but also to long-term capital gains from the sale of other assets.[643] In my view, the reduced tax rate for IP income nevertheless constitutes a tax advantage, as the application of a different tax rate to selected categories of income constitutes an exception in the French corporate income tax system and not a general rule.[644]

IP Box regimes are furthermore granted through state resources as they involve foregone tax revenues on eligible income due to a lower effective statutory tax rate applied to IP income.[645] In this respect it is irrelevant whether on an overall basis the IP Box regime eventually results in an increase of tax revenue on IP income through attracting sufficient foreign IP income or stimulating domestic investment.[646]

In order to demonstrate that a tax measure affects trade and (potentially) distorts competition within the EU, it is not required that aid recipients take part in intra-group trade. It is sufficient to show that the aid strengthens the recipient's position vis-à-vis other undertakings which compete in intra-group trade.[647] The

http://www.eftasurv.int/media/decisions/480-12-COL.pdf. On the Belgian IP Box regime, see Dirix (2013), p. 247.

642 See European Commission (1998), recital 9.

643 See IBFD (ed.) (2014), country chapter France, p. 418, section 1.4.3.

644 Besides the reduced rate of 15%, a reduced tax rate of 19% applies to capital gains derived from the sale of shares in listed real estate companies (see IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, sections 1.10.1.2 and 1.7.2.2 (version November 2014)). Apart from this, all other categories of income earned by corporations are subject to the regular corporate income tax rate.

645 See Felder (2013), p. 129, Micheau and de la Brousse (2012), p. 155. For the Liechtenstein regime, see EFTA Surveillance Authority, 1 June 2011, case no. 69131, decision no. 177/11/COLL, p. 3 recital 1.3, download: http://www.eftasurv.int/media/state-aid/Decision_177_11_COL.pdf, EFTA Surveillance Authority, 12 December 2012, case no. 71725, decision no. 480/12/COLL, recital 21, download: http://www.eftasurv.int/media/decisions/480-12-COL.pdf. On the Belgian IP Box regime, see Dirix (2013), p. 247.

646 See European Commission (2004), recital 19, Knieser (2013), p. 181, Linn (2008), p. 604.

647 See ECJ, 13 July 1988, C-102/87, 'France v. Commission', recital 19, ECJ, 19 September 2000, C-156/98, 'Germany v Commission', recital 33, European Commission (1998), recital 11, Micheau (2008), p. 283, Pérez Bernabeu (2014), p. 184, Terra and Wattel (2012), p. 244.

ECJ also found the amount of aid, the recipient's size, and the recipient's market share to be irrelevant in this regard.[648]

IP Box regimes explicitly aim at attracting investment in R&D and activities associated with the exploitation of IP as well as attracting foreign IP income. In fact, as pointed out in section 6.1.2, empirical evidence indicates that the location of patents and patent income is affected by a reduced tax rate on IP income.[649] Irrespective of this, the EU Commission does not have to prove that the provision actually has these negative consequences on the internal market. Instead, it is sufficient if the Commission demonstrates that the provision is fit to distort competition and to affect trade,[650] which is the case with regard to IP Box regimes.[651]

6.2.1.2.2 Selectivity

The most critical and most controversial part in the State aid assessment is to determine whether the measure "favours certain undertakings or the production of certain goods."[652] This is referred to as the 'selectivity criterion'. It is necessary to differentiate between regional selectivity and material selectivity. The latter category comprises any kind of selectivity on grounds other than the location.[653]

As pointed out in the survey of the IP Box regimes presented in section 3, none of the European IP Box regimes involve an explicit differentiation based on objective factors concerning the region in which the company operates,[654] the sector in which it is active, its size, or its legal form. This indicates that the IP Box Regimes are not *de jure* selective.[655] However, the regimes might be designed in such a way that they implicitly favour certain undertakings or the production of certain goods and could thereby be *de facto* selective.[656] In what follows, I therefore analyse the aspect of material selectivity in more detail.

---

[648] See ECJ, 19 September 2000, C-156/98 'Germany v. Commission', recital 32 with references to previous judgements, European Commission (1998), recital 11.

[649] See Ernst et al. (2014).

[650] See Knieser (2013), p. 184.

[651] See Felder (2013), p. 129, Micheau and de la Brousse (2012), p. 156.

[652] See Pérez Bernabeu (2014), p. 187, Sánchez Rydelski (2010), p. 151.

[653] See Bartosch (2010), p. 730, European Commission (1998), recitals 19 et seq., Engelen and Gunn (2012), p. 145. Some scholars additionally identify 'sectoral selectivity' as a separate category (see European Commission (1998), recital 18, Engelen and Gunn (2012), p. 142, Felder (2013), p. 129) whereas others assign it to the category 'material selectivity' (see Bartosch (2010), p. 730).

[654] The autonomous region of the Basque Country in Spain, which operates its own tax system, has its own IP Box regime in place. For details, see Nárdiz (2010).

[655] See Luts (2014), p. 264.

[656] See Micheau and de la Brousse (2012), p. 157.

6.2.1.2.2.1 General tax measures

When assessing selectivity of tax measures, it is necessary to differentiate *general measures* from State aid.[657] General measures are those which are open to all economic agents which operate within a member state.[658] Member states are furthermore free to design their tax systems in such a way that different factors of production are taxed differently.[659] In particular, tax measures of a purely technical nature (e.g. the operation of a schedular tax system) and tax measures which pursue economic policy objectives through a reduction of the tax burden applicable to certain production factors do not constitute State aid, provided they apply irrespective of the nature of the undertaking and the goods produced.[660] In this regard, the Commission argues that the fact that certain undertakings or certain sectors benefit more than others from a tax measure does not pose a problem as long as the measure is generally open to all undertakings and sectors.[661] To give an example, R&D tax incentives inevitably favour companies which carry out R&D investments. Similarly, IP Box regimes favour companies which generate IP income over those which do not earn such income. However, from this does not necessarily follow that these two kinds of tax incentives constitute State aid. It simply reflects an economic reality.[662]

In line with this, the EU Commission claims in its assessment of the Spanish IP Box regime carried out in 2008 that the fact that not every undertaking creates intangible assets and subsequently receives income from exploiting such assets "merely reflects an economic reality."[663] The Commission continues arguing that the Spanish regime does not strengthen the position of any particular class of undertakings and stresses that tax measures which are open to all economic agents operating within a member state are in principle general measures.[664]

The EU Commission does not conclude its assessment at this point by explicitly labelling the Spanish IP Box a general tax measure but instead continues addressing the issue of selectivity in more detail. The reason for this might be that, as pointed out by Luts, it is difficult to draw a line between general tax

[657] See European Commission (1998), recitals 13 et seq.

[658] See European Commission (1998), recital 13.

[659] See European Commission (1998), recitals 13.

[660] See European Commission (1998), recital 13.

[661] See Knieser (2013), p. 183, Pérez Bernabeu (2014), p. 187, Terra and Wattel (2012), pp. 246 et seq.

[662] See Luts (2014), p. 265.

[663] European Commission (2008), C(2008)467 final State aid of 13 November 2008, recital 15.

[664] See European Commission (2008), recital 15.

measures pursuing legitimate policy aims not constituting state aid and de facto selective tax measures that favour certain undertakings.[665]

6.2.1.2.2.2 Outline of the selectivity test applied by the ECJ

The assessment of the selectivity criterion in the ECJ's case law is not unequivocal. In order to identify whether a (tax) measure is *prima facie* selective, the ECJ originally applied the so called 'derogation test'. This test implies assessing whether the tax measure in question derogates from the reference tax system. The derogation test entails two steps: first, identifying the reference tax system and, second, assessing whether the tax measure derogates from it.[666]

If a reference tax system does not exist, the ECJ relies on comparing different undertakings which are subject to the same tax measure.[667] Within the scope of such an 'internal comparison' a measure is selective if it entails a different treatment of undertakings which are all subject to the same tax measure.[668]

More recent State aid assessments of the ECJ and the EU commission entail a 'comparison test'[669] which focuses on the question whether the measure in question favours "certain undertakings or the production of certain goods (…) in comparison with other undertakings which are in a legal and factual situation that is comparable in light of the objective pursued by the measure in question."[670] This implies that the objective pursued by the measures in question

665 See Luts (2014), p. 261. Similarly Kurcz and Vallindas (2008), p. 161, 171.

666 See Luts (2014), p. 252 with references to ECJ case law, Micheau (2008), p. 278.

667 See Drabbe (2012), pp. 98 et seq., Luts (2014), p. 262.

668 See ECJ, 15 November 2011, C-106/09 and C-107/09 (joint cases), 'Commission v. Gibralta', recitals 104 to 107. In this case, the ECJ concluded that, in light of the objective pursued by the tax measure at stake, namely to establish a general system of taxation for all companies established in Gibraltar, the tax measure would have involved a favourable treatment of offshore companies compared to domestic companies: It was designed in a way that offshore companies would not have been subject to tax due to the fact that by their nature they have no employees and do not occupy business premises (see recitals 101, 102, and 106 of the judgement).

669 See Luts (2014), p. 262.

670 ECJ, 8 November 2001, C-143/99, 'Adria-Wien Pipeline GmbH and Wietersdorfer & Peggauer Zementwerke', recital 41. In this case the ECJ concluded that a rebate on energy taxes for companies from the manufacturing sector which is not available for companies from the services sector constitutes such a different treatment of undertakings which are in a comparable situation in light of the objectives of the tax measure, namely environmental protection (see recital 52 of the judgement). See also ECJ, 13 February 2003, C-409/00, 'Spain v. Commission', recital 47, ECJ, 29 April 2004, C-308/01, 'GIL Insurance and others', recital 68, ECR, 3 March 2005, C-172/03, 'Wolfgang Heiser v Finanzamt Innsbruck', recital 40, ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', 2006 recital 54, ECJ, 8 September 2011, C-279/08 P, 'Commission v. Netherlands', recital 52, ECJ, 15 November 2011, C-106/09 P and C-107/09 P (joint cases), 'European Commission and Kingdom of Spain v. Government of Gibraltar and United Kingdom of Great Britain and Northern Ireland', recital 75.

is decisive for the determination of the appropriate pair of comparison and consequentially for assessing whether the measure is prima facie selective.[671]. This approach is referred to as the 'objective-based approach'.[672]

More recently, the ECJ has combined both tests in its case law.[673] As a consequence, a tax measure is considered to be prima facie selective if it derogates from the reference tax system in as much as it differentiates between undertakings which are, in light of the objective pursued by the regime, in a comparable factual and legal situation.[674]

As a third step of the selectivity test, a *prima facie* selective measure may be justified by the nature or overall structure of the tax system if the member state concerned is able to demonstrate that the measure at stake "results directly from the basic or guiding principles of its tax system".[675] In this regard, "objectives attributed to a particular tax scheme which are extrinsic to it" may not serve as justification whereas "mechanisms inherent in the tax system itself which are necessary for the achievement of such objectives" may justify a selective tax measure.[676] In order to be justified, the derogation of the tax measure from the reference tax system must also be proportionate and cannot "go beyond what is necessary, in that the legitimate objective being pursued could not be attained by less far-reaching measures."[677] Please note that this approach of justifying selective tax measures is not based on Article 107 TFEU.[678] Instead, this approach has been developed by the ECJ in its case law. The grounds for justification which are explicitly mentioned in Article 107 are addressed in section 6.2.1.2.3.

---

671 See Bartosch (2010), p. 733,

672 See Barotsch (2010), p. 734, Drabbe (2012), p. 97, Prek and Lefèvre (2012), p 335.

673 See Drabbe (2012), p. 103.

674 See ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', 2006 recital 56, ECJ, 8 September 2011, C-78/08 to C-80/08 (joint cases), 'Paint Graphos and others', recital 49. See Micheau (2008), p. 278, Luts argues that the application of the comparison test does not generally exclude the derogation test. He points out that the comparison test "quasi always embeds a 'derogation element' (Luts (2014), p. 262)."

675 ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', recital 81. For further details, see Commission notice 98/C 384/03, recitals 23 to 27 and Micheau (2008), pp. 278 et seq.

676 ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', recital 81.

677 ECJ, 8 September 2011, C-78/08 to C-80/08 (joint cases), 'Paint Graphos and others', recital 75, Engelen and Gunn (2012), p. 146.

678 See Micheau (2008), p. 280.

6.2.1.2.2.3 Issues raised by the objective-based approach

The objective-based approach entails that the objective pursued by the measure in question is decisive for determining the appropriate pair of comparison. The determination of the pair of comparison is key to the State aid assessment as it defines the scope of application of the State aid rules.[679] This is because finding that a tax measure is not associated with a differential treatment is more likely the narrower the scope of comparison.[680]

The objective-based approach raises several issues. First, it seems to contradict the statement regularly used by the ECJ that Article 107 TFEU defines state interventions in relation to their effects instead of in relation to their causes or aims.[681] This apparent contradiction has been widely discussed in the literature but has not been resolved so far.[682]

Second, the ECJ does not seem to apply this approach consistently.[683] In the case 'Paint Graphos' the ECJ draws a much wider scope of comparison by referring to the "objective assigned to the tax system of the member state concerned" ('objective-based approach in a *wider* sense').[684] This has important implications for the selectivity assessment. Drawing on the example of IP Box regimes, the objective of the corporate tax system, of which the IP Box regimes form part, is to raise tax revenue through taxing corporate profits. In light of this objective, corporations which carry out R&D activity and exploit intangible assets resulting from such activity and those which do not are in comparable legal and factual situations. As already mentioned above, this has important implications for the selectivity assessment as finding that a tax measure is associated with a differential treatment is more likely the wider the scope of comparison.[685] This example illustrates that this alternative approach (taking into account the objective of the tax system as a whole) implies a very wide notion of selectivity.

Third, in narrowing the scope of possible pairs of comparison, the 'objective-based approach in the *narrower* sense' (relying on the objective of the tax measure in question) applies a narrow concept of selectivity and consequentially

679 See Drabbe (2012), p. 97.

680 See Prek and Lefèvre (2012), p. 340.

681 See for example ECJ, 2 July 1974, C-173/73, 'Italy v. Commission', recital 13, ECJ, 22 December 2008, C‑487/06 P, 'British Aggregates v. Commission', recital 84 and the case-law cited therein.

682 See Bartosch (2010), p. 748, Bousin and Piernas (2008), p. 640, Kurcz and Vallindas (2008), p. 181.

683 For a detailed discussion, see Bartosch (2010), pp. 741 et seq., Luts (2014), p. 267, Haslehner (2012), pp. 312 et seq.

684 ECJ, 8 September 2011, C-78/08 to C-80/08 (joint cases), 'Paint Graphos and others', recital 49.

685 Luts points out that in case the tax system's objective is taken as a basis for the selectivity test, almost any tax benefit would qualify as prima facie selective. See Luts (2014), p. 267.

narrows the scope of the State aid control.[686] This may be illustrated drawing on the example of R&D tax incentives which naturally aim at incentivising R&D activity. The objective-based approach implies that undertakings which carry out R&D activity are not considered to be comparable to undertakings which do not carry out R&D activity. Put differently, the scope of comparison to assess the measure's selectivity is limited to undertakings which carry out R&D activity.[687]

The objective-based approach in the *narrower* sense raises concerns that it provides tax legislators with a considerable leeway to design preferential tax measures in order to comply with the State aid rules through assigning them an objective which is sufficiently narrow in order to ensure that, in light of the objective of the tax measure in question, all undertakings are treated equally.[688] As a consequence, member states might be able to bypass the State aid prohibition by assigning tax measures specific goals targeted at specific groups of undertakings.[689] This raises concerns that under the objective-based approach, the selectivity assessment would largely be restricted to assessing whether the tax measure in question was implemented coherently with regard to the objective pursued.[690]

In this regard, Bartosch submits that the objective-based approach should not give member states a "*carte blanche* to declare all kinds of political goals to qualify as such objectives".[691] In fact, this discussion relates to the main issue lying in the heart of the State aid concept: striking a balance between the member states' freedom to pursue (legitimate) policy objectives and the objective to eliminate distortions of competition and trade arising from policies which favour certain undertakings.

Member states are, however, not completely free to assign objectives to tax measures which favour certain undertakings in order to immunise them against State aid qualification. First, it's not the stated aim (e.g. according to the official justification of the tax law implementing the measure) which is decisive, but the *objective* aim of the measure.[692] In addition, the measure in question should be (i) suitable for achieving this objective, (ii) necessary in the sense that the objective cannot be attained by less far-reaching means, and (iii) appropriate in the sense

686 See Haslehner (2012), p. 320.

687 See Kurcz and Vallindas (2008), p. 172.

688 See Bartosch (2010), p. 742, 745, Kurcz and Vallindas (2008), p. 178.

689 See Drabbe (2012), p. 96.

690 See Haslehner (2012), p. 319.

691 Bartosch (2010), p. 745.

692 See Haslehner (2012), p. 320.

that the positive effects of the measure on the objective pursued outweigh the distortions of competition and trade caused by the measure. Finally, the measure's objective should be legitimate.[693] The objective should, in particular, be compatible with the objective of the State aid rules, namely to safeguard the competition within the internal market.[694]

Before discussing whether the IP Box regimes are selective tax measures, I briefly discuss the implications of applying the objective-based approach in its *wider* sense. As pointed out above, in some cases the ECJ relies on a broad meaning of the objective-based approach by referring to the objective of the tax system as a whole. This entails that any kind of tax measure which pursues a policy goal, and in doing so inevitably differentiates between different undertakings, is considered *prima facie* selective.[695] Such measures would inevitably be considered selective as they would not pass the justification test which is the third step of the ECJ's selectivity assessment. As briefly mentioned in the previous section, this justification test entails that prima facie selective measures may be justified by the nature or overall structure of the tax system if the member state concerned is able to demonstrate that the measure in question "results directly from the basic or guiding principles of its tax system." However, in this regard, the ECJ does not accept extrinsic objectives (such as incentivising R&D) as grounds for justification.[696] As a consequence, the notion of selectivity is considerably wider when applying the objective-based approach in the *wider* sense than when applying the objective-based approach in the narrower sense (relying on the objective of the tax measure in question). In this case, the balancing of the member states' freedom to pursue (legitimate) policy objectives and the State aid rules' objective would be shifted to the level of the assessment of the tax measure's compatibility with the internal market on the grounds of Article 107 (3) TFEU. This compatibility assessment is discussed in more detail in section 6.2.1.2.3. It should, however, be mentioned that the compatibility assessment on the grounds of Article 107 (3) TFEU is at the discretion of the EU commission. As a consequence, relying on the objective-based approach in its

693 See Bartosch (2010), p. 741, 747, Haslehner (2012), p. 321, 323, Luts (2014), p. 271.

694 See Engelen and Gunn (2012), p. 143, Luts (2014), p. 271.

695 See Kurcz and Vallindas (2008), p. 178.

696 In this regard, Advocat General Mengozzi stresses that "the mere fact that a State measure pursues economic policy, structural, social or environmental objectives is not per se sufficient to exclude them from classification as aid for the purposes of that provision (opinion of Advocate General Mengozzi delivered on 22 December 2010 with respect to case C‑279/08 P, 'European Commission v. Kingdom of the Netherlands', recital 63)." Please note that the tax policies' objective may be invoked when assessing whether the selective State aid is still compatible with the internal market pursuant to Article 107 (2) and (3) TFEU. This is discussed in detail in section 6.2.1.2.3.

wider sense and then addressing the tax measure's objective when invoking Article 107 (3) TFEU might in the end not lead to the same conclusions as applying the objective-based approach in its *narrower* sense.

6.2.1.2.2.4 Assessment of the IP Box regimes on the basis of the objective-based approach in the narrower sense

As pointed out in the previous section, three questions must be answered when assessing whether an IP Box regime is selective. First, which is the reference tax system which serves as point of reference to identify whether the IP Box regime in question derogates from it? Second, does the IP Box regime derogate from this reference tax system in as much as it differentiates between undertakings which, in light of the objective pursued by the regime, are in a comparable factual and legal situation? If the answer is yes, the IP Box regime is considered *prima facie* selective. Third, is the IP Box regime justified by the nature or general scheme of the tax system of which it is part? If this is not the case, the IP Box regime is finally considered selective.

IP Box regimes in fact derogate from the regular corporate income tax system, constituting the reference tax system,[697] through offering preferential tax treatment of certain kinds of income from exploiting selected intangible assets resulting in a lower effective tax burden of such income compared to other kinds of income earned by corporations.[698]

The key question is, however, whether the tax measure favours undertakings which are in a comparable legal and factual situation *in light of the objective pursued by the tax measure in question* (objective-based approach in the narrower sense). Hence, the objective pursued by the IP Box regimes is of relevance.[699] This objective must, however, be legitimate.[700] The expressed aim of most IP Box

[697] See Luts (2014), p. 267, Mang (2015). As opposed to this, Micheau and de la Brousse argue that the tax provisions governing undertakings producing intangible assets and exploiting such assets should be the reference tax system (see Micheau and de la Brousse (2012), p. 158). Luts discusses the implications of these two approaches (see Luts (2014), p. 268).

[698] See Luts (2014), p. 268. In the case of an explicitly reduced tax rate as applied in France, the case is less clear-cut if this reduced tax rate forms part of a scheduler tax system involving different tax rates for different categories of income. Though, as already pointed out in section 6.2.1.2.1, in my view, the application of a different tax rate to selected categories of income constitutes an exception in the French corporate income tax system and not a general rule.

[699] Though, the ECJ also stresses that the fact that the tax measure in question pursues an objective of general interest does not generally prevent it from the classification as State aid under Article 107 TFEU. See ECJ, 22 December 2008, C‑487/06 P, 'British Aggregates v. Commission', recital 84 and the case-law cited therein. This is discussed in more detail in section 6.2.1.2.3.

[700] See Bartosch (2010), p. 741, 747, Haslehner (2012), p. 321, 323, Luts (2014), p. 271.

regimes is to incentivise R&D activity.[701] As one of the five 'Europe 2020'-targets is to invest 3% of the Gross Domestic Product (GDP) in Europe in R&D, the objective of incentivising R&D activity without a doubt constitutes a legitimate policy goal. Simply stating that the objective of the IP Box regime is to incentivise R&D is, however, not sufficient. What is decisive in this regard is the *objective* goal of the measure, not necessarily the objective expressed by the tax legislator. The second main aim of IP Box regimes is to attract or retain IP income.[702] This implies that the IP Box regimes explicitly aim to influence the location of IP. This is problematic to the extent that this contravenes the objective of the State aid rules, namely to safeguard the competition within the internal market.[703]

It is not sufficient that the tax measures' objective is legitimate. The IP Box regimes must additionally be (i) suitable for achieving this objective, (ii) necessary in the sense that the objective cannot be attained by less far-reaching means, and (iii) appropriate in the sense that the positive effects of the IP Box regimes on the objective pursued outweigh the distortions of competition and trade caused by the regimes. Whereas it cannot be excluded per se that IP Box regimes may positively affect R&D activity (thereby generally being suitable for achieving the objective of incentivising R&D), it is highly debatable whether they are also necessary and appropriate. First, IP Box regimes which apply to acquired in addition to self-developed IP are not consistently targeted at incentivising R&D activity. The same holds true for regimes which apply to marketing intangibles such as trademarks in addition to patents and other R&D-related intangible assets. Second, traditional R&D tax incentives such as R&D tax credits and super deductions might be better suited to incentivise R&D. This implies that the objective could be attained by less far-reaching means.[704] Third, further empirical analysis is required to assess whether any positive effects of the IP Box regimes on R&D investment outweigh any distortions of competition and trade caused by them.

Putting these unsettled concerns aside, the key question is whether the IP Box regimes favour undertakings which are in a comparable legal and factual situation in light of the objective to incentivise R&D. Relying on the objective-based approach in the narrower sense, undertakings which carry out R&D and

[701] See section 6.1.1.

[702] See section 6.1.2.

[703] See Bartosch (2010), p. 750.

[704] A comprehensive body of empirical literature suggests that traditional R&D tax incentives such as R&D tax credits can be effective in increasing the amount of R&D investment (see section 6.1.1). In contrast, the effects of IP Box regimes on R&D investments have not been investigated empirically so far. For a critical discussion of this issue, see section 6.1.1.

those which do not are not considered to be in a comparable factual and legal situation given the aim to incentivise R&D.[705] In turn, undertakings which carry out R&D activity are considered to be comparable to each other. From this follows that an IP Box regime may be identified as *prima facie* selective if it favours certain undertakings over others which are in a comparable factual and legal situation in light of the objective to incentivise R&D as they both perform R&D activities.

As a consequence, IP Box regimes which are limited to patents but exclude other types of intangible assets which may also result from R&D activity, such as the Belgian, French, and British regimes which are largely limited to patents, are prima facie selective as they favour undertakings which create intangible assets giving rise to patents over those that do not create intangible assets giving rise to patents, but create other kinds of R&D-related intangibles instead. One could argue that in doing so, the regimes treat certain sectors less favourably, namely those where the creation and use of patents is uncommon whereas other kinds of intangible assets, which are not eligible for the IP Box treatment, e.g. software, are commonly created and exploited. More specifically, limiting the IP Box treatment to patents could entail a privilege for undertakings from the manufacturing or pharmaceutical sectors vis-à-vis undertakings from the software industry.[706] If the purpose of the respective IP Box is to incentivise research, development, and innovation, one could argue that by limiting it to patents the regimes favour undertakings which are in a comparable factual situation in light of the objective pursued by the IP Box regime.[707]

In its selectivity assessment of the Spanish IP Box regime the EU Commission focussed on this aspect (the scope of eligible IP). By pointing out that the stated objective of the Spanish IP Box is to encourage R&D investments, the EU Commission argues that the scope of eligible types of intangible assets is

[705] See Kurcz and Vallindas (2008), p. 172.

[706] This is supported by Kurcz and Vallindas who stress that "there is a difference between a measure that, for instance, aims at the promotion of R&D, but due to the conditions attached to it in reality favours only R&D in a certain specific sector, and another measure which aims at the promotion of R&D and in reality does not favour any size of undertakings or business sectors (Kurcz and Vallindas (2008), p. 176)."

[707] Micheau and de la Brousse argue that, given the objective of promoting innovation, a regime which applies to patents, designs, models, plans and secret formulas and processes but not to trademarks and copyrights, treats undertakings which exploit intangible assets qualifying for the IP Box treatment differently than undertakings exploiting intangible assets not qualifying for the regime. They point out that such a regime could be considered selective as it "confers a tax advantage to undertakings in comparison with other undertakings which are in a legal and factual situation that is comparable in light of the objective pursued by the Patent Box scheme (Micheau and de la Brousse (2012), pp. 158 et seq.)."

sufficiently broad to assume that it does not favour undertakings which are in a comparable legal and factual situation in light of the objective pursued by the Spanish IP Box regime.[708] In particular, the Commission does not consider the regime to favour certain sectors in comparison to others.[709] This reasoning is based on the following considerations. Whereas the types of intangible assets eligible for the Spanish IP Box regime (namely patents, models, secret formulas, and processes) have in common that they originate from R&D activity, this is not the case for trademarks and copyrights, which in turn do not benefit from the Spanish regime. Hence, excluding the latter seems adequate in light of the objective pursued by the Spanish IP Box regime to incentivise R&D. Nevertheless, one could argue that given the regime's objective, software should also be included in the scope of eligible IP as long as it is the result of R&D activity.[710]

Another relevant pair of comparison should be addressed, namely undertakings which are successful in performing R&D activity and commercially exploiting the resulting intangible assets and those which are not. In light of the objective to incentivise R&D activity both are comparable. However, self-evidently only successful undertakings may benefit from the IP Box regimes. However, one could come to a different conclusion if the objective of the IP Box regimes were to incentivise commercially-successful R&D.

For sake of completeness, it should be pointed out that the fact that the application of the IP Boxes entails administrative discretion may also render them selective.[711] Some of the IP Box countries provide for tax rulings on the practical application of their IP Box regimes.[712] If such a rule concerns the

[708] See European Commission (2008), recital 16. Similarly, in its assessment of the Lichtenstein IP Box regime, the EFTA Surveillance Authority reached the conclusion that, due to its wide scope of eligible IP, the Liechtenstein IP Box is also not selective (see EFTA Surveillance Authority, case no. 69131, decision no. 177/11/COLL, p. 4, section II.1.4, download: http://www.eftasurv.int/media/state-aid/Decision_177_11_COL.pdf). With respect to the amended version of the IP Box regime which additionally included software and databases in the scope of eligible IP the EFTA Surveillance Authority also came to the conclusion that the measure is not selective (see EFTA Surveillance Authority, 12 December 2012, case no. 71725, decision no. 480/12/COLL, recital 27, download: http://www.eftasurv.int/media/decisions/480-12-COL.pdf).

[709] See European Commission (2008), recital 16. Apparently, this is also reflected by statistical information on the usage of the regime provided by the Spanish authorities. See European Commission (2008), recital 15.

[710] According to the Frascati Manual, non-routine software development may classify as R&D. Accordingly, "for a software development project to be classified as R&D, its completion must be dependent on a scientific and/or technological advance, and the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty (OECD (2002), p. 46)."

[711] See Commission notice 98/C 384/03, recital 21, Micheau and de la Brousse (2012), p. 160.

[712] See Felder (2014), pp. 24, 33 (Belgium), 101 et seq. (the Netherlands), Willems (2012), pp. 233 et seq. (Belgium).

interpretation of the IP Box provision in light of the case at hand, this does not render the measure selective. However, if such a tax ruling goes beyond the wording of the law, this may render the measure selective. This aspect in particular calls for a more detailed investigation of the ruling practice applied by the Dutch tax administration on the determination of the Innovation Box tax base based on a formulary approach instead of separate accounting (see section 3.3.2.4).

If an IP Box regime is found to be *prima facie* selective, it may nevertheless be considered compatible with the State aid rules in case it is justified "by the nature or overall structure of the tax system".[713] This requires that the member state operating the IP Box regime demonstrate that the measure "results directly from the basic or guiding principles of its tax system".[714] This implies assessing whether the differentiation which renders the measure *prima facie* selective is "in accordance with the internal logic of the system of which it is part."[715] In this regard, extrinsic objectives may not serve as a justification but only "mechanisms inherent in the tax system itself which are necessary for the achievement of such objectives."[716] The objective to incentivise R&D is an external objective which may therefore not justify a selective tax measure.[717] Therefore, such a nexus between the reduced tax burden on IP income and the guiding principles of the corporate income tax system can generally not be established in the case of the IP Box regimes.[718] From this follows that IP Box regimes found to be *prima facie* selective are generally in fact selective.

Summing up, if one relies on the objective-based approach in the narrower sense serious doubts may be raised as to the compatibility of some of the IP Box regimes with the EU State aid rules. First, IP Box regimes which are limited to patents but exclude other R&D-related intangible assets favour certain undertaking (those creating and exploiting patents) over others which are in a comparable situation in light of the IP Box regimes' objective to incentivise R&D (those not creating and exploiting patents but similar intangibles). This differentiation may not be justified by the nature or overall structure of the tax

713 ECJ, 2 July 1974, C-173/73, 'Italy v. Commission', recital 15, Commission notice 98/C 384/03, recitals 23 et seq. See Drabbe (2012), pp. 101 et seq., Luts (2014), p. 263.

714 ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', recital 81. For further details, see Commission notice 98/C 384/03, recitals 23 to 27 and Micheau (2008), pp. 278 et seq.

715 Prek and Lefèfre (2012), p. 342.

716 ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', recital 81. See Drabbe (2012), p. 100, Kurcz and Vallindas (2008), p. 164, Prek and Lefèfre (2012), p. 343.

717 See ECJ, 6 September 2006, C-88/03, 'Portugal v. Commission', recital 81. See Luts (2014), p. 263.

718 See Luts (2014), p. 268, Micheau and de la Brousse (2012), p. 158.

system rendering these IP Box regimes selective. Second, it is debatable whether IP Box regimes are proportionate. In this regard, further research is required with respect to two aspects. First, whether the IP Box regimes are actually necessary in the sense that the objective of incentivising R&D cannot be attained by less far-reaching means, in particular through R&D tax credits. Second, whether they are appropriate in the sense that their positive effects on the objective to incentivise R&D outweigh the distortions of competition and trade caused by them.

6.2.1.2.3 Compatibility of IP Box regimes with the internal market according to Article 107 TFEU

Selective State aid may be declared compatible with the internal market on the grounds of serving a certain purposes of public interest enumerated in paragraphs 2 and 3 of Article 107 TFEU. In doing so, Article 107 (2) and (3) TFEU strike a balance between the objective of the State aid rules, namely to eliminate distortions of competition and trade arising from tax measures which favour certain undertakings, and member states' freedom to pursue their policies.[719]

Aid for research, development, and innovation (R&D&I) may primarily be justified on the basis of Articles 107(3)(b) and 107(3)(c) TFEU.[720] According to Article 107 (3)(b) TFEU, aid to promote the execution of an important project of common European interest (such as promoting R&D&I) may be considered compatible with the internal market. In turn, article 107 (3)(c) TFEU states that aid which facilitates the development of certain economic activities may be considered compatible with the internal market, provided such aid does not adversely affect trading conditions to an extent contrary to the common market. I discuss in the following whether IP Box regimes constituting State aid in the meaning of Article 107 (1) TFEU may nevertheless be compatible with the internal market based on Article 107 (3)(b) or (c) TFEU.

The Commission has issued guidelines on how it exercises its discretion when assessing whether a measure is compatible with the internal market according to Article 107 (3)(b) and (c) TFEU ('framework for State aid for R&D&I').[721] According to this framework, the EU Commission's assessment focuses on the

[719] See Bartosch (2010), p. 751.

[720] See European Commission (2014b), Commission Communication 2014/C 198/01, recital 5 of the introduction. Under Article 107 (2) TFEU, certain State aid is automatically considered compatible with the internal market. Though, R&D tax incentives do not fall within the scope of this exemption.

[721] See European Commission (2014b), Commission Communication 2014/C 198/01, OJ C 198, Framework for State aid for research and development and innovation. This document replaced Community Framework for State aid for Research and Development and Innovation, 2006/C 323/01, OJ C 323.

following aspects: (i) need for state intervention due to market failure, (ii) appropriateness of the aid measure, (ii) incentive effect, (iv) proportionality of the aid, and (v) avoidance of undue negative effects on competition and trade.[722] When it comes to IP Box regimes, several of these aspects are critical in my view. I briefly point them out here.

With regard to the incentive effect of the measure (aspect (ii)), it is questionable whether IP Box regimes stimulate investment in R&D&I and are therefore associated with an incentive effect. This is discussed in detail in section 6.1.1. In addition, other kinds of aid, most notably traditional R&D tax incentives, such as tax credits and super deductions, are probably more appropriate instruments to promote R&D&I.[723]

Concerning the proportionality of the aid (aspect (iv)), the framework specifies that, "in order to ensure that the level of aid is proportionate to the market failures which it is intended to address, the aid must be determined in relation to a predefined set of eligible costs and limited to a certain proportion of those eligible costs ('aid intensity')."[724] IP Box regimes may not fulfill this proportionality test as they are granted independently from the amount of costs incurred for R&D&I.[725] Apparently, the EU Commission did not have IP Boxes in mind when it drafted the framework.

From this follows that one cannot rely on the Commission framework in order to determine whether IP Box regimes constituting State aid are nevertheless compatible with the internal market on the grounds of Article 107 (3)(b) or (c) TFEU.[726] This does not, however, imply that Article 107 (3)(b) or (c) TFEU cannot be referred to with respect to IP Box regimes. Whether there is a leeway for considering IP Box regimes which constitute state aid as compatible with the internal market based on Article 107(3) TFEU remains unclear. Only a revision of the Commission framework which explicitly accounts for IP Box regimes or a formal assessment of an IP Box regime by the EU commission which explicitly addresses the issue of compatibility based on Article 107 (3) TFEU may shed light on this issue.

---

722 See European Commission (2014b), Commission Communication 2014/C 198/01.

723 See section 6.1.1 for a summary of empirical evidence on the effects of traditional, cost-based R&D tax incentives on R&D investment.

724 European Commission (2014b), Commission Communication 2014/C 198/01, OJ C 198/19, recital 73.

725 See Micheau and de la Brousse (2012), pp. 161 et seq.

726 See Luts (2014), p. 274, Micheau and de la Brousse (2012), p. 162.

For the sake of completeness, the Commission Regulation no. 651/2014 of 17 June 2014[727] (so called 'Block Exemption Regulation' (BER)) should be mentioned, which provides for an exemption from the notification requirements of Article 108 (3) TFEU. The Block Exemption Regulation also specifies conditions for selective State aid measures in order for them to be declared compatible with the internal market in application of Article 107 TFEU. In addition it provides for an exemption from the notification requirements. Its requirements are therefore narrower and more specific than those of the EU Commission's State aid framework for R&D&I. I nevertheless briefly point out the requirements of the regulation and discuss whether the IP Box regimes fall within the scope of the Block Exemption Regulation.

In order to benefit from the block exemption, tax incentives for R&D must be limited to projects in the fields of fundamental research, industrial research, experimental development, or feasibility studies (Article 25 (2) BER). In addition, eligible costs must fall into the categories specified in Article 25 (3) BER and aid intensities may not exceed certain shares of the costs (Article 25 (5) to (7) BER). Besides this, the aid may also not exceed certain thresholds according to the amount of promoted projects (Article 4 BER).[728]

The fact that Article 25 (5) BER links the maximum aid intensity to the costs incurred for R&D limits the scope of the regulation to cost-based tax incentives for R&D, such as tax credits and super deductions. Again, this does not altogether rule out compatibility of selective IP Box regimes with the internal market.

[727] See Commission Regulation no. 651/2014, 17 June 2014, OJ L187. This Regulation replaces Regulation no. 800/2008, which originally expired on 31 December 2013 but was prolonged until 30 June 2014 by Commission Regulation no. 1224/2013 of 29 November 2013.

[728] For aid in favour of R&D the thresholds are EUR 40 Mio., EUR 20 Mio., EUR 15 Mio., and EUR 7.5 Mio. in case of fundamental research, industrial research, experimental development, and feasibility studies, respectively (see Article 4 (i) Commission Regulation no. 651/2014 of 17 June 2014).

6.2.1.3 Intermediate conclusion

So far, only the Spanish regime has been subject to a formal State aid assessment on behalf of the EU Commission. As the EU Commission did not classify the regime as selective and therefore not as State aid, one could conclude that other IP Box regimes are also not in breach with the State aid rules. However, this would be a hasty assumption. In particular, with regard to the IP Boxes which are only available for patents and similar IP rights, one could argue that the regimes indeed favour undertakings which are in a comparable factual situation in light of the IP Box regimes' purpose of incentivising R&D. Also, with respect to IP Box regimes which are characterised by a wide scope of eligible intangible assets, some arguments point to the selective nature of the regimes. First, IP Boxes favour undertakings which are successful in creating and commercially exploiting IP over those who are not. Second, it is doubtful whether IP Boxes are proportionate means to incentivise R&D. Finally, in case an IP Box regime is indeed considered selective, it is doubtful whether Article 107 (3) TFEU may be invoked in order to declare the regime compatible with the internal market on the grounds that it serves purposes of public interest.

The Commission is currently gathering information on IP Box regimes in the EU member states to assess their compliance with the State aid rules. In this regard, the Commission is believed to have sent information requests on the usage of regimes to several member states including Belgium, Luxembourg, the Netherlands,[729] and the UK.[730] In case the statistical evaluation of the regimes shows that only certain kinds of undertakings (e.g. large multinational companies) benefit from the regimes, this will probably trigger a discussion on the possible de facto selectivity of the regimes.[731] However, it is unclear whether the ECJ would follow such a line of argument. So far, no formal investigation of an IP Box regime has been launched by the Commission. It therefore remains to be seen whether the Commission will formally challenge the IP Box regimes through the State aid rules in the future and what the outcome of the EU Commissions State aid assessment would be.

[729] See Soong Johnston (2014a), p. 418.

[730] See Barker and Houlder, UK faces fresh EU scrutiny over intellectual property tax break, *Financial Times*, 25 March 2014, download: http://www.ft.com/cms/s/0/ac470ab0-b435-11e3-a102-00144feabdc0.html#axzz3Bas8vEzR.

[731] For a discussion of this aspect, see Micheau and de la Brousse (2012), p. 157.

6.2.2 The Code of Conduct for business taxation

6.2.2.1 Development and scope of the Code of Conduct

The Code of Conduct for business taxation[732] is an instrument for counteracting harmful tax measures. It is not a legally binding instrument but a political commitment.[733] It is a 'soft law'[734] instrument, to put it differently.[735] However, the fact that the Code of Conduct has been adopted unanimously by the Council of Economics and Finance Ministers (ECOFIN) in the EU reveals its political prominence.[736]

The Code of Conduct sets out a list of criteria for identifying harmful tax measures which are addressed in detail in the subsequent section.[737] By adopting the Code of Conduct countries commit first to roll-back tax measures which are deemed to be harmful and second not to newly introduce such measures ('standstill' clause).[738] In June 2003, the ECOFIN Council officially agreed on a list of 66 harmful tax measures (so called 'Primarolo list').[739]

Despite its soft law character, experience has shown that the Code of Conduct has practical impact. The countries involved have, by now, withdrawn almost all of the regimes originally labelled as harmful based on the Code's criteria.[740] This is

732 See Council of the European Union (1997).

733 See Council of the European Union (1997), p. C 2/3, Kiekebeld (2004), p. 50.

734 According to Thürer, the term 'soft-law' has been coined by Lord McNair and refers to "instruments with extra-legal binding effect" (Thürer (2014), recital 5). Guzman and Meyer define the term as referring to "legally non-binding commitments from which legal consequences flow" but point out that there is no universally accepted definition (Guzman and Meyer (2010), p. 222). For a discussion of the OECD transfer pricing guidelines as soft law instrument see Li (2012), pp. 78 et seq.

735 See Terra and Wattel (2012), p. 236.

736 See Mors (2007), p. 66.

737 For a summary of the history of the Code of Conduct for business taxation, see Cattoir (1996), pp. 2, Pinto (2002), pp. 157 et seq.

738 See Council of the European Union (1997), Annex I, recitals C and D.

739 See Kiekebeld (2004), p. 32, Terra and Wattel (2012), p. 240. In the context of the 2004 EU accession, in autumn 2003 the Code of Conduct group added 30 tax measures in place in the new member states to the list. When this report was published in autumn 2003, the Group also took note of the fact that 27 of these 30 measures were already rolled-back or were scheduled to be rolled-back by the respective new member states (see Council of the European Union (2003), p. 4 recital 16 and Annex, Mors (2007), p. 69). With regard to the accession of Bulgaria and Romania in 2007, the Working Party on Enlargement identified 8 harmful tax measures. In relation to all of these it agreed on the adequacy of the rollback provisions already proposed by Bulgaria and Romania (see Council of the European Union (2006), pp. 2 et seq. recitals 8 and 10).

740 See Cattoir (2006), p. 6, Fuest et al. (2013), p. 318, Mors (2007), p. 74, Nicodème (2009), p. 766, Nouwen (2013), p. 499.

attributed to peer pressure from fellow member states.[741] Hence, for the countries which object to the IP Box regimes, the Code of Conduct might be a means to counteract them. However, it should also be acknowledged that the rise of IP Box regimes might partly be due to the abolition of other preferential tax regimes which were considered harmful by the Code of Conduct group.[742]

The Code of Conduct reflects EU member states' understanding that, despite relying on their tax sovereignty and acknowledging the positive effects associated with tax competition, they "do not wish to lose any policy race to the bottom from their fellow member states".[743] Against this background, the Code aims at counteracting 'harmful' tax competition within the EU.[744] In this regard, addressing the issue of 'harmful' tax competition is part of a broader initiative of the EU Commission.[745] The Code of Conduct attempts to draw a line between 'fair' tax competition, which is associated with positive effects, and 'unfair' ('harmful') tax competition, which is feared to result in a 'race to the bottom' and to be associated with revenue losses jeopardising the provision of public goods.

The Code of Conduct thus supplements the EU State aid rules as it addresses non-selective tax measures.[746] In addition, many of the measures which are targeted by the Code aim at increasing state resources through attracting foreign income, thereby falling outside the scope of the EU State aid rules. Still, some of the tax measures covered by the Code may also fall within the scope of the State aid rules.[747] The evaluation of a measure based on the Code of Conduct is generally independent from the State aid assessment. A measure which is compatible with the State aid rules may still be considered a harmful tax measure based on the Code's criteria.[748]

---

741 See Kiekebeld (2004), p. 51, Nicodème (2009), p. 766.

742 For Luxembourg, see Chambres des Députés (2007b), p. 11 recital 3.6.

743 Wattel (2013), p. 135.

744 See Wattel (2013), 135.

745 See EU Commission (1998), COM(97) 564, 5 November 1997, Package to tackle harmful tax competition in the European Union (so called 'tax package'). Besides the Code of Conduct for business taxation, the 'tax package' involved the taxation of savings and the issue of withholding taxes on cross-border interest and royalty payments between companies. These two parts eventually resulted in the introduction of the Savings Directive and the Interest & Royalty Directive. On the steps which led to the adoption of the Code of Conduct for business taxation as well as the subsequent list of harmful tax measures, see Monti (1998), Mors (2007), Nijkamp (2001), Pinto (2002), pp. 157 et seq.

746 See Wattel (2013), p. 135.

747 See Council of the European Union (1997), Annex I, recital J. For a detailed comparison between the Code of Conduct and the State aid rules, see Kiekebeld (2004), pp. 78 to 86.

748 See European Commission (2004), recitals 64 et seq., Terra and Wattel (2012), p. 241.

The Code first of all applies to the EU member states. In addition, member states with dependent or associated territories as well as those that have special responsibilities or taxation prerogatives with regard to other territories committed to ensuring that the Code's principles are also applied in these territories.[749] Finally, member states also committed to promoting the adoption of the Code's principles vis-à-vis third countries, such as the member states of the Economic Free Trade Association (EFTA) (Iceland, Liechtenstein, Norway, and Switzerland). Most notably, the European Commission is in negotiations with Switzerland and Liechtenstein with the aim that both countries also commit to the Code's principles and criteria.[750]

6.2.2.2 Criteria for identifying harmful tax measures

6.2.2.2.1 Lower level of taxation

Under the Code of Conduct harmful tax measures are identified based on a two-step procedure. First, tax measures are considered to be *potentially* harmful and therefore subject to further investigation under the rules of the Code of Conduct if they "provide for a significantly lower effective level of taxation, including zero taxation, than those levels which generally apply in the member state in question".[751] This calls for an *intra*-country comparison involving that the effective tax level associated with the tax measure in question is compared to the general tax level.

When assessing the level of taxation, the analysis is not limited to the nominal tax rate. Provisions governing the tax base and other relevant factors are also taken into account. As the general tax system constitutes the benchmark for assessing whether a tax measure is associated with a lower tax level, the so called 'generic tax measures' do not fall within the scope of the Code.[752] Generic tax measures are those which form part of the general tax system. Most notably, the standard corporate income tax rate constitutes a generic tax measure.

[749] See Council of the European Union (1997), Annex I, recital M.

[750] See Council of the European Union (2010a), Council of the European Union (2013b), p. 6, recital 19, European Commission (2014a), p. 25, Felder (2013), pp. 172 et seq.

[751] See Council of the European Union (1997), Annex I, recital B.

[752] See Kiekebeld (2004), p. 22, Szudoczky and van de Streek (2010), p. 275.

6.2.2.2.2 List of criteria for identifying harmful measures

In a second step, *potentially* harmful tax measures are identified as in fact harmful based on the following non-cumulative, non-exclusive list of criteria.[753]

(1) the tax benefits associated with the measure are only available for non-residents or with respect to transactions carried out with non-residents;
(2) the tax benefits are ring-fenced from the domestic market, so they do not affect the national tax base;
(3) the tax benefits are granted without requiring any 'real economic activity and substantial economic presence' in the respective member state;
(4) the tax measure entails that the profit determination rules for activities within a multinational group of companies deviate from internationally accepted principles, notably the rules agreed upon within the OECD;
(5) lack of transparency.

6.2.2.2.3 Complementary economic assessment

The Code furthermore specifies that these criteria should be complemented by an economic assessment. In this regard, the effects of the tax measures on other member states should be considered, inter alia by taking into account how the activities concerned are effectively taxed throughout the EU.[754] This implies an *inter*-country comparison.[755] In this regard, Kiekebeld argues that tax measures which are not associated with a tax burden which is considerably below the average tax burden in the EU should not be considered harmful.[756]

In the case of tax measures which are intended to support the economic development of particular regions, the economic assessment is supposed to focus on whether the measures are targeted at and in proportion to their policy aims.[757] Hence, supporting economic development may constitute a ground for justification provided the measure is well targeted and proportionate.[758]

[753] See Council of the European Union (1997), Annex I, recital B.

[754] See Council of the European Union (1997), Annex I, recital G, sentence 1.

[755] See Pinto (2002), p. 163.

[756] See Kiekebeld (2004), p. 25, Szudoczky and van de Streek (2010), p. 275.

[757] See Council of the European Union (1997), Annex I, recital G, sentence 2.

[758] See Council of the European Union (1997), Annex I, recital G, sentence 2.

6.2.2.3 Evaluation of IP Box regimes by the Code of Conduct group

Among the tax measures of the Primarolo-list were two tax provisions which can be considered IP Box regimes. These are the French royalty tax regime and the exemption of royalty income in place in Ireland until 2010. Whereas the Irish provision was not considered to be a harmful tax measure,[759] the French regime was deemed harmful.[760] The report of the Code of Conduct group to the ECOFIN Council does not explicitly state on which grounds these decisions were based. However, the fact that the report pointed out that the reduced tax rate of the IP Box regime does not apply to French-source royalty income[761] provides some evidence in this regard. In order to comply with its commitment to the Code, France changed its regime.[762] The French IP Box as in place today uniformly applies to French-source and foreign-source IP income as pointed out in section 3.7.1.

In subsequent years, several of the newly introduced IP Boxes have been discussed in light of the Code of Conduct. With regard to the Hungarian regime, the group came to the conclusion that it does not constitute a harmful tax measure.[763] Again, the underlying reasoning of the Code of Conduct group was not published. Concerning the regimes in place in the Netherlands, Belgium, Luxembourg, and Spain, the majority of the Code of Conduct group agreed that there was no need to assess these measures in more detail, though Germany issued a dissenting opinion.[764]

Somehow surprisingly, in summer 2013, the Code of Conduct group put the IP Box regimes which were recently introduced in the United Kingdom (2013) and Cyprus (2012) on its agenda. In this regard, the EU Commission soon reached the verdict that the UK Patent Box constitutes a harmful tax measure[765] which was firmly refuted by the UK.[766] In its December 2013 meeting, the ECOFIN Council did not come to a conclusion on this matter. Instead it invited the Code of Conduct group to assess or consider, respectively, all IP Boxes in place in the EU member

[759] See Council of the European Union (1999), pp. 300, 303, and 314.

[760] See Council of the European Union (1999), pp. 46, 300, and 314.

[761] See Council of the European Union (1999), p. 300.

[762] See Mors (2007), p. 70.

[763] See Council of the European Union (2005), recital 15.

[764] For the Dutch regime, see Council of the European Union (2007), recital 14. For the other regimes, see Council of the European Union (2008), recitals 14 to 16. Germany expressed that it considers it necessary to assess these measures under the Code's criteria (see Council of the European Union (2008), footnote 1 on p. 4).

[765] See EU Commission (2013), Stewart (2013c).

[766] See Stewart (2013c), p. 213.

states including those already dealt with.[767] In doing so, the Council asked the group to focus on the following two aspects. First, how economic substance in the context of IP Box regimes is defined, and second, whether IP Boxes can in principle support and promote real economic activity.[768] At the beginning of 2015, the Code of Conduct group finally came to an agreement in this regard endorsing the so called 'modified nexus approach' as basis for assessing the economic substance of IP Box regimes.[769]

In the following, I discuss the IP Box regimes against the criteria of the Code of Conduct taking into account the implications of the recently endorsed modified nexus approach. Although the Code of Conduct only applies to the regimes in place in the EU member states,[770] I also briefly address the regimes operated in Liechtenstein and the Swiss Canton of Nidwalden. This seems sensible given the fact that the European Commission is in negotiations with Switzerland and Liechtenstein regarding the adoption of the Code's principles and criteria by these two countries.[771]

6.2.2.4 Discussion of the IP Box regimes against the Code of Conduct's criteria of harmful tax measures

It is far from obvious whether IP Box regimes constitute harmful tax measures in the meaning of the Code of Conduct for business taxation or not.[772] Putting the criteria of the Code into practice is not straightforward as most of the Code's criteria are rather vague. No guidance for interpreting the criteria is offered by the Code itself, nor does the report issued by the Group in 1999, which comprises the evaluation of the measures of the Primarolo list, provide any real insights into the interpretation of the criteria of the Code.[773] Similarly, when the Belgian, Luxembourg, and Spanish regimes were discussed, the group's report only mentioned that it felt no need to evaluate the measures without providing any justification for this.[774] The meetings of the group itself are confidential and the group generally does not make its reflections on potentially harmful tax measures publicly available. To sum up, the official documents of the group do not provide

[767] See Council of the European Union (2013a), p. 21.

[768] See KPMG (ed.) (2013b), p. 4.

[769] See Council of the European Union (2014b), p. 4 recital 12.

[770] See section 6.2.1.1.

[771] See section 6.2.1.1.

[772] See Fuest et al. (2013), p. 324.

[773] See Kiekebeld (2004), p. 30.

[774] See Council of the European Union (2008).

sufficient guidance on the interpretation and implementation of the Code's criteria.[775]

6.2.2.4.1 Significantly lower effective level of taxation

The main characteristic of the IP Box regimes is that they provide for a lower tax rate for certain kinds of income from selected types of intangible assets.[776] Pinto points to the difficulties associated with determining whether the reduced tax rates result in a 'significantly lower effective level of taxation' in the meaning of the Code.[777] First, the Code does not give a threshold (for example a reduction by 10 percentage points). Second, it is unclear whether this refers to a reduction in percentage-terms or in terms of percentage points. Third, the Code does not specify how the effective tax rate should be determined. Alternative approaches for determining the effective tax rate are proposed in the literature. The simplest procedure is to solely take into account notional deductions and partial exemptions in order to derive an 'effective nominal tax rate'. More complex approaches consider timing aspects of tax provisions such as depreciation allowance or requirements to capitalise or recapture R&D expenses and differentiate between effective marginal and effective average tax rates. The Devereux & Griffith model applied in section four constitutes an example for such an approach.

The IP Box regimes in Europe result in effective nominal tax rates which undercut the respective main rate of the corporate income tax, which serves as benchmark, by 100% (Malta) to 50% (Hungary). This lower level of taxation is either achieved through a direct reduction of the tax rate or through a reduction of the tax base (either by way of partial exemption or a notional deduction). All these approaches are explicitly covered by the notion of a significantly lower effective level of taxation according to the Code.[778]

In my view, a reduction of the effective nominal tax rate applicable to IP income in the size of 80% and more, as provided by most IP Box regimes, can clearly be considered a significantly lower effective tax level compared to the general tax level.[779] In the case of a reduction of 50%, as under the Hungarian and the UK regimes (as of 2017), the case is somewhat less clear-cut. In its recent evaluation

[775] See Szudoczky and van de Streek (2010), p. 274.

[776] See section 3.1.

[777] See Pinto (2002), p. 161.

[778] See Council of the European Union (1997), Annex I, recital B.

[779] See Dirix (2013), p. 241 with respect to the Belgian regime. For a dismissing comment concerning the Liechtenstein IP Box which also involves an 80% reduction of the corporate income tax rate (2.5% versus 12.5%), see Felder (2013), p. 169.

of the British Patent Box, the EU Commission came to the conclusion that the UK Patent Box's effective tax rate of 10%, as opposed to a regular corporation tax rate of 23% or 20% (as of 2015), is "significantly lower than the rate generally applying".[780] In doing so, the Commission points out that in 2015 the corporation tax rate is scheduled to be 20% which implies a reduction by 10 percentage points and 50%, respectively.[781] As demonstrated in chapter 5, all regimes are furthermore associated with a notable reduction of the effective marginal rate and the effective average tax rate.

From concluding that a respective IP Box regime is associated with a significantly lower effective level of taxation follows that the respective regime is considered as *potentially* harmful in the meaning of the Code of Conduct. Determining whether it is actually considered harmful, requires an assessment based on the five criteria of the Code introduced in section 6.2.1.1 as well as an accompanying economic assessment. This is addressed in detail in the following.

6.2.2.4.2 Reservation of the benefit to non-residents and ring-fencing

Criteria one ('reservation of the benefits to non-residents or to cross-border transactions') and two ('ring-fencing') do not pose a challenge to the IP Box regimes in place in Europe.[782] This is because they are available for domestic corporations and, in most cases, domestic permanent establishments (PEs) of foreign corporations. In addition, the IP Box regimes do not differentiate between domestic corporations/ PEs with domestic parent companies and domestic corporations/ PEs with foreign parent companies. The European IP Box regimes also uniformly apply both to domestic and foreign income without exception. From this follows that they are not insulated from the domestic market of the IP Box country, which would be considered as ring-fencing.[783]

However, in its evaluation of the UK Patent Box, the EU Commission stresses that for assessing these two criteria the de facto application of the tax measure should be taken into account in addition to its de jure interpretation.[784] This calls for a statistical analysis in order to investigate which companies mainly benefit from the individual regimes. Such an evaluation requires data which can only be provided by local tax administrations.

---

[780] EU Commission (2013), p. 1.

[781] See European Commission (2013), p. 1.

[782] For the UK Patent Box, see EU Commission (2013), pp. 1 et seq. For the Belgian IP Box, see Dirix (2013), p. 241.

[783] See Dirix (2013), p. 241, Luts (2014), p. 279. The EU Commission comes to the same conclusion with respect to the UK Patent Box (see EU Commission (2013), p. 2).

[784] See European Commission (2013), pp. 1 et seq.

6.2.2.4.3 Lack of real economic activities with substance

The third criterion, that the tax benefits are granted without requiring any 'real economic activity and substantial economic presence' in the respective member state, requires a more detailed analysis. This criterion is meant to identify tax measures that aim solely at attracting mobile income without requiring the underlying real activity to be shifted to the country granting the tax benefit.[785] This is a concern which is commonly raised in relation to the IP Box regimes.[786]

The comprehensive assessment of the EU IP Box regimes by the Code of Conduct group initiated at the end of the year 2013 also entails specifying the third criterion of the Code of Conduct in more detail. In particular the following two aspects were addressed. First, how economic substance in the context of IP Box regimes is defined and, second, whether IP Boxes can in principle support and promote real economic activity.[787] At the beginning of 2015, the Code of Conduct group finally came to an agreement in this regard endorsing the so called 'modified nexus approach' as a basis for assessing the economic substance of IP Box regimes.[788]

The modified nexus approach was originally put forward by Germany and the United Kingdom[789] on the basis of the nexus approach developed by the OECD within the scope of its work on action no. 5 of the OECD's BEPS project. Action no. 5 focuses on countering harmful tax practices more effectively. It in particular entails developing criteria for assessing whether IP Box regimes lack substantial activity which is perceived to indicate that they constitute harmful tax measures. In this regard, action no. 5 builds upon previous work of the OECD dealing with harmful preferential tax regimes. In 1998, the OECD issued a report on harmful tax competition in which it set out criteria for identifying harmful preferential tax regimes similar to those of the Code of Conduct for business Taxation. This is addressed in more detail in section 6.2.3. Due to the overlap in time and content, the Code of Conduct group and the OECD coordinated their work on harmful preferential tax regimes.

The Code of Conduct group and the OECD both considered three different approaches to apply the 'substantial activity'-criterion forming part of the OECD's and the Code of Conduct's list of criteria for identifying harmful tax measures to

785 See Dirix (2013), p. 235.

786 This issue is discussed in section 6.1. See also Griffith and Miller (2011), p. 231.

787 See KPMG (ed.) (2013b), p. 4.

788 See Council of the European Union (2014b), p. 4 recital 12.

789 See Burow (2014).

IP Box regimes.[790] Among those, the nexus approach received the widest support and was elaborated in detail in the September deliverables for action no. 5.[791] The Code of Conduct group acknowledged the OECD's proposal in general but also put forward several adjustments to the OECD's proposal concerning the level of qualifying expenditure, grandfathering provisions, and the tracking and tracing of expenditures.[792] This modified nexus approach was originally developed by Germany and the United Kingdom.[793] The modified nexus approach as presented by the Code of Conduct group to the ECOFIN council at the end of 2014 constitutes a consensus among the members of the group.[794] In the following, I point out the details of the nexus approach as proposed by the OECD in the deliverables for action no. 5 as well as the amendments proposed under the modified nexus approach later endorsed by the Code of Conduct group.

[790] See Council of the European Union (2014a), p. 4 recital 11, Council of the European Union (2014b), pp. 3 et seq. recitals 10 and 12. In addition to the 'modified nexus approach', the 'value creation approach' and the 'transfer pricing approach' were discussed. According to the value creation approach, a preferential tax regime satisfies the substantial activity factor if it requires taxpayers to undertake several significant development activities (see OECD (2014a), p. 28). According to the transfer pricing approach, a preferential tax regime is considered to be in line with the substantial activity requirement if it requires taxpayers (i) to locate important functions in the jurisdiction providing the tax benefit, (ii) to be the legal and the economic owner of the assets giving rise to the tax benefit, and (iii) to bear the economic risks associated with the assets (see OECD (2014a), p. 28). The requirements of the 'transfer pricing approach'´´ to a certain extent correspond to the requirements of transfer pricing rules for the attribution of income from the exploitation of intangible assets to taxable entities (see Becker (2014), p. 708). In fact, an alternative approach to dealing with the issue of substantial activity requirements of IP Box regimes would be to fully rely on transfer pricing rules. It is, however, doubtful that this would induce fundamental changes to the IP Box regimes as almost all IP Box countries already have transfer pricing rules in place that are based on or consider the OECD transfer pricing guidelines and which also apply in the context of the IP Box regimes (see section 3.7.2.1 footnote 458).

[791] See OECD (2014a), pp. 28 et seq.

[792] See Council of the European Union (2014b), p. 7.

[793] See Burow (2014).

[794] See Council of the European Union (2014b), p. 4 recital 12.

6.2.2.4.3.1 The (modified) nexus approach

The idea underlying the (modified) nexus approach is to establish a nexus between the IP Box benefit and the R&D activity of the taxpayer receiving this benefit. Under the nexus approach, a preferential tax regime satisfies the Code's substantial activity requirement if the regime's benefit is made conditional on the extent of R&D activity performed by the taxpayer.[795] The (modified) nexus approach is based on the perception that R&D expenditures constitute a sensible proxy for substantial activity in the context of the IP Box regimes. In fact, the (modified) nexus approach implies that only R&D activity is considered to be substantial activity whereas the sole management of IP is not.

The (modified) nexus approach points out in quite some detail how IP Box regimes should be designed in order to fulfil the substantial activity requirement that forms part of the OECD's and the Code of Conduct's lists of criteria for identifying harmful preferential tax practices. It aims at limiting the IP Box benefit to income stemming from R&D activity in which the taxpayer was engaged. In turn, pure IP holding companies which do not carry out R&D activity themselves but solely commission other group companies to perform R&D may not benefit from the IP Box treatment under the (modified) nexus approach.

In detail, the nexus approach as set out in the OECD report on action no. 5 entails that only the share of IP income which relates to the proportion of the taxpayer's qualifying R&D expenditures out of the overall expenditures relating to IP qualifies for the IP Box benefit. This is illustrated by equation (44). The category 'qualifying expenditures incurred to develop IP'[796] which enters the numerator of equation (44) refers to the expenditures for in-house R&D[797] as well as R&D outsourced to third parties.[798]

$$Eligible\ income = IP\ income * \frac{Qualifying\ expenditures\ \ incurred\ to\ develope\ IP}{Overall\ expenditures\ incurred\ to\ develop\ IP} \qquad (44)$$

What comprises expenditures for in-house R&D is not conclusively defined in the report. However, it likely comprises wages, salaries, costs of supplies, and depreciation allowances for equipment and for machinery used for R&D

[795] See OECD (2014a), pp. 29 et seq.

[796] When calculating the amount of qualifying expenditures, all expenditures incurred over the life of the IP (including the R&D phase) are summed up. See OECD (2014a), p. 32.

[797] See OECD (2014a), p. 31.

[798] See OECD (2014a), pp. 32 et seq.

activities.[799] In contrast, acquisition costs of IP as well as expenses incurred for outsourcing R&D to related parties are explicitly excluded.[800]

These kinds of expenditures do, however, form part of the category 'overall expenditures incurred to develop IP'. As a consequence, the acquisition of IP and the creation of IP via intra-group contract R&D negatively affect the amount of IP income which may benefit from the IP Box treatment according to the nexus approach. This is because the denominator exceeds the numerator in case part of the R&D activity is outsourced to related parties as well as in the case of acquired IP.

The formula proposed by the OECD is designed to ensure that only income from the exploitation of intangible assets which have been created through R&D activity performed by the taxpayers themselves (or an unrelated contractor) enjoys the IP Box benefit. It entails that income relating to IP created via R&D activity outsourced to related parties or relating to acquired IP does not obtain the IP Box benefit.

The modified nexus approach partly alleviates this restriction by allowing for an up-lift of qualifying expenditure. This uplift amounts to the lower of 30% of qualifying expenditures and the actual expenses incurred for R&D outsourced to related parties and costs for the acquisition of IP. Equation (45) depicts the formula for determining the amount of income eligible for the IP Box benefit according to the *modified* nexus approach.[801]

$$Eligible\ income = IP\ income * \frac{Qualifying\ expenditures + UPLIFT}{Overall\ expenditures} \quad (45)$$

Please note that the (modified) nexus approach does not require that qualifying expenses relate to R&D performed in the IP Box country. For this reason, the (modified) nexus approach is considered to be compatible with the fundamental freedoms.[802] Hence, the IP Box benefit is also available with respect to income from intangible assets created abroad.

The (modified) nexus approach also touches upon several other aspects of the IP Box regimes. In particular, it specifies which kinds of IP and which kinds of IP income should qualify for the IP Box treatment as well as how IP income should be determined. This is summarised in table 26. Accordingly, the scope of qualifying IP is limited to patents and other IP rights which are functionally

[799] See OECD (2014a), p. 50, note 4.

[800] See OECD (2014a), p. 31, pp. 32 et seq.

[801] See Council of the European Union (2014b), p. 7.

[802] See Becker (2014), pp. 707 et seq., Council of the European Union (2014b), p. 3 recital 11.

equivalent to patents whereas marketing intangibles are explicitly excluded. Other kinds of intangibles which may also result from R&D activity, for example certain software,[803] are not explicitly addressed.[804] This might, however, be clarified in the future.[805]

The scope of qualifying IP income comprises royalties, capital gains and other income from the sale of IP, as well as embedded IP income from the sale of products directly relating to IP. The two other common categories of IP income, notional royalty income from the internal use of IP (e.g. from the use of patented production processes) and damages for infringements of IP rights, are not mentioned.[806] Finally, under the (modified) nexus approach, IP income should be defined as net (instead of gross) income.[807] With regard to whether historical R&D expenses should be recaptured under the IP Box regimes, the OECD's draft of the nexus approach does not provide any information.

Table 26: Design of IP Box regimes according to the (modified) nexus approach

Eligible types of IP		**Eligible types of IP income**	
Patents and comparable IP	✓	Royalties	✓
Software	*	Compensations for infringements	*
Other Copyrights	*	Capital gains	✓
Trademarks	x	Embedded income/ Sales income	✓
Designs	*	Notional royalties from internal use	*
Models	*	**Determination of the tax base**	
Secret formulas	*	Current expenses	N
Know-how	*	Recapture of R&D expenses	*

Abbreviations: ✓- qualifies; x – does not qualify; * - not explicitly dealt with by the (modified) nexus approach; N – net income approach; G – gross income approach (see section 3.3.2.2).

[803] According to the Frascati Manual, non-routine software development may classify as R&D. Accordingly, "for a software development project to be classified as R&D, its completion must be dependent on a scientific and/or technological advance, and the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty (OECD (2002), p. 46)."

[804] See OECD (2014a), p. 31, section B.

[805] Whereas the guidance on the modified nexus approach presented by the Code of Conduct group does not address this issue (see Council of the European Union (2014b), pp. 7 et seq.), the guidance presented by the OECD announces that more detailed guidance will be developed by the OECD's FHTP on what is regarded as qualifying types of IP. This will in particular involve clarifying whether qualifying IP comprises copyrighted software, innovations from technically innovative development, and technical scientific research that do not benefit from patent protection (see OECD (2015), p. 5).

[806] See OECD (2014a), p. 32, section E.

[807] See OECD (2014a), p. 32, section E.

6.2.2.4.3.2 Assessment of the IP Box regimes based on the (modified) nexus approach

The European IP Box regimes do not comply with the (modified) nexus approach in several regards. This has also been acknowledged by the Code of Conduct group.[808] Most notably, none of the IP Box regimes entail that the amount of eligible income be limited to the share which relates to expenditures incurred for in-house R&D and R&D outsourced to third parties (increased by the 'uplift') as illustrated by equations (44) and (45) above. So far, none of the IP Box regimes generally exclude IP income which relates to outsourced R&D activity performed by related parties and most regimes apply to acquired IP even if such IP is not further developed by the taxpayer.

In addition, as pointed out in section 3.2.1, only the regimes in place in Belgium, France, and the United Kingdom are currently limited to patents and similar IP as required by the (modified) nexus approach.[809] Finally, the regimes in Belgium, Hungary, and Portugal apply the IP Box tax rate to gross income whereas the (modified) nexus approach entails that the IP Box benefit is restricted to net income.

[808] See Council of the European Union (2014b), p. 4 recital 12.

[809] Supplementary Protection Certificates (SPC) are unique intellectual property rights which extend the duration of exclusive rights. They enter into force after the patent upon which they are based have expired. SPCs are available for human or veterinary medicaments and plant protection products. For further details, see Seville (2009), pp. 158 et seq.

6.2.2.4.4 Criterion 4: Rules for profit determination deviate from internationally accepted principles

The fourth criterion targets tax measures which rely on notional methods for determining taxable profits such as the cost-plus method.[810] In so far as these deviate from internationally accepted principles, such as the OECD transfer pricing rules,[811] the tax measures may be considered harmful.

In the vast majority of European IP Box countries, royalty income received from related parties must meet national transfer pricing requirements[812] which generally rely on the OECD transfer pricing rules.[813] In addition, in order to determine the amount of notional royalty income from internal use which is eligible for the IP Box treatment, the respective IP Box regimes generally draw on transfer pricing rules.[814]

The 'net principle,' which entails that expenses should be deducted from the associated income, also constitutes a generally accepted profit determination rule. Hence, IP Box regimes which entail that gross royalty income (as opposed to IP profits) benefits from the IP Box treatment might be challenged based on this criterion.

Finally, IP Box regimes which are designed in such a way that the IP Box tax base is determined based on a formulaic approach could also be considered to deviate from internationally accepted profit determination principles. This is the case under the British Patent Box. In its assessment of the UK Patent Box, the EU Commission argues that that all three stages of the Patent Box's three-stage procedure for calculating the Patent Box tax base[815] "involve a statutory formula rather than internationally agreed principles".[816]

In addition, the EU Commission claims that the Patent Box profits are subject to a lower effective tax rate due to a partial deduction of the Patent Box profits from the overall profits and that "this deduction is also not in line with internationally

[810] See Pinto (2002), p. 162.

[811] See Pinto (2002), p. 162, Terra and Wattel (2012), p. 237.

[812] See Zinn et al. (2014), p. 356.

[813] See Felder (2013), p. 39 and 74 for Belgium and Luxembourg, respectively. See IBFD (2014), section 7.2 of the respective country chapters. Liechtenstein is one exception to this as, opposed to Switzerland (see Circular ('Kreisschreiben Nr. 4' of the Swiss Tax Administration of 19 March 2004 making reference to a letter by the Director of the Swiss Tax Administration of 4 March 1997), it has neither formally recognised the OECD transfer pricing rules nor does Liechtenstein apply them in practice (see Felder (2013), p. 172).

[814] See section 3.3.1.

[815] For details, see section 3.3.2.2.

[816] European Commission (2013), p. 4.

agreed principles".[817] As a consequence, the EU Commission concludes that the rules for profit determination of the UK Patent Box indeed depart from internationally accepted principles.[818] In Belgium, Hungary, and Liechtenstein the reduced tax rate for IP income is also achieved through a notional deduction of qualifying income. It is debatable whether it is sensible to interpret criterion four in this way as the notional deduction of IP income on the one hand and the partial exemption of IP income on the other hand differ only in technical terms.[819]

Finally, it should be pointed out that under certain conditions, administrative practice allows Dutch taxpayers to calculate the Innovation Box tax base based on a formulaic approach (see section 3.3.2.4 for details). This approach is to some extent similar to the approach applied by the British Patent Box which was criticised by the EU Commission. The Dutch tax administration does, however, argue that this approach is fundamentally similar to the functional analysis set out in the OECD transfer pricing guidelines.

6.2.2.4.5 Criterion 5: Lack of transparency

Tax measures in particular lack transparency if the legal provisions are relaxed by way of an administrative practice. This comprises unpublished or secret administrative practices which are granted on a case-by-case basis as well as administrative rulings which are characterised by a high degree of discretion and thereby go well beyond the statutory tax laws.[820] These often involve negotiations between the tax authorities and taxpayers which opens the scope for preferential tax treatment of certain taxpayers.[821]

From an outside-perspective it is hardly possible to examine whether the practical application of certain IP Box regimes indeed lacks transparency.[822] Nevertheless, two examples can be presented here that may be characterised by a lack of transparency.

As already briefly mentioned above, the Dutch IP Box regime is accompanied by an administrative practice. This practice puts forward a procedure for determining the amount of income eligible for the IP Box tax rate which considerably differs from the approach codified by the tax law provisions

817 European Commission (2013), p. 4.

818 See European Commission (2013), p. 4.

819 See Luts (2014), p. 281,

820 See Pinto (2002), p. 162.

821 See Kiekebeld (2004), p. 26, Pinto (2002), p. 162.

822 For Belgium, Dirix comes to the conclusion that "the Belgian tax authorities do not appear to adopt a lax policy in terms of checking the deduction's applicability and calculation (Dirix (2013), p. 241)."

governing the regime. The administrative practice in particular overturns the Innovation Box's principles for recapturing the development expenses under the 'threshold mechanism' (see section 3.3.2.3). The threshold mechanism is replaced by a formulaic approach to the determination of the Innovation Box tax base similar to the approach pursued by the UK (see section 3.3.2.4). This involves an administrative ruling which is binding to both the taxpayer and the treasury. Publicly available official documentation of this practice is scarce.[823] Nevertheless, it is ambiguous to determine whether the fifth criterion is fulfilled in this case.

Similarly, the formulaic approach for determining the tax base of the British Patent Box could be challenged arguing that it lacks transparency. In this regard, the complexity of the rules governing the Patent Box, which is partly expressed by the length and the great detail of the applicable articles in the tax code as well as comprehensive technical notes accompanying the provision, might serve as an argument in favour of claiming a lack of transparency. However, on the other hand, the great detail provided in the tax code and the technical notes likely reduces the scope for discretion and could thereby also serve as an argument to the detriment of claiming that the regime lacks transparency.

6.2.2.4.6 Complementary economic assessment

The economic assessment, which is supposed to complement the above addressed criteria, involves taking into account how the concerned activities are effectively taxed throughout the European Union.[824] This involves identifying the benchmark tax treatment of the respective activity. The fact that by the beginning of 2015 11 out of the 28 EU member states have implemented an IP Box regime raises the question whether this changes the picture.[825] Pinto argues that tax measures which correspond to those in place in other member states do not constitute harmful tax measures claiming that countries were forced to implement them as response to other member states' practices.[826] However, arguing this way would make it impossible to classify potentially harmful tax measures as indeed harmful if other member states follow-suit and introduce similar regimes. In fact, this is what occurred in the case of the IP Box regimes.

---

[823] A recently published decree on the application of the Innovation Box only provides a very brief description of this Dutch administrative practice. See Belastingdienst (2014), p. 12, section 6.3.4 as well as section 3.3.2.4 of this thesis for details.

[824] See Council of the European Union (1997), Annex I, recital G, sentence 1.

[825] See Luts (2014), p. 281.

[826] See Pinto (2002), p. 163.

6.2.2.5 Outlook

Although the (modified) nexus approach is first of all intended to serve in specifying the substantial activity requirement of the OECD framework for identifying harmful tax practices, the draft published by the OECD and acknowledged by the EU in fact presents the outline for a standardised IP Box regime among the EU member states. Towards the end of 2014, the Code of Conduct group's work on the IP Box regimes has gathered pace: the Code of Conduct group agreed that all EU IP Boxes are not compatible with the modified nexus approach and that the regimes should consequentially be changed along the lines of the approach.[827] Member states are required to abolish their old regimes which are not in line with the modified nexus approach by the end of June 2021.[828]

Most notably, the application of the modified nexus approach involves that the amount of eligible income has to be limited to the share which relates to qualifying expenditures incurred for in-house R&D and R&D outsourced to third parties increased by an 'uplift'[829] (as illustrated by equations (44) and (45) above). None of the IP Box regimes investigated in this thesis provide for such a mechanism. IP income which relates to outsourced R&D activity performed by related parties in general benefits from the IP Boxes and most IP Boxes additionally apply to acquired IP without requiring that it is further developed by the taxpayer.

Besides this, regimes need to be restricted to patents and comparable intangibles. As pointed out in section 3.2.1, only the regimes in place in Belgium, France, and the United Kingdom are limited to patents and supplementary protection certificates.[830] In addition, Belgium, Hungary, and Portugal may no longer apply

[827] See Council of the European Union (2014b), p. 4 recital 12. The other aspects which form part of the list of criteria for identifying harmful tax practices (in particular whether the rules for profit determination deviate from internationally accepted principles and whether the provisions lack transparency) have so far not been addressed in the reports of the Group.

[828] See Council of the European Union (2014b), p. 8. In addition, member states have to close their existing regimes for new entrants by the end of June 2016. In this regard 'new entrants' are taxpayers which are not benefitting from the regime yet as well as new IP owned by taxpayers already benefitting from the regime (see Council of the European Union (2014b), p. 8).

[829] This uplift amounts to the lower of 30% of qualifying expenditures and the actual expenses incurred for R&D outsourced to related parties and costs for the acquisition of IP. For details, see section 6.2.2.4.3.

[830] Supplementary Protection Certificates (SPC) are unique intellectual property rights which extend the duration of exclusive rights. They enter into force after the patent upon which they are based expired. SPCs are available for human or veterinary medicaments and plant protection products. For further details, see Seville (2009), pp. 158 et seq.

the IP Box tax rate to gross income if they align their regimes with the nexus approach.

The recent developments regarding the Code of Conduct already have direct impact on new IP Box regimes. The recently introduced Italian IP Box involves that income relating to R&D activity outsource to related parties and relating to acquired IP only qualifies along the lines of the 'modified nexus approach'.[831] However, in contrast to the modified nexus approach, the IP Box regime is eligible for commercial trademarks.[832] The Irish finance minister who plans to introduce a 'Knowledge Development Box' in 2016 acknowledged that the measure needs to be in line with the modified nexus approach.[833]

The Code of Conduct group and the OECD's work on harmful tax practices are also accounted for by Switzerland within the scope of the ongoing legislative process for the introduction of an IP Box regime at the level of the Swiss Cantons.[834] Switzerland has expressed its willingness to align new tax measures, such as an IP Box regime, with the OECD's standards.[835]

The (modified) nexus approach has important implications for IP tax planning making use of intra-group contract R&D. Under IP Box regimes which are in line with the (modified) nexus approach, intra-group contract R&D would be less attractive as the amount of contract R&D fees paid to related parties negatively

[831] In line with the nexus approach, the provision governing the Italian IP Box regime stipulates that the share of IP income which benefits from the partial exemption under the IP Box is calculated by applying the share of qualifying R&D expenditures out of the total expenditures incurred to develop the relevant IP. The category qualifying R&D expenditures is limited to expenditures for in-house R&D and R&D outsource to universities and other research institutes. A decree issued in January 2015 (Decreto-Legge no. 3/2015 of 24 January 2015), which still has to be converted into law by the Italian parliament, extended the scope of qualifying R&D expenditures. As a consequence, expenditures incurred for the outsourcing of R&D to third parties fully constitute qualifying R&D expenditures. In addition, the decree allows for an uplift analogous to the modified nexus approach implying that expenditures incurred for the outsourcing of R&D to related parties and for the acquisition of IP are also eligible up to the the lower of 30% of qualifying R&D expenditures and the actual expenses incurred for R&D outsourced to related parties and costs for the acquisition of IP. For details, see Art. 1 (37)-(45) Legge no. 190 ('Legge die Stabilità) (Stability Law) of 23 December, 2014, KPMG (ed.) (2015), PricewaterhouseCoopers (ed.) (2014b).

[832] See Burow (2015), Ernst & Young (ed.) (2015). The Italian IP Box was originally limited to patents, trademarks functionally equivalent to patents (functional equivalence implies that development and maintenance of such trademarks entails R&D costs), intellectual works, processes, secret formulas, and industrial, commercial or scientific knowledge (see Art. 1 (37) Legge no. 190 of 23 December, 2014, KPMG (ed.) (2014)).The extension of the scope of eligible IP to commercial trademarks, designs, and models according to the law decree no. 3/2015 of 24 January 2015 (see KPMG (ed.) (2015)) is not in line with this aspect of the modified nexus approach.

[833] See Department of Finance (2015), p. 5, Soong Johnston (2014b), p. 494.

[834] See Eidgenössische Steuerverwaltung (2014), p. 26.

[835] See Eidgenössische Steuerverwaltung (2014), pp. 10 et seq.

affects the amount of IP income eligible for the IP Box tax rate. This is because such expenses are largely excluded from the scope of qualifying expenditures which are in turn decisive for determining the proportion of IP income eligible for the IP Box treatment. The uplift provided for by the modified version of the nexus approach only partially alleviates this restriction.

In doing so, the (modified) nexus approach considerably goes beyond any transfer pricing rules-based approach on the issue of how to ensure that IP Boxes require substantial activity on behalf of the taxpayer. Any transfer pricing rules based approach would not generally exclude income relating to intra-group contract R&D from the IP Box benefit. Transfer pricing rules instead require a certain degree of substance on behalf of the commissioning party in order to be entitled to the income from exploiting the intangible asset. However, this opens scope for intra-group profit shifting by means of contract R&D arrangements as illustrated in chapter 5.[836]

Although the (modified) nexus approach might be effective in preventing multinationals to locate IP and IP income in IP Box countries without locating the associated R&D activity there as well, it might also affect intra-group contract R&D arrangements which are set up for non-tax reasons. Indeed, it is debatable that IP management does in general not go along with substantial activity as implied by the (modified) nexus approach.[837] The modifications to the nexus approach proposed by Germany and the United Kingdom and later endorsed by the Code of Conduct group account for these concerns.

To additionally compensate for the fact that income relating to IP which has been created through intra-group contract R&D is largely excluded from the IP Box benefit under the (modified) nexus approach, I suggest extending the scope of income eligible for the IP Boxes to contract R&D fees received by the contractor performing the R&D activity. This would allow group R&D companies resident in IP Box countries to benefit from the IP Box benefit.

[836] For details, see 2.2.2.1.

[837] Felder claims that the management of IP within the scope of any IP Box regime is indeed principally associated with real economic activity and economic presence (see Felder (2013), p. 169).

6.2.3 OECD project on Harmful Tax Practices

6.2.3.1 Background

In 1998, the OECD issued a report in which it identified harmful tax competition as an emerging global issue. It set out different criteria to identify harmful preferential tax regimes ('framework' in what follows) and guidelines on how to deal with them.[838] The motivation for this work is very similar to the considerations on which the Code of Conduct for business taxation is based. Harmful preferential tax regimes are perceived to distort trade and investment and to undermine the fairness of tax systems.[839] The scope of the OECD initiative does, however, focus on geographically mobile activities, such as financial and other service activities, whereas preferential tax regimes that aim at attracting real business activity are outside the scope of the 1998 report.[840] In contrast to this, the Code of Conduct pursues a wider approach by considering business activities in general.

The OECD report asks member countries to remove the harmful features of their preferential tax regimes and to refrain from adopting harmful tax practices.[841] The report furthermore determines the creation of a Forum on Harmful Tax Practices (FHTP) which shall evaluate tax regimes based on the criteria set-out in the framework as well as the preparation of a list of potentially harmful measures in place in the OECD member countries.[842] This list was eventually published as part of the 2000 'Progress Report of the Committee on Fiscal Affairs'.[843] Only Luxembourg and Switzerland did not approve of the report and abstained from the adoption of the report's recommendations.[844]

As a result of the OECD's work, all 34 preferential tax regimes which had been found harmful (none of them constituting an IP Box regime) were either abolished or amended in order to remove their harmful features.[845] This indicates that despite the fact that OECD member states are not legally bound to remove harmful tax practices, the OECD's initiative did have a practical effect. Even

838 See OECD (1998). The report additionally sets out criteria to identify tax haven and develops recommendations to deal with them. For details, see OECD (1998), pp. 21 et seq.

839 See OECD (1998), p. 7 et seq.

840 See OECD (1998), p. 8.

841 See OECD (1998), p. 56.

842 See OECD (1998), p. 56.

843 See OECD (2000).

844 See Easson (2004), p. 1041, OECD (1998), p. 3.

845 See Englisch and Yevgeneyeva (2013), p. 628, OECD (2006), pp. 5 et seq.

Luxembourg and Switzerland, which did not approve of the report, amended or even abolished their tax practices which had been found harmful by the OECD.[846]

6.2.3.2 Comparison of the OECD framework with the Code of Conduct for business taxation

At this point, I briefly sketch-out the framework for determining whether a tax measure is a harmful preferential regime as presented by the OECD 1998 in its report on harmful tax competition. In doing so, I focus on differences and similarities of the criteria of the OECD framework and the EU Code of Conduct. The recent changes to this framework within the scope of the BEPS project are addressed in the subsequent section.

The OECD framework proposes a set of non-cumulative criteria to identify such a preferential tax regime as harmful. The list of criteria comprises the following four key factors:[847]

(1) no or low effective tax rates;
(2) ring-fencing of the regime;
(3) lack of transparency;
(4) lack of effective exchange of information.

Analogous to the Code of Conduct, a tax regime is considered potentially harmful if it is associated with a low or zero effective tax rate.[848] This criterion constitutes the starting point of the evaluation. In order to identify a preferential tax regime as harmful it must be characterised by a combination of a low or zero effective tax rate and at least one of the other key factors.

The second and third key factors, 'ring-fencing' and 'lack of transparency', are also criteria of the Code of Conduct.[849] The understanding of these two criteria reflected in the Code of Conduct and the OECD framework seem to largely correspond to each other.[850] Albeit, 'ring-fencing' in the meaning of the OECD framework additionally comprises part of the meaning of the first criterion of the Code of Conduct ('reservation of the benefits to non-residents or to cross-border transactions') as it refers to regimes that are restricted to non-residents.[851] Only the fourth factor of the framework is not reflected in the Code of Conduct. In fact,

---

[846] See OECD (2006), p. 5. On the Luxembourg 1929 holding regime, see Brekelmans (2006), p. 1073.

[847] See OECD (1998), p. 25.

[848] See OECD (1998), p. 26.

[849] See Pinto (1998), p. 392 for a tabular comparison of the criteria of the OECD report and the EU Code of Conduct.

[850] See OECD (1998), pp. 26 to 29.

[851] See OECD (1998), p. 28, Pinto (1998), p. 393.

this is the main difference between the Code of Conduct and the OECD framework.[852]

In addition to these key factors, the OECD framework mentions the following ancillary factors which should be taken into account in the evaluation of potentially harmful tax measures:[853]

(5) artificial definition of the tax base;
(6) failure to adhere to international transfer pricing principles;
(7) exemption of foreign source income from residence country tax;
(8) negotiable tax rate or tax base;
(9) existence of secrecy provisions;
(10) being promoted as a tax minimisation vehicle;
(11) encouraging purely tax-driven operations or arrangements which involve no substantial activities.

The fifth factor and sixth factor correspond to criterion 4 of the Code ('rules for profit determination deviate from internationally accepted principles'). Factors eight and nine could also be subsumed under the criterion 'lack of transparency'. The last factor of the framework is similar to the third criterion of the Code, namely 'lack of real economic activities with substance'. A tax regime which does not require real economic activities with substance could be viewed as encouraging purely tax-driven operations or arrangements.

Finally, the evaluation of tax regimes based on the key and ancillary factors should be accompanied by an assessment of their economic effects in terms of their potential harmfulness.[854] Based on this, a potentially harmful tax measure might not be found to be harmful after all if it is not associated with negative economic effects.[855] Again, this corresponds to the complementary economic assessment suggested by the Code of Conduct.

Summing up, the criteria applied by the OECD and the Code of Conduct group largely correspond to each other.[856] Nevertheless, the OECD and the Code of Conduct group may come to different conclusions on the same tax measure. One reason for this may be their different scope. Whereas the OECD focusses on tax measures favouring mobile activities, the Code of Conduct addresses business activity in general.

---

[852] See Pinto (1998), p. 393.

[853] See OECD (1998), pp. 30-34.

[854] See OECD (1998), pp. 34 and 35.

[855] See Becker (2014), p. 706.

[856] See OECD (1998), p. 11, Pinto (1998), p. 392.

The assessment of the French IP Box regime constitutes one example which illustrates that the OECD's FHTP and the Code of Conduct group may come to different conclusions. Whereas the French IP Box was classified as a harmful tax regime by the Code of Conduct group, it was not included in the OECD's list of potentially harmful preferential tax regimes.[857] In fact, in the past none of the IP Box regimes were considered harmful by the OECD.[858] However, it is foreseeable that this is going to change due to the recent developments within the scope of the OECD BEPS projects. This is addressed in more detail in the following.

6.2.3.3 Implications of the BEPS-project

The OECD is revamping its work on harmful tax practices within the scope of action no. 5 of its BEPS-project. The action plan for addressing BEPS in particular demands that the availability of preferential tax regimes be linked to the presence of substantial activity.[859] As one of the outcomes of action no. 5, the Forum on Harmful Tax Practices revised the existing framework for determining whether a regime is a harmful preferential regime. In addition, it is to deliver a review of OECD countries' preferential tax regimes.[860]

In September 2014, the OECD presented the output of its work on action no. 5 which is, however, still work-in-progress. As part of the revision of the existing framework, the substantial activity requirement (factor 11) is given greater weight in the assessment of preferential tax regimes. In fact, the substantial activity factor shall now be considered along with the other four key factors.[861] In addition, with regard to putting this factor into practice, the OECD's report on action no. 5 outlines the nexus approach. At the end of 2014, an agreement was reached on the modified nexus approach among the G-20 leaders.

As already discussed in section 6.2.2, the application of the nexus approach is likely to have far-reaching implications for the IP Box regimes. The OECD member states are required to abolish or amend their regimes to align them with the modified nexus approach by the end of June 2021.[862]

---

857 See OECD (2000), pp. 12 to 14.

858 This also includes the French regime which was found harmful by the Code of Conduct group. For details, see section 6.2.3.

859 OECD (2013e), p. 18.

860 See OECD (2013e), p. 36, OECD (2014a), p. 14.

861 See OECD (2014a). In the OECD report, which set-out the criteria for identifying harmful tax practices published in 1998, this aspect only forms part of the 'other factors'. See section 6.2.3 for details.

862 See OECD (2015), p. 4. In addition, OECD member states have to close their existing regimes for new entrants by the end of June 2016. In this regard 'new entrants' are taxpayers which not benefitting

6.2.4 Issues raised by the initiatives against harmful tax practises

The abolition of harmful preferential regimes might also have negative effects. The majority of measures which have been found harmful, such as special tax regimes for financing companies, holding companies or IP companies, focus on attracting income as opposed to real investment.[863] Companies might use such tax regimes to lower the tax burden on real investments and thereby avoid tax distortions of the location of real activities such as manufacturing or R&D. Empirical evidence indeed suggests that the availability of profit shifting opportunities reduces the distortions of taxes with respect to real investments.[864] Hence, the abolition of such regimes might intensify distortions of investment[865] which the EU Commission and the Council of the European Union actually aim to overcome.[866] However, this issue is not clear-cut as some 'harmful tax measures' may also affect the location of investment depending on the substance requirements of respective regimes.

Countries which are forced to abolish certain tax regimes which are considered harmful might compensate for this in two ways. First, they might lower their main corporate income tax rate.[867] To give an example, in return for the roll-back of its reduced tax rate for income from manufacturing activities undertaken in Ireland which amounted to 10%, Ireland lowered its corporate income tax rate for active business income (so called 'trading income') from 16% to 12.5% in 2003.[868] This raises concerns that the repeal of special tax regimes might intensify tax competition by way of a reduction of the main corporate income tax rate.[869]

Second, countries might replace measures found harmful by other tax regimes which are believed to be in line with the Code of Conduct and the OECD's framework for identifying harmful tax measures. In this regard, the repeal of special tax regimes found to be harmful from which IP holding companies inter

from the regime so far as well as new IP owned by taxpayer already benefitting from the regime (see OECD (2015), p. 4.

863 See Bond et al. (2000), p. 57.

864 For empirical evidence that profit shifting may diminish the detrimental effects of an increased corporate income tax rate on investment, see Becker and Riedel (2012), Grubert (2003), Mintz and Smart (2004), Overesch (2009), Overesch and Schreiber (2010).

865 See Bond et al. (2000), p. 60.

866 See Council of the European Union (1997), Annex I, recital A, European Commission (1997), p. 7.

867 See Bond et al. (2000), p. 59.

868 See Bond et al. (2000), p. 59, Kesti (ed.) (2002), p. 321, country chapter Ireland, section 1.6.1.

869 The theoretical literature on the implications of preferential tax regimes on tax competition and tax revenues are mixed, see footnote 612 in section 6.1.3.

alia benefited might have contributed to the rise of IP Box regimes among the EU member states. To give an example, the introduction of the IP Box regime in Luxembourg was inter alia motivated by the wish to maintain the attractiveness of Luxembourg as a location for IP holding companies and thereby to provide an alternative for the expiring '1929 holding company' regime which was found harmful and rolled-backed in 2010[870].[871] Similarly, Switzerland plans to introduce a License Box on the cantonal level[872] to account for the planned repeal of the domicile and mixed company regimes which are under severe pressure from the EU and considered to be harmful tax measures.[873]

[870] See Council of the European Union (1999), p. 300. For details on the measure and the roll-back, see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Luxembourg, section 11.1 (version November 2014).

[871] See Chambres des Députés (2007b), p. 11 recital 3.6, van Kuijk (2010), p. 140, Schaffner et al. (2009), p. 381.

[872] See the draft of Art. 24b federal law of 14 December 1999 concerning the harmonisation of the direct taxes of the Swiss cantons and municipalities (Bundesgesetz über die Harmonisierung der direkten Steuern der Kantone und Gemeinden) as amended by the federal law on tax measures to strengthen the competitiveness of the Swiss as a location for companies (Corporate Tax Act III) (Bundesgesetz über steuerliche Maßnahmen zur Stärkung der Wettbewerbsfähigkeit des Unternehmensstandorts Schweiz (Unternehmenssteuerreformgesetz III)), download: http://www.news.admin.ch/NSBSubscriber/message/attachments/36627.pdf. For explanatory notes, see Eidgenössische Steuerverwaltung (2014), pp. 26 et seq. A steering committee originally proposed the introduction of a Licence Box on the federal level within the scope of the more comprehensive Corporate Tax Reform III (see Eidgenössische Steuerverwaltung (2013), p. 27, Obrist (2013), pp. 649 et seq., Obrist (2014), p. 815).

[873] See Eidgenössische Steuerverwaltung (2014), pp. 25 et seq., Obrist (2013), pp. 648 et seq., Parillo (2014). For further details on the regimes, see Eidgenössische Steuerverwaltung (2001), Eidgenössische Steuerverwaltung (2013), p. 43, Eidgenössische Steuerverwaltung (2014), pp. 11 et seq., Obrist (2013), pp. 647, Obrist (2014), p. 813.

6.3 Policy options to reform the taxation of IP income

Strikingly low effective tax rates on foreign profits of US multinationals such as Google and Apple recently received much attention triggering a debate about 'aggressive' profit shifting of multinational companies.[874] Indeed, empirical evidence indicates that multinational companies shift profits from high-tax to low-tax countries.[875] In this context, research also points to the fact that intangible assets play an important role for profit shifting.[876] As concluded by Grubert, "opportunities for tax-induced income shifting are strongly influenced by the presence of intangible assets".[877]

The following considerations, which are discussed in more detail in section 2, might explain the special role of intangibles for profit shifting. First, due to their intangible nature, intangible assets do not have a clear geographical connection and can therefore be relocated without (non-tax) costs. Second, taxpayers generally face a considerable amount of discretion when it comes to valuing intangible assets for transfer pricing purposes as comparables rarely exist. Taxpayers may exploit this to their advantage. Third, as intangible assets are important value drivers, a relocation of intangibles involves that a significant share of the group's (future) profits is shifted. Fourth, IP Box regimes offer reduced tax rates for IP income and thereby provide additional incentives to shift intangible-related profits to IP Box countries. Finally, the wide use of thin capitalisation rules, interest barriers and similar interest deduction limitations and the recent trend to extend the scope of such rules[878] might have rendered

[874] See Pinkernell (2012), p. 370, Sullivan (2012), p. 655. For media reports, see Leonhardt, D., Who will crack the code, *New York Times*, 25 May 2013, download: http://www.nytimes.com/2013/05/26/opinion/sunday/who-will-crack-the-code.html?_r=0, Meck, M., Und ewig lockt Holland, *Frankfurter Allgemeine Zeitung*, 1 September 2013, download: http://www.faz.net/aktuell/wirtschaft/recht-steuern/steueroase-und-ewig-lockt-holland-12554976.html?printPagedArticle=true#pageIndex_2, Schön, W., Das große internationale Steuer-Spiel, *Frankfurter Allgemeine Zeitung*, 14 October 2013, download: http://www.faz.net/aktuell/wirtschaft/globale-steuergerechtigkeit-das-grosse-internationale-steuer-spiel-12145394.html?printPagedArticle=true#pageIndex_2, Ducker, J., Google 2.4% Rate Shows How $60 Billion Lost to Tax Loopholes, *Bloomberg*, 21 October 2010, download: http://www.bloomberg.com/news/2010-10-21/google-2-4-rate-shows-how-60-billion-u-s-revenue-lost-to-tax-loopholes.html.

[875] For an overview, see Dharmapala (2014), Heckemeyer and Overesch (2013), Newlon (2000), pp. 221, OECD (2013d), Appendix B.

[876] Grubert (2003) and Dischinger and Riedel (2011) find that the tax sensitivity of pre-tax profits is greater for particularly R&D intensive affiliates. This is interpreted as indirect evidence for profit shifting activities of multinational companies through the distortion of transfer prices of intra-group transactions involving intangibles.

[877] Grubert (2012), p. 263. Grubert's empirical analysis is based on tax data of US-based multinationals.

[878] See Finke et al. (2014), p. 5, Sheppard (2013e), Webber (2010).

profit shifting by way of royalty payments even more attractive compared to profit shifting by means of intra-group debt financing.[879]

In contrast to tax evasion, ('aggressive') tax planning[880] is legal. Most opportunities for tax planning result from international tax rate differentials and the fact that due to the parallel application of the source and the residence principle, multinational companies can influence to a considerable extent where their profits are taxed.[881] It therefore seems legitimate for multinational companies to make use of this leeway to reduce their overall tax burden given the fact that taxes are perceived as costs.[882]

Nevertheless, tax planning which results in tax burdens close to zero or equal to zero (so called 'non-taxation')[883] is not desirable in particular if it results in a competitive disadvantage for certain companies (e.g. SMEs and purely domestic companies) or activities (e.g. business models which do not make use of valuable IP).[884] In addition, there are concerns that tax planning is associated with significant tax base erosion and thereby tax revenue loss, though no reliable empirical evidence on the magnitude of revenue losses is available so far.[885]

In this section, I discuss various options to reform the taxation of IP income which aim at limiting tax base erosion and profit shifting by way of IP tax planning. I consider unilateral, bilateral, and multilateral reform options. In addition to describing the main features of the respective reform option, I point out economic and legal concerns raised by the measures. With respect to the first aspect, I point out to what extent the respective reform option might distort the decision-making of investors, in particular through giving rise to double taxation. With regard to the second aspect, I focus on compliance with the fundamental freedoms codified in the Treaty on the Functioning of the European Union and with the Interest & Royalty Directive.

---

879 See Lodin (2013), p. 1318.

880 See Kahle and Wildermuth (2013), pp. 408 for an overview of the current discussion on the term 'aggressive' tax planning. In its recommendation on 'aggressive' tax planning issued in December 2012, the EU Commission only provides the following vague definition: "Aggressive tax planning consists in taking advantage of the technicalities of a tax system or of mismatches between two or more tax systems for the purpose of reducing tax liability (European Commission (2012), C(2012) 8806 final, p. 2)." For a critical discussion on the EU Commission's understanding of the term 'aggressive' tax planning, see Lang (2013a).

881 See Kahle et al. (2014), pp. 286 et seq., Jacobs et al. (eds.) (2011), p. 8.

882 See Jacobs et al. (eds.) (2011), pp. 917 et seq., Kahle and Wildermuth (2013), p. 408.

883 See OECD (2013d), p. 34.

884 See Fuest (2013), p. 318, Kahle and Wildermuth (2013), p. 410, Kahle et al. (2014), p. 287.

885 See Fuest et al. (2013), pp. 314 et seq. and p. 316.

I differentiate between the perspectives of the 'source country', the 'R&D country', and the 'residence country' of the ultimate parent company of a multinational group. Assuming these different perspectives is important due to the following considerations. First, as pointed out in section 2.3, there is a conflict of interest between the source, the residence, and the R&D country over the allocation of taxing rights. However, this should not imply that countries are either a source country, R&D country, or residence country. In reality, countries may at the same time serve as source country, R&D country, and residence country. Second, tackling profit shifting and tax base erosion in the context of intangible assets requires a coordinated approach which takes these different perspectives into account.

This becomes evident when taking a closer look at 'aggressive' tax planning structures involving intangible assets such as the 'Double Irish Dutch Sandwich' which in general work thanks to the interaction of the following elements of domestic and international tax systems: (i) low tax burden on the initial transfer of IP from the R&D country (the United States of America (US) in this case) to a low-taxed IP Holding, (ii) almost no taxation in the market country as no physical presence is created, (iii) no withholding taxes on royalties paid by corporations resident in the EU as these are rerouted via an EU conduit country which does not levy withholding taxes on royalties (e.g. the Netherlands), and (iv) lax CFC rule which can be easily circumvented in the residence country of the ultimate parent of the group.[886] As a consequence, the R&D country, the source country, the market country, and the residence country of the ultimate parent all go mainly empty handed. This example again illustrates the importance of intangible assets for tax planning.

I do not additionally assume the perspective of the residence country of IP holding companies. From its point of view, implementing an IP Box regime constitutes the most notable policy option. Offering a reduced that rate for IP income by means of an IP Box regime can be considered a 'carrot approach', as opposed to a 'stick approach', to addressing the issue of profit shifting and tax base erosion. Put differently, countries may either increase the attractiveness of their tax system to attract income ('carrot approach') or take measures to prevent profit shifting e.g. by means of interest and license barriers ('stick approach').

This section focuses on 'stick approaches' to tax base erosion and profit shifting involving intangible assets. So far, when it comes to income from intangible

[886] For details, see Darby and Lernaster (2007), Fuest et al. (2013), pp. 310 and 312, Kleinbard (2011a), pp. 706 et seq., Kleinbard (2012), pp. 501 et seq., Pinkernell (2012), Pinkernell (2013a), Sandell (2012).

assets, 'stick approaches' are largely limited to transfer pricing policies. In contrast, countries' alternative ways of profit shifting, most notably intra-group financing, are already widely counteracted by specific anti-avoidance measures.[887] In the following, I therefore focus on specific anti-avoidance measures aimed at counteracting profit shifting through IP tax planning.

6.3.1 Source country perspective

6.3.1.1 Levying withholding taxes on royalty payments

Source countries may reduce the incentive to shift income (and thereby tax revenue) to low-tax countries by levying withholding taxes on royalty income paid to related parties.[888] Withholding taxes render profit shifting to low-tax countries unattractive if they are associated with an extra tax burden. This is the case if the withholding tax burden exceeds the residence country tax burden, provided that the residence country does not refund excess foreign tax credits.[889]

Vis-à-vis tax havens, withholding taxes ensure that income is taxed once and thereby avoid 'non-taxation' of income. To tackle the issue of 'non-taxation', it would be sufficient to levy withholding taxes on royalties paid to countries which do not tax (foreign) royalty income at all. This could be considered as introducing a withholding tax as a mere anti-avoidance measure.[890] However, in this case the residence country could easily ensure that the withholding tax does not apply by increasing its tax rate slightly above zero. This supports the introduction of royalty withholding taxes on a general basis which apply irrespective of the residence country tax level.

Legal concerns

The EU Interest & Royalty Directive, the Savings Directive concluded between the EU and Switzerland, as well as bilateral tax treaties significantly limit the scope of withholding taxes on royalty income.[891] There might, however, be some scope for

[887] See Finke et al. (2014), p. 2.

[888] See Fuest et al. (2013), 319.

[889] An unlimited foreign tax credit may have a similar effect if the taxpayer earns other income which has been subject to a lower source country tax burden. An unlimited foreign tax credit allows the taxpayer to settle his domestic tax liability on other kinds of income as well as on the same kind of income received from another country with the foreign tax credit granted for the withholding tax on royalty payments. Hence, excess tax credits associated with high-taxed foreign income may be offset against the remaining domestic tax liability on low-taxed foreign income. See section 2.2.3.2 for further details.

[890] See Finke et al. (2014), p. 18.

[891] See section 2.3.1.1.

levying withholding taxes as anti-avoidance measures.[892] In addition, EU member states are free to re-negotiate their tax treaties in third country constellations, which do not fall under the scope of the Interest & Royalty Directive, in order to re-introduce withholding taxes on royalty income or levy withholding taxes at higher rates as currently specified in the treaties. Most notably, member states may levy withholding taxes on royalties paid to Liechtenstein as royalty income is not covered by the Savings Agreement between the EU and Liechtenstein.[893]The renegotiation of tax treaties aiming at an extension of source taxation by means of withholding taxes on royalties will probably be a time-consuming and politically difficult task. This is because strengthening source taxation by means of withholding taxes involves that taxing rights be shifted from residence to source countries. This will likely be associated with tax revenue gains of source countries to the detriment of residence countries.[894]

Finally, where double taxation treaties already allow for a withholding tax on royalty income at a rate which exceeds the rates stipulated by domestic tax law, countries may make use of this leeway and raise their domestic rates. However, if domestic licensors are exempt from such a withholding tax, this brings this provision in conflict with primary European law.[895]

Economic concerns

Withholding taxes on royalties also raise economic concerns. They may result in double taxation due to excess tax credits. These arise because residence countries generally limit their foreign tax credits to the domestic tax liability on the respective foreign income. This implies that the amount of foreign tax paid which exceeds the domestic tax burden is not refunded. Even if the withholding tax rate is lower than the residence country tax rate, the withholding tax burden may exceed the residence country tax burden. This is because withholding taxes are generally levied on gross income, whereas corporate income taxes are levied on

892 See Hey (2014), p. 339.

893 See Agreement between the European Community and the Principality of Liechtenstein providing for measures equivalent to those laid down in Council Directive 2003/48/EC on taxation of savings income in the form of interest payments, OJ L379/84. For details, see Lang (2010), p. 564, Terra and Wattel (2012), pp. 782 et seq.

894 See Finke et al. (2014), p. 17. This is also the case if the residence country neither grants a tax credit nor a deduction for the withholding tax rate. The reason for this is that royalties are paid net of withholding tax. Hence, any withholding tax levied at source reduces the amount of royalty income received by the licensor constituting the residence country tax base. As many countries at the same time face an outflow and an inflow of royalty income, the revenue implications are less clear-cut in practice. This is discussed in more detail at the end of this section.

895 Some insights on this issue can be drawn from the ECJ's case law on withholding taxes on dividends and interest. For a summary of this case law, see Terra and Wattel (2012), p. 1060 et seq.

net income involving a deduction for expenses associated with the income.[896] This issue is particularly pronounced in the case of sub-licensing.[897] Double taxation could only fully be avoided if residence countries grant full tax credits.[898]

In case withholding taxes put an extra tax burden on royalty payments (due to excess tax credits) royalty withholding taxes may negatively affect cross-border royalty payments.[899] This is supported by empirical evidence presented by Hines[900] and Grubert,[901] who show that royalty payments to US-multinationals are indeed negatively affected by royalty withholding taxes levied by source countries.[902] However, this possible effect of royalty withholding taxes is in fact the mechanism through which they may render profit shifting to low-tax countries by way of intra-group licensing arrangements less attractive.

What is more problematic is that withholding tax rates on royalties may also affect real investment. First, higher withholding tax rates on royalty income increase the tax costs of imported intangible assets and may thereby discourage technology transfers. As a consequence, increased withholding tax rates on royalty income may positively affect domestic R&D investment if imported intangibles and intangibles created domestically serve as substitutes. In turn, they may negatively affect domestic R&D if foreign and domestic intangible assets are complements.[903] A study by Hines points to the first. His findings indicate that domestic R&D expenditures of US-multinationals are positively affected by

---

[896] See section 2.2.3.2.

[897] This is illustrated by the following example. Assume that company A (resident in country A) licenses-out a patent to company B (resident in country B) which in turn sub-licenses the patent to company C (resident in country C). If company B may not deduct the royalty fee paid to company A from the royalty income received from company C when determining the withholding tax levied in country A, this will likely result in excess foreign tax credits. In case company B applies a mark-up of 5% when sub-licensing the patent, a withholding tax rate of solely 5% on the gross royalty income is associated with an effective source country tax burden of 105% (taking the mark-up as the basis). The reason for this is that the source country levies the withholding tax on the gross royalty income (which amounts to 105 monetary units) instead of on the net royalty income (which amounts to 5 monetary units).

[898] See Finke et al. (2014), p. 17. An unlimited foreign tax credit may have a similar effect if the taxpayer earns other income which has been subject to a lower source country tax burden (see footnote 889).

[899] See Mintz and Weichenrieder (2010), p. 28.

[900] See Hines (1995).

[901] See Grubert (1998).

[902] In contrast to this, Karkinsky and Riedel find that on royalty withholding taxes do not exert a statistically significant effect on patent applications filed by group companies resident in the EU, when considering them separately from the corporate income tax. They interpret this as indicating that foreign royalty withholding taxes in most cases fall short of the corporate tax liability on foreign royalty income. In this case the foreign withholding tax can be fully credited and does not result in an extra tax burden. See Karkinsky and Riedel (2012), p. 184.

[903] See Hines (1999), p. 317.

foreign royalty withholding tax rates.[904] Conversely, a study by Hines and Jaffe on US-multinationals comes to the opposite conclusion; that domestic and foreign R&D are complements.[905] This finding is supported by Hellenstein with respect to Swiss companies.[906] A study by the OECD finally suggests that foreign R&D may act as either a complement or a substitute for domestic R&D activity depending on the characteristics of a country.[907] Hence, no clear cut conclusion can be drawn with respect to the question of how the introduction of a royalty withholding tax might affect domestic R&D investment.

Second, a withholding tax on royalties could also generally deter inbound investment in tangible assets due to the following considerations. Profit shifting, e.g. by way of intra-group licensing arrangements, may diminish the detrimental effects of an increased corporate income tax rate on investment as profit shifting reduces the effective tax burden on investment.[908] By way of limiting multinationals' leeway for reducing the effective tax burden of inbound investment through profit shifting, introducing a withholding tax on royalties could render inbound investment less attractive. To the best of my knowledge, the isolated effects of royalty withholding tax rates on foreign direct investment (FDI) have not been investigated empirically so far. It is therefore necessary to obtain further empirical evidence in order to assess possible effects of royalty withholding taxes on investment. In light of possible negative effects on investment, many countries refrain from levying withholding taxes, as they are concerned this may impair their attractiveness as a location for investment and their competitiveness vis-à-vis other countries.[909]

As potential negative investment effects of royalty withholding taxes first and foremost result from any extra burden associated with source country withholding taxes arising from excess tax credits, the risk of detrimental investment effects can be reduced by introducing a withholding tax at a moderate

[904] See Hines (1995).

[905] According to Hines and Jaffe, US-multinationals show a slower growth of foreign patenting after a tax reform increased the tax cost of carrying out R&D in the US for use abroad. From this they conclude that that domestic R&D and foreign R&D are complements. See Hines and Jaffe (2001).

[906] See Hollenstein (2009).

[907] See OECD (1998b), p. 28.

[908] See Newlon (2000), p. 218. For empirical evidence, see Becker and Riedel (2012), Grubert (2003), Mintz and Smart (2004), Overesch (2009), Overesch and Schreiber (2010).

[909] See Abdellatif (2011), Fuest et al. (2013), p. 318.

rate, provided residence countries grant a tax credit for the withholding tax rate.[910]

As pointed out above, even low withholding tax rates may be associated with excess tax credits if they are applied to gross income. A reform proposal which endorses the application of withholding taxes on royalties could take this issue into account by taxing royalties on a net basis.[911] However, as this would require some kind of mechanism to allocate expenses to royalty income and taxpayers to file a tax return, this would be associated with a greater degree of complexity and administrative burden than levying withholding taxes on a gross basis.[912]

Any possible negative economic effects which are associated with royalty withholding taxes are likely to be most pronounced in the case of a unilateral action of a single country. Therefore, a multilateral approach is more sensible. Reforming or even abolishing the Interest & Royalty Directive does, however, require overcoming the obstacle of achieving unanimity among the 28 EU member states.

Revenue effects

Finally, countries need to consider the revenue implications of the introduction of withholding taxes on royalty income. Although a country might face considerable royalty outflows to affiliates of domestic group companies, the balance of royalty income and payments might be negative; thereby rendering the country a net royalty recipient. In case other countries follow suit by also introducing royalty withholding taxes, such countries may be put in a worse position in terms of revenue effects as the amounts of tax credits granted for foreign withholding taxes would likely rise. Put differently, residence countries are likely to lose from an extension of source taxation by means of withholding taxes.

In a simulation exercise, Fuest et al. show that the effects of a coordinated introduction of royalty withholding taxes not only depend on a country's net balance in royalty flows but also on the composition of withholding taxes. They use aggregate country level data on cross-border royalty flows provided by the OECD to simulate the revenue effects of the coordinated introduction of a royalty withholding tax at a uniform rate of 10% for 12 countries.[913] They point out that the balance of royalty payments and income does not provide definite conclusions about whether the respective country will gain or lose from a general

[910] Tadmore argues in favour of a 'low-medium rate' as regards withholding tax rates acknowledging the source country's "legitimate and material fiscal claim" (Tadmore (2008), pp. 124 et seq.).

[911] See Brooks (2007), p. 180, Schön (2010a), p. 94, Tadmore (2008), pp. 124 et seq,, 128.

[912] See Schön (2010a), p. 94, Tadmore (2008), pp. 125 et seq.

[913] See Finke et al. (2014), pp. 28 et seq.

extension of source withholding taxes. For example, despite the fact that they identify Germany as a net royalty recipient, they find that Germany would overall gain from the coordinated introduction of a 10% royalty withholding tax. This is because the reported tax loss from levying and crediting withholding taxes associated with the reform scenario is lower than under the current tax system.[914]

6.3.1.2 Introducing subject-to-tax or minimum-tax clauses

Subject-to-tax clauses,[915] which link the entitlement for the withholding tax exemption to the taxation of the income in the recipient's residence country, might constitute a more tailored approach to counter the issue of 'aggressive' tax planning than simply introducing a general withholding tax on royalty income.[916] Such a clause should be designed as an 'objective' subject-to-tax clause taking into account whether the royalty payments are subject to tax and not whether the taxpayer is subject to tax in general ('subjective subject-to-tax clause').[917]

Practical and economic concerns

As subject-to-tax clauses only apply if the residence country tax rate equals zero they may be easily circumvented. They furthermore lead to different treatments of economically comparable situations: payments which are tax exempt in the residence country are subject to withholding tax, whereas payments which are subject to a residence country tax rate slightly above zero (e.g. 0.1%) are not.[918] In turn, 'minimum-tax clauses', which also apply in cases where the residence country applies a very low tax rate, have a much wider scope. Nevertheless, determining whether a payment is not subject to tax or only subject to a minimum tax burden, respectively, raises practical difficulties.[919] This inter alia involves the questions of whether such a clause should be based on nominal tax rates or effective tax rates and, in the case of the latter, how such an effective tax rate should be calculated.

A way of working around minimum-tax clauses (as well as subject-to-tax clauses) is to reroute the payments via a conduit country which levies a tax rate just above the minimum tax rate and then to forward the payment to a low-tax country. This

914 They find that such a reform would considerably reduce the negative tax revenue balance (see Finke et al. (2014), pp. 31).

915 The term 'subject-to-tax clause' is also applied with respect to conditions attached to the exemption of dividend income in the residence country (see Eicke (2013b), p. 1035).

916 See Baumhoff and Liebchen (2014), p. 716.

917 See Martinho Fernandes et al. (2011), p. 405.

918 See Lang (2013a), p. 64, Lang (2013b), p. 367.

919 See Lang (2013a), p. 64, Lang (2013b), p. 367.

would only slightly increase the overall tax burden, as only a mark-up on the royalty payment would be subject to tax in the conduit country. The Netherlands are, for example, a popular conduit country for intra-group royalty payments.[920]

To counter this issue, the tax rate applicable to the royalty payments in the hands of the original IP owner should be decisive for determining the tax credit. To administer this, the taxpayer should be obliged to reveal the owner of the intangible asset which forms the basis of the license agreement.[921]

Legal concerns

So far, subject-to-tax clauses are rarely applied in practice, in particular when it comes to source, as opposed to residence, taxation.[922] In its 'Recommendation on aggressive tax planning' issued in December 2012, the EU Commission encourages member states to include an objective subject-to-tax clause in their double tax treaties.[923] Introducing minimum-tax clauses would even constitute a novelty in bilateral tax treaties.

Implementing subject-to tax or minimum-tax clauses on a unilateral basis may constitute a tax treaty override[924] which is considered to be incompatible with constitutional law in some countries.[925] General treaty provisions which give treaty parties the right to levy domestic anti avoidance provisions[926] do not necessarily safeguard subject-to tax/ minimum-tax clauses from the risk of constituting a treaty override, as it is debatable whether subject-to tax clauses and in particular minimum-tax clauses are targeted at tax avoidance. In cases where taxpayers benefit from a tax regime such as an IP Box which allows for a significantly reduced tax rate for certain kinds of income, this cannot be labelled tax avoidance as taxpayers simply make use of international tax rate differentials

920 See Fuest et al. (2013), p. 312, Verlinden and Smits (2009), p. 242.

921 See Lodin (2013), p. 1318.

922 See Eicke (2013b), p. 1035, Lang (2004), pp. 106 et seq., Lang (2013a), p. 64, Lang (2013b), p. 367. For the German treaty practice, see Linn (2010), pp. 351 et seq., Lüdicke (2008), p. 94.

923 See EU Commission, C(2012) 8806 final of 6 December 2012, recital 3. The Commission Recommendation proposes the following wording: "Where this Convention provides that an item of income shall be taxable only in one of the contracting States or that it may be taxed in one of the contracting States, the other contracting State shall be precluded from taxing such item only if this item is subject to tax in the first contracting State".

924 For a definition of the term, see OECD (2012d), p. R(8)-2, Sachdeva (2013b), pp. 468.

925 See Gerzova and Popa (2013), p. 422, OECD (2012d), pp. R(8)-5 et seq., Sachdeva (2013a), pp. 181 et seq., Van Weeghel (2010), p. 28. For further details, see International Fiscal Association (ed.) (2010). With respect to Germany see Jacobs et al. (eds.) (2011), p. 84, Linn (2010), pp. 340 et seq. and Eicke (2014b) for recent developments.

926 See Van Weeghel (2010), pp. 43 et seq.

without necessarily infringing the spirit and purpose of the law, a commonly employed definition for tax avoidance.[927]

So far, the Interest & Royalty Directive does not include a subject-to-tax clause with respect to royalties received by corporations.[928] It therefore bans withholding taxes on intra-group royalty payments irrespective of the level of taxation of the royalty income in the hands of corporate recipients. As a consequence, royalty income can go fully untaxed ('non-taxation') if the residence country of the recipient exempts royalty income from corporate income tax. The Maltese IP Box regime, providing a full tax exemption of royalty income, constitutes an example of this.

However, a proposal to revise the Interest & Royalty Directive published by the EU Commission in 2011 includes a subject-to-tax clause linking the exemption of interest and royalties from withholding tax to the requirement that such income be effectively subject to tax in the recipient's country of residence.[929] According to the proposal, the amended Article 1(1) of the Directive reads: "Interest or royalty payments arising in a Member State shall be exempt from any taxes imposed on those payments in that Member State (…) provided that the beneficial owner of the interest or royalties is a company of another Member State (…) and is effectively subject to tax on the income deriving from those payments in that other Member State."

The last part of the sentence, which was added, constitutes an objective subject-to-tax clause[930] as it requires that the interest and royalty payments be subject to tax, whereas it would not be sufficient that the beneficial owner of the interest or royalties be, in general, subject to tax. Implementing this amendment would be a sensible first step in countering non-taxation of royalty income.[931] This would, for example, allow member states to levy a withholding tax on royalty income paid to a corporation resident in Malta, provided the royalty income benefits from the full exemption granted by the Maltese IP Box regime. In contrast, cases where such income is subject to a very low effective tax burden, for example due to the

[927] See Evans (2009), pp. 531 et seq., Hoffmann (2005), p. 204, Hoor and Bock (2013), p. 913. Hoffmann criticizes this perception (see Hoffmann (2005), pp. 204 et seq.).

[928] See Terra and Wattel (2012), p. 774. Article 1 (5)(b) of the Directive does, however, include a 'subjective' subject-to-tax clause with respect permanent establishments (PE) requiring that the PE is subject to corporate income tax (see Terra and Wattel (2012), p. 774). The recitals also emphasise that "it is necessary to ensure that interest and royalty payments are subject to tax once in a Member State" (see recital 3 of the Council Directive 2003/49/EC).

[929] See Article 1 (1) COM(2011) 714 final, p. 14, Terra and Wattel (2012), p. 760.

[930] See Martinho Fernandes et al. (2011), p. 405.

[931] Martinho Fernandes et al. also argue in favour of implementing an 'objective subject to tax clause' in the Directive (see Martinho Fernandes et al. (2011), p. 407.

application of any other IP Box regime, would not be covered by this clause. Hence, in order to address profit shifting and tax base erosion to the other 12 IP Box countries, a minimum-tax-clause would be required.

Finally, an additional concern is that subject-to-tax/ minimum-tax clauses might violate the fundamental freedoms. This is because non-residents would in most cases be put at a disadvantage, as the subject-to-tax/ minimum-taxation requirement would generally be fulfilled with respect to royalties paid to resident corporations. A detailed analysis of this issue is, however, beyond the scope of this thesis.

6.3.1.3 Restricting the deduction of royalty payments

A more far-reaching but also less targeted approach to counter profit shifting through intra-group licensing arrangements is to generally restrict the deduction of royalty payments. This ensures that royalty income is taxed at least once, namely in the source country, thereby avoiding 'non-taxation' of royalty income. Such a royalty deduction limitation could take the form of a 'license barrier' similar to the German interest barrier provision implemented in 2008.[932] This would imply that royalties are only deductible up to a certain percentage of the earnings before interest, tax, depreciation, and amortisation (EBITDA)[933] or rather the earnings before interest, licenses, tax, depreciation, and amortisation (EBILTDA).[934] The German interest barrier uniformly applies to interest paid to related and unrelated parties as well as to purely domestic and cross-border transactions. Remedy is provided by not applying the restriction in the case of companies which do not form part of a group, and if net interest expenses do not exceed EUR 3 Million. A license barrier could also involve such exception clauses.

Austria recently introduced a general deduction limitation for royalties and interest paid to related corporations resident in Austria or abroad.[935] The deduction of these payments does, however, not depend on an expenses-to-

[932] See Ault (2013), p. 1199, Ditz et al. (2014), p. 46, Fuest et al. (2013), p. 318, Finke et al. (2014), p. 13, Pinkernell (2013b), p. 742, Rödder and Pinkernell (2013), p. 622. By the end of 2014, similar provisions are in place in 7 other EU member states, namely Bulgaria, Finland, Greece, Italy, Portugal, and Spain. See IBFD Tax Handbook (2014), section 7.3 of the respective country chapter for Bulgaria and Finland, section 1.3.3 for Italy, section 7.5.2 for Portugal, section 7.5.1 for Spain. For Bulgaria, see IBFD Tax Research Platform, Corporate Taxation, Country Analysis Bulgaria, sections 10.3 (version October 2014). For an overview, see Finke et al. (2014), pp. 5 et seq. and Hey (2014), pp. 335 et seq.

[933] The interest barrier rules in place in the countries mentioned above apply a threshold or 25% or 30% of the EBIT(DA). Rödder and Pinkernell reject the idea of introducing a restriction of the deductibility of license payments based on a royalties-to-EBITDA ratio (see Rödder and Pinkernell (2013), p. 622).

[934] See Joachimsen and Bildstein (2014), p. 306.

[935] See Article 12 (1)(10) KStG (Austrian corporate income tax law). For details, see section 2.2.3.

EBIT(DA) ratio but on the tax level in the residence country. That is royalties (and interest) paid to a related company may not be deducted from the corporate income tax base if they are subject to a tax rate or an actual tax burden of less than 10%.[936]

Durst proposes a similar deduction limitation which aims at preventing tax base erosion.[937] The proposed provision involves that the deduction of expenses of any kind[938] paid or incurred for intra-group transactions be denied in case these (totally or partly, directly or indirectly) accrue to a tax resident of a low-tax country[939] which generates income exceeding the local operating expenses by 75%.[940] This proposed deduction limitation combines a low-taxation requirement with an income-to-expenses-ratio. The underlying objective is to target the provision at cases in which a multinational group of companies shifts income to a low-tax country in amounts that greatly exceed regular levels of return. In this regard, Durst considers a return of more than 75% to exceed any return "that even the most successful manufacturing or service businesses typically earn at arm's length."[941] He does, however, not provide any evidence which supports this claim.

Legal concerns

As the Austrian royalty and interest deduction limitation affects the payer of a license fee but not the recipient, it is not in conflict with the Interest & Royalty Directive. This can be concluded from the ECJ case 'Scheuten Solar' on a provision of the German trade tax which stipulates that a fraction of royalty payments are not deductible from the trade tax base (so called 'trade tax addition')[942].[943]

---

936 The parties of the current German coalition have also discussed the introduction of a comprehensive royalty deduction limitation in their coalition negotiations. The final coalition agreement indicates that they consider implementing a royalty deduction restriction which is based on the taxation of royalty income in the residence country of the recipient (see CDU, CSU, and SPD (2013), p. 91, the text reads: „Auch wollen wir sicherstellen, dass der steuerliche Abzug von Lizenzaufwendungen mit einer angemessenen Besteuerung der Lizenzerträge im Empfängerland korrespondiert.").

937 See Durst (2013a), p. 467.

938 Durst explicitly mentions the following payments: deductions for the cost of goods purchased for resale, royalties, interest, insurance premiums, payments for factoring services, payments for rental of property, depreciation allowances, and other capital allowances regarding property purchased from related parties (see Durst (2013a), p. 466).

939 The proposal involves that a tax rate of less than 20% triggers the deduction limitation.

940 See Durst (2013a), p. 466.

941 Durst (2013a), p. 467.

942 The provision involves that 6.25% of the royalties paid for the temporary assignment of IP rights have to be added back to the trade tax base. See Article 8 (1)(f) GewStG (German Trade Tax Law).

In order to furthermore ensure the compatibility of the provision with the fundamental freedoms, the Austrian royalty and interest deduction limitation is not limited to cross-border payments.[944] The same applies to the German interest barrier. A royalty deduction limitation which is limited to royalties paid to foreign residents would restrict the free movement of services.[945] In fact, the German interest barrier was introduced as a reaction to the ECJ case 'Lankhorst-Hohorst',[946] which found that the former thin capitalisation rule, which de facto did not apply in the case of purely domestic constellations,[947] violated the freedom of establishment.[948]

Although the Austrian provision generally applies to royalties paid to residents and non-residents alike, the low-taxation-condition first and foremost applies in the case of foreign licensors.[949] According to the explanatory notes accompanying the implementation of the provision, the restriction inter alia, but not solely, aims at counteracting intra-group profit shifting by means of interest and royalty payments to low-tax countries (including those operating special tax regimes).[950] Wimpissinger calls the extension of the deduction limitation to interest and royalties paid to domestic residents a 'fig leaf'.[951] In this context it is also interesting to note that the two examples presented in the explanatory notes concern cross-border constellations, whereas no example for a purely domestic constellation is provided in which the deduction limitation applies.[952] The former German thin capitalisation rule was also not tailored to purely cross-border constellations. Nevertheless, the court pointed out that in the majority of cases it

[943] See ECJ, 21 September 2011, case C-397/09, 'Scheuten Solar', 2011 ECR I-0000. For a discussion of the implications of this case, see Ditz et al. (2014), p. 46 footnote 15, Hey (2014), p. 339, Peyerl (2014), p. 575, Terra and Wattel (2012), pp. 762 et seq., Trinks (2014), p. 216.

[944] See Article 12 (1)(10)(a) KStG (Austrian corporate income tax law), Peyerl (2014), p. 572.

[945] See Ditz et al. (2014), p. 46.

[946] See ECJ, 12 December 2002, case C-324/00, 'Lankhorst-Hohorst', 2002 ECR I-11779.

[947] The former thin capitalisation rule involved that interest paid to substantial shareholders was recharacterised as dividends in case a certain debt-to-equity ratio was exceeded. Article 8a (1) sentence 2 KStG in the version from 15 October 2002 (German Corporate Income Tax Code) did, however, provide an exemption from this in case the interest was subject to tax assessment in Germany in the hands of the shareholder providing the loans and receiving the interest payments.

[948] See Terra and Wattel (2012), pp. 729 et seq.

[949] See Beiser (2014), p. 263, Peyerl (2014), p. 573.

[950] See explanatory notes to the Abgabenänderungsgesetz 2014 (Tax Code Amendment Act), p. 13, download: https://www.bmf.gv.at/steuern/RV_EB_AbgAeG_2014.pdf?47t96r.

[951] See Wimpissinger (2014), p. 221.

[952] See explanatory notes to the Abgabenänderungsgesetz 2014 (Tax Code Amendment Act), p. 14, download: https://www.bmf.gv.at/steuern/RV_EB_AbgAeG_2014.pdf?47t96r.

de facto applied to cross-border constellations but not to purely domestic ones.[953] Peyerl points out that equal treatment of domestic and cross-border cases is only ensured in a formal sense.[954] Hence, it is debatable whether the newly enacted Austrian royalty and interest deduction limitation complies with primary EU law.[955]

Economic concerns

General deduction limitations may give rise to a tax liability despite the fact that the taxpayer does not generate profits (so called 'indirect non-profit taxation'[956]). In the case of the Austrian provision, this is self-evident as it does not take into account whether the taxpayer actually generates profits. A license barrier following the design of the German interest barrier may also result in indirect non-profit taxation, as the amount of non-deductible expenses is determined drawing on EBITDA which may still be positive despite negative operating income. Such provisions are therefore subject to severe criticism.[957] In relation to this, a point of criticism is that due to their general nature, comprehensive deduction limitations, such as the German interest barrier, are not well-targeted at limiting tax avoidance but may also affect transactions which are mainly driven by business considerations and are thereby perceived as legitimate.[958]

Another concern is that general royalty deduction limitations may result in double taxation if they are not limited to the case that the residence country fully exempts royalty income ('non-taxation').[959] This is because foreign tax credits for royalty income are generally only granted with respect to foreign withholding taxes but not with respect to corporate income taxes paid on non-deductible expenses. This issue is raised by the Austrian deduction limitation as well as by any license barrier following the design of the German interest barrier. By way of recharacterising interests as dividends, this issue can be countered.[960] If the residence country accepts the re-characterisation and consequentially exempts

[953] See ECJ, 12 December 2002, case C-324/00, 'Lankhorst-Hohorst', 2002 ECR I-11779, recital 28. For details, see Wimpissinger (2014), p. 224.

[954] See Peyerl (2014), p. 572.

[955] See Peyerl (2014), p. 572, Wimpissinger (2014). A detailed analysis of this issue is beyond the scope of this thesis.

[956] See Spengel and Zinn (2011), p. 497, Ditz et al. (2014), p. 46.

[957] See Eilers and Bühring (2009), p. 137, Herzig and Bohn (2009), p. 257, Kessler and Eicke (2007), p. 266.

[958] See Ditz et al. (2014), p. 47, Fuest et al. (2013), p. 318. The line between tax avoidance and tax planning is difficult to draw. See Evans (2009), pp. 532, Hoor and Bock (2013), p. 913, Russo (2007), pp. 49 et seq.

[959] See Ditz et al. (2014), p. 47, Fuest et al. (2013), p. 318, Peyerl (2014), p. 572.

[960] See Finke et al. (2014), p. 14, Kessler and Knörzer (2008), p. 428.

the income, double taxation is in fact avoided.[961] However, even with respect to interest income, this is only rarely applied in practice.[962] Although this approach could generally also be applied with respect to non-deductible royalties in the case of intra-group royalty payments, the practical benefits of such a rule are limited as it only works with respect to payments made to the parent company.

The fact that deduction limitations will likely result in double taxation indicates that they might negatively affect FDI.[963] Hong and Smart point out analytically that it is not optimal to fully eliminate tax planning possibilities e.g. by means of operating thin capitalisation rules. In contrast, restricting thin capitalisation only to a certain degree by means of thin capitalisation rules may be welfare-improving.[964] Empirical evidence on the investment effects of (interest) deduction limitations is, however, still scarce. Exploiting a dataset on foreign affiliates of German multinationals, Buettner et al. show that thin capitalisation rules increase the adverse effects of taxes on FDI. More specifically, for host countries with relatively high tax rates they report that thin capitalisation rules are associated with a decline of FDI.[965] As deduction limitations for royalties are a new phenomenon, they have not been investigated empirically so far.

[961] See Weiß (2005), p. 175 et seq., Zielke (2010), p. 82. Zielke presents a survey which draws on the provisions of domestic thin capitalisation rules and bilateral double taxation treaties identifying for which country pairs of OECD countries double taxation arises.

[962] See Bohn (2009), pp. 113 et seq., Brown (2012), p. 36, Hinny (2008), p. 23, Kessler and Eicke (2007), p. 266, Zielke (2010), p. 82. Currently, only Belgium and Luxembourg apply this approach. See IBFD Taxation Platform, Corporate Taxation, Country Analysis Belgium, section 10.3 (version November 2014), Country Analysis Luxembourg, section 10.3 (version November 2014). In addition, Austria and Germany operate so called hidden profit distributions rules which also involve that certain interest is recharacterised as dividend. See IBFD Taxation Platform, Corporate Taxation, Country Analysis Austria, section 10.3 (version December 2014), IBFD Taxation Platform, Corporate Taxation, Country Analysis Germany, section 10.3 (version November 2014).

[963] See Finke et al. (2014), p. 14.

[964] See Hong and Smart (2010). They explore the effects of a thin capitalisation restriction on the amount of the high-taxed affiliate's deductible interest expenses as a proportion of capital.

[965] See Buettner et al. (2014).

6.3.1.4 Inverted tax credit

The concept of an 'inverted tax credit' replaces the deduction of certain expenses with a tax credit which depends on the tax rate applied to the payment in the hands of the recipient. This reform proposal was first put forward by Lodin with respect to interest payments.[966] In a subsequent article he suggested to extend this to royalty payments.[967]

His proposal states that in the case of external lenders and licensors, respectively, the tax credit should be based on the domestic corporate income tax rate. However, in the case of intra-group transactions, the lower of the domestic tax rate and the tax rate which applies to the payments in the hands of the recipient is decisive when determining the tax credit.[968] Hence, in the case of a payment to a domestic recipient who is subject to the regular corporate income tax rate, the tax credit would exactly equal the value of the deduction of the payment from the domestic corporate income tax base.

In contrast, in the case of a foreign recipient which is subject to a tax rate below the domestic tax rate, the tax credit falls below the value of the tax deduction. As a consequence, payments to low-taxed recipients are subject to an effective tax burden which is equal to the source country tax rate.[969] Hence, income shifting to low-tax countries by way of intra-group licensing agreements does not achieve its aim of shielding profits from source taxation and benefitting from lower foreign tax rates.

However, such a provision, if applied on a unilateral basis, could easily be circumvented by using conduit companies in countries which operate a tax rate equal to the domestic tax rate. It would be difficult for local tax administrations to monitor chains of payments and to identify the ultimate recipient. Lodin therefore suggests that for royalty payments such a mechanism should be administered by demanding that the taxpayer reveal the owner of the intangible asset to which the license agreement relates. Only the tax rate applicable to the royalty payments in the hands of the original owner of the IP would be decisive for determining the tax credit.[970]

966 See Lodin (2011).

967 See Lodin (2013), p. 1318.

968 See Lodin (2011), p. 178.

969 For a numerical example, see Finke et al. (2014), p. 15, Lodin (2011), p. 179.

970 See Lodin (2013), p. 1318.

Legal concerns

When regarding the compatibility with the Interest & Royalty Directive, basically the same conclusions can be drawn as in the case of the Austrian deduction limitation provision. Drawing on the ECJ case 'Scheuten Solar' the fact that the inverted tax credit affects the payer of a license fee and not the recipient points to the conclusion that the provision is not in conflict with the Directive.[971]

With respect to the issue of EU law compatibility, Lodin stresses that the provision is designed to uniformly apply to payments to domestic and foreign resident recipients. Consequently, intra-group payments to domestic resident companies which are subject to a lower tax burden or even tax exempt would also be affected by the provision.[972] Hence, any higher tax burden of the domestic licensee arising from the application of the inverted tax credit would not be due to the fact that the licensor is resident abroad but that he is subject to a lower tax rate than the licensee. Based on this, Lodin claims that the inverted tax credit as proposed by him does not violate primary EU law as the same mechanism applies to domestic and cross-border payments.[973]

Nevertheless, one can object, that the inverted tax credit first and foremost results in a higher tax burden of transactions with foreign residents, provided they are resident in a low-tax country. In this regard, the reservations raised in the previous section with respect to the interest and royalty deduction limitation recently introduced in Austria equally apply, namely that equal treatment of domestic and cross-border cases is only ensured in a formal sense.

Economic concerns

The inverted tax credit mechanism involves that the combined tax burden of the royalty payments depends on the lower of the source and the residence tax rate. In contrast to pure deduction limitation provisions, double taxation can therefore be largely avoided. However, as the inverted tax credit mechanism disregards expenses incurred by the licensor, it does not generally eliminate double taxation. This is illustrated by the example presented in table 27.

---

971 See Lodin (2013), p. 1319.

972 See Lodin (2011), p. 178. Drawing on the case of Sweden, Lodin points out that the domestic recipient could be subject to a lower tax rate due to a lower municipal tax rate. The paper does not comprise a detailed analysis of the compatibility of an inverted tax credit with the fundamental freedoms and the Interest & Royalty Directive.

973 See Lodin (2011), pp. 178 et seq.

Table 27: Tax burden associated with the application of the inverted tax credit

	Regular tax system		Inverted tax credit	
Residence country tax rate	10%	30%	10%	30%
Source country				
Tax base	0	0	100	100
Source country tax before ITC	--	--	30	30
ITC	--	--	10	30
Source country tax burden	0	0	20	0
Residence country				
Royalty income	100	100	100	100
expenses	50	50	50	50
Tax base	50	50	50	50
Residence country tax burden	5	15	5	15
Overall tax	5	15	25	15

Abbreviations: ICT – Inverted Tax Credit

Assumptions: Source country tax rate 30%; Earnings before royalty expenses: 100 monetary units; royalty expenses: 100 monetary units; expenses incurred by the licensor: 50 monetary units.

This issue is particularly pronounced in the case of sub-licensing. The reason for this is that the inverted tax credit involves source taxation on a gross basis whereas residence taxation occurs on a net basis. In this regard, the double taxation issues raised by the inverted tax credit are similar to the issues pointed out with regard to withholding taxes. On an overall basis the double taxation risk is smaller in the case of the inverted tax credit as it explicitly takes into account the residence country tax rate whereas withholding taxes do not.

Finally, as the inverted tax credit implies that the source country tax burden becomes definite, the concerns regarding possible negative effects on inward investment raised in relation to royalty withholding taxes or a general restriction of the deduction of royalty expenses in principle also apply here.[974] Potential negative investment effects might even be larger under inverted tax credits than under (moderate) withholding tax rates as the full source country tax burden applies in all cases.

[974] See Finke et al. (2014), p. 16.

6.3.1.5 Tightening transfer pricing rules for royalty payments

In light of international tax rate differentials, transfer prices for intra-group transactions such as intra-group licensing or the transfer of intangible assets may be used as a means of 'tactical tax planning'[975] to shift income to low-tax entities of multinational groups of companies in order to minimise the overall tax burden of the group. In this regard, multinationals have an incentive to understate the value of intangibles transferred to IP holding companies resident in low-tax countries and to overstate royalty fees paid by high-tax affiliates.[976] Income shifting through the manipulation of transfer prices is possible due to the considerable leeway which taxpayers face when it comes to determining transfer prices.[977] As Nielsen and Raimondos-Møller nicely put it: "when transfer pricing starts to get somewhat fuzzy, it is only natural for multinationals to consider selecting those values of transfer prices which will assist in minimizing the multinationals' overall tax burden."[978] This is particularly pronounced in the case of intangible assets which increasingly constitute the decisive value generators within multinational companies and which are difficult to rate due to their uniqueness and the absence of market transactions providing comparables.[979]

By ensuring that royalty fees are adequate, tax legislators may limit tax base erosion by means of the deduction of royalty payments.[980] Hence, when it comes to strengthening source taxation, tightening transfer pricing rules for intra-group royalty payments constitutes an alternative to denying the deduction of royalty payments or levying royalty withholding taxes.[981] Indeed, empirical evidence indicates that multinationals shift profits by way of intra-group transfer pricing[982] and that this is closely related to the creation and the use of intangible assets within multinational groups of companies.[983]

---

975 See Kratz (1986), p. 29 and section 2.3.

976 For further details on the relevance of transfer pricing in IP tax planning models see section 2.3.

977 See Nielsen and Raimondos-Møller (2012), pp. 28 et seq., Luckhaupt et al. (2012), pp. 91 et seq.

978 Nielsen and Raimondos-Møller (2012), p. 28.

979 See Li (2012), p. 82.

980 See Fuest et al. (2013), p. 319.

981 See Graetz and Doud (2013), p. 414.

982 For a review of the literature, see Caves (2007), pp. 245, Heckemeyer and Overesch (2013). The meta-analysis by Heckemeyer and Overesch indicates that profit shifting by means of intra-group transfer pricing is more important than profit shifting through intra-group debt-financing.

983 With respect to US multinationals and foreign subsidiaries, Grubert (2003) shows that intra-group income shifted from high to low tax countries is mainly driven by industrial intangibles such as patents and know-how linked to R&D. He furthermore shows that multinational companies which are particularly R&D-intensive engage in significantly larger volumes of intra-group transactions involving greater opportunities for profit shifting. Drawing on data of German multinationals and their

Lohse and Riedel show that multinational profit shifting activities, measured by the sensitivity of corporate pre-tax profits to changes in the corporate tax rate, are significantly reduced when countries introduce or tighten their transfer pricing documentation requirements.[984] Their results furthermore indicate that introducing transfer pricing penalties additionally dampens income shifting, though the reported effect is smaller than the effect reported for transfer pricing documentation requirements. A comparative survey of the transfer pricing regulations by Lohse and Riedel indicates that many member states of the EU and the OECD still have some room for tightening their transfer pricing rules in particular with regard to documentation requirements.[985]

When it comes to revising the substantive transfer pricing rules for intangible assets, a coordinated initiative at the OECD level is required. The revision of chapter six of the transfer pricing guidelines which is currently under way aims to address the complex and numerous issues associated with determining transfer prices for transactions involving intangible assets.[986] This also forms part of the agenda of the OECD's BEPS project. Action no. 8 of the OECD's action plan for addressing BEPS involves developing transfer pricing rules which prevent base erosion and profit shifting by means of the intra-group transfer of intangible assets. Many commentators do, however, raise doubts as to whether the revision of transfer pricing rules relating to intangible assets will prove fruitful with regard to limiting tax base erosion and profit shifting.[987]

They consider the recognition of contracts between affiliated corporations for tax purposes to be a fundamental structural flaw of the prevailing transfer pricing rules. Some commentators therefore question separate accounting as the basis of the taxation of multinational groups of companies.[988] The concept of a Common

---

wholly-owned affiliates, Overesch and Wamser (2009) show that R&D activities are highly tax-sensitive, though they do not provide direct evidence for profit shifting. Overesch and Schreiber (2010) indicate that the tax sensitivity of intra-group transactions to a large degree depends on the R&D intensity of multinationals. Dischinger and Riedel (2011) find that the lower the statutory tax rate faced by a subsidiary compared to all other affiliates of a multinational group, the larger the amount of intangible assets held by this subsidiary. The fact that multinational companies strategically locate high-value patents in low-tax countries, as shown by Karkinsky and Riedel (2012) and Boehm et al. (2012), also points in this direction.

984 See Lohse and Riedel (2013). Similarly, a study by Bartelsman and Beetsma (2003) finds that the degree of enforcement of transfer pricing rules, as measured by their enforcement indicator, negatively affects income shifting.

985 See Zinn et al. (2014), pp. 366 et seq.

986 See Silberztein (2011),

987 See Avi-Yonah and Benshalom (2011), Graetz and Doud (2013), pp. 415 and 417, Sullivan (2010), p. 9.

988 See Avi-Yonah and Benshalom (2011), Durst (2010), p. 249, Vann (2010), p. 334.

Consolidated Corporate Tax Base (CCCTB), which is the most notable alternative approach to taxing multinational groups, is briefly discussed in section 6.3.5.2.[989]

If the transfer pricing system is, however, upheld, retroactive price adjustment clauses may help tax legislators to address the issues raised by the uncertainties and the leeway for profit shifting associated with the valuation of intangible assets for transfer pricing purposes. They may do so by stipulating that license fees be retroactively adjusted in case the actual income earned by the licensee from exploiting the intangible asset deviates from the expected income which formed the basis of the transfer price determination. Most notably, retroactive price adjustment clauses are currently in place in the US and Germany. They apply in case of the transfer of intangible assets.[990] However, similar provisions could also be applied in case of licensing arrangements. Retroactive price adjustment clauses are criticised on the belief that they are introducing the use of hindsight and violating the arm's length principle. These issues are discussed in more detail in section 6.3.2.1 which addresses retroactive price adjustment clauses as a means to counter profit shifting from the perspective of R&D countries.

[989] For an alternative approach, see Avi-Yonah and Benshalom (2011).

[990] For details, see section 6.3.2.1.

6.3.2 R&D country perspective

The country in which the R&D activity is performed seeks to ensure that it receives an appropriate share of the 'tax pie' associated with the income from intangible assets created within its borders. This involves preventing that valuable IP be transferred tax-free to another country and ensuring that domestic contract R&D providers be adequately reimbursed. From the R&D country's perspective the focus is therefore first on transfer pricing rules which ensure that, at the point of time of a transfer of intangible assets, it may tax the future profits associated with these assets constituting hidden reserves. Second, the R&D country seeks to receive an appropriate share of the future profits from exploiting intangible assets which are created via contract R&D performed in its territory.

The analysis of effective tax rates under IP tax planning in chapter 5 shows that in order to prevent profit shifting and tax base erosion by way of the intra-group disposal of intangible assets, the key element is setting a transfer price which truly reflects the profit potential of the intangible. As pointed out in section 2.2.2, the transfer pricing analysis mainly comprises two aspects: (i) whether a related party transaction, for example the transfer of an intangible asset, is generally accepted for tax purposes, and (ii) whether the transfer price set for the transaction is considered to be in line with the arm's length principle.

Both aspects serve as a starting point for the R&D country to address base erosion and profit shifting via IP tax planning. First, R&D countries may disregard certain intra-group transactions on the grounds that the contractual arrangement does not conform to the parties' conduct. More specifically, R&D countries may tighten the substance requirements applied to contract R&D and cost contribution agreements. If an entity commissioning R&D lacks the degree of economic substance which is required to effectively bear the risks associated with contracting out R&D, the R&D country may argue that the entity performing the R&D activity is entitled to the intangible-related returns instead of the commissioning party.[991] In line with this, the current draft for a revised chapter six of the OECD transfer pricing rules involves tighter substance requirements for contract R&D arrangements.[992]

[991] Brauner argues that cost contribution arrangements which involve that a party solely contributes funds but neither contributes intangible assets nor performs R&D activity should even be fully repealed for tax purposes (see Brauner (2010), p. 566).

[992] "Where the legal owner outsources most or all of such important functions to other group members, the entitlement of the legal owner to retain any material portion of the return attributable to the intangibles after compensating other group members for their functions is highly doubtful (OECD (2013b), p. 23 recital 80)." For an illustration of this issue, see the examples presented in the draft for

In the following, I focus on specific measures which relate to the second aspect, the termination of transfer prices. R&D countries may, for example, claim a larger share of the intangible-related income by raising the mark-ups applied when determining the contract R&D fee within the scope of the cost-plus method or by even applying the profit-split method instead.

For the sake of completeness, it should be pointed out that an alternative strategy is to render the R&D country's tax system more attractive for the exploitation of intangible assets in order to avoid valuable IP being transferred abroad. Put differently, R&D countries could apply a 'carrot approach' which aims at attracting income instead of a 'stick approach' which tries to keep IP and IP income in the country.[993] The tax rate on IP income constitutes the most important parameter of such a 'carrot approach'.[994] In fact, the implementation of the UK Patent Box in 2013 was driven by such considerations.[995]

6.3.2.1 Retroactive price adjustment clauses

Retroactive price adjustment clauses may help tax legislators to address the issues raised by the uncertainties associated with the valuation of intangible assets. In case such clauses also allow for retroactive adjustments in favour of the taxpayer, taxpayers additionally benefit from increased legal certainty. So far, adjustment clauses are rarely applied in practice. In Germany, the business restructuring provisions which apply when transferring a whole business function (so called 'Funktionsverlagerung') include a price adjustment clause.[996] In the US, the so called 'commensurate with income standard' which governs the transfer of intangible assets involves a retroactive price adjustment.

The 'commensurate with income standard'[997] aims at resolving some of the uncertainties associated with the determination of transfer prices for intangible assets which are transferred abroad.[998] The provision first emphasises that the arm's length price paid upon the disposal of an intangible asset must reflect the

a revised chapter 6 of the OECD transfer pricing guidelines (see OECD (2013b), pp. 60 et seq., examples 11 to 14, OECD (2014b), pp. 110 et seq., examples 15 to 18). For a discussion of this issue, see Sullivan (2013a).

993 See Pantaleo et al. (2013), p. 4.

994 See Sheppard (2011), p. 988.

995 See HMRC (2011), p. 5, Griffith and Miller (2011), p. 231, Sapirie (2011), p. 915.

996 See Article 1 (3) sentences 11 and 12 AStG (German Foreign Transaction Tax Act), Oestreicher (2011), p. 128.

997 This provision was implemented in the US Internal Revenue Code (IRC) in 1986 and was later accompanied by a 'periodic price adjustment rule'. For the legislative history, see Boos (2003), pp. 96 et seq., Treasury Department and Internal Revenue Service (eds.) (1988), pp. 45 et seq.

998 See Wittendorf (2012b), p. 91.

income generated from exploiting the asset.[999] Second, it implies that facts and circumstances which were not forecasted at the time of the transfer nevertheless have to be taken into account retroactively.[1000] Hence, the provision stipulates that the US tax administration may adjust the transfer price in the years following the disposal in case the amount is no longer commensurate with the income generated by the acquiring party from exploiting the asset. According to Brauner, this provision constitutes "one of the potentially most potent tools" in the US tax administration's "arsenal",[1001] though he observes that the US tax administration hardly makes use of it.[1002]

The commensurate with income standard allows for several safe harbour rules which relieve the taxpayer from the requirement of retroactive price adjustments, most notably in case of transactions involving the same or comparable intangibles if certain conditions are met.[1003] In addition, the tax administration's right to make a retroactive price adjustment expires if no adjustment has been necessary in the five years following the transfer.[1004]

The US commensurate with income standard has been subject to criticism by other countries as well as by the OECD. They argue that it violates the arm's length principle and involves hindsight.[1005] The US tax administration claims that, in conformity with the arm's length principle, it applies the provision on an 'ex-ante' basis.[1006] Whether price adjustments are in line with the arm's length principle is heavily debated among practitioners.[1007] A key concern is that unrelated parties would not have agreed on retro-active price adjustments[1008] as

[999] See Paragraph 482-4 (a) IRC (US Income Tax Code).

[1000] See Paragraph 482-4 (f)(2) IRC (US Income Tax Code).

[1001] Brauner (2010), p. 565.

[1002] See Brauner (2010), p. 565. In a report presented in 2007, Andrus points out that the US tax administration has only rarely relied on the 'commensurate with income standard' during litigation (dee Andrus (2007b), p. 647).

[1003] See Paragraph 482-4 (f)(2)(ii)(A) to (D) IRC (US Income Tax Code). For details, see Andrus (2007), pp. 649 et seq., Boos (2003), p. 109, Cottani (2011), section 19.5.3, Peter et al. (2008), p. 866. For a scheme for assessing whether the retroactive adjustment clause applies, see Peter et al. (2008), p. 867.

[1004] See Paragraph 482-4 (f)(2)(ii)(E) IRC (US Income Tax Code).

[1005] See Brauner (2010), p. 565, Cottani (2011), section 19.5.3, King (1994), OECD (1993a), recitals 2.5 and 2.23-2.33, Kroppen et al. (2007), p. 320.

[1006] See Internal Revenue Service (ed.) (2007), pp. 2 et seq., Joint Committee on Taxation (2010), p. 20, Treasury Department and Internal Revenue Service (eds.) (1988), p. 61.

[1007] See Boos (2003), p. 138 (with further references in footnote 555) and p. 178, Kroopen et al. (2007), p. 319.

[1008] See Boos (2003), pp. 104 et seq. With respect to the German provision, Scholz stresses that the rationale underlying the price adjustment clause of the German Foreign Transaction Tax Act contradicts the aim of price adjustment clauses agreed on between unrelated parties. He argues that

hypothesised by such tax clauses.[1009] According to the OECD transfer pricing guidelines, independent parties might agree on price adjustment clauses in order to protect themselves against unpredictable future events or even renegotiate the price in cases in which the valuation of intangible assets is highly uncertain at the time of the transaction.[1010] However, this should not be interpreted as promoting an automatic price adjustment mechanism as provided by the US commensurate with income standard.[1011]

Another key concern with retroactive price adjustment clauses is that they result in double taxation if the residence country of the acquiring entity does not accept the adjustment.[1012] This concern seems realistic as such clauses are very rare so far.[1013] In addition, the mutual agreement procedure set out in Article 25 of the OECD Model Tax Convention and the EU Convention on the elimination of double taxation in connection to the adjustment of profits of associated enterprises[1014] might fail to solve this issue as the residence countries of the buyer will likely argue that retroactive price adjustment clauses fundamentally differ from the general transfer pricing approach based on the arm's length principle.[1015]

Finally, determining the income related to an intangible asset subsequent to the transfer may not be as simple as conceived by tax legislators. If the asset is enhanced in the years following the transfer it is difficult to disentangle the share of the income relating to the original intangible and the income resulting from the value added by the enhancement.[1016] In addition, the fact that a certain intangible asset might only generate income together with other assets (e.g. marketing intangibles and tangible assets) also makes it difficult to identify the share of overall income which relates to the use of the transferred intangible.[1017] From this follows that retroactive price adjustment clauses might not be the panacea to the transfer pricing issues raised by intangible assets after all.

---

whereas the former is based on the assumption that the transfer price of intangible assets is too low, the aim of the latter is to prevent that the price paid by the acquiring party be too high owing to information asymmetries between acquiring and selling parties. See Scholz (2007), p. 526.

[1009] See Schön (2014), p. 292.

[1010] See OECD (2010a), recitals 6.31 et seq.

[1011] See Cottani (2011), section 19.5.3.

[1012] See Cottani (2011), section 19.5.3, Peter et al. (2008), p. 868.

[1013] See Peter et al. (2008), p. 868, Scholz (2007), p. 523. Opposed to this, Treasury Department and Internal Revenue Service (eds.) (1988), pp. 48 et seq.

[1014] See Convention 90/436/EEC.

[1015] See Cottani (2011), section 19.5.3.

[1016] See Schön (2014), p. 292.

[1017] See Wittendorf (2012), p. 92.

Alternatively, the issue of high uncertainty concerning the value of an intangible asset at the time of disposal could be addressed to treat the disposal like a licensing arrangement. This would involve that, instead of subjecting the full value of the intangible asset to tax, a notional royalty payment is determined and subject to tax in each year following the transfer. This would allow for taking into account the most recent information in order to determine the value of the asset. In practice it may, however, be difficult to disentangle the value created before the transfer of an intangible asset and the value created subsequently by the acquiring entity e.g. by means of further developing the asset or marketing efforts.[1018] This drawback applies to retroactive adjustment clauses and treating disposals like licensing-arrangements alike. In addition, the permanent transfer of an asset implies that the chances and risks associated with exploiting the asset are also transferred. This is usually also reflected in the sales price. The disposal and the licensing-out of an intangible asset are therefore not generally comparable in economic terms and may therefore be associated with different transfer prices.[1019]

6.3.2.2 Setting high mark-ups for contract R&D fees and promoting the profit split method

When it comes to contract R&D arrangements, the analysis of effective tax rates under IP tax planning presented in section five points out that the incentive to shift profits to low-tax countries by way of intra-group contract R&D depends on the method in place for determining the contract R&D fee. First, in case the cost-plus method is applied, the higher the mark-up the larger the share of the intangible-rated income which is attributed to the R&D country. Second, by applying the profit split method, profit shifting to low-tax countries by way of intra-group contract R&D arrangements can be limited even more effectively than by applying the cost-plus method.[1020] However, in case the R&D investment turns out to be unprofitable, the R&D country is worse off than in the case of the application of the cost-plus method. In addition, it should be emphasised that the application of the profit split method raises practical difficulties and does not necessarily fully solve the issues associated with profit shifting involving intangible assets.[1021]

[1018] See Wittendorf (2012), p. 92.

[1019] The grant of an exclusive right to use an IP right for the remainder of its life does, however, largely correspond to the sale of the IP right itself (see Lokken (1980), p. 237).

[1020] See sections 5.1.4 and 5.2.3.

[1021] See Durst (2010), p. 251, Verlinden and Smits (2009), p. 101.

The Indian Department of Revenue promotes the application of the profit split method instead of the cost-plus method with respect to the pricing of contract R&D services arguing that the R&D service providers do not merely perform routine functions[1022].[1023]

In addition, in September 2013, the Central Board of Direct Taxes implemented safe harbour rules[1024] for the application of the cost-plus methods to intra-group contract R&D services carried out on behalf of non-resident associated enterprises.[1025] These are available under the condition that the contractor only assume insignificant risks.[1026] The safe harbour rules are not mandatory but are instead supposed to offer taxpayers legal certainty.[1027] For contract R&D services that wholly or partly relate to software development and generic pharmaceutical drugs, the safe haven ratio was set to 30% and 29% of the operating expenses, respectively.[1028] These ratios constitute substantial mark-ups on the operational expenses and might exceed what taxpayers consider to be reasonable.[1029] Although these mark-ups are not mandatory, some commentators are concerned that they might in the end become 'deemed' arm's length prices.[1030]

[1022] In March 2013, the Central Board of Direct Taxes of the Ministry of Finance of India issued a circular pointing out under which conditions contract R&D centres are treated as contract R&D services providers with insignificant risk may be reimbursed based on the cost-plus method. See Circular No. 03/2013, 26 March 2013, Government of India, Ministry of Finance, Department of Revenue, Central Board of Direct Taxes (Foreign Tax and Tax Research-I Division). This circular was relaxed three months later by Circular No. 06/2013 issued on 29 June 2013. For further details, see Chakravarty and Ray (2013), p. 405, Prakash (2013), pp. 376 et seq., Stewart (2013a).

[1023] See Chakravarty and Ray (2013), p. 404, Mitra et al. (2013), p. 114, Prakash (2013), p. 376. In March 2013, the Central Board of Direct Taxes of the Ministry of Finance of India issued a circular pointing out in which cases the profit split method is considered to be the most appropriate transfer pricing method (see Circular No. 02/20013, 26 May 2013). However, this circular was already withdrawn three months later on the grounds that it seemed to convey the impression that "the profit split method was the preferred method in the case involving unique intangible or in multiple interrelated international transactions (Circular No. 05/2013 of 29 June 2013, Government of India, Ministry of Finance, Department of Revenue, Central Board of Direct Taxes (Foreign Tax and Tax Research-I Division)." See Chakravarty and Ray (2013), pp. 404 et seq., Prakash (2013), pp. 376 et seq.

[1024] For a discussion of the concept underlying safe harbour rules as well as safe harbour rules applied in practice, see Deloitte (2009).

[1025] See Krishnamurthy (2014), Prakash (2013), p. 377.

[1026] See Articles 10TA to 10TD Indian Income Tax Rules 1962 (ITR) as amended on 19 September 2013. With regard to contract R&D service the term 'insignificant risks' is specified in Article 10TB (3).

[1027] See Chawla (2013), Ghandi (2013), p. 1262, Jackson (2013).

[1028] See Article 10TD (3)(8) and (9) ITR as amended on 19 September 2013. For a discussion of these rules, see Gandhi (2013), p. 1261, Krishnamurthy (2014).

[1029] See Chawla (2013), p. 247, Ghandi (2013), p. 1260, Jackson (2013). However, tax advisors indicate that taxpayers may face even higher mark-ups in practice (see Jackson (2013)).

[1030] See Deloitte (2009), p. 43, Ghandi (2013), p. 1260, Jackson (2013).

Setting mark-ups which exceed what is customary involves the risk of double taxation if the residence country of the commissioning entity does not accept these mark-ups arguing that they exceed an arm's length consideration.[1031] Such disputes may be solved by way of mutual agreement procedures set out in double taxation treaties.[1032] The Convention on the elimination of double taxation in connection with the adjustment of profits of associated enterprises involves similar procedures among EU member states.[1033]

A more foresighted approach would be to adopt safe harbour rules on a bilateral or even multilateral basis by means of competent authority agreements between countries.[1034] Whereas the OECD transfer pricing guidelines have so far discouraged the use of safe harbours, the current discussion draft for a revised section on the safe harbour rules in chapter four of the OECD Transfer Pricing Guidelines suggests the use of safe harbours in case of less complex transactions such as low-risk contract R&D services.[1035]

Finally, it should be noted that transfer pricing rules which involve mark-ups for contract R&D fees which exceed what is customary may deter domestic R&D activity. The same holds true for high exit charges for IP which is transferred abroad, as it may lock-in intangible assets and also render domestic R&D activity less attractive. However, to the best of my knowledge, there is no empirical evidence on this.

[1031] See Chawla (2013), p. 247, Deloitte (2009), pp. 10 et seq., OECD (2012c), recitals 20 et seq.

[1032] See OECD (2012c), recital 23. For details of the mutual agreement procedures implemented in tax treaties, see Article 25 OECD Model Tax Convention on Income and on Capital, Amatucci (ed.) (2012), p. 189, Cottani (2011), section 22.2, Terra and Wattel (2012), pp. 705 et seq.

[1033] See Convention 90/436/EEC. For details, see Cottani (2011), section 22.3, Plansky (2010), Terra and Wattel (2012), pp. 711-725.

[1034] See Kroppen et al. (2012), pp. 289 et seq. Durst in particular encourages developing countries to use safe harbours. See Durst (2012b), p. 283.

[1035] See OECD (2012c), recitals 25, 33 et seq. The OECD even presents the draft for a 'memorandum of understanding' relating to safe harbours for low-risk contract R&D services. With respect to complex and high-risk transfer pricing matters, the OECD does not consider safe harbours to be a promising alternative to a case by case application of the arm's length principle according to the OECD guidelines (see OECD (2012c), recital 38). For a detailed discussion, see Durst (2012c).

6.3.3 Ultimate parent country perspective

6.3.3.1 Controlled Foreign Company Rules as a means to counteract profit shifting to low-tax countries

The residence country of the ultimate parent of a multinational group may counteract profit-shifting to low-tax countries by operating controlled foreign company (CFC) rules.[1036] CFC rules stipulate that (passive) income earned by CFCs resident in designated low-tax countries[1037] is subject to tax in the residence country of the parent company when earned.[1038] In doing so, CFC rules reduce the incentive to set up companies in low-tax countries for the purpose of deferring the taxation of profits.[1039] In addition, CFC rules counteract profit shifting to low-tax countries as they require that the tax burden of the foreign parent apply irrespective of the fact that profits are not distributed, thereby overturning separate accounting and deferred taxation.[1040] As a consequence, the income may no longer be shielded from taxation in the hands of the ultimate parent and worldwide taxation of dividends and royalties is safeguarded.[1041]

In cases where the ultimate parent of a group of companies also carries out the R&D activity of the group, CFC rules may also serve as an alternative to tightening transfer pricing rules governing the transfer of intangible assets. This is because any profits which are shifted by way of transferring valuable IP to low-tax countries are recaptured by way of a well-functioning CFC rule.[1042] For this reason, source countries and R&D countries generally have an interest in the residence country of the ultimate parent of the group of companies operating effective CFC rules, thereby rendering profit shifting out of the source and the R&D country less attractive.[1043]

[1036] For a summary of the main features of CFC rules, see Lang (ed.), (2004), pp. 17-25, Dahlberg and Wiman (2013).

[1037] The criterion of 'low taxation' is either specified by defining a nominal tax rate/ effective tax rate below which a jurisdiction is considered to be a low-tax jurisdiction or by drawing up a country list (so called 'black list'). See Arnold and Dibout (2001), pp 45 et seq., Dahlberg and Wiman (2013), pp. 36 et seq., Fontana (2006a), p. 260, Lang (ed.), (2004), pp. 19 et seq., Maisto and Pistone (2008a), p. 509. On the German provision, see Jacobs et al. (eds.) (2011), pp. 441 et seq.

[1038] See Fuest et al. (2013), p. 317, Kane (2014), p. 321.

[1039] See Maisto and Pistone (2008a), p. 505.

[1040] See Dahlberg and Wiman (2013), p. 25, Maisto and Pistone (2008a), Terra and Wattel (2012), p. 219.

[1041] See Ault and Arnold (2010), p. 477, Dahlberg and Wiman (2013), p. 25, Fontana (2006a), pp. 259 et seq., Lang (ed.), (2004), p. 17, Maisto and Pistone (2008a), p. 505, Terra and Wattel (2012), p. 219.

[1042] See Levy and Ruchelman (1988), Wittendorf (2012), p. 92.

[1043] See Kane (2014), p. 323, OECD (2013e), p. 16.

Empirical evidence indicates that CFC rules are indeed effective in counteracting profit shifting to low-tax countries. A study by Ruf and Weichenrieder on the German CFC legislation indicates that German multinationals indeed hold less passive assets in countries which, according to the German CFC legislation, are characterised as low-tax countries triggering the application of the German CFC rules.[1044] Similarly, Altshuler and Hubbard show for US multinationals that the tightening of the CFC rules within the scope of the US Tax Reform Act of 1986 has made it more difficult for US multinationals to defer US corporate income tax on financial services income received by CFCs resident in low-tax jurisdictions.[1045] A paper by Böhm et al. which investigates the effects of taxes on the location of patents furthermore suggests that the probability that patents are relocated to tax haven countries is reduced in case the inventor's residence country has controlled foreign company rules in place.[1046]

Although residence countries may have an incentive to implement CFC rules to limit the leeway for profit shifting to low-tax countries,[1047] they may also have an incentive not to operate (effective) CFC rules, so that domestic multinationals may retain the competitive advantage associated with low tax burdens on foreign income vis-à-vis multinationals from other countries.[1048] Some commentators even go as far as arguing that countries intentionally weaken their CFC rules to increase the competitiveness of their multinational companies.[1049] To give an example, the application of the US CFC rules, which yields that foreign low-taxed passive income is subject to the US federal corporate income tax rate of 35% when earned (the highest among the OECD and EU member states[1050]), may easily be circumvented by opting for the application of the check-the-box

[1044] See Ruf and Weichenrieder (2010). The Survey does, however, not take into account the comprehensive reform of the German CFC rules carried out in 2008 as a reaction to the ECJ case 'Cadbury Schweppes'.

[1045] See Altshuler and Hubbard (2003).

[1046] See Böhm et al. (2014), p. 21.

[1047] See Fuest et al. (2013), p. 317, Jacobs et al. (2011), p. 448, OECD (1996), p. 11, Sheppard (2013c), p. 958.

[1048] See Durst (2013b), p. 1040, Fuest et al. (2013), p. 317, Kane (2014), p. 322, Newlon (2000), p. 233, Sheppard (2013c), p 958.

[1049] See Ault (2013), p. 1198, Sheppard (2013d), p. 10. Haufler et al. (2014) analytically point out the conditions under which binding CFC rules are part of the optimal tax mix chosen by governments.

[1050] For the EU member states, see Spengel et al. (2014), pp. A-1 et seq. table A-1. For the OECD countries, see OECD Tax Database, table II.1 'Corporate income tax rates: basic/non-targeted' (last updated May 2014), download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CC4QFjAB&url=http%3A%2F%2Fwww.oecd.org%2Fctp%2Ftax-policy%2FTable%2520II.1-May-2014.xlsx&ei=SrMyVJ3cBcHDOcGhgLAN&usg=AFQjCNGA4xMZrnCkRE5tXX6S8dg6hbTPqw&bvm=bv.76802529,d.ZWU.

rules.[1051] Kane even argues that the United States of America have "rather porous and lacunae-filled" CFC rules in place.[1052]

6.3.3.2 Compatibility of CFC rules with European law

By way of its case-law, the European Court of Justice (ECJ) significantly limited the scope for operating CFC rules vis-à-vis CFCs resident in EU member states to 'wholly artificial arrangements'.[1053] The ECJ's case-law and its implications on CFC rules in the EU member states are discussed in detail in the following.

In its 'Cadbury Schweppes' case,[1054] the court held that the restriction of the freedom of establishment caused by the British CFC rules[1055] can only be justified on the grounds of 'prevention of abusive practices' if the provision "specifically relates to wholly artificial arrangements aimed at circumventing the application of the [British] legislation (…)."[1056] The Court stressed that this involves that the provision be targeted at preventing "conduct involving the creation of wholly artificial arrangements which do not reflect economic reality, with a view to escape the tax normally due on the profits generated by activities carried out on national territory."[1057]

In order for the CFC rules to be justified on the grounds of the 'prevention of abusive practices', their application must furthermore be excluded if "despite the existence of tax motives, [the] incorporation of a CFC reflects economic reality."[1058] This implies that the taxpayer's intention to obtain a tax advantage is not sufficient.[1059] Instead, objective factors must be taken into account, namely physical presence "in terms of premises, staff, and equipment."[1060] This indicates that, in order to comply with the fundamental freedoms, CFC rules may only

[1051] This is inter alia illustrated by the Double-Irish-Dutch-Sandwich tax planning structure. See Fuest et al. (2013), p. 312, Pinkernell (2012), p. 372, Pinkernell (2013a), pp. 184 et seq., Sheppard (2013a), p. 900.

[1052] See Kane (2014), p. 321.

[1053] See Jacobs et al. (eds.) (2011), p. 449 with further references, Kleinbard (2011b), p. 145, Kraft and Bron (2006), p. 619, Pistone (2008), p. 148, Rust (2008), p. 491, Terra and Wattel (2012), p. 219, Whitehead (2007), p. 181.

[1054] For a summary and an assessment of the ruling, see Rainer et al. (2006), Terra and Wattel (2012), pp. 1011 et seq., Whitehead (2007).

[1055] See ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recitals 43-46.

[1056] ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recital 52.

[1057] ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recital 55.

[1058] ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recital 65.

[1059] See ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recital 64.

[1060] ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recitals 66 et seq.

demand little substance. The Court only clearly classifies 'letterbox companies' and 'front subsidiaries' as 'wholly artificial arrangements'.[1061]

In order to redesign their CFC rules with the goal of rendering them compatible with the ECJ's case-law, countries may aim for activity tests which link the application of the CFC rules to the lack of substantial economic presence in the CFC's residence country in terms of premises, staff, and equipment. In reaction to the 'Cadbury Schweppes' case, the German tax legislator introduced an exemption which excludes CFCs resident in a member state of the EEA from the German CFC rules under the condition (i) that the CFC carry out a genuine economic activity from which the passive income earned by the CFC stems and (ii) that Germany and the residence country of the CFC exchange information in tax matters on the grounds of the EU Directive on Mutual Assistance or a similar agreement.[1062] Hence, the taxpayer may prevent the application of the CFC rules by proving that the CFC carries out a genuine economic activity. Other countries have also amended their CFC rules, although the compatibility with EU law of some of the amended provisions still remains unclear.[1063]

The Council Resolution on the coordination of controlled foreign company rules within the EU issued in June 2010 proposes a similar approach. It recommends that the CFC rules of the EU member states include the following non-exhaustive list of indicators in order to identify whether profits have been artificially shifted to a CFC: (i) insufficient valid economic or commercial reasons, (ii) lack of genuine economic activities, (iii) lack of physical factors such as premises, staff, and equipment, (iv) overcapitalisation of the CFC, and (v) contradiction with economic reality or general business reasons. However, taxpayers should be allowed to produce evidence on the contrary.[1064]

It is unclear whether CFC rules which have been amended in this way, such as the German rule, are still effective in curbing profit shifting to low-tax countries.[1065] Designing CFC rules which are compatible with the requirement of being targeted at 'wholly artificial arrangements' but which are nevertheless effective in curbing the accumulation of profits in low-taxed CFCs resident in the EU, may even be impossible as IP tax planning is not limited to wholly artificial arrangements. CFC rules which only apply to artificial arrangements would probably not cover most

[1061] See ECJ, 12 September 2006, C-196/04, 'Cadbury Schweppes', 2006 ECR I-07995, recital 68.

[1062] See Article 8 (2) sentence 2 AStG (German Foreign Transaction Tax Act).

[1063] See Möller (2010), Dahlberg and Wiman (2013), p. 44.

[1064] See Council of the European Union (2010b).

[1065] The empirical analysis of the effectiveness of the German CFC rule by Ruf and Weichenrieder (2010) relates to the old CFC rule which did not comprise a motive test in case of CFCs resident in a member state of the EEA.

of the IP tax planning structures in place today.[1066] Sheppard even goes as far as concluding that "no amount of advice (…) will overcome the high bar of artificiality of companies set by the European Court of Justice".[1067] She furthermore argues that by requiring substance in controlled foreign companies, tax legislators simply make profit shifting more costly but may not prevent it.[1068] A harmonised CFC rule[1069] would also not resolve this issue as it would also be bound to the limitations pointed out by the ECJ.

One could argue that within the EU, CFC rules which comply with the EU law requirements formulated by the ECJ in its 'Cadbury Schweppes' case are limited to counteracting tax evasion. The fact that many jurisdictions already have general anti-avoidance rules (GAAR) in place which target artificial tax structures[1070] raises the question whether CFC rules which are limited to fully artificial arrangements are redundant.[1071] When it comes to counteracting profit shifting by means of tax structures which are not artificial, CFC rules seem to be limited to third country constellations.[1072] As the freedom of establishment does not apply to third country constellations[1073] and the free movement of capital, which extends to transactions with third countries, is not applicable if the scope of the respective CFC rules exclude portfolio shareholdings,[1074] CFC rules do not have to be targeted at wholly artificial arrangements vis-à-vis third countries in order to comply with primary European law.[1075] However, given the fact that many EU member states operate low-tax regimes for IP income as pointed out in section three, narrowing the scope of CFC rules to third countries would also significantly limit the provisions' vigour.

[1066] The IP tax planning models presented in section 2.3 are not generally characterised by a lack of economic substance.

[1067] Sheppard (2013d), p. 10.

[1068] See Sheppard (2013d), p. 10.

[1069] See Fontana (2006b), p. 332. See Maisto and Pistone propose best practices and principles for common CFC legislation which is consistent with European law (see Maisto and Pistone (2008b), pp. 565 et seq.).

[1070] See Dahlberg and Wiman (2013), p. 48, International Fiscal Association (2013), country reports. For Germany, see Führich (2009), p. 130, Schönfeld (2013), p. 326.

[1071] See Führich (2009), p. 130, Meussen (2007), p. 18.

[1072] See Führich (2009), p. 135.

[1073] See Terra and Wattel (2012), pp. 68 and 77.

[1074] See Terra and Wattel (2012), pp. 71 et seq. and 79. The German CFC rules partly constitute an exception to this, as certain passive income is subject to the CFC rules if the German parent company holds a share of at least 1% of the foreign company receiving such passive income (see Article 7 (6) and (6a) in association with Article 8 AStG (German Foreign Transaction Tax Act)).

[1075] See Führich (2009), p. 128, Jacobs et al. (eds.) (2011), p. 449.

Finally, a fundamentally different way to reform CFC rules in order to render them compatible with the freedom of establishment is to extend their scope to domestic controlled companies and thereby to transform them into controlled company (CC) rules.[1076] The provision in place in Denmark follows this approach.[1077] However, this constitutes a significant extension of residence-based taxation and raises serious practical difficulties.[1078]

[1076] See Führich (2009), p. 127, Jacobs et al. (eds.) (2011), p. 449, Terra and Wattel (2012), p. 1012.

[1077] See Koerver Schmidt (2013), p. 266. In this regard, it is important to know that Denmark also operates an obligatory group taxation regime. For details, see Dahlberg and Wiman (2013), p. 28, Koerver Schmidt (2013), p. 261.

[1078] See Führich (2009), p. 127.

6.3.4 Intermediate conclusion

Numerous approaches to strengthen source taxation and to prevent tax base erosion by way of IP tax planning (intra-group licensing arrangements) are currently being discussed. However, no straightforward solution can be pointed out so far.

Source countries should refrain from unilaterally introducing general royalty deduction limitations as this is generally associated with double taxation. With respect to a general royalty withholding tax, the risk of double taxation due to excess tax credits can be mitigated by applying moderate withholding tax rates or levying the withholding tax on net, instead of gross, income. As residence countries may also mitigate the risk of double taxation by calculating foreign tax credits on an overall basis,[1079] a royalty withholding tax should be implemented as a coordinated initiative. Within the EU and vis-à-vis Switzerland, a coordinated approach is essential as the Interest & Royalty Directive and the Savings Agreement currently exclude levying withholding taxes on intra-group royalties paid between corporations resident in the EU and Switzerland (provided certain participation requirements are met). However, amending the Interest & Royalty Directive and the Savings Agreement will likely be time-consuming due to the unanimity requirement. Hence, a royalty withholding tax does not constitute a quick remedy for the issue of tax base erosion by means of IP tax planning involving IP Box countries.

A more tailored approach to counter the issue of profit shifting and tax base erosion by means of IP tax planning involving intra-group licensing arrangements could be to solely levy withholding taxes on royalties paid to no-tax or designated low-tax countries by introducing subject-to-tax or minimum-tax clauses. An inverted tax credit is similar in this regard as it takes into account the actual tax burden of the royalties in the resident country of the recipient. In order to completely avoid double taxation, expenses associated with the respective royalty income would have to be taken into account when calculating the inverted tax credit. Compared to a general withholding tax on royalties, an inverted tax credit will presumably be associated with a higher administrative burden. In contrast to withholding taxes, introducing an inverted tax credit does not violate the Interest & Royalty Directive. So far, it has not been fully clarified whether such a provision violates primary EU law, as it first and foremost applies to cross-border cases.

[1079] Per-country-limitations and per-income-limitations are common restrictions when determining foreign tax credits. For details, see section 3.7.1.

The R&D country must rely on transfer pricing to counteract tax base erosion. The measures discussed in this section (introducing retroactive price adjustment clauses, increasing the mark-ups for contract R&D fees, and applying the profit split method when determining contract R&D fees) all entail the risk of double taxation if applied on a unilateral basis. On a more general basis, R&D countries may also attempt to revise their transfer pricing rules in order to avoid that taxpayers understate the value of IP when it is transferred abroad. Similarly, R&D countries may require more substance on behalf of the parties commissioning contract R&D to its residents. These aspects form part of the OECD's current work on revising chapter six of the transfer pricing guidelines on transfer pricing aspects of intangibles. However, whether the revised chapter six will de facto strengthen the position of R&D countries remains to be seen.

Finally, the residence country of the ultimate parent of a multinational group may foil profit shifting to low-taxed IP holding companies by operating effective CFC rules. As discussed in section 6.3.3.1, countries may also have an incentive not to operate (effective) CFC rules, so that domestic multinationals may retain the competitive advantage associated with low tax burdens on foreign income vis-à-vis multinationals from other countries. In particular, the US are widely suspected of having intentionally weakened their CFC rules to increase the competitiveness of their multinational companies. Within the EU, primary European Law constitutes another obstacle on the operation of effective CFC rules. This is because with respect to CFCs resident in other EU member states, EU member states must limit their CFC rules to artificial arrangements in order to comply with ECJ case-law. Hence, vis-à-vis their fellow member states, EU member states mainly have the choice between the following alternatives. First, they could simply be content with limiting their CFC to artificial arrangements in case of CFCs resident in other EU member states. This implies that, within the EU, they refrain from tackling (aggressive) tax planning which involves shifting profits to an IP holding resident in an IP Box county. Vis-à-vis non-EU member states such as Switzerland, CFCs which go beyond artificial arrangements can, nevertheless, be maintained. Second, member states could turn their 'controlled foreign company rules' into 'controlled company rules' by also applying them to domestic controlled companies. However, this constitutes a far-reaching change of the corporate tax system which raises serious technical concerns. So far, only Denmark has taken this path.

The discussed reform measures uniformly involve that all respective countries (the source country, the R&D country, and the residence country of the ultimate parent) claim to tax a larger share of the intangible-related income. On a unilateral basis, any of the discussed measures is likely associated with double

taxation. This issue is particularly pronounced if all three countries take measures to counteract profit shifting and tax base erosion, e.g. if the source country decides to restrict the deduction of royalties paid to a no-tax or low-tax country and the residence country of the ultimate parent applies CFC rules but does not grant a tax credit for the source country corporate income tax levied on the non-deductible interest. This points to the importance of a coordinated initiative to tackle the issue of profit shifting and tax base erosion in order to avoid double or even triple taxation.[1080] The current OECD initiative to counteract base erosion and profit shifting (BEPS), which is briefly summarised and discussed at the end of this chapter, aims at such coordinated action. The EU Commission's proposal to introduce a Common Consolidated Corporate Tax Base constitutes an even more far-reaching approach to tackle the issue of profit shifting and tax base erosion.

Finally, when discussing possible measures to counter profit shifting and tax base erosion, it is necessary to keep in mind that many profit shifting opportunities arise from the interaction of international tax rate differences and fundamental tax principles such as that interest and royalties are deductible from the tax base of profit taxes whereas dividends are not. No obvious line can be drawn between tax planning perceived as legitimate and 'aggressive tax planning' which is perceived as an unfair practice of multinationals. Non-taxation of income is clearly not desirable. Similarly, effective tax rates of multinational companies in a low one-digit percent range are also widely considered inappropriate. However, it is far from clear which effective tax rate would be adequate. National tax measures which aim at counteracting tax planning such as the German interest barrier are often criticised as overshooting the target as they entail the risk of double taxation and may also affect transactions which serve a business purpose other than saving taxes (and thereby distort business decisions). Nevertheless, 'legitimate' tax planning may still be associated with considerable tax base erosion. Hence, countries should consider more far-reaching approaches to address the issue of cross-border profit shifting. The EU Commission's proposal for a CCCTB constitutes a fundamental change of system which approaches one of the reasons for profit shifting: separate accounting.

[1080] See Ault (2013), p. 1199.

6.3.5 Outlook

6.3.5.1 The OECD's 'base erosion and profit shifting' project

In July 2013, the OECD issued an action plan to address the issue of tax base erosion and profit shifting (BEPS). This initiative stirs up hope for a coordinated move to counter the issue of tax base erosion and profit shifting associated with IP tax planning. In this regard, action no. 15 provides for the development of a multilateral instrument which will enable countries to implement measures developed in the course of the work on BEPS if they wish to do so. Several of the actions could help limit the scope for tax base erosion and profit shifting by means of IP Box regimes and IP tax planning models. Most notably, as addressed in sections 6.2.2 and 6.2.3, action no. 5 ("countering harmful tax practices more effectively") is likely to have far-reaching implications for the design of IP Box regimes and the benefit of IP Box regimes for tax planning purposes. Two further actions of the BEPS action plan will probably also have an important impact on IP tax planning. I briefly address them in the following.

6.3.5.1.1 Action no. 3: Recommendations for the design of CFC rules.

Action no. 3 calls for developing recommendations for the design of CFC rules. As pointed out in section 6.3.3, CFC rules may make profit shifting to low-taxed affiliates unattractive as they involve that the (passive) income earned by such affiliates immediately be subject to tax in the residence country of the parent. This action is scheduled for September 2015. As the design of CFC rules greatly differs among the member states of the OECD (and the EU),[1081] a coordinated approach in this regard seems sensible, although it may be difficult to achieve.[1082] A coordinated approach would also account for the fact that countries which operate comparably strict CFC rules place their multinational companies at a competitive disadvantage vis-a-vis the multinationals of other countries which have no or only very lax CFC rules in place. One should, however, keep in mind that the fact that the OECD member states which are also members of the EU are constrained by primary European law (as pointed out in section 6.3.3.2) constitutes an obstacle when coordinating CFC rules in the OECD as these two groups of countries, non-EU OECD member states and OECD countries[1083] which are also member states, might come to different views on the preferred design of CFC rules. In addition, it is doubtful whether the OECD member states will be

[1081] See Dahlberg and Wiman (2013) for an overview of selected CFC legislation.

[1082] Kane claims that "CFC legislation is unlikely to prove fertile ground for collaborative efforts (Kane (2014), p. 321)."

[1083] See Kane (2014), p. 323.

successful in inducing the US to amend their CFC rules which, in combination with the check-the-box rules, currently constitute a competitive advantage of US-multinationals as they allow them to accumulate passive income in low-tax countries.[1084]

6.3.5.1.2 Action no. 8: Transfer pricing rules for transactions involving intangibles

Action no. 8 aims to ensure that the transfer pricing outcomes concerning transactions involving intangibles are in line with value creation. This shall be achieved by developing transfer pricing rules which prevent base erosion and profit shifting by means of the intra-group transfer of intangible assets. This is supposed to take into account the following actions: (i) revise the definition of intangibles, (ii) align the allocation of intangible-related profits with value creation, (iii) develop rules for the transfer of hard-to-value intangibles, and (iv)update the guidance on cost contribution arrangements. Action no. 8 therefore overlaps with the current revision of chapter six of the guidelines on transfer pricing aspects of intangibles. The second aspect could be understood as indicating that a greater share of the intangible-related profits should be allocated to the R&D country where value is created. The taxing right of the R&D country could be strengthened by promoting the application of the profit split method for the determination of contract R&D fees.

In September 2014, the OECD published a revised version of chapter six of the OECD Transfer Pricing Guidelines as output of action no. 8. Due to interactions with the work on the transfer pricing rules on 'risk and capital' (action no. 9) and 'other high-risk transactions' (action no. 10), some sections of the revised guidelines still constitute interim drafts of guidance.[1085] It remains to be seen how the revised transfer pricing guidelines for transactions involving intangibles will affect IP tax planning.

[1084] Fuest et al. (2013), p. 317. See section 6.3.3.1 for details.

[1085] See OECD (2014b).

6.3.5.2 The EU Commission's proposal for a Common Consolidated Corporate Tax Base

As pointed out by Durst and others, separate accounting and the recognition of contracts between related parties for tax purposes are central prerequisites for intra-group profit shifting e.g. by means of intra-group licensing arrangements.[1086] Vann calls the freedom of contract "a significant structural flaw in current transfer pricing rules".[1087] Sullivan even proposes to constrain the freedom of contract with respect to the ownership of intangible assets.[1088]

The concept of a Common Consolidated Corporate Tax Base (CCCTB) proposed by the EU Commission[1089] implies that separate accounting be replaced by formula apportionment of the profits of a group of companies.[1090] As argued by Lang, the CCCTB addresses the fundamental cause of double non-taxation (and double taxation), namely the lack of harmonisation in the field of direct taxes, instead of solely providing a cure for the resulting 'symptoms'.[1091]

The CCCTB would mean that the profits of each member of a multinational group of companies are consolidated at the level of the ultimate parent company and subsequently allocated to each entity based on a formula taking into account the factors 'assets', 'labour', and 'sales'[1092].[1093] As a consequence, profit shifting by means of tax-efficient transfer pricing (e.g. through licensing-out IP to low-taxed affiliates) is foiled.[1094] Vis-à-vis group entities which are not part of the scope of the CCCTB, most notably because they are resident outside the EU, intra-group

[1086] See Durst (2010), p. 249, Schön (2014), p. 280, Sullivan (2013a), p. 771, Vann (2010), p. 333.

[1087] See Vann (2010), p. 334.

[1088] See Sullivan (2013b), p. 13.

[1089] See European Commission (2011), COM(2011) 121/4, Proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB).

[1090] See Fuest et al. (2013), p. 320, Spengel and Zöllkau (eds.) (2012), p. 6.

[1091] See Lang (2013a), p. 65.

[1092] The apportionment formula is specified by Article 86 of the proposed Directive. For details, see Hellerstein (2012), p. 226, Spengel and Zöllkau (eds.) (2012), p. 5 et seq., Wendt (2009), pp. 190 et seq.

[1093] Consolidation of profits and subsequent allocation based on the formula is preceded by calculating profits at the level of the group entities based on a uniform set of profit determination rules. See EU Commission (2011), p. 12 recital 9, Spengel and Zöllkau (eds.) (2012), p. 5, Traversa and Helleputte (2013), pp. 5 et seq.

[1094] See Kahle and Wildermuth (2013), p. 415. Eliminating transfer pricing issues is only one of the aims of the CCCTB. For details, see Fuest (2008), p. 726, Spengel and Zöllkau (eds.) (2012), p. 9, Traversa and Helleputte (2013), pp. 8 et seq.

transfer pricing and the associated profit shifting issues would, however, continue to exist.[1095]

Another concern is that profit shifting by means of transfer pricing would be replaced by profit shifting by means of relocating the factors which enter the formula, mainly assets and labour.[1096] The fact that under a CCCTB companies face incentives to shift labour and assets in order to shift profits to low-tax countries raises concerns that the CCCTB might create new distortions.[1097] For this reason, some scholars propose to completely rely on the location of consumption for allocating profits.[1098]

To reduce the magnitude of profit shifting within the scope of the CCCTB, intangible assets are explicitly excluded from the formula acknowledging their mobile nature.[1099] Hence, profit shifting by means of relocating intangible assets to low-tax countries would not be possible under the CCCTB. However, this also entails that the creation of intangible assets is not taken into account when allocating profits to countries by means of the formula. To partly compensate for this, R&D expenses are to some extent taken into account when calculating the asset factor.[1100]

The concept of the CCCTB raises numerous technical issues which cannot be pointed out in detail and discussed here.[1101] In addition, concerns are raised that the harmonisation of the tax base, which constitutes the first step of the CCCTB,

---

[1095] See Bourgeois and von Frenekel (2008), pp. 201 et seq., Fuest (2008), p. 729, Kahle and Wildermuth (2013), p. 415.

[1096] See Altshuler and Grubert (2010), p. 1182, Avi-Yonah and Benshalom (2011), pp. 390 et seq. and 395 et seq., Fuest et al. (2013), p. 320, Hellerstein (2012), p. 233, Spengel and Zöllkau (eds.) (2012), p. 13 et seq., Wendt (2009), pp. 158. For a detailed discussion of the tax planning opportunities under the CCCTB's formulary apportionment mechanism, see Hellerstein (2012, pp. 234-247). For a review of the literature on tax planning under formula apportionment, see Weiner (2005), pp. 42 et seq.

[1097] See Altshuler and Grubert (2010), Fuest et al. (2013), p. 320, Mintz and Weiner (2003).

[1098] Devereux and de la Feria (2014) propose a destination-based cash flow tax. For a brief literature review on concepts for destination-based cash flow taxes, see Schreiber (2013), pp. 311 et seq.

[1099] See EU Commission (2011), p. 14 recital 21 and Article 92 (1) of the proposed CCCTB Directive. For a critical discussion, see Spengel and Zöllkau (eds.) (2012), p. 11.

[1100] According to Article 92 (2) of the proposed CCCTB Directive, the expenses incurred for R&D, marketing and advertising in the six years prior to the date of joining the CCCTB are included in the asset factor for five years following the taxpayer's entry into an existing or new group. See Hellerstein (2012), p. 231, footnote 61.

[1101] These inter alia comprise the following aspects: whether the CCCCTB is optional or mandatory; the treatment of transactions with entities in third countries; the treatment of entities entering and leaving the group; the treatment of local profit taxes, non-profit taxes, and social security contributions. See Simonis (2012), van de Streek (2012), Traversa and Helleputte (2013), Wendt (2008), pp. 181-190 and pp. 194-197.

will put greater emphasis on the corporate tax rate and thereby intensify tax competition.[1102] Hence, it might be necessary to accompany the CCCTB with an EU-wide minimum corporate tax rate.[1103]

In addition, countries are concerned that the introduction of the CCCTB will be associated with a loss in tax revenue.[1104] These concerns make it difficult to reach a consensus among the EU member states. The CCCTB therefore mainly constitutes a long-term reform option to address profit shifting and tax base erosion issues within the EU.[1105]

Finally, it should be noted that the IP Box regimes could not simply be integrated into the CCCTB. This is because IP income derived by group entities from related parties and third parties are consolidated at the level of the parent. However, operating an IP Box for intra-group IP income would anyways run foil of the CCCTB's aim of eliminating the tax effects of intra-group transactions. EU member states could, however, still operate IP Boxes with respect to IP income from third parties by means of a tax credit. In addition, under a CCCTB countries could still operate R&D tax credits. These can be deducted from the corporate tax burden of domestic entities.

[1102] See Nielsen et al. (2001), Spengel (2007), p. 120, Spengel and Zöllkau (eds.) (2012), p. 14. For a review of the literature, see Weiner (2005), pp. 40 et seq.

[1103] See Spengel (2007), p. 120, Spengel and Zöllkau (eds.) (2012), p. 14.

[1104] See Devereux and Loretz (2008), Fuest et al. (2007), Oestreicher and Koch (2011), Oestreicher et al. (2014).

[1105] See Fuest et al. (2013), p. 321.

7 Summary of Main Findings

1. Tax legislators increasingly struggle to tax income from intangible assets in a way that prevents IP income from being shifted abroad. In this regard, the most significant policy development in recent years has been the introduction of Intellectual Property (IP) Box regimes which have become increasingly popular among the EU member states. They offer a substantially reduced corporate income tax rate for income derived from selected kinds of intangible assets and are the focus of this thesis.

2. A survey of all 12 European IP Box regimes implanted in Europe by the end of the year 2014 presented in chapter three reveals that the regimes differ considerably in terms of the IP Box tax rate, the scope of eligible types of IP and IP income, the treatment of acquired IP, and the calculation of the IP Box tax base. Malta, Cyprus, and Liechtenstein offer the lowest statutory IP Box tax rates (0%, 2.5%, and 2.5%). In turn, France has the highest tax rate (15% plus surcharges). The widest scope of eligible types of IP can be found in the Swiss Canton of Nidwalden, Cyprus, Hungary, Liechtenstein, and Luxembourg. In addition to patents, the regimes in place in these countries apply to designs, models, trademarks, copyrights (including software), and certain other types of intangibles. In terms of the types of eligible income, most regimes are limited to royalties from licensing-out IP and capital gains from the disposal of IP. Income from internal use additionally benefits from the IP Box regimes in Belgium, the Netherlands, and the United Kingdom. The vast majority of IP Box countries apply the IP Box tax rate to IP profits, thereby requiring that current IP expenses (e.g. IP management expenses or financing costs) be allocated to IP income. The treatment of historical R&D expenses which have been deducted in the past before the IP Box regime was opted for differs from this in most countries. 7 out of 12 IP Box countries do not stipulate the recapture of such expenses. This implies that the original deduction of such expenses at the regular tax rate is not offset. Finally, the vast majority of regimes are available for acquired IP, without requiring that such IP be further developed by the taxpayer. Belgium, the Netherlands, and Portugal are an exception to this.

3. Based on these characteristics, IP Box regimes can broadly be divided into two groups. One group of regimes (including Belgium, the Netherlands, and the United Kingdom) is more targeted at incentivising R&D investment and innovation. Most notably, they focus on patents and other trade intangibles, but exclude marketing intangibles, and are available for income from internal use. The Belgian and Dutch regimes furthermore do not apply to

acquired IP which is not further developed by the taxpayer. The UK regime is available for acquired IP but operates a comparably strict development and active ownership conditions. The design of the second group of regimes (including Cyprus, France, Hungary, Malta, and the Swiss Canton of Nidwalden) is more suitable to attract mobile IP income, in particular by allowing acquired IP to benefit from the IP Box treatment and by not applying the regime to income from internal use.

4. Due to primary European law requirements, countries are not free to restrict the IP Box benefit to IP which has been created domestically in order to incentivise domestic R&D activity. Nevertheless, there is still some leeway to amend the regimes' design in order to strengthen the link between the IP Box benefit and real activity. In this respect, it seems sensible to exclude acquired IP and IP which was created before the implementation of the IP Box from the regimes' scope. In addition, countries should consider extending the scope of eligible IP income to income from internal use, as incorporating intangibles in the production of goods or the rendering of services is generally associated with real activity in the IP Box countries and may give rise to positive spillovers arising from knowledge gains.

5. The results presented in chapter four show that the IP Box regimes are associated with large reductions in the effective average tax burden of investments in self-developed intangible assets. This effect stems not only from the low IP Box tax rates but from the treatment of R&D expenses. Regimes that do not require the recapture of historical R&D expenses which have been deducted before the application of the IP Box regime (and thereby at the higher regular tax rate) are particularly generous. Depending on the profitability of the investment project, these IP Box regimes may even be associated with negative effective average tax rates.

6. A comparison of the effects of IP Box regimes to those of traditional R&D tax incentives, such as R&D tax credits, shows that the IP Boxes generally reduce the effective average tax burden to a larger extent. In most IP Box countries, companies may, at the same time, benefit from both types of incentives and thereby further reduce the effective tax burden of investment projects.

7. By means of IP tax planning, multinational companies may make use of a beneficial research infrastructure and generous R&D tax incentives in one country and at the same time benefit from low tax rates on income from exploiting IP in another country (e.g. due to an IP Box regime). Popular IP tax planning models are the disposal of IP to subsidiaries resident in low-tax countries, intra-group licensing, and intra-group contract R&D

arrangements. The underlying reasoning is to shift profits from exploiting IP to a low-tax country, and thereby to reduce the overall tax burden of the multinational, without having to shift the R&D activity as well. Countries in which IP is created usually limit the leeway for such kind of profit shifting through transfer pricing rules.

8. In chapter five I amend the Devereux & Griffith model to incorporate these IP tax planning models and show that tax planning does not achieve its profit shifting objective if the transfer prices reflect the true value of IP. Hence, the disposal of IP to a lower-taxed subsidiary only achieves its tax planning objective of reducing the effective tax burden of a multinational group if the multinational is able to understate the value of the asset when it is transferred. By contrast, the disposal of IP triggering an exit tax on the full earnings value of the IP increases the group's effective tax burden. This implies that if the country in which the IP is created succeeds in levying an exit tax on the full earnings value of the IP upon its disposal, multinational groups of companies do not face an incentive to relocate IP to subsidiaries resident in low-tax countries. However, in theory and in practice, identifying the 'true value' of IP is a difficult if not impossible task.

9. Analogous to this, I show that licensing-out IP by the parent to a low-taxed subsidiary does not result in a lower effective average tax burden of the group if the full return from exploiting the asset in the hands of the subsidiary is siphoned off to the licensor (the parent company) through a royalty payment. Licensing-out IP to a low-taxed affiliate only results in a reduction of the group's effective tax burden if the royalty payment corresponds to only a fraction of the return from exploiting the asset.

10. By contrast, contract R&D arrangements which are set up in such a way that the low-taxed subsidiary commissions the parent company to carry out R&D on its behalf may generally achieve a reduction of the group's effective average tax burden, provided that the contractor is reimbursed on a cost-plus basis. According to transfer pricing rules, this requires that the principal bear the risks and the costs of the creation of the intangible and direct and supervise the R&D activity. However, if the contractor is reimbursed based on the profit-split method, the picture is fundamentally different and largely corresponds to the case of the disposal of the asset or the licensing arrangement. This indicates that applying the profit-split method for determining contract R&D fees significantly reduces the leeway for profit shifting by means of intra-group contract R&D arrangements. These findings are of importance given a possible move towards the profit

split method in certain countries or even under the OECD transfer pricing rules for intangible assets which are currently under revision.

11. The introduction of an IP Box in Cyprus (2012) and the United Kingdom (2013) stirred up a discussion about whether IP Boxes constitute harmful tax measures or violate the EU State aid rules. In the past, the Spanish IP Box, which applied to a wide set of IP, was not classified as State aid by the EU Commission. However, one might come to a different conclusion with regard to the regimes which are only available for patents and similar IP. Nevertheless, the regimes seem difficult to challenge through the State aid rules as they are not explicitly selective by favouring certain undertakings based on objective factors such as region, sector, size, or legal form.

12. In contrast to this, it becomes increasingly clear that the Code of Conduct for Business Taxation will have a considerable impact on the IP Box regimes. At the end of 2014, the EU member states endorsed the 'modified nexus approach' which specifies the substantial activity criterion of the Code of Conduct with respect to IP Box regimes. In a second step, the Code of Conduct group concluded that all IP Boxes violate the nexus approach and need to be changed along its lines. This first and foremost involves that the amount of eligible income has to be limited to the share which relates to in-house R&D activity and R&D outsourced to third parties, whereas IP income which relates to intra-group contract R&D and acquired IP needs to be excluded for the most part. The nexus approach further limits the scope of eligible IP to patents and comparable intangibles and stipulates that the IP Box benefit should be applied to net, instead of gross, income. The implementation of the nexus approach will therefore likely result in a considerable standardisation of the IP Box regimes in the EU member states. Member states are required to amend their regimes accordingly by the end of June 2021. The implications of these developments might even extend beyond the EU as Switzerland has expressed its intention to design the proposed cantonal IP Box regime in accordance with the nexus approach.

13. Countries face several tax policy options to counteract profit shifting through IP tax planning. From the perspective of the source countries, the most commonly discussed proposals are withholding taxes on royalties and royalty deduction limitations. In turn, from the perspective of R&D countries (the countries in which IP is created), these are the application of retroactive price adjustment clauses in case of the intra-group disposal of IP and the application of the profit split method when determining contract R&D fees. Finally, the residence countries of the ultimate parent of a multinational group of companies might limit the incentive for profit shifting through

controlled foreign company rules. However, all of these reform measures raise economic, legal, and practical concerns. Most notably, they may be associated with double taxation if implemented on a unilateral basis. This in particular holds true if the countries involved all take measures but do not coordinate them. As a consequence, although the aim might be the elimination of non-taxation, double or even multiple taxation might be the result. Therefore, a coordinated approach is required.

14. The current BEPS initiative of the OECD stirred up hope for a coordinated move to tackle tax base erosion and profit shifting. Several of the actions proposed by the OECD also address the issues raised by IP Box regimes and IP tax planning models. Most notably, the BEPS action plan involves revamping the OECD's work on harmful tax practices (action no. 5) and developing transfer pricing and profit allocation rules to prevent base erosion and profit shifting involving intangible assets (action no. 8). The deliverables for action no. 5 involve the application of the (modified) nexus approach when assessing whether IP Box regimes constitute harmful tax practices. Hence, the conclusions drawn for the Code of Conduct regarding the implications of the modified nexus approach for the IP Box regimes also apply here. Member states of the OECD are required to amend their regimes to align them with the modified nexus approach by the end of June 2021. As output for action no. 8 the OECD published a revised draft of chapter six on the transfer pricing rules for intangible assets. It remains to be seen how the revised guidelines for transactions involving intangibles will affect IP tax planning.

15. Selective and isolated changes to the current international tax system might not be sufficient. The fact that corporate taxes are not internationally harmonised constitutes one of the main reasons for intra-group profit shifting resulting in tax base erosion. Hence, in order to address the root cause of profit shifting and tax base erosion, it might be necessary to fundamentally harmonise corporate taxation. In this regard, the concept for a Common Consolidated Corporate Tax Base (CCCTB) put forward by the EU Commission currently constitutes the most prominent reform proposal. At least within the EU, the CCCTB would eliminate the issue of profit shifting by means of IP tax planning. Instead companies would face incentives to shift labour and tangible assets, two of the three factors which form part of the formula applied to allocate a group's profits to its affiliates under the CCCTB (sales being the third). For this reason, some scholars propose to completely rely on the location of consumption for allocating profits and to replace the traditional corporate income tax involving separate accounting by a

destination-based cash flow tax. Both a CCCTB and a destination-based cash flow tax raise numerous technical issues. They should therefore be further developed and considered as medium- to long-term reform options.

REFERENCES

Abdellatif, M.M. (2011), Withholding tax and cross-border intellectual property transactions in developing countries: the example of Egypt and India, *Bulletin for international taxation*, vol. 65(8), published online 7 July 2011.

Altshuler, R. and R.G. Hubbard (2003), The effect of the tax reform act of 1986 on the location of assets in financial services firms, *Journal of Public Economics*, vol. 87(1), pp. 109-127.

Altshuler, R. and R.G. Hubbard (2010), Formula Apportionment: Is it better than the Current System and are there better Alternatives?, *National Tax Journal*, vol. 63(4. 2), pp. 1145–1184.

Amatucci, A. (ed.) (2012), *International Tax Law*, 2nd edition, Alphen aan den Rijn.

Ambos, B. (2005), Foreign direct investment in industrial research and development: A study of German MNCs, *Research Policy*, vol. 34(4), pp. 395–410.

Andrus, J.L. (2007), United States, in: International Fiscal Association (ed.) (2007), *Transfer pricing and intangibles*, cahiers de droit fiscal international, vol. 92A, The Hague, pp. 629-651.

Andrus, J. and M. Durst (2006), Standing on 'Principal': Risk-Limiting Transfer Pricing Structures, *Tax Notes International*, 18 December 2006, pp. 959-963.

Aristotelous, P. and E. Neocleous (2012), Cyprus adopts intellectual property rights "box", *Tax planning international review*, vol. 39(8), pp. 23-26.

Aquerreta, C., G. Dalziel, S. Lord, and R. Stahel (2013), Patent Box Regime Designed to Protect R&D Tax Credits, *Tax Notes International*, 3 June 2013, pp. 967-970.

Arrow, K. (1962) Economic Welfare and the Allocation of Resources for Invention, in: Nelson, R.R. (ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors*, New York, pp. 609-625.

Atkinson, R.D. and S. Andes (2011), *Patent Boxes: Innovation in Tax Policy and Tax Policy for Innovation*, The Information Technology and Innovation Foundation, October 2011, download: http://www.itif.org/files/2011-patent-box-final.pdf.

Auerbach, A., M. Devereux, and H. Simpson, Taxing Corporate Income, in: J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds.) (2010), *Dimensions of Tax Design: The Mirrlees Review*, Oxford, pp. 837-893.

Ault, H.J. (2013), Some Reflections on the OECD and the Sources of International Tax Principles, *Tax Notes International*, 17 June 2013, pp. 1195-1201.

Ault, H.J. and B.J. Arnold (2010), *Comparative Income Taxation: A Structural Analysis*, 3rd edition, The Hague.

Avi-Yonah, R.S. and I. Benshalom (2011), Formulary Apportionment - Myths and Prospects, *World Tax Journal*, vol. 3(3), pp. 371-398.

Baaijens G.G. and A. Breuer (2010), Niederlande: Steuerliche Impulse für Forschung und Entwicklung: Die "Innovatiebox" und flankierende Regelungen, *Betriebs-Berater*, vol. 65(48), pp. 2932-2939.

Bal, A. and R. Offermanns (2012), R&D Tax Incentives in Europe, *European Taxation*, vol. 52(4), pp. 167-175.

Bartelsmana, E.J. and R.M.W.J. Beetsma (2003), Why pay more? Corporate tax avoidance through transfer pricing in OECD countries, *Journal of Public Economics*, vol. 87(9-10), pp. 2225–2252.

Bartosch, A. (2010), Is there a need for a rule of reason in European State aid Law? Or how to arrive at a coherent concept of material selectivity, *Common Market Law Review*, vol. 47(3), pp. 729-752.

Bauer, M.E. (2000), *Verrechnungspreise für immaterielle Wirtschaftsgüter des Anlagevermögens*, Frankfurt a.M.

Baumann, M., B. Knoll, and N. Riedel (2015), T*he Global Effects of R&D Tax Incentives: Evidence from Micro-Data*, 15 February 2014, conference paper submitted for the annual conference of the German Economic Association, download: http://www.econstor.eu/bitstream/10419/100347/1/VfS_2014_pid_416.pdf.

Baumhoff, H., X. Ditz, and M. Greinert (2007), Auswirkungen des Unternehmensteuerreformgesetzes 2008 auf die Besteuerung grenzüberschreitender Funktionsverlagerungen, *Deutsches Steuerrecht*, vol. 45(38), pp. 1649-1655.

Baumhoff, H. and D. Liebchen (2014), Seminar G: Steuerfragen im Zusammenhang mit immateriellen Wirtschaftsgütern, *Internationales Steuerrecht*, vol. 23(19), pp. 711-716.

Bourgeois, M. and E. von Frenekel (2008), Relation to Taxpayers outside the Group, in: Lang, M., P. Pistone, J. Schuch, and C. Staringer (eds.), *Common Consolidated Corporate Tax Base*, Vienna, pp. 195-210.

Becker, K. (2014), Der OECD-Bericht zur Maßnahme 5 des BEPS-Aktionsplans. BEPS-Aktionspunkt 5: Wirksamere Bekämpfung des schädlichen Steuerwettbewerbs, *Internationales Steuerrecht*, vol. 23(19), pp. 704-708.

Becker, J. and N. Riedel (2012), Cross–Border Tax Effects on Affiliate Investment - Evidence from European Multinationals, *European Economic Review*, vol. 56(3), pp. 436-450.

Beer, S. and J. Loeprick (2013), Profit Shifting: Drivers and Potential Countermeasures, *WU International Taxation Research Paper Series*, no. 2013-03.

Beiser, R. (2014), Ausgewogene Aufteilung der Ertragsteuerbefugnis und Abzug der Schuldzinsen und Lizenzgebühren, *Steuer und Wirtschaft International*, vol. 24(6), pp. 261-263.

Belastingdienst/Directie Vaktechniek Belastingen (2014), *Vennootschapsbelasting. Innovatiebox*., Besluit van 1 september 2014, nr. BLKB2014/1054M, download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.rijksoverheid.nl%2Fbestanden%2Fdocumenten-en-publicaties%2Fbesluiten%2F2014%2F09%2F01%2Fblkb2014-1054-vpbwi-innovatiebox%2Fblkb2014-1054mvpbwi-beleidsbesluit-inzake-innovatiebox.pdf&ei=8BA4VJ_JLMvlaq_SgsgG&usg=AFQjCNHRpVtJL-jlUIyRvE_-v9i00dqa6Q&bvm=bv.77161500,d.d2s.

Bellingwout, J., L. Evers, J. Heckemeyer, and C. Spengel (2012), *Taxation of Headquarter Services in Europe*, Amsterdam and Mannheim, download: http://www.rechten.vu.nl/nl/Images/HQ%20Study_tcm22-276944.pdf.

Bently, L. and B. Sherman (2009), *Intellectual Property Law*, Oxford.

Van den Berghe, J.-P. and P.L. Kelley (2008), New Patent Deduction in Belgium: A Powerful Incentive, *Bulletin for International Taxation*, vol. 3(8-9), pp. 374-383.

Van den Berghe, J.-P. and Vrolijk, J. (2011), House of Representatives Adopts 2012 Tax Plan, *Tax Notes International*, 5 December 2011, pp. 702-707.

Bernales, R. (2012), Corporate Income Tax Law Developments, *European Taxation*, vol. 52(10), pp. 525-528.

Biegalskie, A. (2010), The ALP: Fiscalism or Economic Realism?, *Intertax*, vol. 38(3), 177–186.

Bird, R. (1988), Shaping the New International Tax Order, *International Bureau of Fiscal Documentation Bulletin*, vol. 41(7), pp. 292-299.

Blanluet, G. and P.J. Durand (2011), General Report, in: International Fiscal Association (ed.) (2011), *Key practical issues to eliminate double taxation of business income*, cahiers de droit fiscal international, vol. 96B, The Hague, pp. 17-57.

Bloom, N. and R. Griffith (2001), The Internationalisation of UK R&D, *Fiscal Studies*, vol. 22(3), pp. 337–355.

Bloom, N., L. Chennels, R. Griffith, and J. van Reenen (2001), How has tax affected the changing cost of R&D? evidence from eight countries, in: Smith, H.L. (ed.) T*he Regulation of Science and Technology*, Palgrave Macmillan Basingstoke, pp. 136-160.

Bloom, N., R. Griffith, and J. van Reenen (2002), Do R&D tax credits work? Evidence from a panel of countries 1979-1997, *Journal of Public Economics*, vol. 85(1), pp. 1-31.

Bloom, N., M. Schankerman, and J. Van Reenen (2013), Identifying technology spillovers and product market rivalry, *Econometrica*, vol. 81(4), pp. 1347-1393.

Böcker, H. (1991), Steuerliche Prüfung und Behandlung von Lizenzzahlungen an verbundene ausländische Unternehmen, *Die Steuerliche Betriebsprüfung*, vol. 31(4), pp. 73-83.

Böhm, T., T. Karkinsky, B. Knoll, and N. Riedel (2012), *The Impact of Corporate Taxes on R&D and Patent Holdings*, 15 February 2014, conference paper submitted for the annual conference of the German Economic Association, download: http://www.econstor.eu/bitstream/10419/100347/1/VfS_2014_pid_416.pdf.

Bohn, A. (2009), *Zinsschranke und Alternativmodelle zur Beschränkung des steuerlichen Zinsabzugs*, Wiesbaden.

Bond, S.R. and M.P. Devereux (2002), Cash Flow Taxes in an Open Economy, *CEPR Discussion Paper*, no. 3401.

Bond, S.R., L. Chennells, M.P. Devereux, M. Gammie, and E. Troup (2000), *Corporate Tax Harmonisation in Europe: A Guide to the Debate*, Institute for Fiscal Studies, download: http://www.ifs.org.uk/comms/r63.pdf.

Boos, M. (2003), *International Transfer Pricing: The Valuation of Intangible Assets*, The Hague.

Bousin, J. and J. Piernas (2008), Developments in the Notion of Selectivity, *European State Aid Law Quarterly*, vol. 8(4), pp. 634-653.

Brauner, Y. (2010), Cost Sharing and the Acrobatics of Arm's Length Taxation, *Intertax*, vol. 38(11), pp. 554-567.

Brekelmans, J.-B. (2006), 2006 Year in Review – Luxembourg, *Tax Notes International*, 25 December 2006, pp. 1072-1074.

Brooks, K. (2007), Tax Treaty Treatment of Royalty Payments from Low Income Countries: A comparison of Canada and Australia Policies, *eJournal of Tax Research*, vol. 5(2), pp. 168-197.

Brown, P. (2012), General Report, in: International Fiscal Association (ed.), *The Debt-equity conundrum*, cahiers de droit fiscal international, vol. 97B, The Hague.

Van den Bruinhorst, C. and C. Wetemans (2009), Choosing an Optimal R&D Location: The Netherlands, September 2009, *Tax management international forum*, vol. 30(3).

Brunsbach, S., D. Dieter Endres, J. Lüdicke, and A. Schnitger (2013), Deutsche Abkommenspolitik – Trends und Entwicklungen 2012/2013, *IFSt-Schrift*, no. 492.

Buck, C. and Coe, P. (2013), United Kingdom – New Analysis: The U.K.'s 2013 Growth Budget, *Tax Notes International*, 1 April 2013, p. 33.

Bucovetsky, S. and A. Haufler (2007), Preferential Tax Regimes with Asymmetric Countries, *National Tax Journal*, vol. 60(4), pp. 269-304.

Buettner, T., M. Overesch, U. Schreiber, and G. Wamser (2008), The Impact of Thin–Capitalization Rules on Multinationals' Financing and Investment Decisions, *Bundesbank Discussion Paper*, no. 03/2008.

Buettner, T., M. Overesch, and G. Wamser (2014), Anti Profit-Shifting Rules and Foreign Direct Investment, *CESifo Working Paper Series*, no. 4710.

Burow M. (2014), U.K. and Germany Target Harmful IP Regimes, *Tax Notes International*, 17 November 2014, p. 599.

Cameron, G. (1996), On the measurement of real R&D: Divisia price indices for UK business enterprise R&D, *Research Evaluation*, vol. 6(3), pp. 215-219.

Cantwell, J. and L. Piscitello (2005), Recent Location of Foreign-owned Research and Development Activities by Large Multinational Corporations in the European Regions: The Role of Spillovers and Externalities, *Regional Studies*, vol. 39(1), pp. 1–16.

Carey, S., S. Huibregtse, and V. Bagri (2012), How to deal with the new generation of intangibles, *Transfer pricing international journal*, vol. 13(2), pp. 4-9.

Carr B., J. Murillo, C. O'Neill, and M.J. Berger (2011), To Think Outside the Box, Think Innovation Box, *Taxes – The Tax Magazine*, vol. 89(10), pp. 47-55.

Cassar Torregiani, C. (2010), Malta - Regulations Detail Tax Exemption for Royalties, *Tax Notes Internationa*l, 15 November 2010, p. 486.

Cassar Torregiani, C. and A. Vroom (2012), Malta - Government Expands Royalty, Participation Exemptions, *Tax Notes Internationa*l, 11 June 2012, pp. 1014-1015.

Cassar Torregiani, C. and A. Vroom (2013), Malta - Government Expands Royalty, Participation Exemptions, *Tax Notes Internationa*l, 27 May 2013, p. 860.

Cattoir, P. (2006), A history of the "tax package" - The principles and issues underlying the community approach, *European Commission Taxations Papers*, Working paper no. 10, Luxembourg.

Caves, R.E. (2007), *Multinational Enterprise and Economic Analysis*, 3rd edition, Cambridge u.a.

CDU, CSU, and SPD (2013), *Deutschlands Zukunft Gestalten – Koalitionsvertrag zwischen CDU, CSU und SPD*, download: http://www.bundesregierung.de/Content/DE/_Anlagen/2013/2013-12-17-koalitionsvertrag.pdf;jsessionid=765775F8BF36B13473E6C32B3FA89479.s1t1?__blob=publicationFile&v=2.

Chakravarty, A. and S. Ray (2013), Circulars on Transfer Pricing of Contract R&D Centres: The Road Ahead, *International Transfer Pricing Journal*, vol. 20(11/12), pp. 404-406.

Chambres des Députés (2007a), document no. 5801/00, 15 November 2007, download: http://www.impotsdirects.public.lu/archive/newsletter/2007/nl_071107/Projet_de_loi_no_5801.pdf.

Chambres des Députés (2007b), Rapport de la Commission des Finances et du Budget, document no. 5801/07, 13 December 2007, download: http://www.chd.lu/wps/PA_RoleEtendu/FTSByteServingServletImpl/?path=/export/exped/sexpdata/Mag/057/632/065361.pdf.

Chambre des Représentants de Belgique (2007a), Projet des loi-Programme, document no. 51-3058/1, Explanatory Notes, 4 April 2007, download: http://www.lachambre.be/FLWB/pdf/51/3058/51K3058001.pdf.

Chambre des Représentants de Belgique (2007b), Projet des loi-Programme, Rapport, document no. 51-3058/15, 20 April 2007, download: http://www.lachambre.be/doc/FLWB/pdf/51/3058/51K3058015.pdf.

Chawla, A. (2013), India's Safe Harbor Regulations: An Unlikely Sunset On Transfer Pricing Disputes, *Tax Notes International*, 21 October 2013, pp. 245-247.

Claasen, F. (1994), *Steuerbelastung internationaler Investitionen - Ein Vergleich der Bundesrepublik Deutschland mit den USA*, Hamburg.

Coase, R.H. (1937), The Nature of the Firm, *Economica*, vol. 4(16), pp. 386-405.

Coe, D.R. and R. Moghadam (1993), Capital and Trade as Engines of Growth in France: An Application of Johansen's Cointegration Methodology, *IMF Staff Papers*, vol. 40(3), pp. 542-566.

Congressional Budget Office (2007), *Federal Support for Research and Development*, download: http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/82xx/doc8221/06-18-research.pdf.

Cops, G. and K. de Haen (2008), Patent tax benefit creates European benchmark, *International Tax Review*, vol. 18(6), pp. 33-36.

Cops, G. and D. Lemaire (2009), Tax optimising your R&D investments: Belgium, a first choice location, *Tax planning international review*, vol. 36(3), pp. 12-18.

Cottani, G. (2011), *Transfer Pricing*, IBFD online book.

Council of the European Union (1997), *Conclusions of the ECOFIN Council meeting on 1 December 1997 concerning taxation policy*, 98/C 2/01, 6 January 1998.

Council of the European Union (1999), *Report from the Code of Conduct Group (Business Taxation) to the ECOFIN Council on Code of Conduct (Business Taxation)*, SN 4901/99, Brussels, 23 November 1999.

Council of the European Union (2000), *Progress Report from the Code of Conduct Group (Business taxation) to the ECOFIN Council on the Code of Conduct (Business Taxation)*, Doc. 13563/00 FISC 193, Brussels, 20 November 2000.

Council of the European Union (2003), *Report from the Enlargement Group (Tax Experts) to the Permanent Representatives Committee/Council on the Code of Conduct for Business, Taxation- Harmful tax measures in the acceding States and commitments for rollback*, Doc. 13213/03 ELARG 94 FISC 138, Brussels, 6 October 2003.

Council of the European Union (2005), *Report from the Code of Conduct Group (Business taxation) to the ECOFIN Council on the Code of Conduct (Business Taxation)*, Doc. 15434/05 FISC 156, Brussels, 6 December 2005.

Council of the European Union (2006), *Item note from the Working Party on Enlargement to the Permanent Representative Committee/Council on the Code of Conduct for Business Taxation – Harmful tax measures in Bulgaria and Romania and commitments for rollback*, Doc. 10879/06 ELARG 66 FISC 96, Brussels, 26 June 2006.

Council of the European Union (2007), *Report from the Code of Conduct Group (Business taxation) to the ECOFIN Council on the Code of Conduct (Business Taxation)*, Doc. 15545/07 FISC 157, Brussels, 21 November 2007.

Council of the European Union (2008), *Report from the Code of Conduct Group (Business taxation) to the ECOFIN Council on the Code of Conduct (Business Taxation)*, Doc. 16084/1/08 REV 1, Brussels, 26 November 2008.

Council of the European Union (2010a), *"A" Item note from COREPER to the Council on the Code of Conduct (Business Taxation) - Draft Council Conclusions*, Doc. 10595/10 FISC 57, Brussels, 2 June 2010.

Council of the European Union (2010b), *Council Resolution of 8 June 2010 on coordination of Controlled Foreign Corporation (CFC) and thin capitalisation rules within the European Union*, Doc. 2010/C 151/01, Brussels, 16 June 2010.

Council of the European Union (2013a), *Report from the Code of Conduct Group (Business Taxation) to the ECOFIN Council Code of Conduct Group (Business Taxation)*, Doc. 11465/13 FISC 134, Brussels, 21 June 2013.

Council of the European Union (2013b), *Report from the Code of Conduct Group (Business Taxation) to the ECOFIN Council Code of Conduct Group (Business Taxation)*, Doc. 16656/1 FISC 226, Brussels, 29 November 2013.

Council of the European Union (2013c), *Press Release, 3281st Council meeting Economic and Financial Affairs*, Doc. 17556/13 PRESSE 559 PR CO 66, Brussels, 10 December 2013.

Council of the European Union (2014a), *Report from the Code of Conduct Group (Business Taxation) to the ECOFIN Council Code of Conduct Group (Business Taxation)*, Doc. 10608/14, FISC 95, Brussels, 6 June 2014.

Council of the European Union (2014b), *Report from the Code of Conduct Group (Business Taxation) to the ECOFIN Council Code of Conduct Group (Business Taxation)*, Doc. 16553/1/14, Rev 1, FISC 225, Brussels, 11 December 2014.

Criscuolo, C. (2009), *The effect of R&D tax incentives on location of R&D investment*, http://ec.europa.eu/invest-in-research/pdf/download_en/annex1_impact_tax_incentives_investment_location.pdf.

Dahlberg, M. and B. Wiman (2013), General Report, in: International Fiscal Association (ed.), *The taxation of foreign passive income for groups of companies*, cahiers de droit fiscal international, vol. 98A, The Hague, pp. 17-56.

Darby, J.B. II and K. Lernaster (2007), Double lrish More than Doubles the Tax Saving: Hybrid Structure Reduces lrish, U.S. and Worldwide Taxation, *Practical US/International Tax Strategies*, vol. 11(9), pp. 2, 11-16.

Defever, F. (2012), The spatial organization of multinational firms, *Canadian Journal of Economics/ Revue canadienne d'Economique*, vol. 45(2), pp. 672–697.

Deloitte (ed.) (2009), *An overview of international Safe Harbor provisions and the need for Safe Harbor in India*, A white paper by Deloitte, October 2009, download: http://www.tpweek.com/assets/pdf/Final-Safe-Harbour22Oct11-55AM.pdf.

Deloitte (ed.) (2012), *Global Survey of R&D Tax Incentives*, September 2012, download: http://www.deloitte.com/assets/Dcom-Canada/Local%20Assets/Documents/Tax/EN/2012/ca_en_tax_Global_SurveyR&D_Tax_incentives_September_2012.PDF.

Deloitte (ed.) (2013), *Global Survey of R&D Tax Incentives*, March 2013, download: http://www.investinamericasfuture.org/PDFs/Global_RD_Survey_March_2013.pdf .

Deloitte (ed.) (2014), *Guide to Controlled Foreign Company Regimes*, download: http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-guide-to-cfc-regimes-210214.pdf.

Department of Finance (Ireland) (2013), *Review of Ireland Research and Development (R&D) Tax Credit 2013*, download: http://budget.gov.ie/Budgets/2014/Documents/Department%20of%20Finance%20Review%20of%20R&D%20Tax%20Credit%202013.pdf.

Department of Finance (Ireland) (2014), *An Economic Approach to Evaluation the R&D Tax Credit in Ireland*, working paper, download: http://igees.gov.ie/wp-content/uploads/2014/05/R_and_D_technical_paper_publicationfinal.pdf.

Department of Finance (Ireland) (2015), *The Knowledge Development Box. Public Consultation*, download: http://www.finance.gov.ie/sites/default/files/Knowledge_Development_Box_%20DFinance_consultation_finalweb%20cover_0.pdf.

Desai, M.A., C.F. Foleyb, and J.R. Hines (2004), Foreign direct investment in a world of multiple taxes, *Journal of Public Economics*, vol. 88(12), pp. 2727–2744.

Desai, M. and J.R. Jr. Hines (2003), Evaluating International Tax Reform, *National Tax Journal*, vol. 56(3), pp. 487–502.

Devereux, M.P. (2008a), Business Taxation in a globalized world, *Oxford Review of Economic Policy*, vol. 24(4), pp. 625-638.

Devereux, M.P. (2008b), Taxation of outbound direct investment: economic principles and tax policy considerations, *Oxford Review of Economic Policy*, vol. 24(4), pp. 698–719

Devereux, M.P. and R. de la Feria (2014), Defining and implementing a destination-based corporate tax, *Oxford University Centre for Business Taxation Working Paper Series*, WP 14/07.

Devereux, M.P. and R. Griffith (1998), Taxes and the Location of Production: Evidence from a Panel of US Multinationals, *Journal of Public Economics*, vol. 68(1), pp. 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 (Revision 2), London.

Devereux, M.P. and R. Griffith (2003), Evaluating tax policy for location decisions, *International Tax and Public Finance*, vol. 10(2), pp. 107-126.

Devereux, M.P. and C. Keuschnigg (2009), The Distorting Arm's Length Principle, *Oxford University Centre for Business Taxation Working Paper Series*, WP 09/10.

Devereux, M.P. and S. Loretz (2008), The Effects of EU Formula Apportionment on Corporate Tax Revenues, *Fiscal Studies*, vol. 29(1), pp. 1-33.

Devereux, M.P., R. Griffith, and A. Klemm (2002), Corporate income tax – Reforms and tax competition, *Economic Policy*, vol. 17(35), pp. 451-495.

Devereux, M.P., C. Elschner, D. Endres, J.H. Heckemeyer, M. Overesch, U. Schreiber, and C. Spengel (2008), *Project for the EU Commission TAXUD/2005/DE/3 10*, Final Report, Mannheim and Oxford, download: http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/economic_studies/effective_levels_report.pdf.

Dharmapala, D. (2014), What Do We Know About Base Erosion and Profit Shifting? A Review of the Empirical Literature, *CESifo Working Paper*, no. 4612.

Dikmans, S. (2007), New Netherlands Corporate Income Tax Provisions for 2007, *European Taxation*, vol. 47(4), pp. 158-167.

Direction générale de la compétitivité de l'Industrie et des services (2012), *Étude comparative sur la fiscalité des brevets en Europe*, download: http://www.entreprises.gouv.fr/files/files/directions_services/etudes-et-statistiques/etudes/autres/2013-11-etude-fiscalite-brevet-europe-nov12.pdf.

Dirix, K. (2013), Harmful Tax Competition: Six Belgian Tax Incentives under the Microscope, *EC Tax Review*, vol. 22(5), pp. 233-249.

Dischinger, M. and N. Riedel (2011), Corporate taxes and the location of intangible assets within multinational firms, *Journal of Public Economics*, vol. 95(7-8), 691–707.

Ditz, X. R. Pinkernell, and C. Quilitzsch (2014), BEPS-Reformvorschläge zu Lizenzgebühren und Verrechnungspreisen bei immateriellen Wirtschaftsgütern aus Sicht der Beratungspraxis, *Internationales Steuerrecht*, vol. 23(2), pp. 45-51.

Dorfmüller, P. and H. Fischer (2014), Court Questions Constitutionality of Interest Barrier Rule, *Tax Notes International*, 28 April 2014, p. 329.

Driscoll, D. K. Kimball, B. Lam, D. Munger, and K. Reams (2013), The evolution of business model optimisation, in: Deloitte (ed.), *International Tax Review Tax - References Library no. 76 - Intangibles*, pp. 24-31.

Dougherty, S.M., R. Inklaar, R.H. McGuckin, and B. van Ark (2007), International Comparisons of R&D Expenditure - Does an R&D PPP Make a Difference?, in: Berndt E.R. and CR. Hulten (eds.), *Hard-to-Measure Goods and Services: Essays in Honor of Zvi Griliches*, Chicago University of Chicago Press.

Douma, S. and F. Engelen (2010), Non-discriminatory Tax Obstacles to Free Movement, in: Lang, M. and C. Weinzierl (eds.), *Europäisches Steuerrecht,* Festschrift für Friedrich Rödler zum 60. Geburtstag, Vienna, pp. 193–203.

Drabbe, H. (2012), The Test of Selectivity in State Aid Litigation: The Relevance of Drawing Internal and External Comparisons to Identify the Reference Framework, in: Rust, A. and C. Micheau (eds.), *State Aid and Tax Law*, Alphen aan den Rijn, pp. 87-105.

Dunning, J.H. (1973), The Determinants of International Production, *Oxford Economic Papers*, vol. 25(3), pp. 289-336.

Durst, M.C. (2010), It's Not Just Academic: The OECD Should Reevaluate Transfer Pricing Laws, *Tax Notes International*, 18 January 2010, pp. 247-256.

Durst, M.C. (2012a), OECD Guidelines: Causes and Consequences, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 123-136.

Durst, M.C. (2012b), Pragmatic Transfer Pricing for Developing Countries, *Tax Notes International*, 23 January 2012, pp. 279-285.

Durst, M.C. (2012c), The OECD Discussion Draft on Safe Harbors — And Next Steps, *Tax Notes International*, 13 August 2012, pp. 647-650.

Durst, M.C. (2013a), Statutory Protection From Base Erosion for Developing Countries, *Tax Notes International*, 4 February 2013, pp. 465-468.

Durst, M.C. (2013b), Deduction Curbs May Be Most Feasible Fix for U.S. Base Erosion, *Tax Notes International*, 18 March 2013, pp. 1039-1042.

East, R. (2011), *Malta Tax Treatment of Royalties Derived From Patents*, 8 July 2011, download: http://www.csb-advocates.com/malta-law-articles/malta-tax-treatment-royalties-derived-patents.

Eicke, R. (2013a), Germany's New Portfolio Dividend Taxation, *Tax Notes International*, 8 April 2013, pp. 153-154.

Eicke, R. (2013b), Subject-to-Tax Clauses Under German International Tax Law, *Tax Notes International*, 16 December 2013, pp. 1035-1037.

Eicke, R. (2014a), Switzerland's Cantonal 'License Box' Regime, *Tax Notes International*, 19 May 2014, pp. 641-643.

Eicke, R. (2014b), A German Perspective on Treaty Overrides, *Tax Notes International*, 7 July 2014, pp. 47-48.

Eidgenössische Steuerverwaltung (2001), *Kreisschreiben Nr. 8 - Internationale Steueraussscheidung von Principal-Gesellschaften*, download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCIQFjAA&url=http%3A%2F%2Fwww.estv.admin.ch%2Fbundessteuer%2Fdokumentation%2F00242%2F00380%2Findex.html%3Flang%3Dde%26download%3DNHzLpZig7t%2Clnp6I0NTU042l2Z6ln1acy4Zn4Z2qZpnO2Yuq2Z6gpJCDdIF2g2ym162dpYbUzd%2CGpd6emK2Oz9aGodetmqaN19XI2IdvoaCUZ%2Cs-&ei=wbG2U6TkPPD74QS4nYHgCQ&usg=AFQjCNHwr4bKEs-qUhyGuc-Lsdsi6MtHMQ&bvm=bv.70138588,d.bGE.

Eidgenössische Steuerverwaltung (2013), *Massnahmen zur Stärkung der steuerlichen Wettbewerbsfähigkeit (Unternehmenssteuerreform III) - Bericht des Steuerungsorgans zuhanden des EFD*, download: http://www.news.admin.ch/NSBSubscriber/message/attachments/33314.pdf.

Eidgenössische Steuerverwaltung (2014), *Erläuternder Bericht zur Vernehmlassungsvorlage über das Bundesgesetz über steuerliche Massnahmen zur Stärkung der Wettbewerbsfähigkeit des Unternehmensstandorts Schweiz (Unternehmenssteuerreformgesetz III) vom 19. September 2014*, download: http://www.news.admin.ch/NSBSubscriber/message/attachments/36631.pdf.

Eilers, S. and F. Bühring (2009), Das Ende des Schönwetter-Steuerrechts - Die Finanzmarktkrise gebietet Änderungen im deutschen Sanierungssteuerrecht, *Deutsches Steuerrecht*, vol. 47(4), pp. 137-141.

Elschner, C., C. Ernst, G. Licht, and C. Spengel (2009), What the Design of an R&D Tax Incentive Tells About its Effectiveness: A Simulation of R&D Tax Incentives in the European Union, *Journal of Technology Transfer*, vol. 36(3), pp. 233-256.

Endres, D., A. Oestreicher, W. Scheffer, C. Spengel, S. Alt, H, Koehler, H. Riesselmann, and C. Wendt (2007), *The Determination of Corporate Taxable Income in the EU Member States*, Alphen aan den Rijn.

Engelen, F. and A. Gunn (2012), State Aid: Towards a Theoretical Assessment Framework, in: Rust, A. and C. Micheau (eds.), *State Aid and Tax Law*, Alphen aan den Rijn, pp. 137-151.

Englisch, J. and A. Yevgenyeva (2013), The "Upgraded" Strategy Against Harmful Tax Practices Under the BEPS Action Plan, *British Tax Review*, vol. 58(5), pp. 620-637.

Ernst, C. (2012), *Evaluation of tax incentives for research and development in Germany*, Lohmar.

Ernst, C., K. Richter, and N. Riedel (2014), Corporate Taxation and the Quality of Research and Development, *International Tax and Public Finance*, vol. 21(4) pp. 694-719.

Ernst & Young (ed.) (2003), *Cost Contribution Agreements - A Global, OECD and Country Review*, download: http://www2.eycom.ch/publications/items/200304_cca/en.pdf.

Ernst & Young (ed.) (2012), *IP Box Regime Cyprus*, download: http://www.ey.com/Publication/vwLUAssets/IP_Box_Regime_-_Cyprus/$FILE/E&Y%20brochure%20ip%20tax%20box2%20final.pdf.

Ernst & Young (ed.) (2013), *Worldwide R&D incentive reference guide 2013-2014*, http://www.ey.com/Publication/vwLUAssets/EY-Worldwide_R_and_D_incentives_reference_guide/$FILE/EY-Worldwide-R&D-incentives-reference-guide.pdf.

Ernst & Young (ed.) (2015), *Italian Government makes improvements to Patent Box regime*, Global Tax Alert, 27 January, 2015, download: http://www.ey.com/Publication/vwLUAssets/Italian_Government_makes_improvements_to_Patent_Box_regime/$FILE/2015G_CM5080_Italian%20Government%20makes%20improvements%20to%20Patent%20Box%20regime.pdf.

Estrelles Domingo, J.A. and P. Oraa (2007), Tax Treatment of R&D Expenses in Spain, *International Transferpricing Journal*, vol. 14(1), pp. 44-46.

European Commission (1996), *Taxation in the European Union*, SEC(96) 487 final.

European Commission (1997), *A package to tackle harmful tax competition in the European Union*, COM(97) 564 final.

European Commission (1998), *Commission notice on the application of the State aid rules to measures relating to direct business taxation*, 98/C 384/03, 10 December 1998, download: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:1998:384:0003:0009:EN:PDF.

European Commission (1999), *Decision no. 2000/795/EC of 22 December 1999 on the State aid implemented by Spain for Ramondín SA and Ramondín Cápsulas SA*, 16 December 2000.

European Commission (2004), *Report on the Implementation of the Commission notice on the application of the state aid rules to measures relating to direct business taxation*, C(2004)434, download: http://ec.europa.eu/competition/state_aid/studies_reports/rapportaidesfiscales_en.pdf.

European Commission (2008), *State aid N 480/2007 - Spain – The reduction of tax from intangible assets*, C(2008)467 final State aid, N 480/2007, download: http://ec.europa.eu/competition/state_aid/cases/221657/221657_784713_9_1.pdf.

European Commission (2010), *EU Joint Transfer Pricing Forum, JTPF Report: Guidelines to low value adding intra-group services*, JTPF/020/REV3/2009/EN, Meeting of 4th February 2010, Brussels.

European Commission (2011), *Proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB)*, COM(2011) 121/4, download: http://ec.europa.eu/taxation_customs/resources/documents/taxation/company_tax/common_tax_base/com_2011_121_en.pdf.

European Commission (2012), *Commission Recommendation on aggressive tax planning*, C(2012) 8806 final, 6 December 2012, download: http://ec.europa.eu/taxation_customs/resources/documents/taxation/tax_fraud_evasion/c_2012_8806_en.pdf.

European Commission (2013), *Room Document no. 2 for the Code of Conduct Group (Business Taxation) meeting on 22 October 2013*, Tax Analysts document service, doc. 2013-24148.

European Commission (2014a), *DG Taxation and Customs Union Management Plan 2014*, download: http://ec.europa.eu/atwork/synthesis/amp/doc/taxud_mp_en.pdf.

European Commission (2014b), *Commission Communication. Framework for State aid for research and development and innovation*, 2014/C 198/01, download: http://ec.europa.eu/competition/state_aid/modernisation/rdi_framework_en.pdf.

European Commission (2014c), *A Study on R&D Tax Incentives*. Final Report, TAXUD/2013/DE/315 , download: http://ec.europa.eu/DocsRoom/documents/8032/attachments/1/translations/en/renditions/pdf.

Evans, C. (2009), Containing Tax Avoidance: Anti-Avoidance Strategies, in: Head, J.G. and R. Krever (eds.), *Tax Reform in tbc 21st Century*, A Volume in Memory of Richard Musgrave, Alphen aan den Rijn, pp. 529-559.

Evers, L., C. Spengel, and H. Miller (2013), Intellectual Property Box Regimes: Effective Tax Rates and Tax Policy Considerations, *ZEW Discussion Paper*, no. 13-07, Mannheim.

Evers, L. and C. Spengel (2014), Effective Tax Rates Under IP Tax Planning, *ZEW Discussion Paper*, no. 14-111, Mannheim.

Eynatten, W. (2008), European R&D and IP Tax Regimes: A Comparative Study, *Intertax,* vol. 36(11), pp. 502-519.

Eynatten, W. and P. Brauns (2010), Benelux tax competition to attract IP income is on again, *International Tax Review*, vol. 21(2), pp. 43-45.

Eynatten, W. and A. Schaffers (2013), Tax competition to attract and keep IP remains alive, *International Tax Review,* vol. 24(3), pp. 11-14.

Felder, M. (2013), *IP Box Regimes from an European, Liechtenstein and Swiss Perspective*, Zürich.

Felder, M. and B.-G. Harmann (2013), Die Liechtensteinische IP-Box Kurzkommentierung ausgewählter Aspekte und Ausblick, *Liechtensteinische Juristen-Zeitung*, vol. 34(2), pp. 71-87.

Fiaccadori, M., A. Mitra, and R. Plunkett, Licensor-licensee profit split and the income approach Deloitte (2013), in: Deloitte (ed.), *International Tax Review Tax - References Library no. 76 - Intangibles*, pp. 40-45.

Finke, K., C. Fuest, H. Nusser, and C. Spengel (2014), Extending Taxation of Interest and Royalty Income at Source – an Option to Limit Base Erosion and Profit Shifting?, *ZEW Discussion Paper*, no. 14-073, Mannheim.

Fisher, I. (1930), *The Theory of interest: As determined by impatience to spend income and opportunity to invest it*, New York.

Fontana, R. (2006a), The Uncertain Future of CFC Regimes in the Member States of the European Union, part 1, *European Taxation*, vol. 46(6), pp. 259-267.

Fontana, R. (2006b), The Uncertain Future of CFC Regimes in the Member States of the European Union, part 2, *European Taxation*, vol. 46(7), pp. 317-334.

Fracasso, A. and G. Vittucci Marzetti (2012), An empirical note on international R&D spillovers, *Empirical Economics*, vol. 45(1), pp 179-191.

Fuest, C. (2008), The European Commission's proposal for a common consolidated corporate tax base, *Oxford Review of Economic Policy*, vol. 24(4), pp.720–739.

Fuest, C. (2013), Besteuerung multinationaler Unternehmen: keine Alleingänge!, *Wirtschaftsdienst*, vol. 93(3), pp. 138-139.

Fuest, C., T. Hemmelgarn, and F. Ramb (2007), How Would the Introduction of an EU-wide Formula Apportionment affect the Size and the Distribution of the Corporate Tax Base? An Analysis Based on German Multinationals, *International Tax and Public Finance*, vol. 14(5), pp. 605-629.

Fuest, C., C. Spengel, K. Finke, J.H. Heckemeyer, and H. Nusser (2013), Profit Shifting and "Aggressive" Tax Planning by Multinational Firms: Issues and Options for Reform, *World Tax Journal*, vol. 4(3), pp. 307-324.

Führich, G.J. (2009), *Der Einfluss der EuGH-Rechtsprechung auf die deutsche Unternehmensbesteuerung - Eine steuerplanerische und steuersystematische Analyse*, Wiesbaden.

Gaigné, C. and I. Wooton (2011), The gains from preferential tax regimes reconsidered, *Regional Science and Urban Economics*, vol. 41(1), pp. 59–66.

Gandhi, S. (2013), India Issues Final Safe Harbor Rules, *Tax Notes International*, 30 September 2013, pp. 1259-1262.

Gelin, S. and F. Bonnet (2009), Host Country France, *Tax Management International Forum*, Bloomberg International Tax Centre, September 2009.

Genschel, P. and M. Jachtenfuchs (2010), The Fiscal Anatomy of a Regulatory Polity: Tax Policy and Multilevel Governance in the EU, *TranState Working Papers*, no. 114.

Gerken, L., J. Märkt, and G. Schick (2000), *Internationaler Steuerwettbewerb*, Tuebingen.

Gerzova, L. and O. Popa (2013), Compatibility of Domestic Anti-Avoidance Measures with Tax Treaties, *European Taxation*, vol. 53(9), pp. 420-425.

Goldscheider, R. (2011), The Classic 25% Rule and the Art of Intellectual Property Licensing, *Duke Law & Technology Review*, vol. 46(3), pp. 148-159.

Goldscheider, R., J.J. Jaroz, and C. Mulhern (2002), Use Of The 25 Per Cent Rule In Valuing IP, *les Nouvelles*, vol. 37(4), pp. 123-133.

Gonzalo, J.L. and I.A. Salcedo (2009), Choosing an Optimal R&D Location: Spain, *International Tax Forum,* Bloomberg BNA.

Ghosh, S., J. Wells, and T. Wolosoff (2013), OECD's discussion draft on intangibles: A positive step forward, *International Tax Review Tax - References Library no. 76 - Intangibles,* pp. 13-19.

Graetz, M.J. and R. Doud (2013), Technological Innovation, International Competition, and the Challenges of International Income Taxation, *Columbia Law Review*, vol. 113(2), pp. 347-445.

Van Graafeiland, M. and I. Kam (2012), CCCTB: Selected Issues - A Summary, in: Webber, D. (ed.), *CCCTB - Selected Issues*, Alphen aan den Rijn, pp. 313-338.

Green, R.A. (1993), The Future of Source-based Taxation of the Income of Multinational Enterprises, *Cornell Law Review*, vol. 79(11), pp. 18-86.

Gregory, A., A. Casley, and K. Naish (2013), United Kingdom : the patent box regime, *International transfer pricing journal*, vol. 20(2), pp. 111-115.

Griffith, R. And H. Miller (2010), Support for research and innovation, in: Chote, R., C. Emmerson, and J. Shaw (eds.), *The IFS Green Budget*, London, pp. 238-248.

Griffith, R. And H. Miller (2011), Corporate Taxes and intellectual property, in: Brewer, M., C. Emmerson, and H. Miller (eds.), *The IFS Green Budget*, London, pp. 223-241.

Griffith, R., S. Redding, and J. van Reenen (2004), Mapping the two faces of R&D: productivity growth, *The Review of Economics and Statistics*, vol. 86(4), pp. 883–895.

Griffith, R., J. Hines, and P.B. Sørensen (2010), International Capital Taxation, in: J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles, and J. Poterba (eds) (2010), *Dimensions of Tax Design: The Mirrlees Review*, Oxford, pp. 914-996.

Griffith, R., H. Miller, and M. O'Connell (2014), Ownership of intellectual property and corporate taxation, *Journal of Public Economics*, vol. 112(1), pp. 12–23.

Griliches, Z. (1992), The Search for R&D Spillovers, *Scandinavian Journal of Economics*, vol. 94 supplement, pp. S29–47.

Grubert, H. (1998), Taxes and the division of foreign operating income among royalties, interest, dividends and retained earnings, *Journal of Public Economics*, vol. 68(5), pp. 269–290.

Grubert, H. (2003), Intangible Income, Intercompany Transactions, Income Shifting, and the Choice of Location, *National Tax Journal*, vol. 56(1) part 2, pp. 221-242.

Grubert, H. (2012), Foreign Taxes and the Growing Share of Multinational Company Income Abroad: Profits, Not Sales, Are Being Globalized, *National Tax Journal*, vol. 65(2), pp. 247-282.

Guellec, D. and B. van Pottelsberghe de la Potterie (2001), *R&D and productivity growth: A panel analysis of 16 OECD countries*, OECD Economic Studies, no. 33, Paris.

Guzman, A.T. and T.L. Meyer (2010), International Soft Law, *Journal of Legal Analysis*, vol. 2(1), pp. 171-225.

Haase, F. (ed.) (2012), *Geistiges Eigentum: nationales und internationales Steuerrecht der immateriellen Wirtschaftsgüter*, Köln.

Hall, B.H. (1996), The Private and Social Returns to Research and Development, in: Smith, B.L.R. and C.E. Barfield (eds.), *Technology, R&D, and the Economy*, Washington DC, pp. 140-183.

Hall, R.E. and D.W. Jorgensen (1967), Tax Policy and Investment Behaviour, *American Economic Review*, vol. 59(3), pp. 391-414.

Hall, B. and J. van Reenen (2000), How effective are fiscal incentives for R&D? A review of the evidence, *Research Policy*, vol. 29(4-5), pp. 449-469.

Hall, B., J. Mairesse, and P. Mohnen (2010), Measuring the Returns to R&D, in: Hall. B.H. and N. Rosenberg (eds.), *Handbook of the Economics of Innovation*, vol. 2, Burlington, pp. 1034-1082.

Hansson, A. and C. Brokelind (2014), Tax Incentives, Tax Expenditures Theories in R&D: The Case of Sweden, *World Tax Journal*, vol. 6(2), pp. 168-200.

Haslehner, W. (2012), Materielle Selektivität von Steuerbeihilfen im Lichte des Gibraltar-Urteil des EuGH, in: Jaeger, T. and B. Haslinger (eds.), *Beihilferecht Jahrbuch 2012*, Vienna.

Haufler, A., M. Mardan, and D. Schindler (2014), *An Economic Rationale for Controlled-Foreign-Corporation Rules*, paper presented at the CESifo Area Conference on Public Sector Economics, April 24 to 26, 2014, download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCoQFjAB&url=http%3A%2F%2Fwww.cesifo-group.de%2Fdms%2Fifodoc%2Fdocs%2FAkad_Conf%2FCFP_CONF%2FCFP_CONF_2014%2FConf-pse14-VanderPloeg%2FPaper%2Fpse14_Haufler__19108236_en.pdf&ei=8nO2U8yOMoTDPIj2gLgJ&usg=AFQjCNEqM84hc9lSy2OAnorCAltrGpbMIw&bvm=bv.70138588,d.ZWU.

Haupt, A. and W. Peters (2005), Restricting preferential tax regimes to avoid harmful tax competition, *Regional Science and Urban Economics*, vol. 35(5), pp. 493–507.

Hausmann, R., P. Roth, and O. Krummenacher (2012), Lizenzbox als Alternatives Steuermodell zur Gemischten Gesellschaft – Besteuerung von Lizenzerträgen unter Berücksichtigung internationaler und europarechtlicher Bestimmungen, *Der Schweizer Treuhänder*, vol. 86(1-2), pp. 87-94.

Heckemeyer, J. and M. Overesch (2012), Auswirkungen der Besteuerung auf Entscheidungen international tätiger Unternehmen - Ein Überblick zu den empirischen Befunden, *Die Betriebswirtschaft*, vol. 72(6), pp. 451-472.

Heckemeyer, J. and M. Overesch (2013), Multinationals' Profit Response to Tax Differentials: Effect Size and Shifting Channels, *ZEW Discussion Paper*, no. 13-045, Mannheim.

Hellerstein, W. (2012), Tax Planning under the CCCTB's Formulary Apportionment Provisions: The Good, the Bad and the Ugly, in: Webber, D. (ed.), *CCCTB: Selected Issues*, Alphen aan den Rijn, pp. 221-252.

Henshall, J. (2013), *Global transfer pricing: principles and practice*, Haywards Heath.

Herbold, S. (2009), *Steuerliche Anreize für Forschung- und Entwicklung im internationalen Vergleich*, Lohmar.

Herzig, N. and A. Bohn (2009), Internationale Vorschriften zur Zinsabzugsbeschränkung - Systematisierung denkbarer Alternativmodelle zur Zinsschranke, *Internationales Steuerrecht*, vol. 18(8), pp. 253-261.

Hey, J. (2014), Base Erosion and Profit Shifting and Interest Expenditure, *Bulletin for International Taxation*, vol. 68(6/7), pp. 332-345.

Hickson (2011), Intellectual Property Tax Treatment in Ireland, *International tax journal*, vol. 37(2), pp. 21-28.

Hines Jr., J.R. (1995), Taxes, technology transfer, and the R&D activities of multinational firms, in: M. Feldstein, J.R. Hines Jr. and R.G. Hubbard (eds.), *The Effects of Taxation on Multinational Corporations*, Chicago, pp. 225-248.

Hines Jr., J.R. (*1999),* Lessons from behavioural responses to taxation, *National Tax Journal*, vol. 52(2), pp. 305-322.

Hines Jr., J.R. (2009), Reconsidering the Taxation of Foreign Income, *Tax Law Review*, vol. 62(2), pp. 269-298.

Hines, J. and A. Jaffe (2001), International taxation and the location of inventive activity, in: J. Hines (ed.), *International Taxation and Multinational Activity*, Chicago, pp. 201-230.

Hinny, P. (2008), General Report, in: International Fiscal Association (ed.), *New tendencies in cross-border tax treatment interest of corporations*, cahiers de droit fiscal international, vol. 93B, The Hague.

HMRC (2010), *An evaluation of RD tax credits*, report no. 107, download: http://www.hmrc.gov.uk/research/report107.pdf.

HMRC (2011), *Consultation on the Patent Box*, June 2011, download: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/190176/condoc_responses_patent_box.pdf.

HMRC (2012), *The Patent Box: Technical Note and Guide to the Finance Bill 2012 clauses*, download: http://www.hmrc.gov.uk/budget-updates/march2012/patent-box-tech-note.pdf.

HM Treasury (2013), *Finance Bill 2013 Explanatory Notes*, Clauses 1 to 90 (Volume 1 of 2), download: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207412/015_explanatory_notes_for_finance__no.2__bill.pdf.

Hoffmann, L. (2005), Tax Avoidance, *British Tax Review*, vol. 197(2), pp. 197-206.

Hohage, U., K. Kirchhof, R. Broeren, and E. Huybregts-Jans (2010), Niederlande: „Innovation Box" als Steuergestaltungsoption, *Internationales Steuerrecht-Länderbericht*, vol. 19(11), pp. 50-51.

Hoke, W. (2015), Italy Expands Scope of New Patent Box Law, *Tax Notes International*, 2 February 2015, p. 384.

Hollenstein, H. (2009), Characteristics of foreign R&D strategies of Swiss firms: implications for policy, in: Foray, D. (ed.), *The new economics of technology policy*, Cheltenham, pp. 248-271.

Hong, Q. and M. Smart (2010), In Praise of Tax Havens: International Tax Planning and Foreign Direct Investment, *European Economic Review*, vol. 54(1), 82-95.

Hoor, O.R. and G. Bock (2013), The Misleading Debate About Corporate Tax Avoidance by Multinationals, *Tax Notes International*, 27 May 2013, pp. 907-923.

Hosp, T. and M. Langer (2012), Die Besteuerung von Immaterialgüterrechten – Wie attraktiv ist die liechtensteinische IP-Box?, *Praxis Internationale Steuergestaltung*, vol. 14(1), pp. 16-20.

Huibregtse, S., M. Peeters, L. Verdoner, and S. Carey (2011), IP companies and substance: no-fly zones?, *Transfer pricing international journal*, vol. 12(5), p. 4-15.

Ibañez, A. and S. Velasco (2013), Spain - Government Publishes Draft Tax Reforms, *Tax Notes International*, 26 August 2013, pp. 788-789.

International Bureau for Fiscal Documentation (IBFD) (ed.) (2013), *Global Corporate Tax Handbook 2013*, Amsterdam.

International Bureau for Fiscal Documentation (IBFD) (ed.) (2014), *Global Corporate Tax Handbook 2014*, Amsterdam.

Internal Revenue Service (IRS) (ed.) (2007), *Memorandum AM-2007-007*, download: http://www.irs.gov/pub/irs-utl/am2007007.pdf.

Irish Revenue (2012), *Revenue Guidelines for Research and Development Tax Credit*, Update December 2012, download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDYQFjAA&url=http%3A%2F%2Fwww.revenue.ie%2Fen%2Ftax%2Fct%2Fleaflets%2Fresearch-dev.pdf&ei=0g8vUp_QOsrOhAe40oCICA&usg=AFQjCNGR1hsWs7nt82MViDBNkV55Rdaaww&bvm=bv.51773540,d.ZG4.

Jackson, R. (2013), Government May Issue Directive on Use of Safe Harbor Margins, *Tax Notes International*, 11 November 2013, p. 500.

Jacobs, O.H., D. Endres, and C. Spengel (eds.) (2011), *Internationale Unternehmensbesteuerung*, 7th edition, Munich.

Jacquot, N. (2013), International Fiscal Association (ed.) (2013), *The taxation of foreign passive income for groups of companies*, cahiers de droit fiscal international, vol. 98A, The Hague, pp. 299-319.

Jaffe, A., M. Trajtenberg, and R. Henderson (1993) Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations, *Quarterly Journal of Economics*, vol. 108(3), pp. 577-598.

Janeba, E. and W. Peters (1999), Tax evasion, tax competition and the gains from nondiscrimination: The case of interest taxation in Europe, *Economic Journal*, vol. 109(1), pp. 93-101.

Janeba, E. and M. Smart (2003), Is Targeted Tax Competition Less Harmful than its Remedies?, *International Tax and Public Finance*, vol. 10(3), pp. 259-280.

Jennewein, K. (2005), *Intellectual Property Management - The Role of Technology-Brands in the Appropriation of Technological Innovation*, Heidelberg.

Joachimsen, C. and C. Bildstein (2014), Überlassung und Übertragung von Intellectual Property vor dem Hintergrund der BEPS-Diskussion, *Die Unternehmensbesteuerung*, vol. 7(5), pp. 299-307.

Joint Committee on Taxation (2010), *Present law and background related to possible income shifting and transfer pricing*, Scheduled for a Public Hearing before the House Committee on Ways and Means, July 22, download: https://www.jct.gov/publications.html?func=startdown&id=3692.

Jones, C.I. and J.C. Williams (1998), Measuring the social return to R&D, *The Quarterly Journal of Economics*, vol. 113(4), pp. 1119-1135.

Jorgenson, D.W. (1963), Capital Theory and Investment Behaviour, *American Economic Review*, vol. 53(2), pp. 247-259.

Joris, T. (2013), The European Economic Area and state aid, in: Govaere, I., E. Lannon, P. van Elsuwege, and S. Adam (eds.), *The European Union in the world: Essays in Honour of Marc Maresceau*, Leiden (u.a.), pp. 417-440.

Kadet, J.M. (2013), Worldwide Tax Reform: Reversing the Race to the Bottom, *Tax Notes International*, 25 March 2013, pp. 1133-1136.

Kahle, H. and M. Wildermuth (2013), BEPS und aggressive Steuerplanung: Ein Diskussionsbeitrag, *Die Unternehmensbesteuerung*, vol. 6(7), pp. 405-417.

Kahle, H., C. Biebinger, and M. Wildermuth (2014), Aggressive Steuerplanung und Treaty-/ Directive Shopping im Binnenmarkt, *Die Unternehmensbesteuerung*, vol. 7(5), pp. 285-298.

Kane, M.A. (2014), The Role of Controlled Foreign Company Legislation in the OECD Base Erosion and Profit Shifting Project, *Bulletin for International Taxation*, vol. 68(6/7), pp. 319-320.

Kang, S.S and T. Ngo (2012), *Tech Untaxed: Tax Avoidance in Silicon Valley, and How America's Richest Company Pays a Lower Tax Rate than You Do*, Berkeley, download: http://greenlining.org/wp-content/uploads/2013/02/TechUntaxedReport.pdf.

Kantonales Steueramt Nidwalden (2011), Richtlinie vom 17.01.2011 zur Besteuerung von Lizenzerträgen (Ordinance on the taxation of licence income), download: http://www.steuern-nw.ch/uploads/tx_sbdownloader/StP-NW_85_RL__Lizenzertraege.pdf.

Karkinsky, T. and N. Riedel (2012), Corporate Taxation and the Location of Patents within Multinational Firms, *Journal of International Economics*, vol. 88(1), pp. 176–185.

Katiya, A., N. Cordier-Deltour, and V. Berger (2007), Tax Treatment of R&D Expenses in France, *International Transferpricing Journal*, vol. 14(1), pp. 14-21.

Keen, M. (2001), Preferential regimes can make tax competition less harmful, *National Tax Journal*, vol. 54(4), pp. 757–762.

Keller, W. (2002), Geographic Localization of International Technology Diffusion, *American Economic Review*, vol. 92(1), pp. 120-142.

Kemmeren, E.C.C.M. (2001), *Principle of Origin in Tax Conventions – A rethinking of Models*, Tilburg.

Kenney, M. and R. Florida (1994), The organization and geography of Japanese R&D: Results from a survey of Japanese electronics and biotechnology firms, *Research Policy*, vol. 23(3), pp. 305–322.

Kessler, W. (2011), Grundlagen der Steuerplanung mit Holdinggesellschaften, in: Grotherr, S. (ed.), *Handbuch der internationalen Steuerplanung*, 3rd edition, Herne, pp. 215-239.

Kessler, W. and D. Knörzer (2008), The Implications of the (Reverse) Ban on Interest, *Tax Notes International*, 5 May 2008, pp. 427-431.

Kesti, J. (ed.) (2002), *European Tax Handbook 2002*, Amsterdam.

Keuschnigg, C. and M.P. Devereux (2009), The Distorting Arm's Length Principle, *Oxford University Centre for Business Taxation Working Paper Series*, WP 09/10.

Kiekebeld, B.J. (2004), *Harmful tax competition in the European Union: Code of Conduct, countermeasures and EU law*, Deventer.

King, E. (1994), Is the Section 482 Periodic Adjustment Requirement Really Arm's Length? Evidence From Arm's Length Long-Term Contracts, *Tax Notes International*, 11 April 1994, pp. 1001-1020.

King, M.A. and D. Fullerton (1984), *The Taxation of Income from Capital*, Chicago.

Kleinbard, E.D. (2007), Throw Territorial Taxation From the Train, *Tax Notes*, 5 February 2007, pp. 547-564.

Kleinbard, E.D. (2011a), Stateless Income, *Florida Tax Review*, vol. 11(9), pp. 699-774.

Kleinbard, E.D. (2011b), The Lessons of Stateless Income, *Tax Law Review*, vol. 65(4), pp. 99-171.

Kleinbard, E.D. (2012), Stateless Income's Challenge to Tax Policy, Part 1, *Tax Notes International*, 29 October 2012, pp. 499-518.

Klemm, A. (2010), Causes, benefits, and risks of business tax incentives, *International Tax and Public Finance*, vol. 17(3), pp. 315-336.

Kniese, C. (2013), *Europarechtlicher Rahmen einer steuerlichen Förderung von Forschung und Entwicklung*, Frankfurt a.M.

Knoppe, H. (1972), *Die Besteuerung der Lizenz- und Know-How Verträge*, 2nd edition, Köln.

Koerver Schmid, P. (2013), Denmark, in: International Fiscal Association (ed.) (2013), *The taxation of foreign passive income for groups of companies*, cahiers de droit fiscal international, vol. 98A, The Hague, pp. 259-277.

Köpping, E. (2014), *Tax Incentives and Effective Tax Rates for R&D Staff*, working paper, unpublished manuscript.

Kofler, G. (2012), Indirect Credit versus Exemption: Double Taxation Relief for Intercompany Distributions, *Bulletin for International Taxation*, vol. 7(2), pp. 77-89.

Koka, G. (2012), Changes to the Intellectual Property Box Regime Take Effect, *Tax Notes International*, 30 January 2012, pp. 345-347.

KPMG (ed.) (2012), *The Cyprus new IP Regime*, KPMG Tax Alert Cyprus, 11 July 2012, download: http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/taxnewsflash/Documents/cyprus2-july31-2012.PDF.

KPMG (ed.) (2013a), *New tax measures introduced by law 14/2013 of 27 September 2013 on support for and the internationalisation of entrepreneurs*, Report October 2013, Spain, download: http://www.kpmg.com/ES/es/servicios/Abogados/Fiscal/Documents/Novedades-2013-Ley-14-ingles.pdf.

KPMG (ed.) (2013b), *Weekly Tax Matters*, 13 December 2013, download: http://www.kpmg.com/UK/en/IssuesAndInsights/ArticlesPublications/Documents/PDF/Tax/weekly-tax-matters-131213.pdf.

KPMG (ed.) (2014), *Italian government introduces new R&D and 'Patent Box' facilities*, Tax Alert, 2 December 2014, download: https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/taxnewsflash/Documents/italy-dec3-2014no2budget.pdf.

KPMG (ed.) (2015), *The Italian Government amends the Patent Box*, Tax Alert, 2 February 2015, download: http://kdocs.kpmg.it/marketing/KSA/Tax_Alert_Patent_Box_020215.pdf.

Kraft, G. and J. Bron (2006), Implikationen des Urteils in der Rechtssache „Cadbury Schweppes" für die Fortexistenz der deutschen Hinzurechnungsbesteuerung, *Internationales Steuerrecht*, vol. 15(18), pp. 614-620.

Kratz, P. (1986), *Steuerplanung internationaler Unternehmungen – System und Methode*, Bern.

Krishnamurthy, V. (2014), India Aims To Reduce Transfer Pricing Disputes through Safe Harbour Rules, *Bulletin for International Taxation*, vol. 68(1), pp. 47-52.

Kroppen, H.-K., R. Dawid, and R. Schmidtke (2012), Profit Split, the Future of Transfer Pricing? Arm's Length Principle and Formulary Apportionment Revisited from a Theoretical and a Practical Perspective, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 267-293.

Kroppen, H.-K., S. Rasch, and A. Eigelshoven (2007), Die Behandlung der Funktionsverlagerungen im Rahmen der Unternehmensteuerreform 2008 und der zu erwartenden Verwaltungsgrundsätze-Funktionsverlagerung, *Internationale Wirtschaftsbriefe*, issue no. 6, 28 March 2007, pp. 301-330.

Van Kuijk, F. (2011), The Luxembourg IP Tax Regime, *Intertax*, vol. 39(3), pp. 140-145.

Van Kuijk, F. (2013), An Overview of Luxembourg's Intellectual Property Regime, *Tax Notes International*, 21 January 2013, pp. 291-298.

Kurcz, B. and D. Vallindas (2008), Can general measures be … selective? Some thoughts on the interpretation of a State aid definition, *Common Market Law Review*, vol. 45(1), pp. 159–182.

Van der Lande, M.L.B. (2012), *Innovatiebox en RDA - Artikel 12b Wet Vpb*, 2nd edition, Deventer.

Lang, M. (2004), General Report, in: International Fiscal Association (ed.), *Double non-taxation*, cahiers de droit fiscal international, vol. 89A, The Hague, pp. 73-119.

Lang, M. (ed.) (2004), *CFC Legislation – Domestic Provisions, Tax Treaties and EC Law*, Vienna.

Lang, M. (2013a), „Aggressive Steuerplanung" – eine Analyse der Empfehlung der Europäischen Kommission, *Steuer und Wirtschaft International*, vol. 23(2), pp. 62-68.

Lang, M. (2013b), Direkte Steuern und EU-Steuerpolitik – Wo bleiben die Visionen?, *Internationales Steuerrecht*, vol. 22(10), pp. 365-373.

László, C., T. Mlinárik, and Z. Pongrácz (2007), Tax Treatment of R&D Expenses in Hungary, *International Transferpricing Journal*, vol. 14(1), pp. 24-26.

Lester, J., A. Patry, and D. Adéa (2007), An International Comparison of Marginal Effective Tax Rates on Investment in R&D by Large Firms, *Canadian Department of Finance Working Paper*.

Lev, B. (2003), *Intangibles – Management, Measurement and Reporting*, Washington D.C.

Levy, M. and S.C. Ruchelman (1988), Section 482 -- The Super Royalty Provisions Adopt the Commensurate Standard, *Tax Lawyer*, vol. 41(3), pp. 611-651.

Li, J. (2012), Soft Law, Hard Realities and Pragmatic Suggestions: Critiquing the OECD Transfer Pricing Guidelines, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 71-89.

Linn, A. (2008), Die Anwendung des Beihilfeverbots im Unternehmenssteuerrecht, *Internationales Steuerrecht*, vol. 17(17), pp. 601-607.

Linn, A. (2010), Germany, in: International Fiscal Association (ed.) (2010), *Tax treaties and tax avoidance: application of anti-avoidance provision*s, cahiers de droit fiscal international, vol. 95A, The Hague, pp. 333-354.

Lipp, M. (2014), Germany' s Tax Treaty Negotiation Policy, *European Taxation*, vol. 54(7), pp. 313-317.

Lipsey, R. (2010), Measuring The Location Of Production In A World Of Intangible Productive Assets, FDI, And Intrafirm Trade*, Review of Income and Wealth*, vol. 56 supplement 1, pp. S99-S110.

Lodin, S.-O. (2011), Intragroup Lending in Sweden — A Vehicle for International Tax Arbitrage, *Tax Notes International*, 18 July 2011, pp. 177-180.

Lodin, S.-O. (2013), Intragroup Royalties as a Vehicle for International Tax Arbitrage, *Tax Notes International*, 30 September 2013, pp. 1317-1319.

Lohse, T. and N. Riedel (2013), Do Transfer Pricing Laws Limit International Income Shifting? Evidence from European Multinationals, *Oxford University Centre for Business Taxation Working Paper Series*, WP 13/07.

Lokken, L. (1981), The Sources of Income From International Use and Dispositions of Intellectual Property, *Tax Law Review*, vol. 36(3), pp. 233-339.

Lokshin, B. and P. Mohnen (2013), Do R&D tax incentives lead to higher wages for R&D workers? Evidence from The Netherlands, *Research Policy*, vol. 42(3), pp. 823–830.

Luckhaupt, H., M. Overesch, and U. Schreiber (2012), The OECD Approach to Transfer Pricing: A Critical Assessment and Proposal, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 91-121.

Lüdicke, J. (2008), *Überlegungen zur deutschen DBA-Politik*, Baden-Baden.

Luts, J. (2014), Compatibility of IP Box Regimes with EU State Aid Rules and Code of Conduct, *EC Tax Review*, vol. 23(5), pp. 258-283.

Lychagin, J. J. Pinkse, M.E. Slade, and J. van Reenen (2010), Spillovers in Space: Does Geography Matter?, *CEP Discussion Paper*, no. 991.

Macovei, A. and M. Rasch (2011), Tax and the Strategic Management of Intangibles, *Intellectual Asset Management*, March/April 2011, pp. 26-28.

Maguire, T. (2007), Tax Treatment of R&D Expenses in Ireland, *International Transferpricing Journal*, vol. 14(1), pp. 27-30.

Maisto, G. and P. Pistone (2008a), A European Model for Member States' Legislation on the Taxation of Controlled Foreign Subsidiaries (CFCs), part 1, *European Taxation*, vol. 48(10), pp. 503-513.

Maisto, G. and P. Pistone (2008b), A European Model for Member States' Legislation on the Taxation of Controlled Foreign Subsidiaries (CFCs), part 2, *European Taxation*, vol. 48(10), pp. 554-570.

Mang, F. (2015), The (In)Compatibility of IP Box Regimes in EU law, the Code of Conduct and the BEPS Initiatives, *European Taxation*, published online 26 January 2015.

Marti, A. and D. Ledergerber (2005), Internationale Steuerplanung mit immateriellen Wirtschaftsgütern - Steuer- und Kostenminimierung durch effiziente Strukturierung, *Der Schweizer Treuhänder*, vol. 79(3), pp. 187-195.

Martinho Fernandes, S., R, Bernales, S. Goeydeniz, B. Michel, O. Popa, and E. Santoro (2011), A Comprehensive Analysis of Proposals To Amend the Interest and Royalties Directive – Part 1, *European Taxation*, vol. 51(9/10), pp. 396-417.

Maute, W., P. Senn, and B. König (2013), Lizenzbox-Modell in Liechtenstein und der Schweiz, *Steuer* Revue*/ Revue fiscale*, vol. 68(6), pp. 416-423.

Mayot, C. and R. Juan (2009), A new attractive R&D tax credit regime in France, *Tax planning international review*, vol. 35(4), pp. 14-16.

McKenzie, K.J. (2008), Measuring tax incentives for R&D, *International Tax and Public Finance*, vol. 15(5), pp. 563-581.

Merrill, P., J. Shanahan Jr., J. Gómez, G. Glon, P. Grocott, A. Lamers, D. MacDougall, A. Macovei, R. Montredon, T. Vanwelkenhuyzen, A. Cernat, S. Merriman, R. Moore, G. Muresan, P. van den Berghe, and A. Linczer (2012), Is It Time for the United States to Consider the Patent Box?, *Tax Notes*, 26 March 2012, pp. 1665-1675.

Meussen, G.T.K. (2007), The ECJ Significantly Limits the Application of CFC Rules in the Member States, *European Taxation*, vol. 47(1), pp. 13-18.

Micheau, C. (2008), Tax selectivity in State aid review: a debatable case practice, *EC Tax Review*, vol. 17(6), pp. 276-284.

Micheau, C. and G.C. de la Brousse (2012), Case Studies of Tax Issues on Selectivity: Analysis of the Patent Box Scheme and the Reduced Taxation of Foreign-Source Interest Income, in: Rust, A. and C. Micheau (eds.), *State Aid and Tax Law*, Alphen aan den Rijn, pp. 153-173.

Miller, H. (2013), Corporate tax, revenues and Avoidance, in: Emmerson, C., P. Johnson, and H. Miller (eds.), *The IFS Green Budget*, London, pp. 281-310.

Mintz, J. and M. Smart (2004), Income shifting, investment, and tax competition: theory and evidence from provincial taxation, *Journal of Public Economics*, vol. 88(6), pp. 1149– 1168.

Mintz, J. and J.M. Weiner (2003), Exploring Formula Allocation for the European Union, *International Tax and Public Finance*, vol. 10(6), pp. 695–711.

Mirrlees, S., T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles, and J. Poterba (2011), *Tax by Design: the Mirrlees Review*, Oxford.

Mitra, R., D. Anjaria, and I. Chaudhury (2013), Transfer Pricing and the Profit-Split Method in India, *Tax Notes International*, 8 April 2013, pp. 114-116.

Möller (2010), Möller: Die Hinzurechnungsbesteuerung ausgewählter EU-Mitgliedstaaten – Reaktionen auf „Cadbury Schweppes", *Internationales Steuerrecht*, vol. 19(5), pp. 166-170.

Monti, M. (1998), Editorial: The climate is changing, *EC Tax Review*, vol. 7(1), pp. 2-3.

Mors, M. (2007), Der Steuerwettbewerb in der EU: Erfahrungen mit dem Verhaltenskodex zur Unternehmensbesteuerung, in: Kellermann, C. and J. Zitzler (eds.), *Steuern im europäischen Wettbewerb*, Berlin, pp. 66-75.

Muntendam, F. and J. Chiarella (2008), New Luxembourg Tax Regime for Intellectual Property Income, *European Taxation*, vol. 48(5), pp. 223-232.

Musgrave, P. (1969), *United States Taxation of Foreign Investment: Issues and Arguments*, Cambridge.

Mutti, J. and H. Grubert (2009), The Effect of Taxes on Royalties and the Migration of Intangible, in: Reinsdorf, M. and M.J. Slaughter (eds.), *International Trade in Services and Intangibles in the Era of Globalization*, Chicago, pp. 111-137.

Nárdiz, A.M. (2010), The Basque Patent Box Regime, *European Taxation*, vol. 50(1), pp. 37-40.

Neocleous, E. and P. Aristotelous (2012), The new system of taxation of intellectual property rights in Cyprus, *Accountancy Cyprus*, vol. 108(9), pp. 2-3.

Neefs, P. and O. Hoor (2009), Luxembourg IP tax: opportunities and TP aspects, *Tax planning international transfer pricing*, vol. 10(7), pp. 14-21.

Nelson, R.R. (1959), The Simple Economics of Basic Scientific Research, *The Journal of Political Economy*, vol. 67(3), pp. 297-306.

Neuberg, E. (1956), *Der Lizenzvertrag und die internationale Patentverwertung*, 3rd edition, Weinheim/Bergstraße.

Neves, T.C. (2013), Opening Pandora's Box: 10 International Effects of Portugal's Corporate Tax Reform, *Tax Notes International*, 23 September 2013, pp. 1223-1245.

Newlon T.S. (2000), Transfer pricing and income shifting in integrating economies, in: Cnossen, S. (ed.), *Taxing capital income in the European Union: Issues and Options for Reform*, Oxford (u.a.), pp. 214-242.

Nicodème, G. (2009), On Recent Developments in Fighting Harmful Tax Practices, *National Tax Journal*, vol. 62(4), pp. 755-771.

Nielsen, S.B., P. Raimondos-Møller, and G. Schjelderupb (2010), Company taxation and tax spillovers: Separate accounting versus formula apportionment, *European Economic Review*, vol. 54(1), pp. 121–132.

Nielsen, S.B. and P. Raimondos-Møller (2012), Multiple Roles of Transfer Prices: One vs. Two Books, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 25-46.

Nijhof, M. and M. Kloes (2010), An Improved Tax Regime for Intangibles in the Netherlands, *Tax Notes International*, 5 April 2010, pp. 69-71.

Nijkamp, H. (2001), Landmark agreement on EU tax package: new guidelines stretch scope of EU code of conduct, *EC Tax Review*, vol. 10(3), pp. 147-154.

NL Agency (2014), *Manual WBSO - RDA 2014*, Zwolle, download: http://english.rvo.nl/sites/default/files/2014/08/Manual%20WBSO-RDA%202014_3.pdf.

Nouwen, M. (2013) The Gathering Momentum of International and Supranational Action against Aggressive Tax Planning and Harmful Tax Competition: The State of Play of Recent Work of the OECD and European Union, *European Taxation*, vol. 53(10), pp. 491-506.

Obersou, X. and H.R. Hull (2006), *Switzerland in International Tax Law*, 3rd edition, Amsterdam.

Obrist, T. (2013), The End of Switzerland's Cantonal Tax Regimes Is Near: What's Next?, *Tax Notes International*, 12 August 2013, pp. 647-651.

Obrist, T. (2014), International Pressure on Switzerland: Maintaining Its Tax Attractiveness Through Major Policy Changes, *Tax Notes International*, 3 March 2014, pp. 813-817.

Obuoforibo B.R. (2013), The Technical Aspects of the UK Patent Box Rules, *European Taxation*, vol. 53(10), pp. 482-489.

OECD (1993a), *Intercompany Transfer Pricing Regulations under US Section 482 Temporary and Proposed Regulations, OCDE/GD(93)131*, download: http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD%2893%29131&docLanguage=En.

OECD (1993b), *Tax Aspects of Transfer Pricing within Multinational Enterprises – The United States Proposed Regulations*, A report by the Committee on Fiscal Affairs on the Proposed Regulations under Section 482 IRC, Paris.

OECD (1996), *Controlled Foreign Company Legislation*, Paris.

OECD (1998a), *Harmful Tax Competition: An Emerging Global Issue*, Paris.

OECD (1998b), *Internationalisation of Industrial R&D, Patterns and Trends*, Paris.

OECD (2000), *Towards Global Tax Co-operation - Report to the 2000 Ministerial Council Meeting and Recommendations by the Committee on Fiscal Affairs - Progress in Identifying and Eliminating Harmful Tax Practices*, Paris, download: http://www.oecd.org/tax/transparency/44430257.pdf.

OECD (2002), *Frascati Manual – Proposed Standard Practice for surveys on research and experimental development*, Paris.

OECD (2006), *The OECD's Project on Harmful Tax Practices: 2006 Update on Progress in Member Countries*, download: http://www.oecd.org/ctp/harmful/37446434.pdf.

OECD (2008), *The Internationalisation of Business R&D. Evidence, Impacts and Implications*, Paris.

OECD (2010a), *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*, Paris.

OECD (2010b), R&*D tax incentives: rational, design, evaluation*, Paris, download: http://www.oecd.org/dataoecd/50/62/46586882.pdf.

OECD (2010c), *Tax Policy Reform and Economic Growth*, OECD Tax Policy Studies, Paris.

OECD (2011), *The International Experiences with R&D Tax Incentives*, download: http://www.finance.senate.gov/imo/media/doc/OECD%20SFC%20Hearing%20testimony%209%2020%2011.pdf.

OECD (2012a), *Discussion Draft. Revision of the Special Considerations for Intangibles in Chapter VI of the OECD Transfer Pricing Guidelines and Related Provisions*, download: http://www.oecd.org/tax/transfer-pricing/50526258.pdf.

OECD (2012b), *Research and Development Statistics: Gross Domestic Expenditure on R-D by sector of performance and type of cost*, *OECD Science, Technology and R&D Statistics* (database), doi: 10.1787/data-00190-en, download: http://stats.oecd.org/Index.aspx?DataSetCode=GERD_COST,accessed on 7 February 2014.

OECD (2012c), *Discussion Draft Proposed Revision of the Section on Safe Harbours in Chapter IV of the OECD Transfer Pricing Guidelines and Draft Sample Memoranda of Understanding of Competent Authorities to Establish Bilateral Safe Harbours*, download: http://www.oecd.org/ctp/transfer-pricing/50514053.pdf.

OECD (2012d), R(8). Tax treaty override, in: *Model Tax Convention on Income and on Capital 2010 (Full Version)*, download: http://dx.doi.org/10.1787/9789264175181-101-en.

OECD (2013a), *Supporting Investment in Knowledge Capital, Growth and Innovation*, download: http://dx.doi.org/10.1787/9789264193307-en.

OECD (2013b), *Revised Discussion Draft on Transfer Pricing Aspects of Intangibles*, 30 July 2013, download: http://www.oecd.org/ctp/transfer-pricing/revised-discussion-draft-intangibles.pdf.

OECD (2013c*), OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, download: http://www.oecd-ilibrary.org/docserver/download/9213051e.pdf?expires=1401900749&id=id&accname=guest&checksum=85F43619E51EFBDC5F4B412E055A9BD6.

OECD (2013d), *Addressing Base Erosion and Profit Shifting*, download: http://www.oecd-ilibrary.org/docserver/download/2313151e.pdf?expires=1402997515&id=id&accname=ocid194629&checksum=4E1C093E4F5FD3C0C6E4D056ABBD99C6.

OECD (2013e), *Action Plan on Base Erosion and Profit Shifting*, download: http://www.oecd.org/ctp/BEPSActionPlan.pdf.

OECD (2014a), *OECD/G20 Base Erosion and Profit Shifting Project - Countering Harmful Tax Practices More Effectively, Taking into Account Transparency and Substance, Action 5: 2014 Deliverable*, download: http://www.oecd-ilibrary.org/docserver/download/2314271e.pdf?expires=1412754976&id=id&accname=guest&checksum=E082D41970B1AA793AFF71B2A0DBFCE6.

OECD (2014b), *OECD/G20 Base Erosion and Profit Shifting Project - Guidance on Transfer Pricing Aspects of Intangibles, Action 8: 2014 Deliverable*, download: http://www.oecd-ilibrary.org/docserver/download/2314291e.pdf?expires=1412775494&id=id&accname=guest&checksum=3B69DF88696CC360342A7068A1A8C8EA.

OECD (2015), *Action 5: Agreement on Modified Nexus Approach for IP Regimes*, download: http://www.oecd.org/ctp/beps-action-5-agreement-on-modified-nexus-approach-for-ip-regimes.pdf.

Oestreicher, A. (2011), Valuation Issues in Transfer Pricing of intangibles: Comments on the Scoping of an OECD Project, *Intertax*, vol. 39(3), pp. 126-131.

Oestreicher, A. und R. Koch (2011), The Revenue Consequences of Using a Common Consolidated Corporate Tax base to Determine Taxable Income in the EU Member States, *FinanzArchiv*, vol. 67(1), pp. 64-102.

Oestreicher, A., W. Scheffler, C. Spengel, K. Finke, J. Heckemeyer, G. Kimpel, M. Köstler, and D. Vorndamme (2014), Gemeinsame Körperschaftsteuer-Bemessungsgrundlage (GKB) bzw. Gemeinsame Untemehmensteuer-Bemessungsgrundlage (GUB): Eine steuerliche Folgenabschätzung für Deutschland, *FinanzArchiv*, vol. 70(4), pp. 326-343.

Okten, R. (2013), A Comparative Study of Cost Contribution Arrangements: Is Active Involvement Required to Share in the Benefits of Jointly Developed Intangible Property?, *International Transfer Pricing Journal*, vol. 20(1), pp. 3-17.

Overesch, M. (2009), The Effects of Multinationals' Profit Shifting Activities on Real Investments, *National Tax Journal*, vol. 62(1), pp. 5-23.

Overesch, M. and G. Wamser (2009), Who Cares about Corporate Taxation? Asymmetric Tax Effects on Outbound FDI, *World Economy*, vol. 32(12), pp. 1657–1684.

Overesch, M. and U. Schreiber (2010), Asset Specificity, International Profit Shifting, and Investment Decisions, *Zeitschrift für Betriebswirtschaft*, vol. 80 special issue 2, pp. 23-47.

Paardekooper, W.J., E. Brassem, and E. Gommers (2006), The Netherlands to Introduce 10 Percent Corporate Tax Rate for Patented Intangible Assets, *Tax Planning International Review*, vol. 33(10), pp. 4-9.

Palazzi, P. (2011), Taxation and Innovation, *OECD Taxation Working Papers*, no. 9, download: http://dx.doi.org/10.1787/5kg3h0sf1336-en.

Pantaleo, N., F. Poschmann, and S. Wilkie (2013), *Improving the Tax Treatment of Intellectual Property Income in Canada*, Institute C.D. Howe, commentary no. 379, download: http://www.cdhowe.org/pdf/Commentary_379.pdf.

Parillo, K.A. (2014), EU and Switzerland Reach Corporate Tax Understanding, *Tax Notes International*, 30 June 2014, pp. 1191-1192.

Parson, M. and N. Phillips (2007), An Evaluation of the Federal Tax Credit for Scientific Research and Experimental Development, *Department of Finance Canada Working Paper*, no. 2007-08.

Pérez Bernabeu, B. (2014), R&D&I Tax Incentives in the European Union and State Aid Rules, *European Taxation*, vol. 54(5), pp. 178-191.

Persoff, M. (2010), Case Law – UK, *EC Tax Review*, vol. 19(2), pp. 100-105.

Peter, M., P. Spohn, and R. Hogg (2008), Preisanpassungsklauseln bei Funktionsverlagerungen nach deutschem sowie US-amerikanischem Steuerrecht, *Internationales Steuerrecht*, vol. 17(24), pp. 864-869.

Peyerl, H. (2014), Deductibility of Interest and Royalties Restricted: Is Austria a BEPS Role Model?. *European Taxation*, vol. 54(12), pp. 572-577.

Pinkernell, R. (2012), Ein Musterfall zur internationalen Steuerminimierung durch US-Konzeme, *Steuer und Wirtschaft*, vol. 42(4), pp. 369-374.

Pinkernell, R. (2013), Das Steueroasen-Dilemma der amerikanischen IT-Konzerne, *Internationales Steuerrecht*, vol. 22(5), pp. 180-187.

Pinkernell, R. (2013) OECD-Aktionsplan gegen internationale Gewinnverlagerung und Aushöhlung der Bemessungsgrundlagen (BEPS-Projekt), *Finanz Rundschau*, vol. 95(16), 737-746.

Pinto, C. (1998), EU and OECD to Fight Harmful Tax Competition: Has the Right Path Been Undertaken?, *Intertax*, vol. 26(12), pp. 386–410.

Pinto, C. (2002), *Tax Competition and EU Law*, Amsterdam.

Pistone, P. (2008), The Ups and Downs in the Case Law of the European Court of Justice and the Swinging Pendulum of Direct Taxation, *Intertax*, vol. 36(4), pp. 146-153.

Plansky, P. (2010), The EU Arbitration Convention, in: Lang, M., P. Pistone, J. Schuch, and C. Staringer (eds.), *Introduction to European Tax Law on Direct Taxation*, Alphen aan den Rijn, pp. 199-209.

Prakash P. (2013), Emerging Transfer Pricing and International Tax Issues, *International Transfer Pricing Journal*, vol. 20(11/12), pp. 374-378.

Prek, M. and S. Lefèvre (2012), The Requirement of Selectivity in the Recent Case-Law of the Court of Justice, *European State Aid Law Quarterly*, vol. 11(2), pp. 335-345.

Prendina Dutler, C.P. (2013), Lizenzboxen in Europa: ein Blick über die Grenze auf die europäischen Entwicklungen bei der Besteuerung von Immaterialgüterrechten, *IFF Forum für Steuerrecht*, vol. 13(2), pp. 135-154.

PricewaterhouseCoopers (ed.) (2013a), *European patent box regimes, report prepared for the Japan External Trade Organisation*, April 2013, download: https://www.jetro.go.jp/world/europe/ip/pdf/european_patent_box_regimes_en.pdf.

PricewaterhouseCoopers (ed.) (2013b), *ITS Newsalert, Spanish Corporate Tax Changes*, November 2013, download: http://www.pwc.com/en_US/us/tax-services-multinationals/newsletters/european-tax-newsalert/assets/pwc-spain-enacts-significant-corporate-tax-changes.pdf.

PricewaterhouseCoopers (ed.) (2014a), *Global Research & Development Incentives Group*, May 2014, download: http://www.pwc.com/en_GX/gx/tax/assets/pwc-global-r-and-d-incentives-brochure-nov-2013.pdf.

PricewaterhouseCoopers (ed.) (2014b), *Proposed Legislation for Italian Patent Box Regime*, Tax Insights from Transfer Pricing, 2 December 2014, download: http://www.pwc.com/en_GX/gx/tax/newsletters/pricing-knowledge-network/assets/pwc-italy-patent-box-legislation.pdf.

Quick, P.D. and T.L. Day (2006), Management of IP: Intercompany Transfers, Offshore Planning, and Recent Developments Regarding Cost-Sharing, *The Licensing Journal*, vol. 26(1), pp. 14-21.

Rainer, A., J. Roels, O. Thömmes, E. Tomsett, H. van den Hurk, and G. Weening (2006), ECJ Restricts Scope of CFC Legislation, *Intertax*, vol. 43(12), pp. 636-638.

Richman, P. (1963), *Taxation of Foreign Income: an Economic Analysis*, Baltimore.

Richter, K. (2015), *Research and Development Tax Planning of Multinational Firms*, Mannheim, forthcoming.

Richter, T. (2013), Die neuen Controlled Foreign Company Regeln in Großbritannien, *Internationales Steuerrecht*, vol. 22(5), pp. 187-192.

Rödder, T. and Pinkernell (2013), Zum Seminar F: 20 Thesen zur BEPS-Diskussion, *Internationales Steuerrecht*, vol. 22(16), pp. 619-623.

Roxworthy, P., R. Atkinson, R. Beran, and B. van Ark (2013), Session 1. Competitive Advantage: The Importance of Intangible Assets to U.S. Economic Growth in the Global Economy, *Taxes – the tax magazine*, vol. 91(6), pp. 13-22.

Ruf, M. and A. Weichenrieder (2012), The Taxation of Passive Foreign Investment: Lessons from German Experience, *Canadian Journal of Economics*, vol. 45(4), pp. 1504-1528.

Ruso, S.C. (2013), Subject-to-tax clauses in tax treaties, in: Simader, K. and E. Titz (eds.), *Limits to Tax Planning*, Vienna, pp. 357-378.

Russo, R. (ed.) (2007), *Fundamentals of International Tax Planning*, Amsterdam.

Rust, A. (2008), CFC Legislation and EC Law, *Intertax*, vol. 36(11), pp. 492-501.

Sachdeva, S. (2013a), Tax treaty overrides: a comparative study of the monist and the dualist approaches, *Intertax*, vol. 41(4), pp. 180-207.

Sachdeva, S. (2013b), Overriding Tax Treaty Overrides: Proposing a Solution, *European Taxation*, vol. 53(9), pp. 468-474.

Samuelson, P.A. (1954), The pure theory of public expenditure, *Review of Economics and Statistics*, vol. 36(4), pp. 387-389.

Samuelson, P.A. (1955), Diagrammatic exposition of a theory of public expenditure, *Review of Economics and Statistics*, vol. 37(4), pp. 350-356.

Sánchez Rydelski, M. (2010), Distinction between State Aid and General Tax Measures, *EC Tax Review*, vol. 19(4), pp. 149-155.

Sandell, J. (2012), The Double Irish and the Dutch Sandwich: How Some U.S. Companies Are Flummoxing the Tax Code, *Tax Notes International*, 27 August 2012, pp. 867-878.

Sapirie, M. (2011), U.K. Patent Box Proposes Marriage of Tax, IP Policies, *Tax Notes International*, 26 September 2011, pp. 915-917.

Sapirie, M. (2013), Thinking Outside the Patent Box, *Tax Notes International*, 11 March 2013, pp. 907-909.

Sapirie, M. (2014), The Camp Proposal: Patent Boxes In the Age of BEPS, *Tax Notes International*, 24 March 2014, pp. 1065-1067.

Schaapman, A. and B. Breukink (2012), A Look at Recent Amendments to Cyprus's Income Tax Law, *Tax Notes International*, 24 September 2012, p. 1227.

Schaffner, J., K. Manhaeve, and F. Trouiller (2009), Favourable Tax Regime for Intellectual Property Rights: Clarification by the new Circular, *European Taxation*, vol. 49(7), pp. 381-382.

Schäuble, G. and R. Giger (2010), Lizenzbox in Nidwalden – Ein Steilpass für andere Kantone und den Bund, *Der Schweizer Treuhänder*, vol. 84(10), pp. 711-720.

Schellekens, M. (2013), The Netherlands as an Innovation Hub: An Appraisal of the Innovation Box Regime, *European Taxation*, vol. 53(10), pp. 525- 530.

Schlösser (2009), Steuerliche Vergünstigungen für Forschung und Entwicklung in Frankreich, *Internationales Steuerrecht*, vol. 18(16), pp. 557-563.

Scholz, C.M. (2007), Die Fremdüblichkeit einer Preisanpassungsklausel nach dem Entwurf zu § 1 Abs. 3 AStG, *Internationales Steuerrecht*, vol. 16(15), pp. 521-526.

Schön, W. (2003), Tax Competition in Europe - General Report, in: Schön, W. (ed.), *Tax Competition in Europe*, Amsterdam, pp. 1-42.

Schön, W. (2009), International Tax Coordination for a Second-Best World, part 1, *World Tax Journal*, vol. 1(1), pp. 67-114.

Schön, W. (2010a), International Tax Coordination for a Second-Best World, part 2, *World Tax Journal*, vol. 2(1), pp. 65-94.

Schön, W. (2010b), International Tax Coordination for a Second-Best World, part 3, *World Tax Journal*, vol. 2(3), pp. 227-261.

Schön, W. (2012), Transfer Pricing – Business Incentives, International Taxation and Corporate Law, in: Schön, W. and K. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, Berlin, pp. 47-67.

Schön, W. (2014), International Taxation of Risk, *Bulletin for International Taxation*, vol. 68(6/7), pp. 280-294.

Schönfeld, J. (2013), Germany, in: International Fiscal Association (ed.), *The taxation of foreign passive income for groups of companies*, cahiers de droit fiscal international, vol. 98A, The Hague, pp. 321-340.

Schoppe, C. and L. Voltmer-Darmanyan (2012), Konzerndienstleistungsverträge in der (steuerlichen) Praxis, *Betriebs Berater*, vol. 67(20), pp. 1251-1258.

Schreiber, U. (2013), International business taxation and the business cash flow tax, *Review in Management Science*, vol. 7(3), pp. 309–326.

Schreiber, U., C. Spengel, and L. Lammersen (2002), Measuring the Impact of Taxation on Investment and Financing Decisions, *Schmalenbach Business Review*, vol. 54(1), pp. 2-23.

Scott, T. and J. Ross (2012), The new patent box regime and corporate tax reform in the UK, *International tax journal*, vol. 38(5), pp. 51-58.

Seville, C. (2009), *EU intellectual property law and policy*, Cheltenham.

Sheppard, L.A. (2009), Inbound Transfer Pricing as Beggar Thy Neighbor, *Tax Notes International*, 1 June 2009, pp. 714-717.

Sheppard, L.A. (2011), Intangibles Migration From the United States and Excess Profits, *Tax Notes International,* 28 March 2011, pp. 983-988.

Sheppard, L.A. (2012), The Downside of Patent Boxes, *Tax Notes International*, 18 June 2012, pp. 1093-1094.

Sheppard, L.A. (2013a), OECD Confronts Zipless Tax Planning, *Tax Notes International*, 11 March 2013, pp. 899-900.

Sheppard, L.A. (2013b), Apple's Tax Magic, *Tax Notes International*, 3 June 2013, pp. 939-943.

Sheppard, L.A. (2013c), Rosbif Rules: What Should the OECD Do About Base Erosion?, *Tax Notes International*, 9 September 2013, pp. 956-961.

Sheppard, L.A. (2013d), The Twilight of the International Consensus, *Tax Notes International*, 7 October 2013, pp. 7-12.

Sheppard, L.A. (2013e), Interest Barriers Rise in Europe, *Tax Notes International*, 21 October 2013, pp. 808-812.

Sheppard, L.A. (2014), BEPS Intangibles Draft Coming in Two Pieces, *Tax Notes International*, 9 June 2014, pp. 905-906.

Silberztein, C. (2011), Transfer pricing aspects of intangibles: the OECD project, *Transfer Pricing International Journal*, vol. 11(8), pp. 1-6.

Silberztein, C., M.C. Bennett, and G.D. Lemein (2013), The OECD Discussion Draft on the Transfer of Intangibles (Revision of Chapter VI of the OECD Transfer Pricing Guidelines) – Main Comments, *Intertax*, vol. 41(2), pp. 60-65.

Simonis, P.H.M. (2012), Relevant Aspects When Entering the System/CCCTB Group, in: Webber, D. (ed.), *CCCTB - Selected Issues*, Alphen aan den Rijn, pp. 11-44.

Smith, P. (2013), New UK CFC rules, *European Taxation*, vol. 53(2), pp. 127-131.

Soong Johnston, S. (2014a), Ministry to Challenge Request for Information on Tax Practices, *Tax Notes International*, 5 May 2014, pp. 417-418.

Soong Johnston, S. (2014b), IP Regime Is Not a Tax Avoidance Scheme, Noonan Says, *Tax Notes International*, 10 November, pp. 493-494.

Soong Johnston, S. and D.D. Stewart (2013), Germany on Patent Box Regimes: Put a Lid on It, *Tax Notes International*, 29 July 2013, pp. 395-398.

Spengel, C. (2003), *Internationale Unternehmensbesteuerung in der Europäischen Union, Steuerwirkungsanalyse – Empirische Befunde – Reformüberlegungen*, Mannheim.

Spengel, C. (2006), *Besteuerung von Einkommen – Aufgaben, Wirkungen und europäische Herausforderungen*, Gutachten F/G zum 66. Deutschen Juristentag, Stuttgart.

Spengel, C. (2007), Common Corporate Consolidated Tax Base – Don't forget the tax rates!, *EC Tax Review,* vol. 16(3), pp. 118-120.

Spengel, C. (ed.) (2009), *Steuerliche Förderung von Forschung und Entwicklung (FuE) in Deutschland*, Ökonomische Begründung, Handlungsbedarf und Reformbedarf, MPI Studies on Intellectual Property, Competition and Tax Law, vol. 8, Heidelberg.

Spengel, C. (2013), Wachstumsorientierte Steuerpolitik erfordert steuerliche Forschungsförderung, in: Lüdicke, J., M. Mössner, and. L. Hummel (eds.), *Das Steuerrecht der Unternehmen*, Festschrift für Gerrit Frotscher zum 70. Geburtstag, Freiburg, pp. 579-595.

Spengel, C. and C. Elschner (2010), Steuerliche Anreize für Forschung und Entwicklung – Empirische Befunde, internationaler Vergleich und Reformansätze für Deutschland, *Zeitschrift für Betriebswirtschaft*, vol. 80, special issue 2, pp. 1-22.

Spengel, C. and L. Lammersen (2001), Methoden zur Messung und zum Vergleich von internationalen Steuerbelastungen, *Steuer und Wirtschaft*, vol. 31(3), pp. 222-238.

Spengel, C. and W. Wiegard (2011), *Ökonomische Effekte einer steuerlichen Forschungsförderung in Deutschland*, Mannheim und Regensburg.

Spengel, C. and B. Zinn (2011), Non-profit Taxation on Corporations in the EU: Lessons from Corporate Tax Reforms in Germany and Tax Implications of the Global Economic Crisis, *Intertax*, vol. 39(10), pp. 494-520.

Spengel, C. and Y. Zöllkau (eds.) (2012), *Common Corporate Tax Base (CC(C)TB) and Determination of Taxable Income: An International Comparison*, Heidelberg.

Spengel, C., M. Ortmann-Babel, B. Zinn, and S. Matenaer (2012), A Common Corporate Tax Base for Europe: An Impact Assessment of the Draft Council Directive on a CC(C)TB, *World Tax Journal*, vol. 4(3), pp. 185-221.

Spengel, C., D. Endres, K. Finke, and J. Heckemeyer (2014), *Effective Tax Levels using the Devereux/Griffith Methodology*, Project for the EU Commission TAXUD/2013/CC/120, Final Report 2014, Mannheim, download: http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/final_report_2014_taxud_2013_cc_120.pdf.

Sporken E. and E. Gommers (2006), Transfer Pricing Implications of the Proposed Patent Box, *International Transfer Pricing Journal*, vol. 13(5), pp. 266-270.

Sporken E. and E. Gommers (2007), The Patent Box: Approved and Implemented in the Netherlands, *International Transfer Pricing Journal*, vol. 14(3), pp. 198-203.

Staff of the Joint Committee on Taxation (2010), *Present law and background related to possible income shifting*, document no. JCX-37-10, 20 July 2010, download: https://www.jct.gov/publications.html?func=startdown&id=3692.

Van Stappen, D., K. van Praet, and E. Vander Elst (2007a), Tax Treatment of R&D Expenses in Belgium, *International Transferpricing Journal*, vol. 14(1), pp. 4-10.

Van Stappen, D., A. Delanoy, and Y. de Groote (2007b), New Patent Taxation Regime: Patent Income Deduction Creates Opportunities for Innovative Companies, *International Transfer Pricing Journal*, vol. 14(5), pp. 291-296.

Steuerverwaltung Fürstentum Liechtenstein (2012), *Wegeleitung zur Steuererklärung 2012 für juristische Personen*, download: http://www.llv.li/pdf-llv-stv-ste_jp_wegleitung.pdf.

Stewart, D.D. (2013a), Government Updates Transfer Pricing Guidance on R&D, *Tax Notes International*, 9 July 2013, pp. 125-127.

Stewart, D.D. (2013b), Transfer Pricing Safe Harbors Draw Limited Appeal, *Tax Notes International*, 9 September 2013, p. 976.

Stewart, D.D. (2013c), Report: U.K. Patent Box Violates Code of Conduct, *Tax Notes International*, 21 October 2013, pp. 214-215.

Stewart, D.D. (2014), Harmful Tax Practices: An Opaque Push for Transparency, *Tax Notes International*, 23 June 2014, pp. 1094-1095.

Stiglitz, J.E. (2000), *Economics of the Public Sector*, 3rd edition, New York.

Van de Streek, J. (2012), Leaving a Group, in: Webber, D. (ed.), *CCCTB - Selected Issues*, Alphen aan den Rijn, pp. 53-65.

Sullivan, M.A. (2010), *Testimony before the Committee on Ways and Means U.S. House of Representatives*, Hearing on "Transfer Pricing Issues in the Global Economy", 22 July 2010, download: http://waysandmeans.house.gov/media/pdf/111/2010jul22_sullivan_testimony.pdf.

Sullivan, M.A. (2012), Economic Analysis: Should Tech and Drug Firms Pay More Tax?, *Tax Notes International*, 27 February 2012, pp. 655-656.

Sullivan, M.A. (2013a), Example 13 of the OECD Revised Intangibles Draft, *Tax Notes International*, 26 August 2013, pp. 769-772.

Sullivan, M.A. (2013b), How to Prevent the Great Escape of Residual Profits, *Tax Notes International*, 7 October 2013, pp. 12-15.

Sundermann, M. (2007), Patents Box: Favourable Tax Regime for Income from Intangibles, *Transfer Pricing International Journal*, vol. 8(9), pp. 227- 229.

Szudoczky, R. and J.L. van de Streek (2010), Revisiting the Dutch Interest Box under the EU State Aid Rules and the Code of Conduct: When a 'Disparity' Is Selective and Harmful, *Intertax*, vol. 38(5), pp. 260-280.

Tadmore, N. (2008), Royalties (Article 12 OECD Model Convention), in: Lang, M., P. Pistone, J. Schuch, and C. Staringer (eds.), *Source versus Residence - Problems Arising from the Allocation of Taxing Rights in Tax Treaty Law and Possible Alternatives*, Alphen aan den Rijn, pp. 107-128.

Taieb, S. (2008), Reforming the tax regime for patents, *International Tax Review*, vol. 18(1), p. 14.

Tecu, I. (2013), The Location of Industrial Innovation: Does Manufacturing matter?, *US Census Bureau Center for Economic Studies Paper*, no. CES-WP-13-09.

Terra, B.J.M. and P.J. Wattel (2012), *European Tax Law*, 6th Edition, Alphen aan den Rijn.

Thomas, L., E. Abery, and D. Eisele (2007), Tax Treatment of R&D Expenses in Luxembourg, *International Transferpricing Journal*, vol. 14(1), pp. 36-38.

Thürer, D. (2014), Soft Law, in: Wolfrum, R. (ed.), *Max Planck Encyclopedia of Public International Law*, online edition, last visited 16 June 2014.

Transfer Pricing Associates (2013), *Innovation Box*, download: http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CDoQFjAB&url=http%3A%2F%2Fwww.tpa-global.com%2Ffiles%2FStreamFile217445%2Fdownload%2Ftpa-global-innovation-box.pdf&ei=OUYLU464JYfkswbU2oDICQ&usg=AFQjCNFk3-ko20O5F78PN3sQls_kL2mCtw&bvm=bv.61725948,d.Yms.

Traversa E. and C.-A. Helleputte (2013), Taxation of EU resident companies under the current CCCTB framework: Descriptive and critical approach to selected 'extraterritorial' aspects, in: Lang, M. (ed.), *Corporate income taxation in Europe: the common consolidated corporate tax base (CCCTB) and third countries*, pp. 1-38.

Treasury Department and Internal Revenue Service (eds.) (1988), *A Study of Intercompany Pricing*, 'The White Paper', prepared by Treasury Department, Office of International Tax Counsel, Office of Tax Analysis, Internal Revenue Service, Office of Assistant Commissioner (International), Office of Associate Chief Counsel (International), October 18, 1988, download: https://ia600305.us.archive.org/17/items/studyofintercomp00unit/studyofintercomp00unit.pdf.

Trinks, M. (2014), Neue „Lizenzschranke" für konzerninterne Transaktionen in Österreich – Abgabenänderungsgesetz 2014 versus Steueroasen, *International Wirtschaftsbriefe*, issue no. 6, 26 March 2014, pp. 211-217.

Valta, M. (2014), *Das Internationale Steuerrecht zwischen Effizienz, Gerechtigkeit und Entwicklungshilfe*, Tübingen.

Vanistendael, F. (2000), Fiscal support measures and harmful tax competition, *EC Tax Review*, vol. 9(1), pp. 152-161.

Vann, R.J. (2010), Taxing International Business Income: Hard-Boild Wonderland and the End of the World, *World Tax Journal*, vol. 2(3), pp. 291-343.

Verlinden, I. and A. Smits (2009), *Mastering the Intellectual Property Life Cycle. A global perspective on the tax-efficient management of IP rights*, 2nd edition, Sint-Stevens-Woluwe.

Vögele, A. (ed.) (2011), *Verrechnungspreise*, 3rd edition, Munich.

Vosse, W. and M. Harcos (2012), Tax Planning in Eastern Europe – Hungary, *Tax Planning International Review*, vol. 39(9), pp. 2-5.

Walsh, M. (2001), Get the best value from intangibles, *International Tax Review*, vol. 12(2), pp. 23-26.

Wanger, M. (2011), *Kommentar Steuergesetz (SteG) 2011: Gesetz über die Landes- und Gemeindesteuern in Liechtenstein*, Abhandlungen und Kommentare zum liechtensteinischen und internationalen Recht, no. 15, Berlin, download: http://www.wanger.net/tl_files/media/downloads/Steuergesetz%202011%20Kommentar%20mit%20Inhalt%20%20&%20Index%202011.01.28.pdf.

Warda (2001), Measuring the Value of R&D Tax Treatment in OECD Countries, *OECD STI Review,* no. 27, Paris.

Warda, J. (2006), Tax Treatment of Business Investments in Intellectual Assets: An International Comparison, OECD Science, *Technology and Industry Working Papers*, no. 2006/04.

Warson, E. and M. Foriers (2008), The Belgian Patent Income Deduction, *European Taxation*, vol. 48(2), pp. 70-77.

Warson, E. and R. Claes (2010), The Belgian Patent Income Deduction, *European Taxation*, vol. 50(7), 319-323.

Wassermeyer, F. (2007), Modernes Gesetzgebungsniveau am Beispiel des Entwurfs zu § 1 AStG, *Der Betrieb*, vol. 60(10), pp. 535-539.

Wattel, P.J. (2013), Forum: Interaction of State Aid, Free Movement, Policy Competition and Abuse Control in Direct Tax Matters, *World Tax Journal*, vol. 4(1), pp. 128-144.

Webber, S. (2010), Thin Capitalization and Interest Deduction Rules: A Worldwide Survey, *Tax Notes International*, 29 November 2010, pp. 683-708.

Weigel, J., J. Brand, and F.J. Safarik (eds.) (2012), *Investitions- und Steuerstandort Schweiz - Wirtschaftliche und steuerliche Rahmenbedingungen*, 3rd edition, Munich and Bern.

Weiß, R. (2005), Reclassification of Interest into Dividends in the Light of Thin Capitalisation Regulations, in: Land, M. (ed.), *Source Versus Residence in International Tax Law*, Vienna.

Wendt, C. (2009), *A Common Tax Base for Multinational Enterprises in the European Union*, Wiesbaden.

Van Weeghel, S. (2010), General Report, in: International Fiscal Association (ed.) (2010), T*ax treaties and tax avoidance: application of anti-avoidance provision*s, cahiers de droit fiscal international, vol. 95A, The Hague, pp. 17-55.

Weiner, J.M. (2005), Formula Apportionment and Group Taxation in the European Union: Insights from the United States and Canada, *European Commission Taxation Papers*, no. 8, download: http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/2004_2073_en_web_final_version.pdf.

Whitehead, S. (2007), Practical implications arising from the European Court's recent decision concerning CFC legislation and dividend taxation, *EC Tax Review*, vol. 16(4), pp. 176-183.

Widmer, S.G. (2002), Steuerplanungsmöglichkeiten mittels Principal-Strukturen, *Der Schweizer Treuhänder*, vol. 76(10), pp. 935-940.

Willems, R. (2012), *Guide to Tax Rulings in Belgium*, Amsterdam.

Wilson, J.D. (1999), Theories of tax competition, *National Tax Journal*, vol. 52(2), pp. 269-304.

Wilson, J.D. (2006), Tax Competition with and without Preferential Treatment of a Highly-Mobile Tax Base, in: J. Alm, J. Martinez-Vasquez, and M. Rider (eds.), *The Challenge of Tax Reform in a Global Economy*, New York, pp. 193-206.

Wilson, J.D. (2009), Beggar thy Neighbor? The In-State, Out-of-State and Aggregate effects of R&D Tax Credits, *The Review of Economics and Statistics*, vol. 91(2), pp. 431-436.

Wimpissinger, C. (2014), Ist die Nichtsabzugsfähigkeit von Zinsen und Lizenzgebühren nach § 12 KStG unionsrechtswidrig?, *Steuer und Wirtschaft International*, vol. 24(5), pp. 220-227.

Wittendorff, J. (2012a), 'Shadowlands': The OECD on Intangibles, *Tax Notes International*, 3 September 2012, pp. 935-952.

Wittendorff, J. (2012b), Transfer Pricing Timing Issues Revisited, *Tax Notes International*, 1 October 2012, pp. 87-94.

Wolter, H. (2011), Germany, in: International Fiscal Association (ed.) (2007), *Cross-border business restructuring*, cahiers de droit fiscal international, vol. 96A, The Hague, pp. 349-370.

Zielke, R. (2010), Shareholder Debt Financing and Double Taxation in the OECD: An Empirical Survey with Recommendations for the Further Development of the OECD Model and International Tax Planning, *Intertax*, vol. 38(2), pp. 62-92.

Zinn, T., N. Riedel, and C. Spengel (2014), The Increasing Importance of Transfer Pricing Regulations: A Worldwide Overview, *Intertax*, vol. 42(6/7), pp. 352-404.

Newspaper Articles

Ducker, J., Google 2.4% Rate Shows How $60 Billion Lost to Tax Loopholes, *Bloomberg*, 21 October 2010, download: http://www.bloomberg.com/news/2010-10-21/google-2-4-rate-shows-how-60-billion-u-s-revenue-lost-to-tax-loopholes.html.

Leonhardt, D., Who will crack the code, *New York Times*, 25 May 2013, download: http://www.nytimes.com/2013/05/26/opinion/sunday/who-will-crack-the-code.html?_r=0.

Schön, W., Das große internationale Steuer-Spiel, *Frankfurter Allgemeine Zeitung*, 14 October 2013, download: http://www.faz.net/aktuell/wirtschaft/globale-steuergerechtigkeit-das-grosse-internationale-steuer-spiel-12145394.html?printPagedArticle=true#pageIndex_2.

Simpson, G.R., Irish Subsidiary Lets Microsoft Slash Taxes in U.S. and Europe, *Wallstreet Journal*, 7 November 2005, download: http://online.wsj.com/news/articles/SB113132761685289706.

Anon., Corporate tax avoidance - The price isn't right, *The Economist*, 12 September 2012, download: http://www.economist.com/blogs/schumpeter/2012/09/corporate-tax-avoidance.

Tax laws and regulations

Liechtenstein

Finanzgesetz vom 7. November 2013 für das Jahr 2014 (Finance Law2014), download: https://www.gesetze.li/get_pdf.jsp?PDF=2013377.pdf.

Steuergesetz vom 23. September 2010 über die Landes– und Gemeindesteuern (SteG) (Tax Law on the Federal and Municipal Taxes), download: https://www.gesetze.li/Seite2.jsp?LGBlm=2010340, Law of 23 September 2010 on National and Municipal Taxes (Tax Act), download: http://www.llv.li/pdf-llv-stv-steuergesetz_2011_englisch.pdf.

Verordnung vom 21. Dezember 2010 über die Landes– und Gemeindesteuern (SteV) (Ordinance on Federal and Municipal Taxes), download: https://www.gesetze.li/Seite1.jsp?LGBlm=2010437.

Luxembourg

Circulaire du directeur des contributions LIR. n° 50bis/1 du 5 mars 2009, Administration des contributions directes de Luxembourg, download: http://www.impotsdirects.public.lu/legislation/legi09/Circulaire_LIR_no_50bis-1_du_5_mars_2009.pdf.

Malta

Income Tax Act, 1st January, 1949, amended by XVII. 1994.35, download: http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8658.

Cases

ECJ, 2 July 1974, C-173/73, Italy v. Commission, 1974 ECR 709.

ECJ, 20 March 1997, C-24/95, Land Rheinland-Pfalz v. Alcan Deutschland, 1997 ECR I-1591.

ECJ, 13 July 1988, C-102/87, France v. Commission, 1988 ECR 4067.

ECJ, 8 July 1999, C-254/97, Baxter and Others, 1999 ECR I-4809.

ECJ, 19 September 2000, C-156/98, Germany v. Commission, 2000 ECR I-6857.

ECJ, 8 November 2001, C-143/99, Adria-Wien Pipeline GmbH and Wietersdorfer & Peggauer Zementwerke, 2001 ECR I-8365.

ECJ, 12 December 2002, case C-324/00, Lankhorst-Hohorst, 2002 ECR I-11779.

ECJ, 13 February 2003, C-409/00, Spain v. Commission, 2003 ECR I-1487.

ECJ, 29 April 2004, C-308/01, GIL Insurance and others, 2004 ECR I-4777.

ECR, 3 March 2005, C-172/03, Wolfgang Heiser v. Finanzamt Innsbruck, 2005 ECR I-1627.

ECJ, 10 March 2005, C-39/04, Laboratoires Fournier SA, 2005 ECR I-2057.

ECJ, 6 September 2006, C-88/03, Portugal v. Commission, 2006 ECR I-7115.

ECJ, 12 September 2006, C-196/04, Cadbury Schweppes, 2006 ECR I-07995.

ECJ, 13 March 2008, C‑248/06, Commission v. Spain, 2008 ECR I-47.

ECJ, 22 December 2008, C‑487/06 P, British Aggregates v. Commission, 2008 ECR I-10505.

ECJ, 8 September 2011, C-78/08 to C-80/08 (joint cases), Paint Graphos and others, 2011 ECR I-7611.

ECJ, 8 September 2011, C-279/08 P, Commission v. Netherlands, 2011 ECR I-7671.

ECJ, 21 September 2011, C-397/09, Scheuten Solar, 2011 ECR I-0000.

ECJ, 15 November 2011, C-106/09 and C-107/09 (joint cases), Commission v Gibralta, 2011 ECR I-0.

ECFI, 6 March 2002, T-92/00 and T-103/00 (joint cases), Diputación Foral de Álava v Commission, 2002 ECR II-1385.

EFTA Surveillance Authority, 1 June 2011, case no. 69131, Decision on tax deductions in respect of intellectual property rights, decision no. 177/11/COL, download: http://www.eftasurv.int/media/state-aid/Decision_177_11_COL.pdf.

EFTA Surveillance Authority, 12 December 2012, case no. 71725, Decision on Article 55 of the Liechtenstein tax act, decision no. 480/12/COLL, download: http://www.eftasurv.int/media/decisions/480-12-COL.pdf.

High Court of Justice, 4 July 2009, CH/2007/APP/0603, Vodaphone 2 v The commissioners for Her Majesty's Revenue and Customs, 2008, EWHC 1569 (Ch).

Agreements between the European Community and third countries, Commission Regulations and Council Directives

Agreement between the European Community and the Swiss Confederation envisaging measures equivalent to those provided for in Council Directive 2003/48/EC on taxation of the incomes of the saving in the form of payments of interests - Memorandum of understanding, OJ L385/30, 29 December 2004.

Agreement between the European Community and the Principality of Liechtenstein providing for measures equivalent to those laid down in Council Directive 2003/48/EC on taxation of savings income in the form of interest payments, OJ L379/84, 24 December 2004.

Commission Regulation no. 651/2014 of 17 June 2014, OJ L187/1, 26 June 2014.

Council Directive 2003/123/EC of 22 December 2003 Amending Directive 90/435/EEC on the Common System of Taxation Applicable in the Case of Parent Companies and Subsidiaries of Different Member States, OJ L007/41, 13 January 2004.

Council Directive 2003/49/EC of 3 June 2003 on a Common System of Taxation Applicable to Interest and Royalty Payments made Between Associated Companies of Different Member States, OJ L157/49, 26 June 2003.

Lebenslauf

Name: Lisa Katharina Evers

Werdegang

09/2009 – 02/2015	Wissenschaftliche Mitarbeiterin am Zentrum für Europäische Wirtschaftsforschung (ZEW GmbH), Mannheim
09/2004 – 07/2009	Studium der Betriebswirtschaftslehre mit interkultureller Qualifikation Russisch an der Universität Mannheim, Abschluss als Diplom-Kauffrau
02/2007 – 06/2007	Auslandssemester an der Staatlichen Universität für Wirtschaft und Finanzen, St. Petersburg
06/2004	Abitur am Grimmelshausen Gymnasium, Gelnhausen

This thesis contributes to the current debate on Intellectual Property (IP) Box regimes and IP tax planning. It provides a comprehensive survey of the 12 IP Box regimes in place in Europe by the end of 2014 and presents effective tax rates associated with the IP Box regimes and the use of popular IP tax planning models. Moreover, it evaluates the IP Box regimes on the basis of the EU State Aid rules and the EU Code of Conduct for business taxation and discusses options to reform the taxation of IP income in order to counter profit shifting and tax base erosion.