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.
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

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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.

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Mannheim, February 2015
Lisa Katharina Evers
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Min. 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
SIG 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

a  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

\( \bar{d} \)  Share of the earnings value which leaves the NPV of the investment unaffected from the disposal

\( A \)  Net present value of tax allowances

\( A_c \)  Net present value of periodical tax depreciation

\( A_{c,rs} \)  Net present value of tax allowances in the subsidiary's residence country based where the depreciable base equals the transfer price

\( b \)  Present value factor which forms part of the equation denoting the earnings value

\( \beta \)  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

\( d' \)  Mark-up which leaves the NPV of the investment unaffected from the contract R&D arrangement

\( \delta \)  Economic depreciation rate

\( E V \)  Earnings value of the IP

\( \psi \)  Rate of periodical tax depreciation

\( \psi_c \)  Share of the investment expenditures which are immediately deductible

\( \psi_r \)  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

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\( F \)  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
ρ 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
ρ\text{\textsuperscript{domestic}} After-tax NPV of a domestic investment of the parent company
ρ\text{\textsuperscript{trans}} After-tax NPV of a cross-border investment involving the disposal of IP to a subsidiary
ρ\text{\textsuperscript{trans/parent}} After-tax NPV of a cross-border investment involving the disposal of IP to a subsidiary of the parent company

Roy Royalty rate
t Statutory profit tax rate
t\text{IP Box} Statutory IP Box tax rate
t\text{p} Statutory profit tax rate in the parent company’s residence country
t\text{s} Statutory profit tax rate in the subsidiary’s residence country
Δt Difference between the statutory profit tax rates applied in the parent’s and the subsidiary’s residence countries
τ\text{exit} Exit tax levied in the case of IP disposal
TP Transfer price paid in the case of IP disposal
TP\text{EV} Transfer price based on the earnings value of the IP
u Life use for tax purposes
v Rate of a super deduction for R&D expenses
w Rate of an R&D tax credit

XVI

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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 do not have a fixed geographical nexus 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. Indeed, recent empirical evidence shows that patent applications are responsive to corporate income tax and that European companies’ intangibles are more likely to be held by low-tax subsidiaries. 1

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. 2 This has triggered a debate on profit shifting by multinational companies through relocating valuable intangibles to low-tax countries. 3 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. 4 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. 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. 5

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1 See Lipsey (2010), p. 100.
3 See Griffiths et al. (2014), Kitchin and Hendel (2012).
4 See Dือger and Hendel (2011).
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. They offer a substantially reduced corporate income tax rate for income derived from patents and 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)6 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%67 (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.

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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).

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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. 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 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.12 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.

In this thesis, I 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 light 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 beeway for base

12 This excludes the Italian regime which was introduced at the beginning of 2015.
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 outset, 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 Dereversus & Griffin 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.

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In section 5, I present effective tax rates under IP tax planning. 18 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.19 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 present 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.

18 This section is based on joint work with Christoph Spengel (see Evers and Spengel (2014)).
19 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. Their future economic benefit is usually highly uncertain. Intangible assets may fulfill the characteristics of public goods, which are non-excludability from consumption and non-rivalry in consumption. Knowledge arising from R&D activity constitutes such a public good and may give rise to positive spillovers.

Intangible assets can be categorized 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’. 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. 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. 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’).

References:
1. See Barro (2003), p. 16.
4. Non-excludability implies that consumers cannot be excluded from the use of the good once it has been produced. See Barro and Horst (2005) p. 2; Samouëlou (1954, 1955), Siglo (2008), p. 128.
5. 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 in the marginal costs of providing another individual with the good are zero. See Arroyo (1962), Barro and Horst (2005) p. 2; Samouëlou (1954, 1955), Siglo (2008), p. 128.
7. OECD (2010a), refc 6.3.
8. For further details, see section 6.1.1.
9. See Barro (2003), pp. 34 et seq.

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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. The term 'intellectual property right' denotes this subset of intangible assets. 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. Therefore they are generally not considered 'assets' but instead referred to as 'intangible capital'. The category of 'intangible assets' thereby assumes a centre position between 'intangible capital' and 'intangible property' in terms of their degree of identifiability.

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. The broad definition and categorisation presented above, however, suffices for the purpose of this thesis.

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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 for the development of certain kinds of intangibles (in particular patents) upon qualifying as an intangible asset.48 However, in order to benefit from the Luxembourg IP Box, a taxpayer must capitalise the respective intangible assets.49 Among the remaining EU-27 Member States,50 only Estonia,51 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.52

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48 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 ZilloDI (eds.) (2012), p. 19 figure 1).
49 For details, see section 3.2.2.3.
50 No information on the tax treatment of self-developed intangible assets in Cyprus, whether capitalisation is required, optional or prohibited, could be obtained.
51 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.
52 These requirements are often similar to IAS 38 (i) identifiability, (ii) probability of future economic benefits and the power to obtain these benefits, (iii) ability to measure the costs of the asset reliably (see Verlindt and Steins (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. 34 et seq., Spengel and ZilloDI (2012), pp. 57 et seq., p. 45.
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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 taxpayer 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 assets. These are granted on top of this regular linear depreciation of these assets.\footnote{See Bie and Ohrnmann (2012), p. 167, Deloitte (ed.) (2013), Elscher et al. (2011), Ernst & Young (ed.) (2013), IIEP (2013), p. 106, Spengel and Wiegand (2013), p. 17.} 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.\footnote{See Bie and Ohrnmann (2012), p. 167, Deloitte (ed.) (2013), Elscher et al. (2011), Ernst & Young (ed.) (2013), IIEP (2013), p. 106, Spengel and Wiegand (2013), p. 17.} 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.\footnote{For an overview of such incentives, see European Commission (2014), p. 58, Kipping (2014).} 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.\footnote{For an overview of such incentives, see European Commission (2014), p. 58, Kipping (2014).}

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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.\textsuperscript{82}

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<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Size</th>
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<th>Qualifying Expenditure</th>
<th>Refund or carry forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>TO</td>
<td>4.5%*</td>
<td>Tangible &amp; intangible assets</td>
<td>Cap. exp.</td>
<td>Carry forward, refund after 3 y.</td>
</tr>
<tr>
<td>Cyprus</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>France</td>
<td>TC</td>
<td>30% up to EUR 100 M, 5% above</td>
<td>n.a.</td>
<td>C. exp.</td>
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</tr>
<tr>
<td>Hungary</td>
<td>SD</td>
<td>100%</td>
<td>n.a.</td>
<td>C. exp.</td>
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<td>Liechtenstein</td>
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<td>50%</td>
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<td>Carry forward within loss offset rules, refund</td>
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<td>The Netherlands</td>
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<td>40%</td>
<td>Equipment, machine &amp; buildings</td>
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<td>Portugal</td>
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<td>32.5%</td>
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<td>Cap. exp.</td>
<td>Carry forward 8 y.</td>
</tr>
<tr>
<td>Spain</td>
<td>TC</td>
<td>42% on exp. exceeding the 2-y-average</td>
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<td>C. exp.</td>
<td>Carry forward 18 y.</td>
</tr>
<tr>
<td>Switzerland</td>
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*Alternative: 6% - tax credit; 5% - super deductions; exp. exp. - capital expenditures; n.a. - not applicable.

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<th>Method</th>
<th>Qualifying asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>SL 3 years</td>
<td>Equipment &amp; machinery</td>
</tr>
<tr>
<td>Cyprus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>France</td>
<td>DB 1.5 to 2.5-times SL rate</td>
<td>Equipment &amp; machinery</td>
</tr>
<tr>
<td>Hungary</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Liechtenstein</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>DB 4-times SL rate, max. 40%</td>
<td>Equipment &amp; machinery</td>
</tr>
<tr>
<td>Malta</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
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<td>n.a.</td>
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<td>Equipment, machinery &amp; buildings</td>
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</table>
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.

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. 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.

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.

---

41 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 HBFD Tax Research Platform, Corporate Taxation, 
Country Analysis Portugal, section 1.3.3 (version November 2014)).

42 In the case of “Laboratoire Francais” (DQ), 10 March 2005, C-39/04, 2005 ECB I-2577, the EU 
concluded that the French R&D tax credit which was only available for R&D activities carried out in 
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Belgium, France, and the United Kingdom (since 2013) even pay-out any unused tax credits (see table 1). 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 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.41

40 See IBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, section 1.5.1 (version November 2014).
41 The refund is only available for small and medium-sized companies (SMEs). See IBFD Tax Research Platform, Corporate Taxation, Country Analysis France, section 1.5.1 (version November 2014).
42 See HM Treasury (2013), clause 34, schedule 14, IBFD Tax Research Platform, Corporate Taxation, Country Analysis United Kingdom, section 1.5.2 (version December 2014).
43 In fact, refunds of PAYE tax credits are rare. See Grant and Dool (2013), p. 408 referring to Deloitte (14)(2012).
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Chapter 2: Principles and Fundamentals

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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 characterized by a certain degree of substance. A higher rate of 25% is applied to income which does not qualify as trading income.12 Companies managing IP rights may benefit from the lower trading income tax rate under certain conditions.13 IP Box regimes14 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 (2008), Spain (2008), Malta (2010), Liechtenstein (2011), the Swiss Cantons of Nidwalden (2011), Cyprus (2012), the United Kingdom (2013)15 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 16.76/9% in France. Chapter 3 provides a detailed survey of these regimes as in place by the end of 2014.


13 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 Irish-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. The exception is consequently limited to the higher corporate income tax rate of 25%. For further details, see Hegarty (2013) pp. 22 et seq. Guidance on Revenue Opinions on Classification of Activities as Trading, downloaded: http://www.revenue.ie/en/tax/classification-of-activities-as-trading-activities.aspx, cases nos. 49, 50, 70, 71, 76, 82, 92, 94, 95, 99, 101, and 107; downloaded: http://www.revenue.ie/en/about/publications/submitted-cases.html.

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

15 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.

16 Including additional encheques and contributions levied on the incomes. For details, see section 3.1.6.

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2014/15
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. 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.15 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.16 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’), 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’), all hold convincing claims to tax the intangible asset’s returns.17

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.18 Furthermore, the respective countries in which the entities reside contribute to the creation of the intangible asset.19

2.2.2 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. 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.20 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.21 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’), 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’), all hold convincing claims to tax the intangible asset’s returns.22

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15 See Bos (2003), p. 6-iv seq., Kennerman (2005), pp. 113 et seq.
17 See Bos (2003), pp. 4-6 seq., Kennerman (2005), p. 113 et seq.
20 See Kennerman (2005), p. 113 et seq.
23 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.
24 The term ‘source country’ denotes the country in which a corporation’s profits are earned. This place may, however, be difficult to define (see Doversie and de la Fiera (2014), p. 6, Kennerman (2003), 33, Schilt (2009), p. 48). 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.
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. 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 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. 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.

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)\(^4\), (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\(^5\). 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.

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\(^{6}\) See Dredž (2016a), p. 91.

\(^{7}\) See Dredž (2016b), p. 337.


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.\(^{19}\)

The allocation of the residual reflecting the risk-bearing and any monopoly rents is subject to much debate.\(^{20}\) Practical considerations may point to allocating these economic rents to the owner of the intangible asset.\(^{21}\) This may seem sensible if the owner also bore the risk associated with the R&D investment.\(^{22}\) 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.\(^{23}\)

The functional analysis promoted by the OECD transfer pricing guidelines highlights the allocation of rents through intra-group contracts. 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\(^{24}\) 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.\(^{25}\)

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.\(^{26}\) Economic rents often arise from risk-taking and R&D investments are particularly risky undertakings. Ault as well as Schin argue that a group of companies as a whole bears the risks associated

\(^{19}\) See Schin (2010a), p. 92.

\(^{20}\) See Schin (2010a), p. 92 et seq.

\(^{21}\) See Schin (2010a), p. 93.

\(^{22}\) See Schin (2010a), p. 93.

\(^{23}\) See Schin (2010a), p. 93.

\(^{24}\) See Schin (2010a), p. 93.


\(^{26}\) See Schin (2010a), p. 93.
with business activity.⁶⁵ 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.⁶⁶ This takes into account that multinational groups of companies earn excess profits as they are highly integrated, operate internationally, and jointly exploit valuable intangible assets⁶⁷ and that these excess profits relate to the group as a whole and not to single assets and entities.⁶⁸ 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.

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\text{See Auk (2013), p. 119, Schin (2009), pp. 77 and 93.}
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\text{See Sullivan (2013b), p. 13.}
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\text{See Kleinhard (2010), p. 149.}
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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.58 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.59 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 circumstances.60 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.61

In the following, I briefly62 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&A arrangements focussing on the OECD transfer pricing guidelines. Although these constitute an instrument of "soft law,"63 they serve as a foundation for transfer pricing rules in OECD member states and many non-OECD countries.64

59 For an overview, see Zinn et al. (2014), pp. 355 and 370.
61 Third, a third country might raise a claim to tax the intangibles' return arguing that the company entitled to the intangibles' return has in 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 Hogedijk (2011), p. 4.
62 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 Bes (2003), Hauer (ed) (2012), International Fiscal Association (2012).
63 According to Thüer, the term "soft law" has been coined by Lord Megaw and refers to "instruments with extra-legislative effect" (Thüer (2014), rocit 5). Guaman 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 (Guaman and Meyer (2010), p. 222). For a discussion of the OECD transfer pricing guidelines as soft law instrument, see Liu (2014), pp. 79 et seq.
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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. 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”. 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. 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.

Legal ownership serves as a reference point for determining which parties are entitled to the intangible’s returns. 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. 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.”

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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.

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traded on external markets due to their uniqueness and their central role in the generation of excess profits. This particularly holds true for intangibles constituting the ‘crown jewels’ of a company which are usually not sold or licensed-out to unrelated parties. 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. Taxpayers may exploit this inside knowledge by systematically understating the value of the 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. The fair-marking issues relating to the determination of transfer prices for transactions involving intangible assets are also acknowledged by the OECD. To account for this, the OECD is currently revising chapter six of the transfer pricing guidelines on the transfer pricing rules for intangible assets.

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’. The term ‘traditional transaction methods’ summarises the first three of the methods listed, whereas the latter two constitute ‘transactional profit methods’.

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 to obtain relevant market data.”

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to locate comparable unaunted transactions.\textsuperscript{107} In the case of transactions involving intangibles, such comparable unaunted transactions rarely exist due to the uniqueness of intangible assets.\textsuperscript{108}

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.\textsuperscript{109} 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.\textsuperscript{110} 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.\textsuperscript{111} 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.\textsuperscript{112}

Rules of thumb such as the German ‘Knope-Formula’\textsuperscript{113} or the ‘25%-rule’\textsuperscript{114}, which may be popular among practitioners,\textsuperscript{115} are explicitly discouraged by the recent draft of chapter six of the OECD transfer pricing guidelines.\textsuperscript{116} Similarly, the costs incurred for creating intangibles are generally not considered to be an appropriate indicator for the value of intangible assets.\textsuperscript{117}

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of the cost-plus method to determine the value of intangibles based on the costs incurred for its development is generally discouraged.\footnote{See OECD (2011a), (2011b), (2014), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} Any contract R&D fee paid to an affiliate must also be in line with the arm’s length principle.\footnote{See OECD (2013b), (2014b), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} If the principal effectively bears the risks and chance 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.\footnote{See OECD (2011a), (2011b), (2012a), (2014), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} This requires that the principal manage and control the party carrying out the R&D activity.\footnote{See OECD (2014a), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} 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.\footnote{See OECD (2014a), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} When applying the cost-plus method, the mark-up should reflect an “appropriate profit in light of the functions performed and the market conditions.”\footnote{See OECD (2014a), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.} 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,\footnote{See OECD (2011a), (2011b), (2013a), (2014b), (2016); national tax law or regulations; and other relevant legal and regulatory frameworks.}
2.2.3 Allocation of taxing rights in the context of intangible assets
Vis-a-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.142 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.143 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.144

How the ‘cake’ is split, in the end depends on how these countries settle their claims.145 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 country146 whereas the source country is first and foremost assigned the right to tax any business profits remaining after the deduction of license fees.147

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

144 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.
146 See Article 12 (1) of the OECD Model Tax Convention on Income and on Capital.

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

As of the first of March 2014, royalties paid by Austrian corporate tax residents to domestic or foreign related corporations are not deductible from the Austrian corporate income tax base, in case the royalties are tax exempt in the hands of the licensor or are subject to a tax rate or an actual tax burden of less than 10% due to a targeted tax relief. The German trade tax, which in quantitative terms, may be as important as the corporate income tax,164

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For the purpose of developing an effective strategy to address the trade deficit, it is important to understand the underlying factors contributing to the trade imbalance. This analysis should be based on a comprehensive examination of the economic relationships and trade patterns among the countries involved. By doing so, policymakers can identify specific areas for targeted intervention and develop strategies to enhance trade efficiency and diversification. This will not only contribute to the economic growth and stability of the region but also promote a more sustainable and equitable global trading environment.
the beneficiary of the royalties is a corporation resident in another member state. The Interest & Royalty Directives significantly limits the levy for source taxation of royalties and facilitates profit shifting to low-tax EU member states through intra-group licensing arrangements. Although multinationals may not freely relocate their intangible assets to low-tax countries due to transfer pricing or exit tax rules, tax legislators increasingly struggle with the associated 'leak' in their tax system.

The Interest & Royalty Directives 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. In addition, member states may further require a minimum holding period of 2 years to qualify for the exemption from withholding tax. The directive accounts for transitional regimes which allowed some member states to levy withholding taxes at limited rates up to the end of 2014. 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. In contrast, comparable agreements entered into by the European Union with Andorra, Monaco, San Marino, and Liechtenstein do not apply to royalties. Although the Interest & Royalty Directives 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. This recently received widespread attention in the media.

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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.184 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 company 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.185 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 company 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 principle186 is often perceived to support the R&D country in its claim to tax the income relating to intangible assets created in its jurisdiction.187

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, 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

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184 See Section 3.1.
185 This is discussed in more detail in section 3.7.1 which addresses cross-border aspects of the IP Box regimes.
186 See Scholz (2009) pp. 75 et seq. with further references.
187 See Boos (2003), p. 186. Koenemann 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 Koenemann (2001), pp. 452 et seq.).
allow for weighing the R&D country’s and the source country’s claims in quantitative terms.174

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 straightforward; 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.175

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.190 However, the R&D country is assigned the right to tax the contract R&D fees.191

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

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2.3 IP tax planning

2.3.1 Fundamentals of IP tax planning

In a nutshell, tax planning of IP tax planning of multinationals aims at minimizing the overall tax burden of the group given a certain level of profitability without violating the law. 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. 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.189

It is helpful to differentiate between ‘strategic’ and ‘tactical’ tax planning. Strategic tax planning involves efficient organisational structure. In turn, tactical tax planning takes the organisational structure of a group as a given.190 Instead, it stretches the boundaries of transfer pricing rules by means of setting tax-efficient transfer prices for intra-group transactions.191 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 in hand.

189 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 Bans (2007) p.65).
190 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.
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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.\(^5\) 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.\(^6\) 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.\(^7\) 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.\(^8\) Otherwise, tax deductions may be lost.\(^9\)

In the exploitation phase, the tax rate applicable to income from the exploitation of intangible assets is decisive.\(^10\) Hence, it is tax-efficient\(^11\) to exploit intangible assets in a tax haven. To give an example, the long absence of statutory transfer pricing rules in Ireland\(^4\) has facilitated tax planning models such as the ’Double Irish Sandwich’\(^4\), a tax planning structure i.a. used by Apple and Google.\(^4\) However, the focus of this section is on strategic tax planning.

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assets in low-tax countries and to make use of beneficial tax regimes for income from intangible assets such as IP Box regimes.\textsuperscript{121}

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.\textsuperscript{122} 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.\textsuperscript{123} 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.\textsuperscript{124} Avoiding source taxation of the intangible-related income also involves that royalties are fully deductible from the income tax base in the source country.\textsuperscript{125}

Second, the income must be sheltered from current taxation in the residence country of the parent.\textsuperscript{126} 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.\textsuperscript{127} 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.\textsuperscript{128}

Third, in case the income is subsequently repatriated as dividends, any additional tax burden must be avoided.\textsuperscript{129} This location which does not levy any withholding taxes on dividends.\textsuperscript{130} In addition, the dividends should be exempt in the residence country of the ultimate parent of the group.\textsuperscript{131}
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’. 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. 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, taking into account tax and non-tax factors. 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.257

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 rates258 attract foreign-invented patents, whereas countries with high tax rates for patent income face the relocation of patents abroad.259


254 To give an example, the corporate income tax rates in France, Portugal, and Spain, which offer very generous R&D tax credits, amount to 33.9/39% (plus surcharges and additional contributions), 30% and 30%, respectively (see table 2 in section 5.3).


256 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.

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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.144 The tax planning strategies differ in how the location of the creation and the location of the exploitation are disintegrated, 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 operate group companies.145 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.146

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.147

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.148 The tax planning strategies differ in how the location of the creation and the location of the exploitation are disintegrated, 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 operate group companies.149 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.150

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146 Provided that the participation requirements are met, the OECD Parent & Subsidiary Directive ensures that the intangibles are only transferred to the European Union. Except for Ireland, all EU Member States have until now exempt foreign dividend income from corporate income tax (see section 2.3.3). If dividends are subject to an extra layer of taxation, whether by source 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 forward as debt capital to operating affiliates in order to finance investment.

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151 See section 2.2.2.
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.\textsuperscript{225} 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.\textsuperscript{226} Tax legislators may counter this issue by requiring retroactive price adjustments.\textsuperscript{227}\

Transfer pricing rules also require that the conduct of the parties be consistent with the terms of the respective legal arrangement.\textsuperscript{227} 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\textsuperscript{228} the transfer price only when the transferor and the recipient are resident in the R&D country at the time of the disposal.\textsuperscript{229} The transferor does not achieve its tax planning objective of shifting profits to low-tax countries.\textsuperscript{229} 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.\textsuperscript{226} Tax legislators may counter this issue by requiring retroactive price adjustments.\textsuperscript{227}\

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![Figure 2: Contract R&D arrangements as IP tax planning model](image)

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.2\(^\text{31}\) 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.2\(^\text{32}\) In doing so, the multinational may avoid the transfer of intangible assets which would trigger some kind of exit taxation.2\(^\text{33}\) 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.2\(^\text{34}\)

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

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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

\[ \text{Equation (2)} \]

![Figure 2: Contract R&D arrangements as IP tax planning model](image)
functions related to developing, enhancing, maintaining and protecting the intangible asset as well as assume the risks associated with these activities.{{185}} 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.{{186}} 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.’{{187}}

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.{{188}} 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.’{{189}} 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.{{190}}

2.3.2.2 Franchising and principal structures

Franchising models constitute a variant of the above described licensing model as they go beyond the licensing of patents or trademarks by including know-how and the rendering of services (see figure 3).{{191}} Franchising enables the franchisee to make use of a full-fledged business model. As a consequence, franchising

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220 See Wilder (2002), p. 935. As pointed out by Durán “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. Thus, they gain rights to the host’s share of income, with the activities in higher-tax countries designated under contract as ‘limited risk’ distribution or manufacturing attracting relatively little income” (Durán (2010), p. 249).


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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. 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.223 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


220 These two terms are synonymous. Whereas the US transfer pricing regulations use the term ‘cost sharing agreement’, the OECD transfer pricing guidelines use the term ‘cost contribution agreement’ (see Bos (2000), p. 135; Brauner (2010), p. 348, OECD (2014), 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 (2012a), p. 74.

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

<table>
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<tr>
<th>R&amp;D company</th>
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<th>Licence fee</th>
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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’).\textsuperscript{237,238} In such cases, the entity 
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agreement and any IP to be developed within the scope of the agreement in its 
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Chapter 2: Principles and Fundamentals

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3 Survey of IP Box Regimes in Europe*4

Intellectual Property (IP) Box regimes constitute the single most significant tax policy innovation in the field of IP taxation in recent years. The main characteristic is that they offer a substantially reduced rate of corporate income tax on the income derived from IP.271 IP Box regimes 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, those 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*4 to account for the possible repeal of the domicile and mixed company regimes which are

This survey is a contribution to ensure forms part of a joint paper with Heike Miller and Christoph Spengler (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 generally, 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 30% 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 production activities (impounds regional value added production). 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, processors, secret formulas, and industrial, commercial, scientific knowledge. To benefit from this partial exemption the taxpayer must regularly exploit the IP and meet certain conditions. In any case it must be used in Italy and the so-called 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% of 2017. See Art. 1(77) (75) Legge n. 190 (Lunghe le Studio) (Stability Law) of 23 December, 2014, Decreto-Legge n. 3/2015 of 21 January 2015, Hoe (2013), BITI Tax Research Platform, Corporate Taxation, Country Analysis Italy, section 1.5.1 (version 14.04.2014) (KPMG) (ed) (2014), PricewaterhouseCoopers (ed) (2014).

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278 The Italian regime involves a 30% 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 production activities (impounds regional value added production). 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, processors, secret formulas, and industrial, commercial, scientific knowledge. To benefit from this partial exemption the taxpayer must regularly exploit the IP and meet certain conditions. In any case it must be used in Italy and the so-called 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% of 2017. See Art. 1(77) (75) Legge n. 190 (Lunghe le Studio) (Stability Law) of 23 December, 2014, Decreto-Legge n. 3/2015 of 21 January 2015, Hoe (2013), BITI Tax Research Platform, Corporate Taxation, Country Analysis Italy, section 1.5.1 (version 14.04.2014) (KPMG) (ed) (2014), PricewaterhouseCoopers (ed) (2014).

279 See the draft of Article 246 Federal Law of 14 December 1999 concerning the harmonisation of the direct taxes of the Swiss cantons and municipalities (Bundeskammer 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) (Bundeskammer über die Harmonisierung der direkten Steuern der Kantone und Gemeinden) has 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*4 to account for the possible repeal of the domicile and mixed company regimes which are
under severe pressure from the EU.234 The introduction of a Patent Box is also discussed in the United States.235 Even the German Minister of Finance, who has been one of the sharpest critics of IP Box regimes,236 is now considering the implementation of such a regime according to press reports.237

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.”238 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.239

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 related to IP income.

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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% in 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.

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increase the attractiveness of the regime.²⁰⁵ 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.²⁰⁶ 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 2017.²⁰⁷ 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 2009,²⁰⁸ 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.²⁰⁹ Currently, Hungary limits the benefits of its IP Box to 50% of the overall profits.²¹⁰

²⁰⁵ This applies to licence agreements signed on or after 29 September 2013. See Ihadzic and Velasco (2013).
²⁰⁶ A 3.3% social surcharge is levied on the part of the corporate income tax exceeding EUR 763,686. In addition, a contribution on the added value of enterprises (CVAE) is levied at a rate of up to 1.5% on the turnover (in case the turner exceed EUR 112,500). In contrast, the 10.7% exceptional tax surcharge levied on the corporate income tax liability, which applies in case the turnover exceeds EUR 258 Mio, is disregarded. Including this surcharge the main rate and the IP Box tax rate amount to 38.93% and to 16.34%, respectively.
²⁰⁸ In this regard, the costs of the IP enterprise capitalized expenses as well as expenses which have not been capitalized (see Ihadzic and Velasco (2013), p. 709).
²¹⁰ See Voros and Haracs (2012), pp. 3-4 enq.
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), and closely related rights. 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.

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 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. 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.

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246 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 revenu de brevet,” download: http://www.fiscalites.gouv.be/interfaile/crages/Deduction-pour-revenus-brevets/index.htm. The text reads: “Il est envisageable d'octroyer une déduction fiscale, conformément à la déclaration de l'impôt sur les sociétés, des droits d'auteur et droits de base de données s'ils 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 son produit ou un produit breveté.”

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contribution arrangement under the condition that the UK company contributes to the development of the IP.940

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 regime.941 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.942 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.943

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.905 In France, acquired IP only benefits from the regime after a two-year holding period.906

Only Portugal strictly excludes acquired IP from the IP Box regime in all cases.907 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.908

Belgium and the Netherlands to some extent open the scope of their regimes to acquired IP under the condition that it is further developed.909 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.910 In contrast, the Belgian regime does not require that the improvement of an acquired patent result in a new patent.911 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.912 However, the value of the acquired intangible will

905 See Article 25(3)(L) LIR, Circulaire du directeur des contributions (2009), Felder (2013), p. 55, van Kuil (2013), p. 227, Montaurence and Charlier (2008), p. 227. A company is considered to be a related party for the purpose of Article 25(3)(L) LIR if it holds at least 10% of the capital of the company receiving the IP income (parent company), or if it at least 10% of its capital is held by the company receiving the IP income (subsidiary), or if it either company holds at least 10% of its capital and the capital of the company receiving the IP income (subsidiary) is less than 50%, only direct participations are of relevance. As a result, this restriction can be avoided by transferring IP between indirectly related parties.


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The Belgian regime furthermore requires that the R&D activity occur in a research centre forming a branch of activity of the taxpayer.\textsuperscript{314} This research centre need not be located in Belgium.\textsuperscript{315} The taxpayer may contract out the R&D activity, though it must supervise the R&D activities carried out by the contractor.\textsuperscript{316}

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.\textsuperscript{317} 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.”\textsuperscript{318} 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.\textsuperscript{319}

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 eventually be fully depreciated and at some future point of time all of the income will relate to newly-developed intangibles.\textsuperscript{320}

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\textsuperscript{318} See Article 207Tc (2) and (3) CTa 2010.

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\textsuperscript{331} See Article 207Tc (6) and (7) CTa 2010.

\textsuperscript{332} For details, see section 2.2.2.1.
potentially commercially-successful R&D, planning, and budgeting. In line with this, IO 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. The British Patent Box additionally requires that the R&D be carried out by a group company. 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. 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 may serve as an alternative to contract R&D arrangements where the ownership is supposed to be shared between two or more parties. IO obtained by way of a cost contribution arrangement may qualify for the IP Box if the respective ownership requirements of the regimes are met.

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Cost contribution agreements may serve as an alternative to contract R&D arrangements where the ownership is supposed to be shared between two or more parties. IO obtained by way of a cost contribution arrangement may qualify for the IP Box if the respective ownership requirements of the regimes are met.
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.184 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 benefited if it was not used before 2009.185 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.186

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.187 The former Irish patent income exemption used to be limited to patents which had been created in Ireland. This was challenged by the EU Commission188 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.189

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

185 See van den Berghe and Slejfer (2008), p. 381.
187 See Grats and Douw (2013), p. 374. In doing so, the IP Box countries avoid taking 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.
188 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 from this 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 EU’s cases ‘Laboratories Forouzan SA’ (CJ, 10 March 2005, C-395/05, ECR I-2857) and ‘Raiser and Other’ (CJ, 9 July 1999, C-254/97, ECR I-3889) and the EC Commission Decision 2005/648/EC of 20 July 2005. The Commission Decision was adopted in the ECJ’s case ‘Laboratories Forouzan SA’ (CJ, 10 March 2005, C-395/05, ECR I-2857) and ‘Raiser and Other’ (CJ, 9 July 1999, C-254/97, ECR I-3889). See EC Commission Decision 2005/648/EC of 20 July 2005, download http://europa.eu/rapid/press-release_IP-05-488_en.htm#context.
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. Second, if less than 50% of the R&D activity 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. In addition, R&D carried outside the European Union in full does not qualify for the R&D certificate in general.

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 Schelkens 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. Similarly, the ‘research centre’-requirement of the Belgian regime was implemented with the aim of promoting R&D and innovation in Belgium. However, this is counteracted by the fact that the research centre may be located abroad.

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 Schelkens 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. Similarly, the ‘research centre’-requirement of the Belgian regime was implemented with the aim of promoting R&D and innovation in Belgium. However, this is counteracted by the fact that the research centre may be located abroad.
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:241 (i) income from the sale of products incorporating IP ("sales income") and (ii) "notional royalty income". Sales income may comprise242 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 qualifying item.

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<th>Country</th>
<th>Finance</th>
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### Notes:
1. 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) (TA), capital assets include copyrights, patents, trademarks and trade names falling under the capital gains provisions may be transferred-tax free within a group of companies (see IP Box Research Platform, Corporate Taxation, Country Analysis Malta, section 8.4 (version November 2014)).
3. In doing so, we follow the classification applied by the UK Patent Box. See Article 35TC (2) CTA 2010, HMRC (2012), p. 33 (table 3.22).

A minority of IP Box regimes is also available in case eligible IP is used externally. In this regard it is helpful to differentiate two categories of income relating to external use:243 (i) income from the sale of products incorporating IP ("sales income") and (ii) "notional royalty income". Sales income may comprise244 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 qualifying item.

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5. See IP Box Research Platform, Corporate Taxation, Country Analysis Hungary, section 1.7.5 (version November 2014).
6. In doing so, we follow the classification applied by the UK Patent Box. See Article 35TC (2) CTA 2010, HMRC (2012), p. 33 (table 3.22).
out its business such as the production of goods or the rendering of services.\textsuperscript{123} 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.\textsuperscript{124}

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 the IP.\textsuperscript{125} 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.\textsuperscript{126}

\textsuperscript{123} The following example is derived 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-IP income that for the purposes of the notional royalty provisions will be ‘IP-derived income’ (HMRC 2012, p. 39).

\textsuperscript{124} Belgium: according to Federer, Article 205/2 (2)(1) index 2 can be read as comprising notional royalty income from internal use (see Federer (2013), p. 36); Lichtenstein: Article 55 (5) (b) Bel, Federer (2013), p. 233; Maese et al. (2012), p. 423; Luxembourg: Article 55 (5) (b) LIR, Federer (2013), p. 68; the Netherlands: Art 120 LB, Federer (2013), p. 102: “Pioneer royalty income is excluded from the regime, see Direktie generale van de competitiebeheerder and de diensten der (services) 2012, p. 13.” Portugal: Article 135 (a)(1) (b) (ii) (i) (ii) (iii) hence contracts governing the disposition and licensing out of IP and thereby excludes notional royalty income; Spain: notional royalty income is excluded from the regime, see Article 21 (1) (b) (ii) (i) (ii) (i) (ii), Maese et al. (2013), p. 421; Malta: Article 35(7) (1) CTA 2010, HMRC (2012), p. 33. No conclusions evidence could be obtained for Greece, Hungary, and Malta.


\textsuperscript{126} See Article 35(7) (5) and (6) CTA 2010, HMRC (2012), p. 39.

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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,348 Hungary, and Portugal adopt this approach (see table 5).349 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.348 Furthermore, in Belgium, in the case of acquired IP, the amount of the notional patent income deduction is reduced by depreciation allowances.348

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.350

3.3.2.2 Comparison of current expenses

IP Box countries tend to adopt either a gross or net approach to IP Box treatment. The gross approach allows companies to deduct IP expenses from their non-IP income, whereas the net approach deducts IP expenses only against IP income.

The choice of approach is driven by tax policy considerations. For example, the gross approach is often adopted to ensure that IP Box income is taxed at a lower rate than non-IP income. This is because IP Box income is often generated from activities that are not subject to active management or control, such as the licensing of intellectual property.


348 The provisions governing the Belgian patent income deduction stipulate that depreciation allowances for acquired IP, which benefited the taxpayer prior to its acquisition, are deductible from IP income when determining the amount of the notional deduction of patent income (see Article 257(1)(c) indented 1 CCR, Warren and Foriers (2008), p. 74).


350 See Vogue and Harcs (2012), p. 3 et seq.


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350 See Vogue and Harcs (2012), p. 3 et seq.
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-patient income.\(^\text{108}\)\(^\text{109}\)

<table>
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<tr>
<th>Treatment of current expenses</th>
<th>Treatment of R&amp;D expenses incurred in the past</th>
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<tr>
<td>Belgium</td>
<td>Gross income</td>
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<td>Cypriot</td>
<td>Net income</td>
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<td>French</td>
<td>Gross income</td>
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<td>Hungarian</td>
<td>No recapture</td>
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<td>Netherlands</td>
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<td>Portugal</td>
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<td>Spain</td>
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<td>Switzerland, Maltese</td>
<td>No recapture</td>
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<td>United Kingdom</td>
<td>No recapture</td>
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Notes: *In the case of self-developed intangibles not accounted for on the balance sheet, the IP Box tax base is inevitably assessed to correspond to 80% of the IP income. As a consequence, expenses relating to such income are deductible from non-patient 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

such intangibles, the IP Box tax base is irrevocably assumed to correspond to 80% of the IP income.\(^64\) 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 15.69%\(^{65}\) 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.\(^66\) 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.\(^67\) Instead, the tax base of the UK Patent Box is determined in a three-step procedure.\(^68\) 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’).\(^69\) In both cases, financing income and expenses are disregarded and are taxed and deducted, respectively, at the regular tax rate.\(^70\)

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

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\(^{64}\) See Article 21 (2)(C)(I) Luxembourg and Malta (2013), BHR Tax Research Platform, Corporate Taxation, Country Analysis, (online 15/9 (version November 2014), Pineau-hunterman (note 45) (2013)).

\(^{65}\) These changes apply to licence agreements signed on or after 29 September 2013.


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\(^{68}\) See Article 23 (2)(D)(I) Luxembourg and Malta (2013), BHR Tax Research Platform, Corporate Taxation, Country Analysis, (online 15/9 (version November 2014), Pineau-hunterman (note 45) (2013)).

\(^{69}\) 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’).\(^71\) In both cases, financing income and expenses are disregarded and are taxed and deducted, respectively, at the regular tax rate.

\(^{70}\) 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
result in non-patient 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.276

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.277 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).278

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 at the arm’s length notional marketing royalty.279 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.280 It nevertheless constitutes a levy 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.281

186 See Aquaviva et al. (2013), p. 166.
189 See Article 375C TCA 2010; HMRC (2012), pp. 45-51.
190 See Article 375C TCA 2010.
192 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 GBP 1 Mio. as well as if the qualifying residual profits are below GBP 3 Mio. and certain further requirements are met (see Article 375C and 375C CM OTA 2010; HMRC (2012), pp. 46-51; OsborneLoeb (2013), pp. 407).

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In cases where the deductibles for routine functions and marketing assets do not fully capture the returns to non-patient-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. 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. 

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, and the Swiss Canton of Nidwalden. 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. 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 (so-called ‘threshold mechanism’). Hence, IP

363 Recall, in case of self-developed IP not accounted for on the balance sheet the IP Box tax base is, however, irreversibly assumed to correspond to 60% of qualifying income as derived out in section 3.3.2.1.
364 Belgium: van den Berghe and Kelley (2008), p. 379, Warner and Fortier (2008), p. 73, Hungary: Koka (2012), p. 346, Special Situations and Values (2012), Swiss Centre of Nidwalden: Felder (2013), p. 331. 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. The regime is relatively new so this issue has, however, not been fully clarified so far.
365 See Article 124(2)(1) LIR, Munsterland and Chiarella (2008), p. 225, Noth and Huser (2009), Voss and Huser (2012), p. 4. For the scope of expenses which are subject to capitalisation, see Circular du directeur des contributions (2009), ch. 5.2.

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income up to the development expenses is subject to the regular tax rate. Under the Dutch regime, the calculation of whether the IP income exceeds the threshold is done jointly for all assets. However, the taxpayer may opt for the IP Box treatment separately for each intangible asset. 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 imply that the application of the lower IP Box rate to income from other, more profitable intangible assets. In contrast, the rules governing the Liechtenstein regime stipulate that the IP tax base and the recapture of development expenses, be determined separately for each eligible intangible asset. 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. 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 Box treatment is not chosen for the tax base, it is added to the tax base when the IP Box is opted for. Thereby, the initial deduction of the development costs is offset for a positive interest effect stemming from the time value of money as no adjustment for inflation is required. 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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.434

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.435

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.436 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.437 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.

434 See Blackford and Wattenmaker (2009).

435 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.


437 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 Spiegel and Zilbik (eds) (2012), p. 19 figure 1). Until 2007, capitalisation of self-developed intangibles was also mandatory in the Netherlands (see Baasjes en Bruwer (2010)), p. 2936.

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### 3.3.2.4 The Dutch administrative practice 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.\(^{165}\) If intangible assets are used internally (e.g. in manufacturing), this is difficult to put into practice.\(^{166}\) 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, so called 'afplemdehode' 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.\(^{167}\) It is available by means of an administrative ruling which is binding to both the taxpayer and the treasury.\(^{168}\) 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 ‘afplemdehode’.\(^{169}\)

Within the scope of the ‘afplemdehode’ 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.\(^{170}\) This requires carrying out a functional analysis\(^{171}\) which is to some extent similar to the functional analysis set out in the OECD transfer pricing guidelines.\(^{172}\) 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.\(^{173}\)

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167 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 Belastinginstituut (2014), p. 12, van der Lande (2012), p. 76.
168 For details, see van der Lande (2012), pp. 99 et seq.
169 See Belastinginstituut (2014), p. 12, section 6.5.4.
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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. Depending on the business model, production, marketing and sales, logistics, and other functions either constitute core functions or supporting functions.480

Within the scope of the ‘apelmethode’, 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 EBT to arrive at the amount of EBT relating to the core functions.481 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).482 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.483

Table 6: Calculation of the Innovation Box tax base under the ‘apelmethode’

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>EBT</td>
<td>30,000</td>
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<td>Return to supporting functions (1)</td>
<td>-10,500</td>
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<td>Return to R&amp;D not associated with eligible IP (2)</td>
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Notes: This example draws on an example presented by van der Lande (2012), pp. 120 et seq.

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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.143

### 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-financing142 be proportionally allocated.143 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 unabsorbed deductions, it is of relevance that the deduction takes place after the so called ‘dividends-received deduction’ (the Belgian participation exemption), but before the deductions that can be carried forward. These are the ‘notional interest deduction’,144 the deduction of losses which have been carried-forward, and the ‘investment deduction’.145

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.146

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 benefits.


143 See Földi (2013), p. 224.143

142 In Liechtenstein, 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, Book 5, 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 November 17 2013 in conjunction with Article 2 Tax Law of 22 September 2010). See Földi (2013), pp. 217 et seq. and p. 222.

143 In Belgium, a notional interest deduction is available at a rate of 2.63% for the financial year 2014 (see HBFD (2014), country chapter Belgium, sections 1.7.6 and 1.13).

144 See van den Berge and Kellen (2009), 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 HBFD Tax Research Platform, Corporate Taxation, Country Analysis Belgium, sections 1.5.2 (version November 2014).

incentives. In general, taxpayers who make use of the IP Box regimes are not excluded from the benefits of R&D tax incentives. 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. 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. 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.

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### Incentives in the IP Box Regime

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

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<tr>
<th>Year</th>
<th>2007</th>
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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;
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- (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 notarial royalty income from internal use of qualifying IP. 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 not 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. The larger the area in-between the lines which are drawn to connect the values for each spoke, the more generic and thereby the more attractive the respective IP Box regime is. This is based on the assumption that all

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

43 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%.

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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.

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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

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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.

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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)

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<tr>
<th>Region</th>
<th>Ireland</th>
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Notes: In the United Kingdom, the Patent Box is planned 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 2013.134 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%.135 Besides Spain, two

135 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.

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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.411 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.

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 irrefutably assumed introduction was introduced setting the IP Box tax base to 80% of the IP income.412 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%413 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.

411 The following surcharges are taken into account: 2000: 10% surcharge, 2001: 6% surcharge, 2002 to 2004: 3% surcharge, 2005: 1.5% surcharge, 2006 to 2013: 13.5% ‘large company surcharge’ levied on the part of the corporate tax which exceeds EUR 763,000. Since 2014, a 1.5% contribution on the added value of enterprises (CAE) is additionally levied on the turnover (in case the turnover exceeds EUR 155,000). In contrast, the ‘exceptional tax levied’ on the corporate income tax liability (in case the turnover exceeds EUR 255 Mio.) is disregarded (5% in 2012 and 2013, 17.5% in 2014).

412 See section 3.2.1.

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

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412 See section 3.2.1.

413 As 80% of the IP income is subject to the 60% notional deduction the effective tax rate amounts to 15.6%.
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.444 Second, the self-development criterion was relaxed. It is now sufficient that the taxpayer bears at least 25% of the asset development costs.444 Third, the IP Box no longer causes to apply in the tax period which follows the one in which the qualifying IP income exceeds six times the costs of the IP.444

412 See HFD (2012), country chapter Hungary, section 1.4, p. 401.
414 See Eymans and Braune (2013).
418 See Rubles en Valaco (2013). Section 22 (2) (ii) of the Form of Ley 16/2007 de referenda y adaptación de la legislación mercantil ex materias contables para su armonización internacional con base en la normativa de la Unión Europea de 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.

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451 See Rubles en Valaco (2013). Section 22 (2) (ii) of the Form of Ley 16/2007 de referenda y adaptación de la legislación mercantil ex materias contables para su armonización internacional con base en la normativa de la Unión Europea de 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.
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 Cantons 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.431 Hence, IP holding companies which have commissioned the creation of intangible assets to foreign affiliates may benefit from the IP Box regimes, provided the respective substance requirements to which IP holding companies are subject in case of contract R&D arrangements.

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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.442 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.443 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).444

The legal ownership requirement may also involve that the IP Box treatment not be available for companies which sub-licence IP and thereby do not hold the legal ownership or did not register the IP right, respectively.445 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.446

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.447

Irrespective of whether the respective IP Box regime involves an active ownership condition or not, transfer pricing rules448 limit the leeway for benefiting from the IP Box in the case of IP holding companies with no or only

442 See Parrenkoooper et al. (2006).
443 See Mazzoni and Rocks (2011), pp. 25 et seq.
444 See Kirkland and Biedel (2012), p. 179.
448 Almost all IP Box countries already have transfer pricing rules in place that are based on or consider the OECD transfer pricing guidelines. Multinational companies use this to conclude the economic ownership of IP. Hence, in cases where the taxpayer is the economic owner but is not considered the legal owner, he may benefit from these regimes.449 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.450 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).451

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Irrespective of whether the respective IP Box regime involves an active ownership condition or not, transfer pricing rules455 limit the leeway for benefiting from the IP Box in the case of IP holding companies with no or only
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.\(^{433}\) 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\(^{434}\) if in the residence country of the ultimate parent of a group. This may be the case if the respective CFC rules take 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.\(^{435}\)

However, within the European Union and the European Economic Area CFC rules have become largely ineffective in counterracting tax planning (as opposed to tax evasion) due to EU Tax law changes. In the ‘Cadbury Schweppes’ case, the EU 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.\(^{436}\) 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 state.\(^{437}\)

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

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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
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\(^{485}\) 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\(^{486}\) 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.

\[485\] See section 3.3.1.

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\[486\] 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. 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 of the regular tax rate and the IP Box tax rate.

414 For details, see section 2.2.2.1.
415 Weighted by the shares of the profits derived from activities eligible for the IP Box treatment and activities which are not eligible.

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.

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415 Weighted 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 to 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.e., 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** 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 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. Discretion of investment decisions can arise for example when investment funds are limited, so

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* This section is mainly based on joint work with Helene Miller and Christopher 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 national interest deduction available for equity capital in those two countries is modelled in a slightly different way.

that not all profitable investment projects can be carried out. Deciding in which country to carry out a profitable investment project i.e. 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.\(^64\)

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.\(^65\)

Equation (1) represents the after-tax NPV of an investment in a self-developed patented 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 decisional assumption that the R&D expenditures' value is not realised immediately but accrues over several periods.\(^66\)

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.\(^67\)

\[
R = \left(1 - \frac{1}{(1 - \alpha)}\right) + \frac{\beta}{\alpha} \frac{1}{1 - \frac{1}{(1 - \alpha)}}
\]

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 that not all profitable investment projects can be carried out. Deciding in which country to carry out a profitable investment project i.e. 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.

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64. See Devereux and Griffith (1999, 2003), Schröder et al. (2002), Spong (2003), pp. 66 ff. et seq.


67. 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 of the shareholder level is not taken into account for investment decisions.
the creation of a self-developed intangible asset to be expended immediately when they are incurred. This reduces the investment outlay in period 1 (first term of equation (1)).

\[
A = \frac{q_1}{\text{immediate deduction}} - \frac{q_2}{\text{immediate deduction}} + \frac{q_1(1 - \frac{\gamma_1}{1 + r})}{\text{capitalisation}} + \frac{q_2(1 - \frac{\gamma_2}{1 + r})}{\text{capitalisation}} \tag{1}
\]

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.\(^{44}\) Equation (2) denotes the NPV of tax allowances in this case. The first term of equation (2) illustrates the immediate deduction of B&D expenditures; variable \(q_1\) reflects the share of B&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.\(^{44}\) Hence, the first two terms of equation (2) cancel out each other. The third term accounts for the subsequent depreciation of the patent. Variable \(\varphi\) represents the depreciation rate and \(u\) denotes the useful life of the asset. Variable \(\varphi\) 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 (1). In this case the NPV of the tax allowances is equal to the profit tax rate \(\Delta t\).

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 \(\tau\) (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 \((\delta)\) denotes the economic depreciation rate). The variable \(\varphi\) 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.\(^{45}\)

For details, see section 2.2.1, footnote 34.

\(^{44}\) As a consequence, there are no timing effects resulting from the fact that B&D expenses remain deductible until a self-developed intangible asset is created. Within this two-period framework, the alternative is to assume that exploitation happens 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 announced by one period, the actual length of the B&D investment is irrelevant.

\(^{45}\) For a more detailed discussion of the methodology, see Devereux and Griffith (1999, 2001); Spengel and Lammermann (2001); and Schröder et al. (2002).

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\(^{45}\) For a more detailed discussion of the methodology, see Devereux and Griffith (1999, 2001); Spengel and Lammermann (2001); and Schröder 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.

\[ p = \frac{(1 + i)(1 - t_p) - \delta}{(1 + r)^n} \]  

(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 (8) 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).

\[ \text{EATR} = (R^* - R) / R \]  

(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).

\[ p^D = \frac{(1 - t_p)(1 - i)(1 + r) - \delta}{(1 + r)^n} \]  

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(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 equal 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.

\[ p^D = \frac{(1 - t_p)(1 - i)(1 + r) - \delta}{(1 + r)^n} \]  

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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 type of investment.

\[ p^E = \frac{(1 - t_p)(1 - i)(1 + r) - \delta}{(1 + r)^n} \]  

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case. As in the case of debt-financed investment, the marginal return is fully 
shied from profit taxation if the rate of the notional interest deduction, 
denoted by $\lambda_{nt}$, equals the capital market interest rate.

\[
p^{nit} = \frac{1 - (r - \lambda_{nt})}{(1+r)} - \delta \quad \frac{1 - (r - \lambda_{nt})}{(1+r)} 
\]

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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.469

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).470 The assumption of no tax exhaustion is most appropriate in the case of large mature companies that also generate income from other investment projects.471

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=1). 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.

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


471 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).

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474 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.\textsuperscript{494} The NPV of allowances is therefore based on the IP Box tax rate and is best reflected by equation (9).\textsuperscript{495}

\[
A = \frac{q_t}{r} + \frac{q_{t+1}}{r^2} + \frac{q_{t+2}}{r^3} \cdots \frac{q_{T_2}}{r^{T_2}}
\]

In contrast, the tax treatment of R&D investment projects which are undertaken before the IP Box regime is first opted for is more complex. 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.

Liebenthien, 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 is 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)\textsuperscript{496} denotes the overall value of the allowances for R&D expenditures under the Luxembourg regime, where the variable \(q_t\) reflects the share of R&D expenditures which may be immediately deducted (usually 100\%), \(r\) represents the depreciation rate (equal to 1 for immediate deduction), and \(n\) is the useful life of the asset.

\[
A = \frac{q_t}{r} + \frac{q_{t+1}}{r^2} + \frac{q_{t+2}}{r^3} \cdots \frac{q_{T_2}}{r^{T_2}}
\]

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.\textsuperscript{497} Under the Cypriot IP Box, which applies to IP profits, the depreciation allowances are

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\]

\textsuperscript{494} Recall, once the British Patent Box is in 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 3.1.2.2.

\textsuperscript{495} 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 function 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 returns of investment reflects a return net of expenses for marketing intangible goods, no returns to marketing assets is deducted.

\textsuperscript{496} For details, see sections 2.1.1. and 3.1.2.3.

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\textsuperscript{498} 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 function 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 returns of investment reflects a return net of expenses for marketing intangible goods, no returns to marketing assets is deducted.

\textsuperscript{499} For details, see sections 2.1.1 and 3.1.2.3.
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. 413 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.111 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 (\(t + t_{IPBox}\)). Equations (11) and (12) illustrate the financing term and the cost of capital, respectively, in this case.

\[
\beta = \frac{1 - \left(\frac{1}{1 + r_{IPBox}}\right)^{n}}{r_{IPBox}} \quad \sigma = \frac{\left(1 + r_{IPBox}\right) - \left(1 + r_{w}\right)}{r_{IPBox}} \quad (11)
\]

\[
\beta = \frac{1 - \left(\frac{1}{1 + \left(t + t_{IPBox}\right)}\right)^{n}}{\left(t + t_{IPBox}\right)} \quad \sigma = \frac{t_{IPBox} - \left(1 + r_{w}\right)}{t_{IPBox}} \quad (12)
\]

412 See section 3.1.2.1 for further details.
413 Assuming a rate of return of 20% and an economic depreciation rate of the self-developed patent of 15.75%, the income from exploiting the patent only exceeds the investment expenditure in period three.

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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 \((i \times r)\). 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.

\[
\beta = \frac{1 - (1 - (1 + r))^n}{r} s - \frac{(1 - (1 + r))^n}{1 + r} \delta
\]

(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.

\[
p_{\text{BP}} = \frac{1 - (1 - (1 + r))^n}{1 + r} s - \frac{(1 - (1 + r))^n}{1 + r} \delta
\]

(14)

\[
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\]

(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.

\[
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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 \( q_k \) 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.

\[
A_j = q_x + \frac{\Delta x}{\delta} + v + w
\]

(18)

Immediate
deduction
Accelerated
depreciation
Super
deduction
Tax
credit

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(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%.

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. 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. 446


447 See Devereux & Griffith (2003), p. 111.

448 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.

Chapter 4: Analysis of IP Box regimes drawing on Effective Tax Rates 105

4.2 Effective tax rates associated with IP Box regimes

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application of a notional interest deduction for equity capital reduces the cost of capital below the market interest rate.\footnote{For the financial year 2014, the rates for the notional interest deduction are 2.63% in Belgium and 4% in Liechtenstein.} 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.\footnote{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 35%.}

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 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.\footnote{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 35%.} 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 profit tax rate. The regime requires that R&D expenses be capitalised.

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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)

<table>
<thead>
<tr>
<th>IP Box treatment of R&amp;D expenses</th>
<th>B</th>
<th>C</th>
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<tr>
<td>Tax rates (%)</td>
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<tr>
<td>Mainrate</td>
<td>33.99</td>
<td>12.5</td>
<td>35.41</td>
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<tr>
<td>IP Box</td>
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<td>16.74</td>
<td>9.5</td>
<td>2.5</td>
<td>7.08</td>
<td>8</td>
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</tr>
</tbody>
</table>

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.

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44) The results presented for France are based on the assumptions that the 10.7% tax charge applicable to companies with a turnover exceeding EUR 250 Mio does not apply. Including this tax charge, the main rate and the IP Box tax rate amount to 30.3% and to 18.34%, respectively. This is associated with an EATR of 25.2% under the regular tax system and an EATR of 7.15% if the IP Box regime applies.

45) In section 4.2.2 shows EATRs for investment earning a rate of return of 49%. 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%.

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The negative EARIs indicate that the company may shelter non-IP income from taxation due to the asymmetric treatment of IP income and R&D expenses.439 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 EARI 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 EARIs to the remaining EU-member states.440 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 (10.9%). However, in these cases the possibility to deduct the R&D expenses at the higher regular profit tax rate ensures that the EARI associated with the IP Box regimes in place in these three countries is still lower than the EARI reported for Bulgaria.

For IP Box countries, the dots in figure 9 show the EARI 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 EARI to levels below the EU-27 average EARI (depicted by the horizontal line).

440 Only Croatia is disregarded as no information on the treatment of self-developed patents could be obtained.

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442 Only Croatia is disregarded as no information on the treatment of self-developed patents could be obtained.
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 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.106 Hence, in the case of cross-border R&D investment involving contract R&D, multinationalies may achieve effective tax rates as low as the ones presented for domestic investment, provided certain substance requirements are met.

Figure 9: Ranking of EATRs in 2014 for the EU-27 Member States, Switzerland (Netherlands) and Liechtenstein (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 require 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.

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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.202

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.203 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% for income from self-developed intangibles which 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.

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201 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: 5% surcharge; 2006 to 2010: 3.5% surcharge; 2011: 1.5% surcharge; 2012 to 2013: 0.8% surcharge.

202 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: 5% surcharge; 2006 to 2010: 3.5% surcharge; 2011: 1.5% surcharge; 2012 to 2013: 0.8% surcharge.

203 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>
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<th>Castile and Leon</th>
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<th>La Rioja</th>
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<tr>
<td>2011</td>
<td>-0.20</td>
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<tr>
<td>2012</td>
<td>-0.25</td>
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<tr>
<td>2013</td>
<td>-0.20</td>
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<tr>
<td>2014</td>
<td>-0.20</td>
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</tbody>
</table>

Table 13: Historical development of the EATR under the IP Box regime (equity-financed investment in a self-developed patent)
Finally, the variation in the Belgian EATR results from periodical adjustments of the interest rate underlying the notional interest deduction.695

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.696 As already shown by other authors, R&D tax incentives reduce the cost of capital and the effective tax burden.697 Here, I therefore compare IP Boxes to R&D tax incentives available for current R&D expenditures.

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%.

695 The following interest rates applied in the respective financial years and were taken as a basis: 2007: 5.730%; 2008: 4.370%; 2009: 4.472%; 2010: 3.8%; 2011: 4.412%; 2012: 3%; 2013: 2.742%; 2014: 2.66% (see IEFR Corporate Tax Handbook (2007-2014)).

696 France: 30% tax credit for expenses up to EUR 100 Mio. and 5% for expenses above this threshold (the figures presented in 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, additional 10% for expenses exceeding the 2-year average; Spain: 25% volume-based tax credit, additionally 42% of the expenses exceeding the 2-year average general (40% 10% tax credit (7.99% after tax). Belgium and Luxembourg offer R&D tax incentives for current R&D expenditures, but not for current expenditures. For further details and references, see table 1 in section 2.2.1.


Finally, the variation in the Belgian EATR results from periodical adjustments of the interest rate underlying the notional interest deduction.

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.698 As already shown by other authors, R&D tax incentives can substantially reduce the cost of capital and the effective tax burden.699 Here, I therefore compare IP Boxes to R&D tax incentives available for current R&D expenditures.

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%.


699 France: 30% tax credit for expenses up to EUR 100 Mio. and 5% for expenses above this threshold (the figures presented in 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 10% for expenses exceeding the 2-year average general (40% 10% tax credit (7.99% after tax). Belgium and Luxembourg offer R&D tax incentives for current R&D expenditures, but not for current expenditures. For further details and references, see table 1 in section 2.2.1.

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)

<table>
<thead>
<tr>
<th>Country</th>
<th>Cyprus</th>
<th>France</th>
<th>Greece</th>
<th>Hungary</th>
<th>Ireland</th>
<th>Italy</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>United Kingdom</th>
<th>United States</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D tax incentives for current expenditures</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>IP Box treatment of R&amp;D expenses</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Cost of Capital (%)</td>
<td>Regular tax system</td>
<td>4.12</td>
<td>5.53</td>
<td>5.80</td>
<td>6.89</td>
<td>4.51</td>
<td>5.89</td>
<td>5.89</td>
<td>5.89</td>
<td>5.61</td>
<td>5.89</td>
<td>5.89</td>
<td>5.89</td>
</tr>
<tr>
<td>IP Box</td>
<td>-1.56</td>
<td>5.50</td>
<td>5.84</td>
<td>2.86</td>
<td>4.98</td>
<td>5.23</td>
<td>5.89</td>
<td>5.88</td>
<td>3.37</td>
<td>5.33</td>
<td>4.51</td>
<td>5.89</td>
<td></td>
</tr>
<tr>
<td>R&amp;D tax incentives</td>
<td>-</td>
<td>-4.43</td>
<td>2.23</td>
<td>-</td>
<td>-</td>
<td>-4.63</td>
<td>0.93</td>
<td>-2.24</td>
<td>-2.46</td>
<td>-2.24</td>
<td>-2.46</td>
<td>-2.46</td>
<td></td>
</tr>
<tr>
<td>EATR (%)</td>
<td>Regular tax system</td>
<td>22.60</td>
<td>11.69</td>
<td>24.14</td>
<td>14.25</td>
<td>23.12</td>
<td>16.25</td>
<td>18.75</td>
<td>11.38</td>
<td>22.34</td>
<td>9.30</td>
<td>15.75</td>
<td>15.75</td>
</tr>
<tr>
<td>R&amp;D tax incentives</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Alfredos: A = Apenninica; S = Spainohol, 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)

<table>
<thead>
<tr>
<th>Country</th>
<th>Cyprus</th>
<th>France</th>
<th>Greece</th>
<th>Hungary</th>
<th>Ireland</th>
<th>Italy</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>United Kingdom</th>
<th>United States</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D tax incentives for current expenditures</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>IP Box treatment of R&amp;D expenses</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>IP Box</td>
<td>-9.03</td>
<td>2.42</td>
<td>5.10</td>
<td>3.48</td>
<td>4.96</td>
<td>5.06</td>
<td>0.00</td>
<td>4.30</td>
<td>18.99</td>
<td>6.32</td>
<td>5.79</td>
<td>8.75</td>
<td></td>
</tr>
<tr>
<td>R&amp;D tax incentives</td>
<td>-</td>
<td>-6.87</td>
<td>-2.08</td>
<td>-</td>
<td>-</td>
<td>-8.44</td>
<td>-3.49</td>
<td>-0.30</td>
<td>-7.00</td>
<td>-3.49</td>
<td>-0.30</td>
<td>-7.00</td>
<td></td>
</tr>
<tr>
<td>IP Box</td>
<td>-9.03</td>
<td>2.42</td>
<td>5.10</td>
<td>3.48</td>
<td>4.96</td>
<td>5.06</td>
<td>0.00</td>
<td>4.30</td>
<td>18.99</td>
<td>6.32</td>
<td>5.79</td>
<td>8.75</td>
<td></td>
</tr>
<tr>
<td>R&amp;D tax incentives</td>
<td>-</td>
<td>-6.87</td>
<td>-2.08</td>
<td>-</td>
<td>-</td>
<td>-8.44</td>
<td>-3.49</td>
<td>-0.30</td>
<td>-7.00</td>
<td>-3.49</td>
<td>-0.30</td>
<td>-7.00</td>
<td></td>
</tr>
</tbody>
</table>

Alfredos: A = Apenninica; S = Spainohol, 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 reduction 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, the reduction of the tax rate of the interest payments is also disregarded. Consequently, the tax shield is generally higher than under the regular tax system. This is the case in Belgium, Hungary, Portugal, and Spain.

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149. As my analysis focuses on the tax consequences on the company level, personal taxation at the level of the investor is disregarded (see section 4.1.3 for details). Hence, the taxation of the return of the alternative investment (the marginal capital 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 corporate entity may (partly) be offset by the taxation of interest income.

150. As depicted in table 11 in section 4.2.1.3, this is also the case for equity-financed investment under the Luxembourg IP Box as the return of the alternative investment (the marginal capital 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 corporate entity may (partly) be offset by the taxation of interest income.

151. Although, since the reform of the 9B in December 2013, the Spanish regime generally applies to IP profits, the determinant of the IP Box tax base in case of self-developed intangible assets not accounted for on the balance sheet (such as 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, the tax shield is generally higher than under the regular tax system. This is the case in Belgium, Hungary, Portugal, and Spain.

---

### 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 reduction 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, the reduction of the tax rate of the interest payments is also disregarded. Consequently, the tax shield is generally higher than under the regular tax system. This is the case in Belgium, Hungary, Portugal, and Spain.

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149. As my analysis focuses on the tax consequences on the company level, personal taxation at the level of the investor is disregarded (see section 4.1.3 for details). Hence, the taxation of the return of the alternative investment (the marginal capital 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 corporate entity may (partly) be offset by the taxation of interest income.

150. As depicted in table 11 in section 4.2.1.3, this is also the case for equity-financed investment under the Luxembourg IP Box as the return of the alternative investment (the marginal capital 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 corporate entity may (partly) be offset by the taxation of interest income.

151. Although, since the reform of the 9B in December 2013, the Spanish regime generally applies to IP profits, the determinant of the IP Box tax base in case of self-developed intangible assets not accounted for on the balance sheet (such as 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, the tax shield is generally higher than under the regular tax system. This is the case in Belgium, Hungary, Portugal, and Spain. 
Table 16: Effective tax burden of debt-financed investment in a self-developed patent (2014)

<table>
<thead>
<tr>
<th>Region</th>
<th>Depreciation</th>
<th>Gross</th>
<th>Operating</th>
<th>Interest</th>
<th>Transfer</th>
<th>Royalty</th>
<th>Tax Base</th>
<th>Netted Income</th>
<th>Tax Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>C</td>
</tr>
<tr>
<td>IP Box treatment of R&amp;D expenditures</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

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.

Table 16: Effective tax burden of debt-financed investment in a self-developed patent (2014)

<table>
<thead>
<tr>
<th>Region</th>
<th>Depreciation</th>
<th>Gross</th>
<th>Operating</th>
<th>Interest</th>
<th>Transfer</th>
<th>Royalty</th>
<th>Tax Base</th>
<th>Netted Income</th>
<th>Tax Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>C</td>
</tr>
<tr>
<td>IP Box treatment of R&amp;D expenditures</td>
<td>A</td>
<td>S</td>
<td>A</td>
<td>S</td>
<td>S</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

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. 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)

<table>
<thead>
<tr>
<th>Regime</th>
<th>Capital cost (%)</th>
<th>EATR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>-5.6</td>
<td>5.50 0.89 2.06 4.00 5.00 5.00 3.00 3.00 3.00 3.00 3.00</td>
</tr>
<tr>
<td>Sales income</td>
<td>-5.6</td>
<td>*</td>
</tr>
<tr>
<td>National avg.</td>
<td>-5.6</td>
<td>*</td>
</tr>
</tbody>
</table>

Notes: The results presented could be treated whether these categories qualify for the IP Box treatment at the wording of the respective tax provisions governing the IP Box regimes do not explicitly address these categories of income. For details, see footnotes 94 and 95 in section 4.1.1.

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. 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)

<table>
<thead>
<tr>
<th>Regime</th>
<th>Capital cost (%)</th>
<th>EATR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>-5.6</td>
<td>5.50 0.89 2.06 4.00 5.00 5.00 3.00 3.00 3.00 3.00 3.00</td>
</tr>
<tr>
<td>Sales income</td>
<td>-5.6</td>
<td>*</td>
</tr>
<tr>
<td>National avg.</td>
<td>-5.6</td>
<td>*</td>
</tr>
</tbody>
</table>

Notes: The results presented could be treated whether these categories qualify for the IP Box treatment at the wording of the respective tax provisions governing the IP Box regimes do not explicitly address these categories of income. For details, see footnotes 94 and 95 in section 4.1.1.

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. 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)

<table>
<thead>
<tr>
<th>Regime</th>
<th>Capital cost (%)</th>
<th>EATR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>-5.6</td>
<td>5.50 0.89 2.06 4.00 5.00 5.00 3.00 3.00 3.00 3.00 3.00</td>
</tr>
<tr>
<td>Sales income</td>
<td>-5.6</td>
<td>*</td>
</tr>
<tr>
<td>National avg.</td>
<td>-5.6</td>
<td>*</td>
</tr>
</tbody>
</table>

Notes: The results presented could be treated whether these categories qualify for the IP Box treatment at the wording of the respective tax provisions governing the IP Box regimes do not explicitly address these categories of income. For details, see footnotes 94 and 95 in section 4.1.1.
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 periodic 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 from internal use of IP, and Luxembourg, income from internal use of acquired patents is explicitly excluded from the scope of the IP Box regime.114 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)**

<table>
<thead>
<tr>
<th>Acquired IP</th>
<th>Belgium</th>
<th>Cyprus</th>
<th>France</th>
<th>Germany</th>
<th>Hungary</th>
<th>Ireland</th>
<th>Italy</th>
<th>Luxembourg</th>
<th>Malta</th>
<th>Portugal</th>
<th>Slovakia</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>3.10</td>
<td>3.75</td>
<td>3.28</td>
<td>6.99</td>
<td>5.23</td>
<td>3.80</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5.30</td>
<td>7.26</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sales income</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4.99</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nominal rate</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4.99</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

114 See sections 3.2.3 and 3.3.1.

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 periodic 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 from internal use of IP, and Luxembourg, income from internal use of acquired patents is explicitly excluded from the scope of the IP Box regime.115 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)**

<table>
<thead>
<tr>
<th>Acquired IP</th>
<th>Belgium</th>
<th>Cyprus</th>
<th>France</th>
<th>Germany</th>
<th>Hungary</th>
<th>Ireland</th>
<th>Italy</th>
<th>Luxembourg</th>
<th>Malta</th>
<th>Portugal</th>
<th>Slovakia</th>
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<th>Sweden</th>
<th>Switzerland</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>5.10</td>
<td>5.75</td>
<td>5.20</td>
<td>4.99</td>
<td>5.23</td>
<td>3.80</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sales income</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4.99</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nominal rate</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4.99</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<th>Ireland</th>
<th>Italy</th>
<th>Luxembourg</th>
<th>Malta</th>
<th>Portugal</th>
<th>Slovakia</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalties</td>
<td>2.34</td>
<td>5.67</td>
<td>6.66</td>
<td>6.65</td>
<td>5.47</td>
<td>8.60</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7.90</td>
<td>17.60</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sales income</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.65</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nominal rate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.65</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

116 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.\textsuperscript{146} 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.\textsuperscript{147}

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.

146 See Blazes et al. (2002).
147 See Blazes et al. (2002).
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.166

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.167 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.

166 See equation (1) for the net present value of the investment project which forms the basis for the effective average tax rate.

167 In addition to R&D tax incentives available for current R&D expenses (see footnote 58 in section 4.2.2), the following R&D tax incentives available for capital R&D expenditure are accounted for: Belgium: accelerated straight-line depreciation for R&D plant and machinery over 2 years and 15.5% super deduction for capital expenditure 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; Netherlands: 30% 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 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.

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5 Effective Tax Rates under IP Tax Planning

In practice, R&D activities, commercialization 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.

My motivation for doing so is threefold. First, it allows me to point out how IP tax planning and other related 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 ones. 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 heyday of multinational companies.

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6 See this section based on joint work with Christoph Spengel (see Evers and Spengel (2014)).
7 See Evers and Spengel (2014). 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 (2013b), 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 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.

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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.\textsuperscript{124} 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.

\textsuperscript{124} For further details on these tax planning models, see section 2.3.2.1.

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\textsuperscript{124} 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.\(^{111}\)

\[
R = \left(1 - \text{tax rate}_1 - \text{tax rate}_2\right) \cdot TVP + \frac{\left(1 - \text{tax rate}_1 - \text{tax rate}_2\right) \cdot TVP}{(1 - \text{tax rate}_3)} + \frac{\left(1 - \text{tax rate}_1 - \text{tax rate}_2\right) \cdot TVP \cdot (1 - \text{tax rate}_3)}{1 - \text{tax rate}_4}
\]

(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 \(\Delta P\)) 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) shows 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 Tax1\(^{112}\) (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)\(^{113}\) and therefore has a tax book value of zero, the tax base of the patent is reduced by the amount of the transfer price.

---

111 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 member states exempt foreign dividends in relation to substantial participations from corporate income tax (see Spengel et al. (2014), pp. 6.23 et seq. table A-4).

112 Only Cyprès, Estrella, 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 6).

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\]

(19)

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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 \( c_B \), 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 \( x^*_{2} \) 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.139 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.141 Variable \( \phi_2 \) denotes the periodical depreciation rate and variable \( u' \) depicts the useful life for tax purposes where \( u = 1/\phi_2 \).

\[
\Delta_{T2} = t_2 + TP + \phi_2 \left( \frac{1}{\phi_2} + \frac{1}{\phi_2} + \cdots + \frac{1}{\phi_2} \right) = t_2 + TP \cdot \frac{1}{1 - \phi_2} \quad (20)
\]

139 As in section four, I assume that the parent and 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 multi-country companies that generate income from other investment projects. If, in contrast, this, the taxpayer is tax-exhausted, the tax benefits associated with tax allocations 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).

140 This is the most common tax depreciation method for intangibles. For the EU member states, see Spengel et al. (2014), p. A-23, set seq. table A-8. For additional countries, see CIT TAx Database, download: http://www.cits-tax.org/ideas-impact/tax/publications/data/.

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\[
\Delta_{T2} = t_2 + TP + \phi_2 \left( \frac{1}{\phi_2} + \frac{1}{\phi_2} + \cdots + \frac{1}{\phi_2} \right) = t_2 + TP \cdot \frac{1}{1 - \phi_2} \quad (20)
\]

139 As in section four, I assume that the parent and 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 multi-country companies that generate income from other investment projects. If, in contrast, this, the taxpayer is tax-exhausted, the tax benefits associated with tax allocations 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).

140 This is the most common tax depreciation method for intangibles. For the EU member states, see Spengel et al. (2014), p. A-23, set seq. table A-8. For additional countries, see CIT TAx Database, download: http://www.cits-tax.org/ideas-impact/tax/publications/data/.

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 \( c_B \), 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 \( x^*_{2} \) 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.139 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.141 Variable \( \phi_2 \) denotes the periodical depreciation rate and variable \( u' \) depicts the useful life for tax purposes where \( u = 1/\phi_2 \).

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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).\(^{105}\)

\[
A^P = r_t + c + TP
\]

\[
c = \frac{1}{(1 + \frac{r}{m})^t}
\]

(20')

(21)

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\[
A^P = r_t + c + TP
\]

\[
c = \frac{1}{(1 + \frac{r}{m})^t}
\]

(20')

(21)

Analogous to the immediate deduction of the R&D investment expenditures granted by the residence country (denoted by the term \(w_r\)) 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 tax 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 \(r_t\). 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.\(^{106}\) 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...
incurred in the creation of an intangible asset are unsuitable as indicators for the value of intangible assets. 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.\(^{122}\) 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.\(^{123}\) 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.\(^{124}\) 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.\(^{125}\) 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 \((p + \delta)^{126}\)

\[
EV = \sum_{n=0}^{\infty} \frac{(1 + r)^n \times E_n}{(1 + \delta)^n}
\]

(22)

Assuming that \((1 + r) = (1 + \delta)/ (1 + \delta)\) (so called 'Fishier effect'), equation (22) can be simplified to the following:

\[
EV = \sum_{n=0}^{\infty} \frac{E_n}{(1 + \delta)^n}
\]

(22)

Rearranging equation (22) yields:

\[
EV = \left(\frac{p + \delta}{\delta}\right) \frac{E}{(1 + \delta)^2}
\]

(22)

\(^{122}\) See Bern (2003), p. 77.
\(^{123}\) See Bern (2003), p. 81.
\(^{124}\) For details, see sections 2.2.2.2.
\(^{125}\) See Bern (2003), p. 11-14.
\(^{126}\) 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.
\(^{127}\) See Kremen (2012).
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 + n)/(i + δ(1 + n) – δ)).

\[ EV = (p + δ) \times b \]  

(22\n)

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 a. This is illustrated by equations (23) and (23) denoting the transfer price.

\[ TP^{MT} = a \times EV = \frac{(1 + n)}{(i + \delta)} \times (p + \delta) \]  

(23)

\[ TP^{T} = a \times EV = a \times b \times (p + \delta) \]  

(23\n)

Inserting \( D^{MT} = t_x \times TP^{MT} \times c \) (equation (20\n)) and \( TP^{MT} = ab(p + \delta) \) (equation (23\n)) 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).

\[ R = \left[ (1 - \psi t_r - \psi a \times b(p + \delta) - \psi \times ab(p + \delta) + \frac{(p + \delta)(1 + n)}{1 + i} \times (1 - \phi) \right] \times (1 - \psi t_r - \psi a \times ab(p + \delta) + \phi \times ab(p + \delta)) \]  

(24)

From this, the cost of capital is derived by setting equation (24) equal to zero and isolating the rate of return \( \rho \), yielding equation 25. Equation (25) deviates from the standard formula for a domestic investment where the parent both creates and exploits the patent\n 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.

\[ \tilde{\beta} = \frac{(1 - \psi t_r - \psi a \times ab(p + \delta) + \phi \times ab(p + \delta))}{(1 - \psi t_r - \psi a \times b(p + \delta) + \frac{(p + \delta)(1 + n)}{1 + i} \times (1 - \phi))} \]  

(25)

118 See equation (4) in section 4.1.2.

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(23)

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(23\n)

Inserting \( D^{MT} = t_x \times TP^{MT} \times c \) (equation (20\n)) and \( TP^{MT} = ab(p + \delta) \) (equation (23\n)) 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).

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(25)

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(23)

\[ TP^{T} = a \times EV = a \times b \times (p + \delta) \]  

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Inserting \( D^{MT} = t_x \times TP^{MT} \times c \) (equation (20\n)) and \( TP^{MT} = ab(p + \delta) \) (equation (23\n)) 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).

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(25)

118 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 patent. This is denoted by variable $\Delta R$ and illustrated by equation (26).

\[
\Delta R = R^{utility} - R^{pure domestic} = R_{exit tax}^{utility} - R_{exit tax}^{pure domestic} + R_{step-up}^{utility} - R_{step-up}^{pure domestic}\]

This equation captures the effect of the application of the source country (instead of the residence country) tax rate on the patent income tax burden 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.

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\[
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\[
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By replacing $A^{LT}$ by $t_2 + TP + c$ (see equation (17')), equation (28') can be further simplified to the following:

$$
\Delta R = -(t_2 - t_2 c) + TP \left( \frac{1}{1 - (1 - t_2) \frac{\omega_{LT} + \omega_t}{\omega}} \right) + (t_2 - t_2) \frac{\omega_{LT} + \omega_t}{\omega} < 0 \quad (27')
$$

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 country 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 overshadows 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-tax 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.

By replacing $A^{LT}$ by $t_2 + TP + c$ (see equation (17')), equation (28') can be further simplified to the following:

$$
\Delta R = -(t_2 - t_2 c) + TP \left( \frac{1}{1 - (1 - t_2) \frac{\omega_{LT} + \omega_t}{\omega}} \right) + (t_2 - t_2) \frac{\omega_{LT} + \omega_t}{\omega} < 0 \quad (27')
$$

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 country 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 overshadows 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-tax 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 α<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 ΔN=0). This is denoted by variable δ which is derived by inserting equation (27) in equation (27) (yielding equation (29)) and then isolating variable δ.

\[
\Delta N = -a(t_F - t_L) \frac{(1 + \delta^{n+1})}{(1 + \delta^n)} + (t_F - t_L) \frac{\delta^{n+1}}{(1 + \delta^n)} = 0
\]  
\[
\delta = \left(\frac{a(t_F - t_L) \frac{\delta^n}{(1 + \delta^n)}}{(t_F - t_L) \frac{\delta^{n+1}}{(1 + \delta^n)}}\right) 
\]  
For α<0, 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.

\[
R = \left(1 - \varphi_1 \tau_1 \right) - \left(1 - \varphi_2 \tau_2 \right) \frac{\text{Earnings}_1}{1 + \tau_1} - \left(1 - \tau_2 \right) \frac{\text{R&D}_1}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_2}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_3}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_4}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_5}{1 + \tau_1}
\]

(31)

The licensing arrangement has the following tax consequences. First, the royalty payment (denoted by \(\varphi_1\)) 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 \(\varphi_1\) denotes the share of the royalties that may be deducted. If royalty payments are fully tax deductible, \(\varphi_1\) 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 \(\tau_1\) (fourth term). 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.

5.1.4 Tax planning model 2: Licensing-out the patent to an operating subsidiary

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\[
R = \left(1 - \varphi_1 \tau_1 \right) - \left(1 - \varphi_2 \tau_2 \right) \frac{\text{Earnings}_1}{1 + \tau_1} - \left(1 - \tau_2 \right) \frac{\text{R&D}_1}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_2}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_3}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_4}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_5}{1 + \tau_1}
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\[
R = \left(1 - \varphi_1 \tau_1 \right) - \left(1 - \varphi_2 \tau_2 \right) \frac{\text{Earnings}_1}{1 + \tau_1} - \left(1 - \tau_2 \right) \frac{\text{R&D}_1}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_2}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_3}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_4}{1 + \tau_1} + \left(1 - \tau_2 \right) \frac{\text{R&D}_5}{1 + \tau_1}
\]

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Third, the return from exploiting the patent is subject to corporate income tax in the source country at the rate \(\tau_1\) (fourth term). 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.
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).

\[
\text{Roy} = a(p + \delta)(1 + \varepsilon) \tag{32}
\]

\[
R = -(1 - \psi_{t})r_{t} + (\alpha_{t} - \psi_{t})(1 - \gamma_{t}) + \delta \left[ \frac{(1 + \gamma_{t})(1 + \varepsilon)}{(1 + \varepsilon)(1 + \gamma_{t})} \right] (1 - \psi_{t}) \tag{33}
\]

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 \((p + \delta(1 + \varepsilon))\) 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.357

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 (\(\Delta R>0\)) 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).

\[
\Delta R = -(\alpha_{t} - \gamma_{t}) + (\alpha_{t} - \gamma_{t})(1 + \varepsilon) + \delta \left[ \frac{(1 + \gamma_{t})(1 + \varepsilon)}{(1 + \varepsilon)(1 + \gamma_{t})} \right] (1 - \psi_{t}) \tag{34}
\]

If the royalty is fully deductible from the source country profit tax base (\(\beta_{t} = 1\)) and the royalty equals the full return (\(\alpha_{t} = 1\)), 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.

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\[
\Delta R = -(\alpha_{t} - \gamma_{t}) + (\alpha_{t} - \gamma_{t})(1 + \varepsilon) + \delta \left[ \frac{(1 + \gamma_{t})(1 + \varepsilon)}{(1 + \varepsilon)(1 + \gamma_{t})} \right] (1 - \psi_{t}) \tag{34}
\]

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\[
\Delta R = -(\alpha_{t} - \gamma_{t}) \tag{35}
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In turn, if the royalty equals only a share of the overall return generated by exploiting the patent \((\pi < 1)\), 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 \((\pi < 1)\).

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\(^{109}\) 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.

\[
\beta = \frac{(1-\pi)y \times (\frac{1}{1-\Delta T} - \frac{1}{1-\Delta T_{Eff}})}{1-\Delta T_{Eff}} - \delta 
\]  

\(136\) See equation (3) in section 4.1.2.

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\]  

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5.1.4 Tax planning model: 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. 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. Hence, the tax treatment of the contract R&D fee equals the treatment of current expenses incurred with respect to internal R&D activity.

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.

\[ R = \left(1 - \frac{1}{2} \frac{\ln (1 + d)}{\ln (1 + y)} \right) \left(1 - \frac{d(1 + d)}{(1 + d)(1 + y)} \right) + \frac{\ln (1 + y)}{\ln (1 + d)} \left(1 - \frac{1}{1 + d} \right) \]

(37)

512 See section 2.1.1.
513 For details on the application of the cost-plus method to determine the contract R&D fee, see sections 2.2.2 and 2.2.2.1.

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\[ R = \left(1 - \frac{1}{2} \frac{\ln (1 + d)}{\ln (1 + y)} \right) \left(1 - \frac{d(1 + d)}{(1 + d)(1 + y)} \right) + \frac{\ln (1 + y)}{\ln (1 + d)} \left(1 - \frac{1}{1 + d} \right) \]

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514 For details on the application of the cost-plus method to determine the contract R&D fee, see sections 2.2.2 and 2.2.2.1.
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 \( r_e \) instead of at the parent country tax rate (see term three of equation [37]).\(^{145}\)

In the following, 1 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:

\[
\Delta R = -(1 + D)(r_p - r_e)\left(1 - \frac{1 - (1 + r_e)^{-1}}{1 + r_e}\right) + (r_p - r_e) \frac{\phi (x_k + y_k)}{\phi (x_k + y_k) + y_k} \tag{38}
\]

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 \( \Delta = r_p - r_e > 0 \)), 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 \( \bar{d} \)). Please note that this is independent from the tax rates in the source and the residence country.

\[d = \frac{\phi (x_k + y_k)}{\phi (x_k + y_k) + y_k} \tag{39}\]

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.\(^{146}\)

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\[
\Delta R = -(1 + D)(r_p - r_e)\left(1 - \frac{1 - (1 + r_e)^{-1}}{1 + r_e}\right) + (r_p - r_e) \frac{\phi (x_k + y_k)}{\phi (x_k + y_k) + y_k} \tag{38}
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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 \( \bar{d} \)). Please note that this is independent from the tax rates in the source and the residence country.

\[d = \frac{\phi (x_k + y_k)}{\phi (x_k + y_k) + y_k} \tag{39}\]

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.\(^{148}\)
In case the mark-up falls below the critical mark-up denoted by \( \hat{d} \), a positive tax rate differential \((\tau > \tau_1)\) 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.

\[
\beta = \frac{(1+\tau)(1+d)}{(1+\tau)(1+d) - \tau (1+d) + \delta} - \tau (1+d) + \delta
\]  

(40)

Equation (40) deviates from the standard formula for a domestic investment where both the parent creates and exploits the patent\(^{148}\) 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.\(^{149}\)

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.\(^{150}\) 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.\(^{151}\)

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

\[ \text{Equation (40)} \]

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.\(^{149}\)

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.\(^{150}\) 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.\(^{151}\)

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

\[ \text{Equation (40)} \]
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 \((p + \delta)\tau + n\)), instead of the operating profits, are split between the parent and the subsidiary.\(^{144}\) Variable \(a\) 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).

\[
R = -\left(1 - \psi \tau \gamma\right) + (1 - a)\cdot \gamma t_2 + \frac{(1 - a)\cdot \gamma t_2}{(1 - \tau)\cdot \gamma} - (1 - \psi \tau \gamma) \]

\(a\) A contract R&D arrangement where the contract R&D fee equals the full return of the patent ([implying \(a = 1\)]) 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 \(a < 1\)], 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.

\[
\Delta R = \frac{\Delta \alpha}{\Delta \tau} (1 - a)\tau \gamma t_2 - \tau_2 \gamma t_2 \]

\(\Delta R\) 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\(^{143}\) with respect to the denominator. The EARTR is determined by inserting equation (41) in equation (4) depicted in section 4.1.1.

\[
\beta = \frac{1 - a - (1 - \psi \tau \gamma) + (1 - a)\cdot \gamma t_2}{(1 - \Delta \alpha)(1 - \tau)\gamma} - \delta \]

\(\beta\) See equation (3) in section 4.1.2.

\(\delta\) See equation (3) in section 4.1.2.

\(\Delta \alpha\) See equation (3) in section 4.1.2.

\(\Delta \tau\) See equation (3) in section 4.1.2.

\(\Delta \gamma\) See equation (3) in section 4.1.2.

\(\tau_p\) See equation (3) in section 4.1.2.

\(\tau_s\) See equation (3) in section 4.1.2.

\(\gamma\) See equation (3) in section 4.1.2.

\(\psi\) See equation (3) in section 4.1.2.

\(\delta\) See equation (3) in section 4.1.2.

\(\tau\) See equation (3) in section 4.1.2.

\(\gamma t_2\) See equation (3) in section 4.1.2.

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\(a\) See equation (3) in section 4.1.2.

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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\(^49\) 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.\(^50\) 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.

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**Table 20:** Economic parameters and tax parameters of the numerical example

\(^{49}\) 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 Camerer (1996), Draughtry et al. (2007), HEID (2012)).

\(^{50}\) Gupta, Ermias, Portugal, Slovenia, and Sweden are an exception to this. For details, see section 2.1.1.

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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).

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In the following, I analyse the effects of a potential levy 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 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

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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 a patent triggering 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.

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Table 22 shows the values of $a$ 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 $d$.

Table 22: Share of the earnings value which leaves the effective tax burden unaffected of the disposal

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<th>$a$ (%)</th>
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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 fraction of the return generated by exploiting the patent. In turn, if the royalty corresponds to the full return (implying α = 1), the individual tax consequences of the licensing arrangement 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 α < 1), the licensing arrangement is associated with a lower effective tax burden compared to a domestic investment of the parent.

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 105 Recall, these are the taxations 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 parent income because this income is subject to tax in the source country instead of the residence country.

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safe harbour ratios, provided that the contractor only assumes insignificant risks. 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. 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. 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 EATR (%) in the case of intra-group contract R&D (application of the cost-plus method, equity-financing) |
|---|---|---|---|---|---|---|
| | Domestic investment | 0.05 | 0.1 | 0.15 | 0.2 | 0.3 |
| 0 | 5.00 | 5.31 | 5.55 | 5.74 | 5.90 | 6.03 |
| 5 | 5.00 | 5.27 | 5.34 | 5.74 | 6.01 | 6.29 |
| 10 | 5.00 | 5.31 | 5.49 | 5.94 | 6.27 | 6.52 |
| 20 | 5.00 | 5.31 | 5.51 | 5.74 | 5.94 | 6.15 |
| 50 | 5.00 | 5.31 | 5.55 | 5.90 | 6.16 | 6.37 |

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 safe harbour ratios, provided that the contractor only assumes insignificant risks. 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. 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. Nevertheless, I apply a mark-up of 30% as the upper boundary of a range of plausible mark-ups for contract R&D fees.

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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 δ) 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%.

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 EATRs 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 (ε > 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 (ε = 0.6), the EATR is 8.36% in contrast to 22.5% 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 (ε = 0.8) (again given a source country tax rate of 10%).

164 As illustrated by equations (39) the mark-up which leaves the after-tax NPV of the investment unaffected is independent from the size of the tax rate differential.

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### 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)

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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\textsuperscript{443} or even under the OECD transfer pricing rules for intangible assets which are currently under revision.\textsuperscript{442}

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.

\textsuperscript{443} For details, see section 6.3.2.2.

\textsuperscript{442} 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 Silberstins et al. (2013), p. 63, Sullivan (2013b), p. 15).

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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.

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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. 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. 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.

The reason for this is that the private return to R&D investment generally falls below the social return. Governments may also seek to affect the location of innovative activities because evidence suggests that, despite the existence of international spillovers, geographical proximity facilitates knowledge spillovers between researchers.

6.1.2 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. 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.

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. The reason for this is that the private return to R&D investment generally falls below the social return. Governments may also seek to affect the location of innovative activities because evidence suggests that, despite the existence of international spillovers, geographical proximity facilitates knowledge spillovers between researchers.
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 and (ii) studies drawing on benefit-cost ratios, thereby additionally taking into account the revenue losses associated with R&D tax incentives.

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. 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. This is a concern which is also raised with respect to IP Box regimes.

155 The cost of R&D investment is usually measured by way of the so-called Brd's. For further details, see Words (2001, 2006).
161 See Blooms and Gruffit (2001), Hines (1995) and Hills (2003). This has recently been confirmed for European multinationals by Blooms et al. (2015). By contrast, a study by Hills and Johns (2001) comes to the opposite conclusion.
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163 See Blooms (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.176,177 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.178 Hanson and Brokolelind 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 do not 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.179 Finally, drawing on the Innovation Union Scoreboard 2010, Atkinson and Andøs 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.180

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.

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176 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.
177 See Ernst et al. (2014).
178 See Hanson and Brokolelind (2014).
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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.173 Spillovers are likely to be largest at the point of research.174 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,175 or from network externalities that arise when the value of a new idea or product is dependent on the development of related technologies.176

IP boxes provide a tax reduction for the income from successful projects and not for the underlying research.177 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.178

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.179 Therefore, the market failure argument does not equally apply to tax incentives for investments in marketing intangibles.180

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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.654 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 benefiting 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.655 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.656 In contrast, the

654 Most notably, sales income relating to the sale of products which incorporate at least one patented item fully qualifies for the IP Box (reiterating the deductions for costs toroutine functions and to marketing functions). 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 3.2.2.

655 These are Cyprus, France, Hungary, Spain, the Swiss Canton of Nidwalden, and the United Kingdom. In addition, the Luxembourg 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.

656 These are Cyprus, France, Hungary, Liechtenstein, Luxembourg (except IP acquired from directly related parties), Malta, the Swiss Canton of Nidwalden, and the United Kingdom. In addition, the Luxembourg 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.

657 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 Box 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 2.3.3 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.104 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 Box, provided certain substance requirements are met (see section 3.2.3 for details).105 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 domestically106. 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.107 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.

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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.\(^\text{9}\) Such income is presumed to be particularly mobile and thereby tax-sensitive. Indeed, empirical evidence suggests that the holding of patents within multinationals is negatively affected by the size of the income tax rate.\(^\text{10}\) 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-invested patents. This, in particular, holds true for high-quality patents\(^\text{11}\) which are associated with a high earnings potential. They also show that inventors countries which levy high tax rates on patent income are faced with the transfer of high-quality patents abroad.\(^\text{12}\) This is confirmed by Kirdinsky and Rieder, 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.\(^\text{13}\) 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.\(^\text{14}\)

In a simulation exercise, Griffin et al. find that IP Boxes work to attract patents, and that those with a high expected value are particularly responsive to tax.\(^\text{15}\) 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


\(^{10}\) 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 Kirdinsky and Rieder (2012), also points in this direction.

\(^{11}\) The quality of a patent is measured as the value of the patent family in (the number of countries in which the company filed for patent protection). The number of forward citations and the number of technology classes (see Böhm et al. (2014), pp. 7-10 eq.)

\(^{12}\) See Böhm et al. (2014).

\(^{13}\) See Kirdinsky and Rieder (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 extra tax burdens.

\(^{14}\) See DISCHINGER and RIEDEL (2011) They take IP Boxes into account where applicable.

\(^{15}\) See Griffin 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 (as called Cradle patent families).

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attracted when they originally introduced their regimes.\(^{195}\) 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,\(^{196}\) 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.\(^{197}\) 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.\(^{198}\) 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 in relation to eligible IP rights.\(^{199}\) 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.\(^{200}\)

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.\(^{201}\) However, it is unclear whether this hope is confirmed.

\(^{195}\) However, this rests on the assumption that the total level of patenting activity of European firms is not affected by the introduction of IP regimes. In fact, IP Box regimes might attract IP from non-EU countries, in order to stimulate these effects, the rate changes in third countries would also have to be taken into account.

\(^{196}\) IP acquired from directly related parties is excluded from the regime. For details, see section 3.2.3.

\(^{197}\) For details, see section 3.2.3.

\(^{198}\) For details, see section 3.2.3.

\(^{199}\) Felder points this out with respect to the Liechtenstein and Swiss (Canton of Nidwalden) IP Box regimes. See Felder (2012), pp. 212 et seq., p. 294.

\(^{200}\) See Spengel et al. (2014), pp. 4-1 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 Oehme and Hall (2006), pp. 60 et seq. section 1.4.3 and 1.4.4, (Oehme (2013), Wöß-Nesbitt et al. (2012), pp. 19 et seq.

\(^{201}\) See Oehme and Hall (2013), 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.468 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,469 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.470 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.471

A key issue of preferential rates, which was also raised by the ‘harmful tax’ initiatives of the EU and the OECD,472 is their potential negative effect on government revenues from corporate income taxes.473 The findings of the theoretical literature about the effects of preferential rates on tax revenues are

469 See Auerbach et al. (2010) for an overview of empirical evidence, see Feld and Heckenkemper (2013), Heckenkemper and Honicke (2012).
470 See Griffin et al. (2010), p. 926.
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477 See Patztias 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.

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In a simulation exercise, Griffin 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 Bi. a year in steady state.

IP Boxes may produce offsetting positive revenue effects in other parts of the tax system (e.g. personal tax) if there is an increase in real activities, 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.

Put differently, theoretical literature indicates that own tax elasticities are relatively high for small countries. This is supported by empirical evidence presented by Griffin et al. which show that own tax elasticities are higher for the Benelux countries.

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Put differently, theoretical literature indicates that own tax elasticities are relatively high for small countries. This is supported by empirical evidence presented by Griffin et al. which show that own tax elasticities are higher for the Benelux countries.
than for Germany and France. 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. This would reduce the danger that IP Box regimes into conflict with the freedom of establishment (in the case of inhouse R&D) and the free movement of services (in the case of contract R&D). 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. It is doubtful whether the ECJ would find a restriction of the freedom of establishment.

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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 regime to intangible assets created in the respective IP Box country might violate primary EU law.423 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 Fourier"424 and the case "Commission v. Spain".425 Subsequently, these restrictions were abolished by the two member states.426

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 authorities should consider extending the scope of income eligible for the IP Box treatment to income from internal use, namely sales income and royalty income. Internal use of IP, for example in the production of goods

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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.\textsuperscript{113,114}

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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.477

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

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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.\(^{469}\) 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.\(^{470}\)

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.\(^{471}\) First, the measure must offer aid recipients ‘an advantage which relieves them of charges that are normally borne from their budgets’ and thereby constitute a tax advantage.\(^{472}\) The Commission notice explicitly

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Chapter 6: Tax Policy Considerations

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.\(^{469}\) 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.\(^{470}\)

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.\(^{471}\) First, the measure must offer aid recipients ‘an advantage which relieves them of charges that are normally borne from their budgets’ and thereby constitute a tax advantage.\(^{472}\) The Commission notice explicitly

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mentions special reductions of the tax base and total or partial reduction in the amount of tax.464

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.465 In our 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.466

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.467 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.468

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.469 The

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ECJ also found the amount of aid, the recipient’s size, and the recipient’s market share to be irrelevant in this regard.\textsuperscript{144}

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.\textsuperscript{145} 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,\textsuperscript{146} which is the case with regard to IP Box regimes.\textsuperscript{147}

\subsection*{6.2.1.2 Selectivity}

The most critical and most controversial part of the State aid assessment is to determine whether the measure ‘favours certain undertakings or the production of certain goods.’\textsuperscript{148} 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.\textsuperscript{149}

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,\textsuperscript{150} 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.\textsuperscript{151} 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.\textsuperscript{152} In what follows, I therefore analyse the aspect of material selectivity in more detail.

\subsection*{6.2.1.2.1 Material Selectivity}

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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. These measures are those which are open to all economic agents which operate within a member state.365 Member states are furthermore free to design their tax systems in such a way that different factors of production are taxed differently.366 In particular, tax measures of a purely technical nature (e.g. the operation of a scheduled 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.367 In this regard, the Commission argues that the fact that certain undertakings or certain sectors benefit more from others than a tax measure does not pose a problem as long as the measure is generally open to all undertakings and sectors.368 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 kinds of tax incentives constitute State aid. It simply reflects an economic reality.369

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."370 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.371

The EU Commission does not conclude its assessment at this point by explicitly labelling the Spanish IP Box as 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 measures and State aid.372

365 See European Commission (1999), recital 13 et seq.

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380 See European Commission (1999), recital 13 et seq.
measures pursuing legitimate policy aims not constituting state aid and de facto selective tax measures that favour certain undertakings.460

6.2.1.2.2 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.461

If a reference tax system does not exist, the ECJ relies on comparing different undertakings which are subject to the same tax measure.462 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.463

More recent State aid assessments of the ECJ and the EU Commission entail a ‘comparison test’464 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.465 This implies that the objective pursued by the measures in question

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is decisive for the determination of the appropriate pair of comparison and consequentially for assessing whether the measure is prima facie selective.843 This approach is referred to as the ‘objective-based approach’.843

More recently, the ECJ has combined both tests in its case law.844 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.845

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”.846 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.847 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”.848 Please note that this approach of justifying selective tax measures is not based on Article 107 TFEU.849 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.

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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.496 This is because finding that a tax measure is not associated with a differential treatment is more likely the narrower the scope of comparison.497

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.498 This apparent contradiction has been widely discussed in the literature but has not been resolved so far.499

Second, the ECJ does not seem to apply this approach consistently.500 In the case ‘Paint Graphs’ 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').501 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.502 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

701 See 8 September 2011, C-78/09 to C-81/09 (joint case), ‘Paint Graphs and others’, cited 49.
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narrow the scope of the State aid control. 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. 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. As a consequence, members states might be able to bypass the State aid prohibition by assigning tax measures specific goals targeted at specific groups of undertakings. 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.

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”. 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 impune 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. 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

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Member states are, however, not completely free to assign objectives to tax measures which favour certain undertakings in order to impune 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. 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
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.434 The objective should, in particular, be compatible with the objective of the State aid rules, namely to safeguard the competition within the internal market.435

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.436 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 incentivizing R&D) as grounds for justification.437 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 wider sense may be seen as the more prudent approach in certain circumstances.”

437 In this regard, Advocate General Mengozzi stresses that “the mere fact that a state measure pursues economic policy, structural or environmental objectives, in one way or another, does not in itself exclude such measures 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-279/09 P, “European Commissions v. Kingdom of the Netherlands”, recital 64) “(note that the tax policies’ objectives 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.

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.438 The objective should, in particular, be compatible with the objective of the State aid rules, namely to safeguard the competition within the internal market.439

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wider sense and then addressing the tax measure's objective when involving 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,[477] 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.[478]

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.[479] This objective must, however, be legitimate.[480] The expressed aim of most IP Box regimes is to foster innovation and economic growth by shifting the tax base from income from traditional services to income from intangible assets, thereby increasing the effective tax burden on traditional services and decreasing it on intangible assets.[481]

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regime is to incentivise R&D activity.534 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.535 This implies that the IP Box regimes explicitly aim to influence the location choice. It is problematic to the extent that this contravenes the objective of the State aid rules, namely to safeguard the competition within the internal market.536

It is not sufficient that the tax measures' objective is legitimate. The IP Box regimes must additionally be (1) 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, 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.

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 regime is to incentivise R&D activity.537 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.538 This implies that the IP Box regimes explicitly aim to influence the location choice. It is problematic to the extent that this contravenes the objective of the State aid rules, namely to safeguard the competition within the internal market.539

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those which do not are not considered to be in a comparable factual and legal situation given the aim to incentivise R&D.\cite{Kurcz2006} 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.\cite{Kurcz2008}

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.\cite{Kurcz2008}

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

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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. In particular, the Commission does not consider the regime to favour certain sectors in comparison to others. 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 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. 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 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. Some of the IP Box countries provide for tax rulings on the practical application of their IP Box regimes.

64 See European Commission (2008), recital 16. Similarly, in its assessment of the Lithuanian IP Box regime, the Directorate General Taxation and Customs Union concluded that, due to its wide scope of eligible IP, the Lithuanian IP Box is also not selective (see EFTA Surveillance Authority, case no. 60/131, decision no. 177/11/CSSL, p. 4, section 11.4.L, downloaded: http://www.efatursesur.org/media/statut/downl/177_11_CSSL_2011.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 November 2012, case no. 7372, decision no. 480/12/CSSL, recital 15, download: http://www.efatursesur.org/media/decisions/480-12-CSSL.pdf).

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68 See Bühler (2014), pp. 24, 53 (Belgian), 101 et seq. (the Netherlands), Williams (2012), pp. 233 et seq. (Belgian).

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For the sake of completeness, the Commission Regulation no. 651/2014 of 17 June 2014125 (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).126

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.

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126 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 fundamental research, industrial research, experimental development, and feasibility studies, respectively (see Article 4 (1) 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 this case 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.

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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.
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 is an instrument for countering harmful tax measures. It is not a legally binding instrument but a political commitment. It is a ‘soft law’ instrument, to put it differently. 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.

The Code of Conduct sets out a list of criteria for identifying harmful tax measures which are addressed in detail in the subsequent section. 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). In June 2003, the ECOFIN Council officially agreed on a list of 66 harmful tax measures (so called ‘Primaroli list’). 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. This is

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attributed to peer pressure from fellow member states.110 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.111

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”.112 Against this background, the Code aims at countering harmful tax competition within the EU.113 In this regard, addressing the issue of harmful tax competition is part of a broader initiative of the EU Commission.114 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 jeopardizing the provision of public goods.

The Code of Conduct thus supplements the EU State aid rules as it addresses non-selective tax measures. 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 scope of the State aid rules.115 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.116

114 See EU Commission (1998), 080/97/545, 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’ included the introduction of arm’s length rules and the cross-border interest and royalty payments between companies. These two parts eventually resulted in the introduction of the arm’s length principle and the Interest & Royalty Directives. 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 (1999), Merc (2007), Nikkigam (2001), Pinto (2002), pp. 137 et seq.

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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. 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 in negotiations with Switzerland and Liechtenstein with the aim that both countries also commit to the Code’s principles and criteria.

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”. 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. 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.

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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.153

(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.154 This implies an inter-country comparison.155 In this regard, Kiekobeld 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.156

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.157 Hence, supporting economic development may constitute a ground for justification provided the measure is well targeted and proportionate.158

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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,157 the French regime was deemed harmful.158 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 income159 provides some evidence in this regard. In order to comply with its commitment to the Code, France changed its regime.160 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.161 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.162

Somewhat 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 measure163 which was firmly relied by the UK.164 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 states.165

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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, 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.

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sufficient guidance on the interpretation and implementation of the Code's criteria.175

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.176 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.177 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 allowances 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.178

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.179 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

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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.” 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. 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 following 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. 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.

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. 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.

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From concluding that a respective IP Box regime is associated with a significantly lower effective level of taxation following 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. 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.

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. 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.
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.652 This is a concern which is commonly raised in relation to the IP Box regimes.653

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.654 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.655

The modified nexus approach was originally put forward by Germany and the United Kingdom656 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 economic 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.657

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

653 This issue is discussed in section 6.1. See also Griffith and Miller (2011), p. 231.
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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. This modified nexus approach was originally developed by Germany and the United Kingdom. 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. 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.

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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.796 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 fulfill 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).

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 and

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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 up-lift 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:

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\text{Eligible income = IP income - Qualifying expenditures x 0.30}
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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. 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 regime. 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 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

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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, are not explicitly addressed. This might, however, be clarified in the future.  

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 related 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. Finally, under the (modified) nexus approach, IP income should be defined as net (instead of gross) income. 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

<table>
<thead>
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</tr>
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<tr>
<td>Software</td>
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<tr>
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<td>Capital gains</td>
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<tr>
<td>Trademarks</td>
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### Notes
- Qualifies: qualifies, does not qualify: not explicitly dealt with in the (modified) nexus approach; N: net income approach; G: gross income approach (see section 3.2.2).
- Similar to the (unmodified) nexus approach, the same rules apply.

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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.680 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.681 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.

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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. In so far as these deviate from internationally accepted principles, such as the OECD transfer pricing rules, this tax measure 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 which generally rely on the OECD transfer pricing rules. 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.

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 all three stages of the Patent Box’s three-stage procedure for calculating the Patent Box tax base involves a statutory formula rather than internationally agreed principles.

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 applied principles.”

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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 applied principles.”
agreed principles.417 As a consequence, the EU Commission concludes that the rules for profit determination of the UK Patent Box indeed depart from internationally accepted principles.418 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.419

Finally, it should be pointed out that under certain conditions, administrative practice allows Dutch taxpayers to calculate the Innovation Box tax base 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 unpublishable 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.420 These often involve negotiations between the tax authorities and taxpayers which opens the scope for preferential tax treatment of certain taxpayers.421

From an outside-perspective it is hardly possible to examine whether the practical application of certain IP Box regimes indeed lacks transparency.422 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

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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

422 For Belgium, Dirix comes to the conclusion that “the Belgian tax authorities do not appear to adopt a tax policy in terms of checking the deductibility’s applicability and calculation” (Dirix (2013), p. 241).
governing the regime. The administrative practice in particular overturns the Innovation Box’s principles for recapitalising 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.\textsuperscript{413} 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.\textsuperscript{414} 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.\textsuperscript{415} 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.\textsuperscript{416} 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.
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 outputs to related parties and relating to acquired IP only qualifies along the lines of the ‘modified nexus approach’.

However, in contrast to the modified nexus approach, the IP Box regime is eligible for commercial trademarks.692 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.693

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.694 Switzerland has expressed its willingness to align new tax measures, such as an IP Box regime, with the OECD’s standards.695

The (modified) nexus approach has important implications for IP tax planning making use of intra-contract contract R&D. Under IP Box regimes which are in line with the (modified) nexus approach, intra-contract R&D would be less attractive as the amount of contract R&D fees paid to related parties negatively affects 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 outputs to related parties and relating to acquired IP only qualifies along the lines of the ‘modified nexus approach’.

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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 S.6.66

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.667 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.

665 For details, see 2.2.2.1.

666 Fielder 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 Fielder (2013), p. 169).

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6.2.3 OECD project on Harmful Tax Practices

6.2.3.1 Background
In 1997, 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.2388 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.2389 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.2390 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.2391 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.2392 This list was eventually published as part of the 2000 Progress Report of the Committee on Fiscal Affairs.2393 Only Luxembourg and Switzerland did not approve of the report and abstained from the adoption of the report’s recommendations.2394 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.2395 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

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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.\(^{295}\)

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: \(^{296}\)

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.\(^{297}\) 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.\(^{298}\) The understanding of these two criteria reflected in the Code of Conduct and the OECD framework seem to largely correspond to each other.\(^{299}\) Both, ‘ring-fencing’ in the meaning of the OECD framework as well as 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,\(^{300}\) Only the fourth factor of the framework is not reflected in the Code of Conduct. In fact, 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.\(^{301}\)

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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: \(^{302}\)

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this is the main difference between the Code of Conduct and the OECD framework.\[402\]

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:\[403-405\

- (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 substantive 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. 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. Again, this corresponds to the comprehensive 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.\[406-410\] 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.

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\[403\] See OECD (1998), pp. 30-34.
\[408\] See OECD (1998), pp. 30-34.
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. In fact, in the past none of the IP Box regimes were considered harmful by the OECD. 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. 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.

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. 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.

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6.2.4 Issues raised by the initiatives against harmful tax practices

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. 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. Hence, the abolition of such regimes might intensify distortions of investment which the EU Commission and the Council of the European Union actually aim to overcome. 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. 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. 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.

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

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76 See the draft of Art. 246 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 Unternehmensverkehrs Schweiz (Unternehmenssteuerverordnung Schweiz 301), download: http://www.admin.ch/ch/bfr/thesaurus/message/attachments/36627.pdf. For explanatory notes, see Eidgenössische Steuerverwaltung (2014), p. 26 et seq. A meeting 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, Obiet (2013), pp. 649 et seq., Obiet (2014), p. 615).

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76 See the draft of Art. 246 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 Unternehmensverkehrs Schweiz (Unternehmenssteuerverordnung Schweiz 301), download: http://www.admin.ch/ch/bfr/thesaurus/message/attachments/36627.pdf. For explanatory notes, see Eidgenössische Steuerverwaltung (2014), p. 26 et seq. A meeting 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, Obiet (2013), pp. 649 et seq., Obiet (2014), p. 615).
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.64 Indeed, empirical evidence indicates that multinational companies shift profits from high-tax to low-tax countries.65 In this context, research also points to the fact that intangible assets play an important role for profit shifting.66 As concluded by Grubert, “opportunities for tax-induced income shifting are strongly influenced by the presence of intangible assets”.67

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 in general 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 rules68 might have rendered

66 Grubert (2002) and Diederich and Riebel (2011) find that the tax sensitivity of pre-tax profits is greater for particularly R&D intensive assets. 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.
68 See Fathé et al. (2014), p. 5; Shapoori (2013a), 2013b; Whalin (2010).
profit shifting by way of royalty payments even more attractive compared to profit shifting by means of intra-group debt financing.681 In contrast to tax evasion, ‘aggressive’ tax planning682 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.683 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.684

Furthermore, tax planning which results in tax burdens close to zero or equal to zero (so called ‘non-taxation’)685 is not desirable in particular if 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).686 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.687

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 focus on compliance with the fundamental freedoms codified in the Treaty on the Functioning of the European Union and with the Interest & Royalty Directive.

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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 to the United States of America (US) in this case,


(ii) 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. 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 rate that 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


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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.487 In the following, I therefore focus on specific anti-avoidance measures aimed at countering 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 revenue) to low-tax countries by levying withholding taxes on royalty income paid to related parties.488 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 revenue country tax burden, provided that the residence country does not refund excess foreign tax credits.489

Vis-a-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.490 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.491 There might, however, be some scope for

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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.188

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

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185 See Hey (2014), p. 239.
187 For Falke 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 as the tax is that reallocated by means 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. As many countries at the same time face an outflow and an influx of royalty income, the revenue implications are less clear-cut in practice. This is discussed in more detail at the end of this section.
188 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 Wuttal (2012), p. 1060 sqq.
net income involving a deduction for expenses associated with the income. This issue is particularly pronounced in the case of sub-licensing. Double taxation could only fully be avoided if residence countries grant full tax credits. 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. This is supported by empirical evidence presented by Hines and Gruber, who show that royalty payments to US-multinationals are indeed negatively affected by royalty withholding taxes levied by source countries. 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. A study by Hines points to the first. His findings indicate that domestic R&D expenditures of US-multinationals are positively affected by royalty withholding taxes.

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foreign royalty withholding tax rates. Conversely, a study by Hines and Jaffe on US-multipolitans comes to the opposite conclusion; that domestic and foreign R&D are complements. This finding is supported by Hellenstein with respect to Swiss companies. 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. 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. By way of limiting multinational’s’ leverage 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.

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 foreign royalty withholding tax rates. Conversely, a study by Hines and Jaffe on US-multipolitans comes to the opposite conclusion; that domestic and foreign R&D are complements. This finding is supported by Hellenstein with respect to Swiss companies. 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. 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.

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644 According to Hines and Jaffe, US-multipolitans show a slower growth of foreign parentage after a tax reform increased the 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).


rate, provided residence countries grant a tax credit for the withholding tax rate.\textsuperscript{105}

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.\textsuperscript{111} 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 on a gross basis.

Any possible negative economic effects which are associated with royalty withholding taxes are likely to be more 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.\textsuperscript{103} 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 extension of source taxation by means of withholding taxes.

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## 11.6 Rate Differences and Robustness

While the above analysis has focused on a uniform rate for royalty withholding taxes, it is important to consider how rate differences and robustness might affect the outcomes. Rate differences can arise due to variations in the local tax systems of different countries. Additionally, tax treaties and double taxation agreements (DTAs) can influence the rates applied. Robustness, on the other hand, refers to how sensitive the tax revenue effects are to changes in rate differences or the application of DTAs. Understanding these aspects is crucial for policymakers to make informed decisions about royalty withholding tax rates.

### 11.6.1 Rate Differences

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.\textsuperscript{103} 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 extension of source taxation by means of withholding taxes.

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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.¹⁰⁴

6.3.1.2 Introducing subject-to-tax or minimum-tax clauses

Subject-to-tax clauses,¹⁰⁵ 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.¹⁰⁶ 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’).¹⁰⁷

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.¹⁰⁸ 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.¹⁰⁹ 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

¹⁰⁴ They find that such a reform would considerably reduce the negative tax revenue balance (see Flode (2014), pp. 23).
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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.609

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.610 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.611 Introducing minimum-tax clauses would even constitute a novelty in bilateral tax treaties.612

Introducing subject-to-tax or minimum-tax clauses on a unilateral basis may constitute a tax treaty override613 which is considered to be incompatible with constitutional law in some countries.614 General treaty provisions which give treaty parties the right to levy domestic anti avoidance provisions615 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.

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without necessarily infringing the spirit and purpose of the law, a commonly employed definition for tax avoidance.\textsuperscript{161}

So far, the Interest & Royalty Directive does not include a subject-to-tax clause with respect to royalties received by corporations.\textsuperscript{162} 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 (\textit{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 European 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.\textsuperscript{163} 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 [\ldots] provided that the beneficial owner of the interest or royalties is a company of another Member State [\ldots] 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\textsuperscript{164} 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.\textsuperscript{165} 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 are excluded from the scope of the new Article 1(1).


\textsuperscript{162} See Terra and Watten (2012), p. 774. Article 1(3)(c) of the Directive does, however, include a subjective subject-to-tax clause with respect permanent establishments (PE) requiring that the PE be subject to corporate income tax (see Terra and Watten (2012), p. 774). The recital also emphasizes 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).


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EBIT(DA) ratio but on the tax level in the resident 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%.

Durst proposes a similar deduction limitation which aims at preventing tax base erosion. The proposed provision involves that the deduction of expenses of any kind 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 which generates income exceeding the local operating expenses by 75%. This proposed deduction limitation combines a tax-exemption 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.” 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 ECI 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’).

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de facto applied to cross-border constellations but not to purely domestic ones. Peyer points out that equal treatment of domestic and cross-border cases is only ensured in a formal sense. Hence, it is debatable whether the newly enacted Austrian royalty and interest deduction limitation complies with primary EU law.

**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'). 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 criticisms. 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.

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’). 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 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. If the residence country accepts the re-characterisation and consequentially exempts royalties, this can be argued. If the residence country accepts the re-characterisation and consequentially exempts royalties, this can be argued.

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194 However, even with respect to interest income, this is only rarely applied in practice. 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. 195 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. 196 Empirical evidence on the investment effects of (interest) deduction limitations is, however, still scarce. Exploiting a dataset on foreign affiliates of German multinationals, Buettrt et al. show that this 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. 197 As deduction limitations for royalties are a new phenomenon, they have not been investigated empirically so far.


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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 Ledin with respect to interest payments. In a subsequent article he suggested to extend this to royalty payments. 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. 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. 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. Ledin 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.

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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 ‘Schouten 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.611 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.612 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.613

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.

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612 See Lodin (2013), p. 170. 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 Directives.
613 See Lodin (2011), pp. 178 et seq.

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612 See Lodin (2013), p. 170. 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 Directives.
613 See Lodin (2011), pp. 178 et seq.

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 ‘Schouten 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.611

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.612 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.613

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.

612 See Lodin (2013), p. 170. 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 Directives.
613 See Lodin (2011), pp. 178 et seq.
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.\(^{45}\) 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.

\(^{45}\) See Flath et al. (2014), p. 16.

### Table 27: Tax burden associated with the application of the inverted tax credit

<table>
<thead>
<tr>
<th>Residence country tax rate</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
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<tbody>
<tr>
<td>Source country</td>
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<tr>
<td>Tax base</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Source country tax before ITI</td>
<td>30</td>
<td>30</td>
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<tr>
<td>ITI</td>
<td>10</td>
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<tr>
<td>Source country tax burden</td>
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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”595 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 undertake the value of intangibles transferred to IP holding companies resident in low-tax countries and to overstate royalty fees paid by high-tax affiliates.596 Income shifting through the manipulation of transfer prices results in no loss to the considerable beeway which taxpayers face when it comes to determining transfer prices.597 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.”598 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.599

By ensuring that royalty fees are adequate, tax legislators may limit tax base erosion by means of the deduction of royalty payments.600 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.601 Indeed, empirical evidence indicates that multinationals shift profits by way of intra-group transfer pricing602 and that this is closely related to the creation and the use of intangible assets within multinational groups of companies.603

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595 See Ernst (1984), p. 29 and section 2.3.
596 For further details on the relevance of transfer pricing in IP tax planning models see section 2.3.
599 See Li (2012), p. 50.
602 For a review of the literature, see Graetz (2007), pp. 245, Heckenkemper and Overesch (2013). The meta-analysis by Heckenkemper and Overesch indicates that profit shifting by means of intra-group transfer pricing is more important than profit shifting through intra-group debt-financing.
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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.\footnote{See Lohse and Riedel (2010, 2011); Stahlknecht and Breidenbach (2011, 2012); also points in this direction.} 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 members of the EU and the OECD still have some room for tightening their transfer pricing rules in particular with regard to documentation requirements.\footnote{See Lohse and Riedel (2010). Similarity, a study by Bartelsman and Bruno (2003) finds that the degree of enforcement of transfer pricing rules, as measured by their enforcement indicator, significantly affects income shifting. See Zia et al. (2016); pp. 366 et seq. See Stahlknecht (2011). See Arti Vojtich and Breidenbach (2011).} 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.\footnote{See Zia et al. (2015).} 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.\footnote{See Zia et al. (2015); pp. 366 et seq. See Stahlknecht (2011). See Arti Vojtich and Breidenbach (2011).} 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.\footnote{See Lohse and Riedel (2010, 2011); Stahlknecht and Breidenbach (2011, 2012); also points in this direction.} The concept of a Common

wholly-owned affiliates, Overwoerd and Wamser (2009) show that BEPS activities are highly tax- sensitive, though they do not provide direct evidence for profit shifting. Overwoerd and Schr€ober (2010) indicate that the tax sensitivity of intra-group transactions to a large degree depends on the tax burden of multinational. Diezinger and Riedel (2011) find that the lower the statutory tax rate based by a subsidiary compared to all other affiliates of a multinational group, the larger the amount of intangible assets by this subsidiary. The facts that multinational companies strategically locate high value-potents in low-tax countries, as shown by Kerkhoffs and Riedel (2012) and Burton et al. (2012), also points in this direction.} See Lohse and Riedel (2010, 2011); Stahlknecht and Breidenbach (2011, 2012); also points in this direction.} See Lohse and Riedel (2010). Similarity, a study by Bartelsman and Bruno (2003) finds that the degree of enforcement of transfer pricing rules, as measured by their enforcement indicator, significantly affects income shifting. See Zia et al. (2015); pp. 366 et seq. See Stahlknecht (2011). See Arti Vojtich and Breidenbach (2011).
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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.999 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.

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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 a transfer of intangible assets, it may tax the future profits associated with those assets constituting hidden reserves, and 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.491 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.492

491 Brauer 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 repeated for tax purposes (see Brauer (2015), p. 546).

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493 Where the legal owner entrusted most or all of such important functions to other group members, the entitlement of the legal owner to retain any material portion of the returns attributable to the intangibles after compensating other group members for their functions is highly doubtful (OECD (2010b), p. 23 recital 98). For an illustration of this issue, see the examples presented in the draft for chapter 6. Tax Policy Considerations 233

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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. The tax rate on IP income constitutes the most important parameter of such a ‘carrot approach’. In fact, the implementation of the UK Patent Box in 2013 was driven by such considerations.

6.3.2.1 Retractive price adjustment clauses

Retractive price adjustment clauses may help tax legislatures to address the issues raised by the uncertainties associated with the valuation of intangible assets. In case such clauses also allow for retractive 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. In the US, the so-called ‘commensurate with income standard’ which governs the transfer of intangible assets involves a retractive price adjustment. The ‘commensurate with income standard’ aims at resolving some of the uncertainties associated with the determination of transfer prices for intangible assets which are transferred abroad. The provision first emphasises that the arm’s length price paid upon the disposal of an intangible asset must reflect the

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income generated from exploiting the asset. Second, it implies that facts and circumstances which were not forecasted at the time of the transfer nevertheless have to be taken into account retrospectively. 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, 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 retrospective 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 retrospective 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 ‘arm’s 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 adjustments1008 as

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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. 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.1613

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. 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.1614

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1613 The grant of an exclusive right to use an IP right for the remainder of its life, however, largely corresponded to the value of the IP right itself (see Lakissi (1995), p. 237).
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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.

In addition, in September 2013, the Central Board of Direct Taxes implemented safe harbour rules for the application of the cost-plus methods to intra-group contract R&D services carried out on behalf of non-resident associated enterprises. These are available under the condition that the contractor only assume insignificant risks. The safe harbour rules are not mandatory but are instead supposed to offer taxpayers legal certainty. 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. These ratios constitute substantial mark-ups on the operational expenses and might exceed what taxpayers consider to be reasonable. Although these mark-ups are not mandatory, some commentators are concerned that they might in the end become ‘deemed’ arm’s length prices.

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 service providers with insignificant risk. The provision is based on the cost-plus method. See Circular No. 01/2012, 26 March 2012, Government of India, Ministry of Finance, Department of Revenue, Central Board of Direct Taxes (Foreign Tax and Tax Research Finances). This circular was released three months later by Circular No. 03/2013 issued on 29 June 2013. For further details, see Chakravarty and Ray (2013), p. 405, Prakash (2013), p. 376 et seq., Newson (2011).

For a discussion of the concept underlying safe harbour rules as well as safe harbour rules applied in practice, see Dolatte (2009).

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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. Disputes may be solved by way of mutual agreement procedures set out in double taxation treaties. 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.

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. 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.

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.


See OECD (2012c), recital 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 39). For a detailed discussion, see Burt (2012).

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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 applying controlled foreign company (CFC) rules.\(^\text{136}\) CFC rules stipulate that (passive) income earned by CFCs resident in designated low-tax countries is subject to tax in the residence country of the parent company when earned.\(^\text{137}\) 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.\(^\text{138}\) 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.\(^\text{139}\) 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.\(^\text{140}\)

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 by shifting out of the scope of controlled foreign companies. 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.\(^\text{141}\) 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.\(^\text{142}\)

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Empirical evidence indicates that CFC rules are indeed effective in countering profit shifting to low-tax countries. A study by Rul 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.\footnote{See Rul and Weichenrieder (2010).} Similarly, Althuler 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.\footnote{See Althuler and Hubbard (2003).} 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 inventors’ residence country has controlled foreign company rules in place.\footnote{See Böhm et al. (2014).}

Although residence countries may have an incentive to implement CFC rules to limit theleeway for profit shifting to low-tax countries,\footnote{See Böhm et al. (2014).} 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.\footnote{See Böhm et al. (2014).} Some commentators even go so far as arguing that countries intentionally weaken their CFC rules to increase the competitiveness of their multinational companies.\footnote{See Böhm et al. (2014).} To give an example, the application of the US CFC rules, which yields that foreign low-tax passively income is subject to the US federal corporate income tax rate of 35% when earned (the highest among the OECD and EU member states\footnote{See Rul and Weichenrieder (2010).}), may easily be circumvented by opting for the application of the check-the-box rules.\footnote{See Rul and Weichenrieder (2010).}
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'.1845 The ECJC'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,1846 the court held that the restriction of the freedom of establishment caused by the British CFC rules1847 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 [...]',1848 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' and for rules,1849 Kane even argues that the United States of America have "rather porous and lacunae-filled" CFC rules in place.1850

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."1851 This implies that the taxpayer's intention to obtain a tax advantage is not sufficient.1852 Instead, objective factors must be taken into account, namely physical presence "in terms of premises, staff, and equipment."1853 This indicates that, in order to comply with the fundamental freedoms, CFC rules may only

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demand little substance. The Court only clearly classifies ‘letterbox companies’ and ‘front subsidiaries’ as ‘wholly artificial arrangements.’

In order to redesign their CFC rules with the goal of rendering them compatible with the ECI’s case-law, countries may aim for activity tests which link the application of the CFC rules to the lack of substantial economic existence in the CFC’s residence country in terms of premises, staff, and equipment, or in reaction to the ‘Cadmury Schweppe’s 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. 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.

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.

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. 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 CFC 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 of the profit shifting.

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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.\footnote{See Führich (2009), p. 127, Jacobs et al. (eds) (2011), p. 449, Tubr and Wiatel (2012), p. 1012.} The provision in place in Denmark follows this approach.\footnote{See Koever Schmidt (2012), p. 266. In this regard, it is important to know that Denmark also operates an obligatory group taxation regime. For details, see Dahlberg and Winum (2013), p. 26; Koever Schmidt (2015), p. 261.} However, this constitutes a significant extension of residence-based taxation and raises serious practical difficulties.\footnote{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, 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, the interest and 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.

639 Pre-country limitations and pre-income limitations are common restrictions when determining foreign tax credits. For details, see section 3.7.1.

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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. 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 countering 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.

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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 sits 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), a coordinated approach in this regard seems sensible, although it may be difficult to achieve. 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-à-vis the multinationals of other countries which have no or only very tax 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 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

6.3.5.1.2 Action no. 4: Recommendations for the design of BEPS rules.

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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-multiplicationals as they allow them to accumulate passive income in low-tax countries.\textsuperscript{1003}

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.\textsuperscript{1006} It remains to be seen how the revised transfer pricing guidelines for transactions involving intangibles will affect IP tax planning.

\textsuperscript{1003} Paet et al. (2013), p. 317. See section 6.3.5.1 for details.
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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. Vann calls the freedom of contract “a significant structural flaw in current transfer pricing rules.” Sullivan even proposes to constrain the freedom of contract with respect to the ownership of intangible assets.

The concept of a Common Consolidated Corporate Tax Base (CCCTB) proposed by the EU Commission implies that separate accounting be replaced by formula apportionment of the profits of a group of companies. 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.

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’. As a consequence, profit shifting by means of tax-efficient transfer pricing (e.g. through licensing-out IP to low-taxed affiliates) is foiled.

6.3.5.2 The EU Commission’s proposal for a Common Consolidated Corporate Tax Base

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The concept of a Common Consolidated Corporate Tax Base (CCCTB) proposed by the EU Commission implies that separate accounting be replaced by formula apportionment of the profits of a group of companies. 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.

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’. As a consequence, profit shifting by means of tax-efficient transfer pricing (e.g. through licensing-out IP to low-taxed affiliates) is foiled.

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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.606 The fact that under a CCCTB companies face incentives to shift labour and assets to order to shift profits to low-tax countries raises concerns that the CCCTB might create new distortions.607 For this reason, some scholars propose to completely rely on the location of consumption for allocating profits.599

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.608 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.610

The concept of the CCCTB raises numerous technical issues which cannot be pointed out in detail and discussed here.611 In addition, concerns are raised that the harmonisation of the tax base, which constitutes the first step of the CCCTB,

transfer pricing and the associated profit shifting issues would, however, continue to exist.612

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In addition, countries are concerned that the introduction of the CCCTB will be associated with a loss in tax revenue.\textsuperscript{145} 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.\textsuperscript{146}

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 foul 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.

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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 implemented 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 (9%, 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 are different 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 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 are different 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.

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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 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.

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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 lowering an exit tax on the full earnings value of the IP on 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 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.

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13. 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 arrangements.
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, 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 retrospective 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 split method in certain countries or even under the OECD transfer pricing rules for intangible assets which are currently under revision.

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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. In this partial 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 2021. As output for action no. 5 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. The risk of profit shifting resulting in tax base erosion. 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 (CCTB) put forward by the EU Commission currently constitutes the most prominent reform proposal. At least within the EU, the CCTB 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 CCTB (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 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.

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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.


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Agreements between the European Community and third countries, Commission Regulations and Council Directives

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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 for reform the taxation of IP income in order to counter profit shifting and tax base erosion.