



**International Tax Policy Forum and
Georgetown Law's Institute of
International Economic Law**

***Taxation of Intellectual Property in
a Global Economy***

March 11, 2016

Georgetown University Law Center
120 F Street NW
Washington, D.C. 20001

ITPF & IIEL Conference
Taxation of Intellectual Property in a Global Economy
March 11, 2016

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Taxation of Intellectual Property in a Global Economy

*Featuring Keynote Remarks by Jason Furman,
Chairman of the Council of Economic Advisers*

Friday, March 11th, 2016, 8:30 a.m. – 1:30 p.m.

Georgetown Law

Gewirz Student Center, 120 F Street, NW, Washington, DC 20001

Join Georgetown Law's Institute of International Economic Law (IIEL) and the International Tax Policy Forum (ITPF) on March 11th for a high-profile conference examining the taxation of intellectual property in a global economy.

The United States now lags behind its global competitors in tax incentives for research and development. In recent years, at least fourteen developed economies have adopted patent or innovation boxes, which provide a special low tax rate on business income that is derived from innovative activities. This development has sparked debate in the United States, and several recent U.S. tax reform proposals include a patent or innovation box. A discussion draft for a U.S. innovation box was released last year by Rep. Charles Boustany (R-LA) and Rep. Richard Neal (D-MA).

This conference brings together experts from a variety of backgrounds to share their perspectives on these important emerging issues in tax policy. A series of panels will explore the taxation of innovative activity in the United States and abroad, the resulting economic effects, the impact of patent and innovation boxes, and what action the United States should take. Jason Furman, the Chairman of the Council of Economic Advisers, will deliver the keynote address.

8:30 a.m. Registration

8:50 a.m. Introductory Remarks

John M. Samuels
Chairman
International Tax Policy Forum

William M. Treanor
Executive Vice President & Dean of the Law Center
Georgetown Law

9:00 a.m. Taxation of Intellectual Property in the United States and Abroad

Alan J. Auerbach (Moderator)
Robert D. Burch Professor of Economics and Law
Director, Burch Center for Tax Policy and Public Finance
University of California, Berkeley

Paul W. Oosterhuis
Partner
Skadden, Arps, Slate, Meagher & Flom LLP

Lilian V. Faulhaber
Associate Professor of Law
Georgetown Law

9:50 a.m. **Effects of IP Taxation on Economic Activity: A Review of the Literature**

Mihir A. Desai (Moderator)
Mizuho Financial Group Professor of Finance
Harvard Business School

Sebastien Bradley (Presenter)
Assistant Professor of Economics
Drexel University, LeBow College of Business

10:20 a.m. **New Evidence on the Impact of Patent Boxes**

James R. Hines, Jr. (Moderator)
L. Hart Wright Collegiate Professor of Law
Co-Director of the Law and Economics Program
University of Michigan

Eric Ohrn (Presenter)
Assistant Professor
Grinnell College

Rosanne Altshuler (Commentator)
Professor of Economics
Chair, Department of Economics
Rutgers University

11:00 a.m. **Break**

11:15 a.m. **Keynote Address**

Introduction: John M. Samuels
Chairman
International Tax Policy Forum

Remarks: Jason Furman
Chairman
Council of Economic Advisers

11:45 a.m. **Luncheon**

12:15 p.m. **Should the United States Introduce a Patent Box?**

Michael J. Graetz (Moderator)
Columbia Alumni Professor of Tax Law
Columbia Law School

James R. Hines, Jr.
L. Hart Wright Collegiate Professor of Law
Co-Director of the Law and Economics Program
University of Michigan

Alan J. Auerbach
Robert D. Burch Professor of Economics and Law
Director, Burch Center for Tax Policy & Public Finance
University of California, Berkeley

Martin A. Sullivan
Chief Economist
Tax Analysts

Itai Grinberg
Associate Professor of Law
Georgetown Law

1:30 p.m. **Adjourn**

All interested members of the public are welcome; there is no cost to attend.
Please register [here](#) and contact Christine Washington, IIEL's Director of Programs & External Affairs,
at 202.662.4193, or cqw@law.georgetown.edu, with any questions.



International Tax Policy Forum

Web site: www.itpf.org

About the International Tax Policy Forum

Founded in 1992, the International Tax Policy Forum is an independent group of more than 45 major U.S. multinationals with a diverse industry representation. The Forum's mission is to promote research and education on the taxation of multinational companies. Although the Forum is not a lobbying organization, it has testified before the Congressional tax-writing committees on the effects of various tax proposals on U.S. competitiveness. The ITPF also sponsors annual public conferences on major international tax policy issues. The January 2015 conference on *Corporate Inversions and Tax Policy* was co-sponsored with the Brookings Institution. On the research front, the Forum has commissioned over 20 papers on international tax policy topics such as the effects of the interest allocation rules on the competitiveness of U.S. firms, the compliance costs of taxing foreign source income, and the linkages between foreign direct investment and domestic economic activity (see www.ITPF.org).

Members of the Forum meet three times a year in Washington, DC to discuss key international tax policy issues with leading experts in government, academia, and private practice.

PwC serves as staff to the Forum. **John Samuels**, former Vice President and Senior Counsel for Tax Policy and Planning with General Electric Company, chairs the Forum. The ITPF's *Board of Academic Advisors* includes ITPF Research Director Prof. **James Hines** (University of Michigan), Prof. **Alan Auerbach** (University of California, Berkeley), Prof. **Mihir Desai** (Harvard), Prof. **Michael Devereux** (Oxford), Prof. **Michael Graetz** (Yale), Prof. **Michelle Hanlon** (MIT), and Prof. **Matthew Slaughter** (Dartmouth).

ITPF Mission Statement

The primary purpose of the Forum is to promote research and education on U.S. taxation of income from cross-border investment. To this end, the Forum sponsors research and conferences on international tax issues and meets periodically with academic and government experts. The Forum does not take positions on specific legislative proposals.

Member Companies

Abbott Laboratories
AbbVie Inc.
American Express Company
Apple Inc.
Bank of America
Bank of New York/Mellon
Boston Scientific Corporation
Cargill Inc.
Caterpillar Inc.
Chevron Corporation
Cisco Systems, Inc.
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The Coca-Cola Company
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Goldman Sachs
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The Procter & Gamble Company
The Prudential Insurance Company
State Street Corporation
Tupperware Corporation
United Technologies Corporation
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Michael Devereux
Glenn Hubbard, *Emeritus*

Consultants

Peter R. Merrill
Pam Olson

GEORGETOWN LAW



ABOUT US

Georgetown Law is one of the world's premier law schools. It is pre-eminent in several areas, including constitutional, international, tax and clinical law. The Institute of International Economic Law (IIEI) is the focal point for the study of international economic law at Georgetown. IIEI's faculty include scholars and practitioners at the forefront of all areas of international economic law. Originally focused on trade, the Institute now boasts leading capabilities in a range of areas including investment and financial regulation, tax, business and monetary law. The Institute actively approaches these fields as interrelated and at times overlapping policy spheres that impact how law is devised, practiced and enforced.

IIEI's programs are geared toward both students and professionals alike. Students from around the world pursuing a degree at Georgetown Law are invited to enroll in IIEI's International Economic Law & Policy Colloquium; to pursue a Certificate in WTO Studies; or to answer legal questions related to international economic law in service of a real client, as part of the International Economic Law Practicum. Students and Visiting Researchers may apply to be an IIEI Fellow and participate in weekly policy discussions and research workshops. Practitioners are invited to expand their knowledge and network by attending one of IIEI's many conferences, special events or Executive Education programs.

IIEI hosts fora for policy debate and research with a wide range of international organizations, firms, NGOs and government agencies, and welcomes new partnerships. For additional information, please contact us:

Christopher J. Brummer, Professor of Law & Faculty Director, chris.brummer@law.georgetown.edu
C. Christopher Parlin, Adjunct Professor & Deputy Director, parlinc@law.georgetown.edu
Christine Q. Washington, Director of Programs & External Affairs, cqw@law.georgetown.edu

<http://iielaw.org/>; <http://law.georgetown.edu>



www.pwc.com

*Global Research &
Development
Incentives Group*
May 2015

Welcome to PwC's Global R&D Incentives Group

The important role innovative companies play in their national economies has led to the enactment of tax incentives and grant programmes to encourage additional research investments by businesses. To stimulate innovation, many jurisdictions around the globe provide research incentives in the form of tax credits, “super” deductions, or even cash grants. In addition, some jurisdictions provide relief in the form of reduced tax for income associated with technology-based intellectual property. Understanding these tax incentives—along with the impact of transfer pricing, intellectual property protection and location, grants, and capital investments to maximize the return on investments in research—is critical for business decision makers.

Leverage our experience

The PwC Global R&D Incentives Group, part of the PwC Global International Tax Services Network, has assisted hundreds of clients around the world in structuring their R&D programmes, improving their return on investment in research and their effective tax rate. We also work with governments to design and improve tax regimes, fostering innovation, which ultimately can stimulate economic growth.

Our team consists of tax, financial, engineering, and science professionals who understand the technical challenges confronting companies in different industries and countries. Since the types of research incentives vary from country to country, businesses need advisers who have experience with the various incentives at all stages of the innovation value chain. Our established network of professionals across the world deliver analysis that can help mitigate risk, manage your tax burden, identify and develop critical, strategic initiatives, and support the implementation through documentation of the key aspects of various relief and corporate tax incentives.

Industry scope

PwC's global R&D team has experience in many industries, including:

- Aerospace
- Agriculture
- Automotive
- Chemicals
- Clean Tech
- Energy
- Entertainment & Media
- Life Sciences
- Manufacturing
- Mining
- Oil & Gas
- Pharmaceuticals
- Pulp & Paper
- Retail
- Software
- Technology
- Telecommunications
- Transportation
- Utilities

Working together

Because it takes strong working relationships to deliver effective solutions, we apply an integrated approach. Our goal is to create a lasting relationship with you.

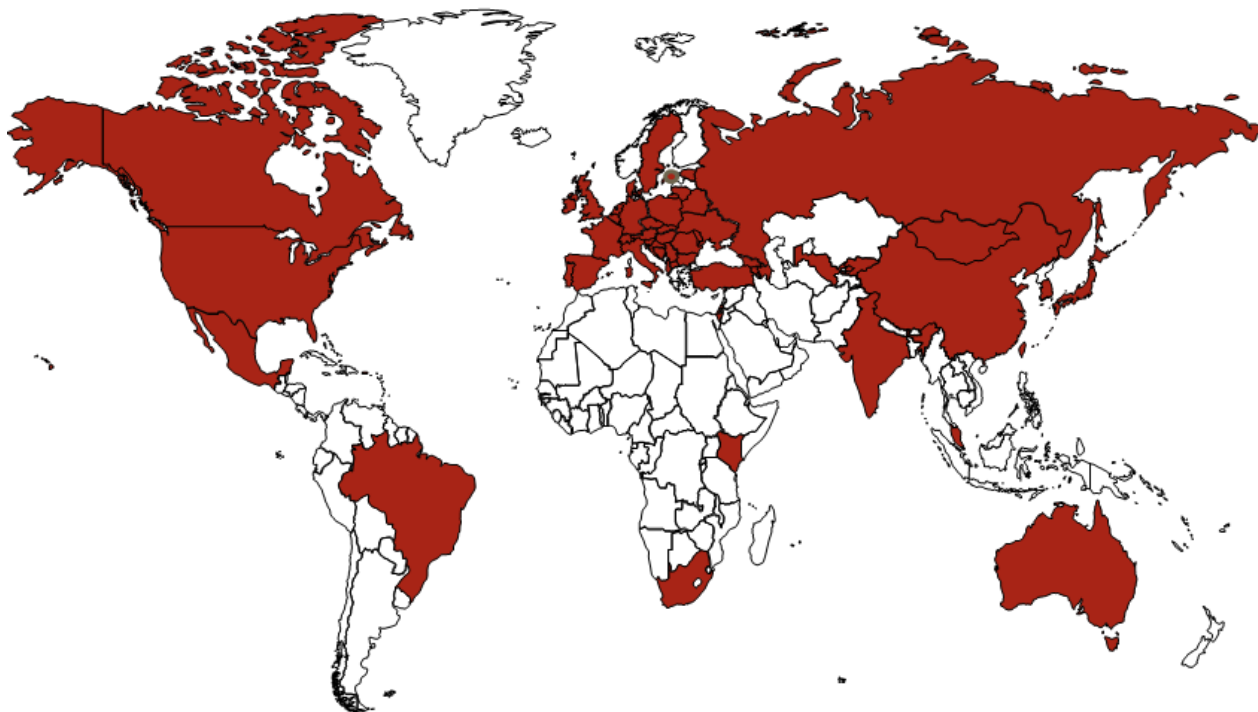


*Diarmuid MacDougall,
Group Leader
Global R&D Incentives*



*Suchi Lee,
Global Leader
International Tax Services*

We have the capabilities to understand the global picture



Business focus

Qualifying for, and quantifying these incentives presents companies with a challenge. PwC can support your R&D objectives both locally and globally with in-depth and well coordinated R&D teams. Our global network of R&D professionals, located in more than 30 countries, combines extensive experience in analysing the often ambiguous statutory language concerning research incentives with knowledge of the rules used by local taxing authorities. Our professionals include technical specialists with extensive industry experience that assist in identifying those research activities that qualify for incentives that might be otherwise overlooked.

In the countries highlighted above, we assist our clients to:

- Competitively plan in the global economy
- Consider new and/or alternative jurisdictions for innovation and growth
- Connect their global research
- Respond to economic and legislative changes
- Consider the impact of IP migration.

We team with your global and local staff to train individuals on the implementation of strategies to:

- Identify available research activities
- Analyse detailed accounting records to find costs available for jurisdictional relief
- Consider existing and potential alternative tax planning strategies based on the rules in differing jurisdictions, taking into account not only the incentives for research expenditures, but various implications such as withholding taxes, available grants for job creation, and corporate tax rate reductions for the license of intellectual property
- Gather, organise, and develop documentation to support and defend the eligible costs in the event of an enquiry by the tax authorities
- Develop procedures and technologies intended to improve the efficiency and effectiveness of identifying, documenting, calculating, and sustaining current and future incentives

The Big Picture – Research and Development



Our global network of experienced R&D professionals are trained in identifying and documenting research expenditures. Your global strategy may require alternative consideration of where you spend your R&D dollars based on ownership of intellectual property and jurisdictional relief. Our team, including our international tax specialists, can help large multinational companies take advantage of available incentives, consider the effect on transfer pricing, and review your company's global tax strategy for cross-border structuring.

Our global tax planning approach can offer substantial value by focusing on your key tax objectives and developing a sound global tax strategy related to your global R&D activities. PwC's strategies, however, do not end with a review of what has already been done. We understand the value of collaborating with teams involved in all stages of the R&D process.

Working with you, we will develop strategies to assist you in obtaining your goals of expansion and growth. We will jointly develop effective strategies for obtaining grants, incentives for innovation, and alternative energy/green initiatives. This analysis will address jurisdictional selection of where to locate R&D operations while taking into consideration other aspects such as transfer pricing, cross-border transactions, and expansion site selection.

Tax Incentive Highlights

Country	R&D Credit	R&D Super Deduction	Patent or Innovation Box
Australia	√		
Austria	√		
Belgium	√	√	√
Brazil		√	
Canada	√		
China		√	
Czech Republic		√	
Denmark	√*		
France	√		√
Hungary	√	√	√
India		√	
Ireland	√		
Italy	√**		
Japan	√		
Kazakhstan		√	
Korea	√		√
Latvia		√	
Liechtenstein			√
Lithuania		√	
Luxembourg			√
Malta	√	√	√
Netherlands	√	√	√
Poland		√	
Portugal	√		
Romania		√	
Russia		√	
Singapore		√	
Slovak Republic	√		
South Africa		√	
Spain	√		√
Switzerland			√
Turkey	√	√	√***
United Kingdom	√****	√	√
United States	√		

*Limited to the tax value of loss incurred in the current assessment year up to DKK 25 million resulting from immediate deduction of R&D costs. Jointly taxed companies are subject to the same limitation on group level.

** Patent Box and R&D tax credit entered into force on 1st January 2015, although it is still necessary to wait the Regulations, to be provided in a short while by a Ministerial Decree, in order to understand exactly how the provisions will apply.

***For more details please refer to comparison on page 11, country information on pages 32 & 33 and contact R&D team in Turkey, per contact list on page 37.

**** The UK government introduced a new R&D credit scheme for large companies., effective for expenditure incurred from 1 April 2013. The new scheme initially runs alongside the R&D super deduction for large companies but will become mandatory from 1 April 2016.

Patent Boxes

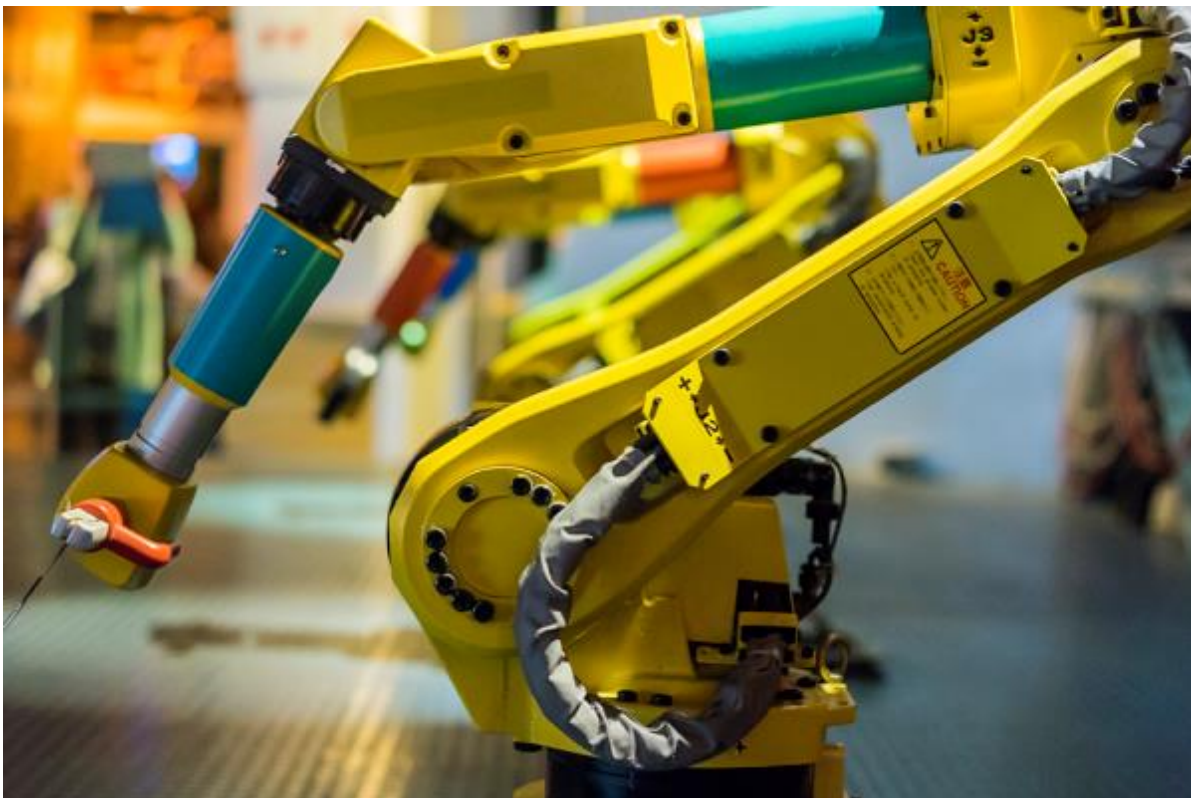
As outlined in comparison table, ten European Union (EU) countries have adopted "patent box" regimes that sharply reduce the corporate tax rate on qualifying intellectual property (IP) income to a nominal rate of 0-22 percent (effective tax rates typically are lower).

In addition to the regimes currently in effect in Belgium, France, Hungary, Italy, Liechtenstein, Luxembourg, Malta, Netherlands, Portugal, Spain and Turkey, the UK government enacted a 10% patent box regime which was phased in effective from 1 April 2013.

What is a "Patent Box"

Tax incentives can be provided at the front-end of the innovation cycle, in the years when R&D expenditures are incurred, and/or at the back-end, in the years when income is generated from exploiting IP. Front-end tax incentives include "super" deductions and tax credits for qualifying R&D expenses, such as the U.S. research tax credit and the recently introduced Dutch R&D deduction. By contrast, patent box regimes are back-end incentives that provide a reduced corporate income tax rate for certain income arising from the exploitation of IP generally through a 50-80 percent deduction or exemption of qualified IP income.

The types of IP that qualify for preferential tax treatment vary. In addition to patents, some countries (Hungary, Luxembourg, and Spain) include designs, copyrights, and models. The Dutch "innovation box" regime includes some forms of unpatented intangibles that are the result of approved R&D activities.



Comparison of Patent Box Regimes (May 2015)

Tax Factors	Belgium	France
Effective tax rate	6.8%*	15.5%-17.1%**
Qualifying IP	Patents and supplementary patent certificates	Patents, extended patent certificates, patentable inventions, and industrial fabrication processes
Qualifying income	Gross patent income (less cost of acquired IP)	Royalties net of cost of managing qualified IP
Acquired IP?	Yes, if IP is further developed	Yes, subject to specific conditions
Cap on benefit?	Deduction limited to 100% of pretax income	No
Includes embedded royalties?	Yes	No
Includes gain on sale of qualified IP?	No	Yes
Can R&D be performed abroad?	Yes, if R&D centre qualifying as a branch of activity (condition not applicable for SME's)' and oversight remains in the company'	Yes
Credit for tax withheld on qualified royalty?	Yes	Yes
Year enacted	2007	2001, 2005, 2010,2011***
Applicable to existing IP?	IP granted or first used after January 1, 2007	Yes

*Effective Tax Rate can further be reduced with additional tax planning.

**17.1% for companies subject to corporate income tax and with a turnover above EUR250m. Threshold considered globally for a French tax group.

***The French Finance Act for 2012 (enacted in 2011) has added new conditions to the deductibility of patent concession fees.

Comparison of Patent Box Regimes (May 2015)

Tax Factors	Hungary	Italy
Effective tax rate	5% -9.5%*	2015: 21.98%** 2016: 18.84%** From 2017: 15.7%**
Qualifying IP	Patents, know-how, trademarks, business names, business secrets, and copyrights	In general all the IP potentially subject to protection, including: patents, brands, trademarks, business names, designs, know-how, formulas, processes and licensed IP.
Qualifying income	Royalties	The net income from qualifying IP is relevant for the regime for a percentage calculated as the ratio between the <i>qualifying expenditure (R&D costs for the maintenance, increase or development of the IP)</i> and the <i>total expenditure for the acquisition of the IP</i> ***.
Acquired IP?	Yes	Yes. If purchased from group companies please refer to “Can R&D be performed abroad?” section below.
Cap on benefit?	Deduction limited to 50% of royalty income, max. 50% of pretax income	The exemption is limited to the 50% (30% for FY 2015 and 40% for FY 2016) of the net income from qualifying IP.
Includes embedded royalties?	No	Yes. In case of direct use of IP (i.e. no royalties), the amount of qualifying income is determined on the basis of an APA to be filled to the Italian Tax Authority.
Includes gain on sale of qualified IP?	Yes. The sale of reported IP rights are tax exempt	Yes, the potential capital gains arising from the sale of the qualifying IP are fully exempt of taxation, provided at least 90% of said gains is reinvested in the development of other IP with the same nature within the next two years after the sale. APA with the Italian Tax Authority is required.
Can R&D be performed abroad?	Yes	Not specified in the law provision, however R&D can be externalised (e.g. universities, qualified research entities, group companies)***. However, in case of purchased IP from group companies, the cost allowed is capped to 30% of the qualified expenditure incurred.
Credit for tax withheld on qualified royalty?	Yes	No.
Year enacted	2003	2015***
Applicable to existing IP?	Yes	Yes.

*Effective Tax Rate can further be reduced with additional tax planning.

**The effective tax rate includes both Corporate Tax (so called IRES) and Regional Tax (so called IRAP). The ordinary tax rate for IRES and IRAP is respectively equal to 27,5% and 3,9% for a total of 31,4%.

***The Patent Box regime entered into force on 1st January 2015, although it is still necessary to wait the Regulations, to be provided in a short while by a Ministerial Decree, in order to understand exactly how the provisions will apply.

Comparison of Patent Box Regimes (May 2015)

Tax Factors	Korea	Liechtenstein	Luxembourg
Effective tax rate	5~11% (Sale of IP) 7.5~16.5%(Royalty)	2.5%	5.76%
Qualifying IP	Patents, utility models, self-developed scientific technical secrets (excluding industrial property, foreign construction and engineering activities)	Patents, supplementary protection certificates, utility models, trademarks, designs, software, technical and scientific databases	Patents, trademarks, designs, domain names, models, and software copyrights
Qualifying income	Gain on transfer of qualifying IP owned by Small & Medium Enterprises (SMEs) and Medium-scale Companies (MSCs) to domestic corporations or residents (excluding related party) Royalty income of self-developed IP by SMEs to others (excluding related party)	Net income from qualifying IP	Royalties
Acquired IP?	Yes, subject to further conditions	Yes	Yes, from non directly associated companies
Cap on benefit?	Subject to minimum tax (8~17% for MSCs and 7% for SMEs)	No	No
Includes embedded royalties?	Yes (limited to self-developed IP)	Yes	Yes
Includes gain on sale of qualified IP?	Yes	Yes	Yes
Can R&D be performed abroad?	Yes	Yes	Yes
Credit for tax withheld on qualified royalty?	Yes	Yes	Yes
Year enacted	2014	2011	2008
Applicable to existing IP?	Yes	IP developed or acquired after December 31, 2010	IP developed or acquired after December 31, 2007

Comparison of Patent Box Regimes (May 2015)

Tax Factors	Malta	Netherlands	Portugal
Effective tax rate	0% - 6.25%	5.00%	11.5% (50% of CIT)
Qualifying IP	Qualifying Patents are exempt from Maltese income tax *	Patented IP or IP from approved R&D projects	Patented inventions and other innovations such as models and industrial designs protected by IP rights
Qualifying income	Gross patent income	Net income from qualified IP	Gross income from qualifying IP. Sale or licensing to related parties are excluded
Acquired IP?	Yes	Yes, if IP is further self-developed	No
Cap on benefit?	No	No	No
Includes embedded royalties?	No	Yes	No
Includes gain on sale of qualified IP?	No	Yes	Yes
Can R&D be performed abroad?	Yes	Yes for patented IP; strict conditions for IP from approved R&D projects	Yes, but self-developed by the licensor
Credit for tax withheld on qualified royalty?	No	Yes, subject to limitations	Yes, subject to limitations
Year enacted	2010	2007 , 2010	2014**
Applicable to existing IP?	Yes	Patented IP developed or redeveloped from 2007; IP from approved R&D projects from 2008	Only to IP developed after December 31, 2013

*We understand that currently no applications are being processed by the respective authorities. However, broadly similar benefits can potentially be achieved under the general tax framework.

**The Corporate Tax Reform that has effect from the beginning of 2014 introduced a Patent Box regime for some IP created after January 2014.

Comparison of Patent Box Regimes (May 2015)

Tax Factors	Spain	Turkey	UK
Effective tax rate	12-15.6%	10%	10%
Qualifying IP	Patents, secret formulas, processes, plans, models, designs, and know-how	1. Invention arising as a result of research, development, innovation and software activities realised in Turkey and is patented or utility model certified* 2. Licence, patent, adaptation, development, revision, deployment and plug-in derived from the software or products developed as a result of the research and development activities in technology development zones*	Patents, supplementary protection certificates, regulatory data protection, and plant variety rights
Qualifying income	Net income from qualified IP	Net income from qualified IP	Net income from qualifying IP
Acquired IP?	Yes, but it is necessary that at least 25% of the IP has been created by the licensor	No for TDZ, Yes for Law No. 6518	Yes, if further developed and/or actively managed
Cap on benefit?	No	Yes, subject to conditions	No
Includes embedded royalties?	No	Yes	Yes
Includes gain on sale of qualified IP?	Yes. However, the acquirer must not be a related party	Yes	Yes
Can R&D be performed abroad?	Yes, but must be self-developed by the licensor in at least 25%	No	Yes
Credit for tax withheld on qualified royalty?	Yes, subject to limitations	1- Yes, subject to conditions. 2- No, for TDZ regime.	Yes
Year enacted	October 2013	1. For upcoming legislation 01/01/15 2. For TDZ regime 2001	2013
Applicable to existing IP?	Yes. However, there are limitations regarding IP assets that have been subject to former Spanish Patent Box legislation	1- Yes, IP income only arising from invention as a result of research, development, innovation and software activities realised in Turkey and is patented or utility model certified by Turkish Patent Institute. 2- No, IP income only arising from R&D activities carried out in techno parks.	Yes

*For more details please refer to country information on pages 32 & 33 and contact R&D team in Turkey, per contact list on page 37

Global R&D credits and incentives by country (May 2015)

The information on this chart, pages 13- 36, includes select credits and incentives, and is for general information purposes only and should not be used as a substitute for consultation with professional advisors.

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Australia	<ol style="list-style-type: none"> 45% refundable R&D tax offset for grouped turnover of less than \$20 million; or 40% non-refundable R&D tax offset for grouped turnover more than \$20 million. The incentive is effectively capped at a maximum of \$100M of eligible R&D expenditure. 	Based on volume	Available if overseas expenditure is less than the amount of expenditure on 'core' Australian R&D and: <ol style="list-style-type: none"> the overseas R&D cannot be performed in Australia and the overseas activity has significant scientific linkage to at least one of the Australian core R&D activities 	IP may be held outside Australia however it must be held within the same Multinational Group as the Australian entity
Austria	<p>R&D premium Tax credit of 10% for qualifying R&D expenses incurred by Austrian companies. The R&D premium is credited respective of whether companies are in a tax profit or loss position.</p> <p>Two types of R&D premium:</p> <ol style="list-style-type: none"> Internal R&D premium is a 10% volume-based tax credit on all qualified R&D related expenditure available to domestic companies performing eligible R&D in Austria. The premium is not capped. An application for approval has to be filed electronically after the end of each fiscal year to obtain confirmation from the Austrian Research Promotion Agency (FFG) that the R&D activities performed by a company meet the necessary criteria. For subcontracted R&D that is placed by an Austrian entity or permanent establishment with a subcontractor located in the EU or EEA, a 10% volume-based tax credit may also be claimed on all qualified R&D related expenditure. The subcontracted R&D premium is capped with a maximum base amount of EUR 1,000,000 p.a., hence a total R&D premium of EUR 100,000. Further the subcontractor must not be under the controlling influence of the hiring company and there should not be a tax group in place between the hiring company and the subcontractor. <p>According to the envisaged Tax Reform 2015/16, which is to become effective as of 1 January 2016, the research premium is to be increased from 10% to 12%.</p>	Volume-based tax credit	Yes. In case the research premium for subcontracted R&D is claimed. The subcontractor to whom R&D activities are outsourced may also be located in the European Union or European Economic Area.	Under certain conditions yes, especially in case R&D activities are performed in Austria for a foreign principal (i.e. outsourced R&D).

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Australia	Yes - if grouped turnover <\$20 million	Non-refundable R&D tax credit can be carried forward and used in future years	Discreet grant funding available and other business incentives
Austria	10% volume-based tax credit on all qualified R&D related expenditure; also available in a loss making position (may be refunded in cash to bank account)	No.	<p>Other incentives: Cash grants, loans granted at favourable interest rates, Assumption of liability, Venture Capital/share holdings</p> <p>What can be funded?</p> <ul style="list-style-type: none"> - Innovation - R&D - Environmental Protection - Regional Development - Projects of Small/Medium sized companies - De minimis aids <p>Who? Austria Economic Service (AWS), Austrian Research Promotion Agency (FFG), Municipalcredit (KPC), Austrian Tourism Bank (ÖHT), Austrian Control Bank (OeKB), EC – Incentives (e.g. Horizon 2020) and several federal state promotion companies</p>

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Belgium	<ul style="list-style-type: none"> One-time R&D investment deduction of 13.5% (*) of the acquisition value of qualifying R&D investments Spread R&D investment deduction of 20.5% (*) of the depreciation on qualifying R&D Investments The above incentives can be claimed in the form of an R&D tax credit which corresponds to the R&D investment deduction, multiplied by the standard corporate tax rate of 33.99% (*)Rate for financial years ending between 31 December 2014 and 30 December 2015 (included) 	Based on volume of investment in qualifying R&D assets (including capitalised R&D expenses)	Yes, part of the R&D can be contracted out to parties located outside Belgium (also possible to benefit from local R&D benefits)	The law does not explicitly require that the IP which results from the overall R&D activities should remain in Belgium. The impact on R&D tax incentives should be analysed on a case-by-case basis
Brazil	160% to 200% "super deduction"	Volume based	Yes. However, only expenses incurred with Brazilian entities and individuals are subject to the "super deduction"	Yes

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Belgium	Yes, if the incentive is claimed in the form of an R&D tax credit, the remaining balance of unused R&D tax credits after five tax years is paid to the company.	Unused R&D investment deduction/R&D tax credit is carried forward for an unlimited period.	<ul style="list-style-type: none"> • 13.5% (*) investment deduction on acquisition value of qualifying patents • Special expat tax status for foreign researchers temporarily assigned to Belgium • 80% payroll withholding tax exemption. The exemption is assigned to qualifying research programs. • Specific advantageous regime for qualifying SMEs that qualify as young innovative companies • Regional R&D grants available, which are exempt from corporate income tax • Notional interest deduction for equity funded R&D activities <p>(*)Rate for financial years ending between 31 December 2014 and 30 December 2015 (included)</p>
Brazil	No	No	<ul style="list-style-type: none"> • 50% reduction on the IPI (Federal VAT) levied on acquired R&D machinery and equipment (domestic or imported) • Accelerated depreciation for new R&D machinery and equipment acquired (Income Taxes purposes) • Accelerated amortisation for the acquisition cost of intangibles related to R&D activities (Income Taxes purposes) • Zero withholding tax rate on the remittances for registration and maintenance of trademarks and patents abroad

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Canada	<ol style="list-style-type: none"> 20% non-refundable federal tax credit on qualified expenditures. Reduced to 15% after 2013. Certain Canadian controlled private corporations are eligible for the 35% refundable credit on the first \$3 million of qualified expenditures; and Provincial tax credits, ranging from 4.5% to 37.5%, certain of which are refundable 	Credit on volume	Yes, however only to the extent of 10% of salaries of Canadian residents performing the R&D	Yes
People's Republic of China	<ul style="list-style-type: none"> 150% "super deduction" 15% reduced Corporate Income Tax ("CIT") rate for High and New Technology Enterprise ("HNTE") (Standard CIT rate is 25%) Zero-rated VAT/VAT exemption for export of R&D services Value-added Tax ("VAT") exemption on certain technology related offshore outsourcing services 15% reduced CIT rate for Technology Advanced Service Enterprise ("TASE") in pilot cities CIT exemption/reduction on technology transfer income VAT exemption on income arising from technology transfer, technology development and associated consulting/services Duty/VAT/Consumption Tax free importation of certain R&D equipment imported by qualified foreign-invested R&D center VAT refund for purchasing certain R&D equipment by qualified domestic and foreign-invested R&D centers 	Deduction on volume	Yes	<ul style="list-style-type: none"> Super deduction: China tax regulation is silent on this point. Companies as consignee carrying out cross boarder contract R&D activities may usually not allowed super deduction. HNTE: Chinese entity should have proprietary IP rights or minimum 5 years worldwide exclusive license of the respective core technology of its main products/services. TASE: No IP ownership requirements
Czech Republic	200/210% super deduction	200% super deduction on volume, 210% super deduction on increment	Yes, provided it is performed by the party claiming the deduction and not a third party	Yes

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Canada	<ul style="list-style-type: none"> Federal credits are refundable for certain Canadian controlled private corporations. Certain of the provincial credits are refundable. 	Unused non-refundable federal and provincial tax credits may be carried forward 20 years or carried back 3 years	<ul style="list-style-type: none"> 65% uplift on eligible salary based expenditures. Uplift reduced to 60% for 2013, and to 55% after 2013 Certain federal and provincial direct funding programs may be available for R&D activities R&D capital expenditures attract 100% tax depreciation in the year available for use. Repealed for years after 2013
People's Republic of China	No	China does not have R&D credits, but tax loss which may be generated from R&D expense super deduction can be carried forward for 5 years.	<ul style="list-style-type: none"> R&D centers may import self-used equipment, related technologies, accessories, and spare parts exempt from import duties Also provides indirect tax incentives for R&D, namely VAT zero-rate / exemption for export of R&D services under the Business Tax to VAT Pilot Program. There may be various local financial subsidies granted by local governments to support R&D activities upon approval.
Czech Republic	No	Non-utilised allowance may be carried forward 3 years	Investment incentives available for setting up/expansion of: (i) production facilities, (ii) technological centres (the R&D allowance cannot be used for projects that are supporter by another form of public support). There are also various grants for R&D or innovation.

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Denmark	<p>1. Danish tax law allows for an immediate write-off of capital expenditures for R&D. Alternatively, the taxpayer may choose to take tax depreciation in the same year and the following four years on a straight-line basis.</p> <p>2. Companies have been granted the opportunity to apply to the Danish tax authorities for a payment equal to the tax value of negative taxable income relating to R&D costs up to DKK 25 million.</p> <p>Tax payments according to this rule cannot exceed an amount of DKK 5.875 million (the tax value of DKK 25 million at tax rate of 23.5 %) in 2015.</p> <p>In 2016 the tax rate is lowered to 22 % implying that the tax payment cannot exceed an amount of DKK 5.5 million.</p> <p>For companies subject to tax consolidation, the limit of DKK 25 million applies for the tax consolidation group in total.</p> <p>3. Costs related to purchase of patents and know-how (including rights/licenses to utilize patents or know-how) may either be fully expensed in the year of acquisition or amortized over a seven-year period.</p>	Volume based	Yes	Yes, if the Danish company receives part of the economic benefit generated by the IP.
France	<ul style="list-style-type: none"> • 30% rate up to €100m eligible expenses • 50% rate up to €100m eligible expenses for overseas territory. • 5% credit in excess of €100m eligible expenses • Scope of the R&D tax credit has been extended to some innovation expenditures such as prototypes, design and pilot plants for new products incurred by small and medium-size enterprises. For said expenses, the credit rate is 20%, and applies to a maximum of €400,000 of innovation expenses (i.e. assessment basis) • French Tax Authorities (FTA) have published new guideline on subcontracting expenses and public subsidies that have toughened the regime 	Credit on volume	Yes, if performed in EC countries, Norway and Iceland, subject to conditions	Yes

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Denmark	Yes, see “tax incentive/relief “ item 2 concerning tax credits.	<p>Tax losses may be carried forward indefinitely.</p> <p>Denmark applies a minimum taxation rule such that tax losses carried forward can reduce taxable income exceeding DKK 7.7475 million with 60% only. Taxable income up to a threshold of DKK 7.7475 million can be off set in full by tax losses carried forward. Unused tax losses may be utilized in later income years.</p>	<ul style="list-style-type: none"> • Foreign researchers hired by a Danish company may benefit from a significantly reduced income tax rate for 5 years. • Grant funding available
France	Yes	<p>Excess credits may be carried forward 3 years</p> <p>Any unused tax credit is refundable at the end of this three year period. As an exception, excess credits are immediately refundable to certain qualifying companies.</p>	<p>The R&D tax credit tax ruling process has been adjusted as from 1st January 2013: a tax ruling could be requested from the French tax authorities to confirm the eligibility of the R&D projects launched during a given year. The tax ruling request in this respect shall be filed no later than six months before the R&D tax credit filing deadline (i.e. by mid-November 2015 for R&D expenses incurred in 2015).</p>

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Germany	No	No	No	The law does not explicitly require that the IP which results from the overall R&D activities should remain in Germany but specific limitations could be included in the grant agreement. The impact on R&D grants should be analysed on a case-by-case basis.
Hungary	<ul style="list-style-type: none"> • 200% “super deduction” • 10-year tax allowance for certain investments made for research projects with present value of at least HUF 100 million (approx. EUR 350,000) available up to 80% of the calculated corporate income tax liability 	Deduction on volume	Yes. Contracted R&D activities as well as mutual R&D activities performed based on R&D agreement are also possible.	Yes
India	<ul style="list-style-type: none"> • 200% “super deduction” - Weighted deduction for capital and revenue expenditure (other than cost of land or building) for approved “in-house” R&D expenditure for units recognised by the Department of Scientific and Industrial Research (DSIR) * • no deduction available for expenditure incurred after 31 March 2017 • 100% deduction – Revenue and capital expenditure (other than cost of land) on scientific research activity 	Subject to the satisfaction of certain specific conditions, the weighted deduction can be claimed based on amount of R&D spend in a given year	This position has not been tested so far by the India tax authorities	Yes, subject to ownership remaining with the Indian Company who has undertaken such R&D. Further, foreign patent filing expenditure is not allowed as a weighted deduction.

* In the case of Electronics Corporation of India Ltd. it was held by the Tribunal (appellate authority) that the quantum of weighted deduction certified by DSIR is not amenable to questioning by the tax/appellate authorities. The said deduction cannot be tampered by the tax/appellate authorities.

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Germany	No	No	<p>R&D projects can count on numerous forms of financial support. There are many programs allocating R&D grants, interest-reduced loans, and special partnership programs. Financing is provided by the European Union (EU), the German government, and the individual German states.</p> <p>Funding ranges from 25% to 50% of eligible costs for industrial research projects . Specific limitations are defined in the relevant call for projects.</p>
Hungary	No	Yes. If R&D costs are capitalized as intangible assets, the amortization on these assets is deductible during the amortization period.	<p>State and EU sponsored grants for R&D purposes are also available.</p> <p>Direct own R&D costs can also be deducted from the from the base of the Hungarian local business tax (tax rate is maximum 2% of the net sales revenue, decreased by the material costs, direct costs of R&D, costs of subcontractors' work, and certain part of costs of goods sold and costs of mediated services) and innovation contribution (tax rate is 0.3% of the base of the local business tax).</p> <p>The Hungarian government established the Hungarian Intellectual Property Office ("HIPO"). This organization is authorized to issue binding rulings in order to identify whether future R&D project of Hungarian companies qualifies as R&D projects. The HIPO acts as an advisor in assistance with the Tax Authority regarding retrospective R&D project as well.</p>
India	No	No carry forward is permissible although a tax loss generated out of such tax allowance is permissible.	<ul style="list-style-type: none"> • 125% deduction - Any sum paid to specified / approved research institutions and companies recognised by the prescribed authority for this purpose. • 175% deduction - Any sum paid to specified/approved research association which has the object of undertaking scientific research or to a specified/approved university/ college/ other institution to be used for scientific research • 200% deduction - Any sum paid to National Laboratory / Indian institute of Technology (IIT)/ University/ specified person with a specific direction to use it for scientific research undertaken under the programme approved by the head of National Laboratory/ IIT/University • Additionally, certain indirect tax benefits in are available on certain goods and services, subject to conditions

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Ireland	25% credit	<ol style="list-style-type: none"> 1. First €300,00 on volume basis 2. Credit on incremental spending and 3. Credit, effectively on volume basis, for new taxpayers 4. For accounting periods commencing from 1 January 2015, the credit will be on a volume basis for all claimants 	Yes, if <ol style="list-style-type: none"> 1. Performed in the European Economic Area and 2. No tax deduction is available in the other country 	Yes
Israel	R&D expenses shall be deducted in the tax year incurred when such expense has been approved as an R&D expense by the relevant government department . The approval in regard to industrial related projects is generally granted by the Office of the Chief Scientist ("OCS"). When such OCS approval is not obtained, the expense shall be deducted over three tax years.	Based on volume of investment in qualifying R&D assets.	Yes, part of the R&D can be contracted out to parties located outside of Israel, subject to OCS approval.	Yes . However, eligibility for the tax deduction may vary.
Italy	Tax credit* equal to: <ul style="list-style-type: none"> • 25% of the incremental expenses related to machinery and laboratory equipment used for the R&D; • 50% of the incremental expenses related to R&D qualified employees and external qualified R&D contracts. The credit cannot exceed € 5.000.000 per year. Minimum R&D expense amount must be equal to € 30.000.	Based on incremental R&D investments respect to the average of the R&D expenses sustained in FYs 2012, 2013, 2014. The incentive is in force up to FY 2019.	Not specifically stated in the law provision introducing the R&D incentives, however it cannot be excluded the Ministerial Decree, that is supposed to be issued, will clarify this point.	Not specifically stated in the law provision introducing the R&D incentives, however it cannot be excluded the Ministerial Decree, that is supposed to be issued, will clarify this point.
Japan	<ol style="list-style-type: none"> 1. Maximum credit of 25% of total tax liability (plus 5% of special R&D cost based credit, i.e., joint R&D with or contracted R&D by university or public research institution, etc.) for a fiscal year beginning from April 1, 2015. 2. Additional and temporal 10% credit. 	<ol style="list-style-type: none"> 1. Credit on volume 2. Temporal credit on incremental spending until the fiscal year beginning before 1 April 2017 	Yes	Generally speaking, while not explicitly provided in the rules, it appears that the IP needs to stay within the Japanese "tax net". It is possible that this may include, however, IP held in a foreign branch of a Japanese company since earnings from a foreign branch are taxable in Japan.

* The R&D tax credit entered into force on 1st January 2015, although it is still necessary to wait the Regulations, to be provided in a short while by a Ministerial Decree, to understand exactly how the provisions will apply.

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Ireland	Yes	Excess credits may be refunded or carried forward indefinitely	<p>Various government grant incentives for establishing or expanding R&D activities in Ireland, e.g., capital, employment, training, feasibility, pilot projects, etc.</p> <p>For accounting periods commencing from 1 January 2012, companies who are in receipt of an R&D tax credit will now in certain instances have the option to reward key employees.</p>
Israel	No	Tax loss generated from R&D deductions can be carried forward indefinitely.	Where R&D costs are borne by a taxpayer that is not the owner of an enterprise in the abovementioned fields or the taxpayer participates in R&D costs of another developer in consideration for a reasonable return, when such R&D projects also enjoy government grants, the R&D expenses incurred shall generally be deducted over two tax years. The deductible expenses allowed to a participant in R&D costs of another developer generally may not exceed 40% of the taxable income of the investor in the year in which the expenses were incurred.
Italy	The credit is non-refundable, it can be used to offset tax debts without any limitation.	Not specifically stated in the law provision introducing the R&D incentives, therefore is reasonable that the R&D tax credit may be carried forward indefinitely.	<p>Accounting documentation must be certified by an auditor.</p> <p>R&D tax credit incentives can be added to Patent Box Regime.</p>
Japan	No	Certain excess credits may be carried forward 1 year. (Note) Due to the 2015 Tax Reform, carry-forward is no longer applicable.	<p>Government bodies provide various grants for R&D activities.</p> <p>Special Measures for the Promotion of R&D by Certified Multinational Enterprises.</p>

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Kazakhstan	<ul style="list-style-type: none"> Expenses related to creation of industrial property units (inventions, utility models and industrial designs) are eligible for an additional tax deduction of 50% (an effective deduction of 150%). This incentive is applicable if all the following conditions are met: <ol style="list-style-type: none"> patent issued by the competent authorities is available; R&D expenses are confirmed by relevant State authority; result of R&D expenses implemented in Kazakhstan (should be supported by the conclusion of authorized State body). CIT exemption for companies engaged in R&D (if 90% of revenue is generated from R&D activities), provided certain criteria are met. VAT exemption for R&D turnover related to implementation of a state order. 	<ul style="list-style-type: none"> Volume based 	No	No
Korea	<ol style="list-style-type: none"> Tax credit to the extent of either (i) 2% to 3% (25% for Small & Medium Enterprises; SMEs, 8% for Medium-scale Companies; MSCs, 15% or 10% for the intermediate stage from SMEs to MSCs) of the current R&D expenses or (ii) 40% (50% for SMEs) of the incremental portion of the current R&D expenses over the amount of last year. R&D tax credit for core technologies as authorised by government ministries as well as pre designated strategic growth industries: 20% (30% for SMEs) of the current expenditures. 	<p>Credit on either incremental or volume.</p> <p>However, the incremental method cannot be used in case of either (i) no R&D expense has been incurred during the previous four years or (ii) the R&D expenses of last year are less than the average of the previous four years.</p>	Yes (R&D should be performed by dedicated R&D department or R&D center)	Yes, subject to ownership remaining with the Korean company
Latvia	300% super -deduction is applied for qualifying R&D costs (with the exception of depreciation and amortisation charges) - e.g., taxpayers can claim a corporate income tax (CIT) deduction for their R&D expenses multiplied by a coefficient of 3.	Volume based	Yes, if R&D services are received from the scientific institution which is a resident of the EU or EEA country that has concluded the double tax treaty with Latvia.	Tax payer will lose possibility to use increased deduction, if it transfers (sells) IP ownership rights during at least 3 calendar years after calendar year when last expenses related to the IP has been included. No requirements for IP registration country has been introduced.

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Kazakhstan	No	Carry forward of losses from R&D activities is available for 10 years as part of general tax losses carry forward.	<ul style="list-style-type: none"> • Preferential tax treatment is available for companies registered in the special economic zone “Park of innovative technologies” (SEZ “PIT”). • The following tax benefits are available: <ul style="list-style-type: none"> • 100% reduction of corporate income tax; • Exemption from Property tax, Land tax, levy on land plots usage. • To enjoy these benefits 70% of gross annual income must be generated from R&D activities.
Korea	No	Excess credits can be carried forward 5 years.	<ol style="list-style-type: none"> 1. Investment tax credit on facilities for the purpose of R&D and job training up to 3% to 10% such investment. These rates are differentiated by the company size. In other words, a 3% tax credit would apply to large companies while 5% and 10% would apply to MSCs and SMEs respectively.
Latvia	No	<p>R&D costs are deductible in the tax period they are incurred regardless of whether a taxable profit or loss is reported for the period.</p> <p>Any tax loss arising after the deduction of R&D costs can be carried forward indefinitely.</p> <p>If the R&D costs are capitalised they are deductible according the period used for depreciation for financial purposes</p>	<ol style="list-style-type: none"> 1. Prior to starting a new R&D project taxpayer should perform certain activities - e.g. define the objectives of the project. describe the scientific or technological uncertainty, which is expected to be resolved as well as the expected innovation etc. Further description of these activities must be added to project documentation, which will be reviewed by State commission to apply the tax incentive. 2. If R&D projects were subsidized by the State or EU grants, tax incentive may not be applied.

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Lithuania	Qualifying R&D costs (except for depreciation or amortisation costs of fixed assets) may be deducted three times from income during the tax period when they are incurred, i.e. 300% deduction is applied.	Volume based	Yes, if R&D works are performed in a country of the European Economic Area or in a country which has concluded a double taxation treaty with Lithuania.	No requirements for the resulting IP to reside in Lithuania are established.
Malta	R&D expenditure qualifies as a tax deductible expense and spread equally over a six year period. An option to deduct 150% of the actual amount incurred for such R&D expenses exists (with limitations). Additionally, R&D schemes exist, subject to approval, that provide tax credits on specific expenditures, part-financing and refunds of expenditure paid by a qualifying entity.	Deduction on volume	Yes Yes (with limitations)	Yes (but rules may vary)
Mexico	No	No	80% of the R&D activities must be performed in Mexico.	The IP resulting must be registered with the Mexican IP Authorities, even if it could be registered abroad.

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Lithuania	No	All R&D costs can be deducted during the tax period when they are incurred despite whether a company has calculated taxable profits or losses during a respective period. Tax losses calculated after R&D investment deduction can be carried forward indefinitely.	<ul style="list-style-type: none"> R&D documentation containing a description of R&D works (objectives, implementation process, results and other related information) is required in order to apply the tax incentive. Tax incentive is not applied for R&D works which were subsidized by the State grants. Reduced depreciation/amortization rates can be applied for fixed assets solely used in R&D activities.
Malta	Yes (with conditions)	Excess income tax deductions can be carried forward indefinitely.	Grants are available depending on the specific scheme
Mexico	No	No	<p>The Mexican Government provides complementary financial support for the R&D projects developed in Mexico on annual basis to promote competitiveness and innovation. The funds usually grant a percentage of the investment spent mainly in the following concepts: training, acquisition of specialized equipment, human resources, specialized consulting fees (foreign and local), IP protection strategy, trials, pilot and prototype expenses.</p> <p>The National Council of Science and Technology (CONACyT) is the Mexican authority in charge of granting funds with reference to R&D activities, however, there are other funding options according to State or Sector.</p> <p>One important aspect to consider, is that once a project is favoured by one Fund, it cannot receive any further support from the Mexican Government, for the same phase/stage/activities.</p>

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Netherlands	<ul style="list-style-type: none"> • “Super deduction” of 160% for qualifying R&D investments and expenses (other than wage costs) • R&D credit for qualifying wage. cost: 35% of the first Euro 250k and 14% on the excess amount (known as WBSO). • Corporate tax deduction for IP development costs at once. 	Volume based	In part, for the Innovation Box. For the WBSO the activities should take place inside the EU territory	Yes for WBSO
Poland	Tax relief for new technologies – 9,5% of expenditures may be deducted from taxable income	Volume	No	N/A
Portugal	SIFIDE Tax Credit = $0,325D_n + 0,5[D_n - (D_{n-1} + D_{n-2})/2]$ Where D stands for the amount of R&D expenses incurred each year, net of non-reimbursable financial Government contributions.	Combination of volume and incremental based	Yes, but R&D expenses need to be in the local company’s books to qualify	Yes
Romania	50% additional deduction of the eligible expenses from research and development activities that lead to results which can be capitalised by the tax payer to its own use . The eligible research and development activity must be applicative research and / or technological development, relevant to the taxpayer’s activity .	Deduction on volume. The deduction is granted separately for each research and development project.	Yes, the R&D may be performed also outside the country in one of the EU Member States or the EEA Member States.	No

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Netherlands	No	No	Several grants are available for R&D, mostly through a sectoral approach (e.g., ICT, Life Science, Chemistry) and provide up to 50% cash grants for eligible cost
Poland	No	Yes. Tax relief may be utilized within 3 years	<ul style="list-style-type: none"> grants for R&D projects aimed at developing new products and technologies cash grants for R&D works and commercialization of innovative environmentally-friendly technologies, allowing also for financing the investment stage of a project opportunity to benefit from cash grants dedicated to industrial research and development works conducted within the particular sectors (separate schemes available for aviation sector, medicines, coal energy and shale gas extraction in Poland) co-financing of costs incurred by submittal of a patent application possibility to obtain governmental cash grants for creation of R&D centers cash grants for the science and industry sector within the scope of applied research in various scientific fields
Portugal	No	Possibility to carry forward the tax credit for 8 years (6 years until 2013).	There's a financial grant program available (cumulative with R&D tax credits)
Romania	No	Yes, as part of tax losses . Tax losses may be carried forward for 7 years	<p>Support is provided for the development of the research capacities in enterprises. The procurement of instruments, equipment, computers, software, etc necessary for R&D activity is financed.</p> <p>Personal income tax exemption applies for qualified IT personnel involved in software development activities.</p> <p>A new Government Decision is in force, providing a state aid scheme for the period 2012-2013. This scheme is aimed at supporting R&D investments and hence employment in the R&D sector.</p> <p>The maximum aid is 50% of eligible costs = salary costs (gross wages plus mandatory social security contributions) for the new jobs created through the investment.</p> <p>These costs are calculated over a period of 2 consecutive years. However, the maximum amount of aid which may be granted is limited to €28.125 million.</p> <p>The main requirement for the eligible companies is to maintain the created jobs for a period of at least 5 years from the moment of receiving the first state aid payment.</p>

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
Russia	<ul style="list-style-type: none"> Expenses related to R&D activities in certain areas included into Government-approved list are eligible for tax deduction with a coefficient of 1.5; Investment tax credit /deferral on profits tax, regional and local tax payments (with interest accrued and due upon repayment of tax) is available for companies performing R&D activities; Accelerated depreciation rate for certain assets; Possibility to set up a deductible provision for future R&D expenses; Possibility of immediate tax write-off for computer hardware for certain companies; Preferential rates on social contributions for IT companies; 	Volume-based	Yes	Yes
Singapore	<ul style="list-style-type: none"> 150% super deduction on qualifying R&D expenditure (including staff costs, vendor costs, and consumables) 200% super deduction requiring Minister approval on qualifying R&D expenditure (including staff costs, vendor costs, and consumables) Productivity and Innovation Credit - PIC (Year of Assessment [YA] 2011 to YA 2018): Deductions/Allowances of 400% (instead of 150%) on up to S\$400,000 of total qualifying expenditure per year across six qualifying activities, including R&D. With effect from YA 2012, the scope of R&D activities under PIC is expanded to include R&D cost sharing agreements. PIC+ scheme for qualifying small & medium size enterprises introduced with effect from YAs 2015 to 2018. The expenditure cap under the PIC+ scheme will be S\$600,000 for each of the 6 qualifying activity per YA. 	<ul style="list-style-type: none"> Deduction on volume excluding amounts claimed under PIC Deduction on volume excluding amounts claimed under PIC PIC on R&D up to S\$400,000 PIC+ on R&D up to S\$600,000 	<p>No</p> <p>No</p> <p>Yes, under PIC program from YA11 to YA18, up to S\$400,000 p.a. may be incurred on overseas R&D (subject to satisfaction of the condition that the overseas R&D activities are related to the taxpayer's trade or business).</p> <p>Yes, under PIC+ program from YAs 2015 to 2018, up to S\$600,000 p.a. may be incurred on overseas R&D (subject to satisfaction of the condition that the overseas R&D activities are related to the taxpayer's trade or business).</p>	<p>Yes, so long as the IP can be exploited by the local company. IP ownership can be either legal or economic in nature, and formal registration, whilst not required, may reside outside Singapore.</p> <p>See above.</p> <p>See above.</p> <p>See above.</p>
Slovak Republic	<ol style="list-style-type: none"> Cash subsidies for R&D projects from the state budget Income tax relief – at the amount incurred on R&D within the project for which incentives were approved 	Incremental	Yes, law does not exclude such possibility. However the practice has been that until now only Slovak entities with R&D performed in Slovakia applied for the aid.	Yes Subject to ownership of core IP rights remaining with the Slovak entity, which was undertaking R&D activities.

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
Russia	No	Carry forward of losses from R&D activities is available for 10 years as part of general tax losses carry forward.	<p>Beneficial tax treatment is available for companies registered as tax residents of Skolkovo Innovation Center or Special Economic Zones organized in Russian regions.</p> <p>Skolkovo residents are eligible for the following tax benefits:</p> <ul style="list-style-type: none"> • Exemption from the CIT, VAT, Property tax for a limited period of time; • Reduced rates of mandatory social contributions and some other tax incentives. <p>Tax residents of the Special Economic Zones are eligible for the following tax concessions:</p> <ul style="list-style-type: none"> • reduced CIT rate (0-18 % instead of 20%); • exemption from property tax; • reduced rates for social contributions; • other tax incentives. <p>The above tax concessions can differ depending on the region of the Special Economic Zone and peculiarities of the local tax legislation.</p> <p>Tax benefits for R&D activity are also available as part of Rosnano grant programs.</p>
Singapore	<ul style="list-style-type: none"> • PIC - For YA11 to YA12, can cash out up to 30% of the first \$100,000 of expenditure on qualifying activities. For YA13 to YA18, can cash out 60% of first \$100,000 of expenditure on qualifying activities. • PIC+ - For YA2015 to YA2018, can cash out up to 60% of first \$100,000 of expenditure on qualifying activities. 	Yes	Yes, multiple grants available for multiple fields, including innovation, product development, and IP management
Slovak Republic	No	No	Other grants for R&D are accessible via EU funds.

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
South Africa	<p>Super charged deduction of 150%;</p> <ul style="list-style-type: none"> • 100% of qualifying R&D expenditure is claimed automatically • Further 50% of qualifying R&D expenditure is claimed upon pre-approval by the Department of Science and Technology (DST) 	Volume based	No	IP can be held outside the country
Spain	<ol style="list-style-type: none"> 1. 25% credit plus 2. 42% credit plus 3. 8% credit on certain asset acquisitions 4. 17% certain staff salaries 5. 12% credit on technological innovation. 	<ol style="list-style-type: none"> 1. credit on volume plus 2. credit on incremental increase plus 3. credit on volume for technological innovations (industrial design and production process engineering) 4. credit on volume for technological Innovations 	Yes, but must be related to activities carried out in Spain, any Member State of the EU or Iceland, Liechtenstein or Norway.	Yes
Turkey	<p>R&D Law No.5746: All eligible innovation and R&D expenditures made in R&D centres, technology centres, R&D and innovation projects supported by governmental institutions, foundations established by law or international funds.</p> <ul style="list-style-type: none"> • 100% R&D deduction over the eligible innovation and R&D expenditures. The same expenditures can also be capitalised and expensed through amortisation over five years. • Companies with separate R&D centres employing more than 500 R&D personnel can – in addition to the above deduction – deduct half of any increase in R&D expenditures over R&D expenditures in the previous period. • 80% (90% for personnel with a PhD degree) of the salary income of eligible R&D and support personnel is exempt from income tax. • Half of the employer portion of social security premiums for R&D and support personnel are funded by the Ministry of Finance. • Documents prepared in relation to R&D activities are exempt from stamp duty. <p>Technology Development Zones Law No.4691:</p> <ul style="list-style-type: none"> • Profit derived from the software development activities or research and development activities in techno parks is exempt from corporate income tax until 31 December 2023. • The salaries of R&D and support personnel working in techno parks are exempt from income tax. • Half of the employer portion of social security premiums for R&D and support personnel are funded by the Ministry of Finance. • Deliveries of certain types of software (system management, data management, business application, sector-specific, internet, mobile and military command control application software) produced by the companies operating in techno parks are exempt from 18% VAT. 	Incremental	No	Yes

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
South Africa	No	If the company is in a tax loss position the benefit may be carried forward until it is utilised	No
Spain	Yes. It is possible under certain circumstances, to ask for a cash-refund for the amount of unused R&D tax credits up to €3 million.	Excess credits may be carried forward 18 years	Autonomous regions provide additional business incentives; tangible and intangible fixed assets, excluding buildings, used for R&D activities may be freely depreciated
Turkey	No	Any unutilized R&D deduction can be carried forward without any time limitation, indexed to the revaluation rate which is an approximation of inflation rate.	<ul style="list-style-type: none"> • Grants funding by several governmental institutions for eligible R&D projects • Other grants for R&D are accessible via EU funds • Corporate income tax exemption • R&D deduction • Income tax exemption • Social security premium support • Stamp tax exemption • VAT exemption (only for delivery of software and services)

Global R&D credits and incentives by country (May 2015)

Country	Tax incentive/relief	Incremental or volume based?	May the R&D be performed outside the country?	May the resulting IP reside outside the country?
United Kingdom	<p>"Super deduction" :</p> <p>Large Companies</p> <ul style="list-style-type: none"> from 1 April 2013 option to claim the 10% Research & Development expenditure credit (RDEC) instead of 130% super deduction. from April 2016 RDEC will be mandatory. the RDEC is payable to loss-making companies. <p>Small and medium Enterprises(SMEs):</p> <ul style="list-style-type: none"> 175% pre 1 April 2011 200% from 1 April 2011 to 31 March 2012 225% from 1 April 2012 	Deduction on volume	Yes	Yes
United States	<p>20% Credit (regular method)</p> <p>14% Credit (Alt. Simplified Credit)</p>	<p>Credit on incremental spending, with limitations</p> <p>Credit on incremental spending, without Limitations</p>	<p>No</p> <p>No</p>	<p>Yes, provided the research is funded by the foreign related party</p>

Global R&D credits and incentives by country (May 2015)

Country	Refundable option	Carry forward	Grants/other
United Kingdom	<p>Large companies – A cash credit is available from 1 April 2013 under the new 10% R&D expenditure credit. There is no ability to receive a cash credit under the super-deduction regime which is still available instead of the new credit until 2016.</p> <p>SMEs – ability to surrender losses for cash back – assuming sufficient losses, effective cashback is 24.75% (cashback rate of 11% on a super deduction of 225%). For expenditure incurred from 1 April 2014, the effective cashback has increased to 32.625% (cashback rate of 14.5% on a super deduction of 225%).</p>	<p>Extra deduction reduces taxable profits. If a loss results this can be carried forward indefinitely, offset current profits (including other UK group companies) and offset prior year profits.</p> <p>Large company RDEC - loss making companies - it is possible to carry forward any withheld tax and excess credit due to restrictions.</p>	<p>Expenditure on assets used for R&D attracts 100% tax depreciation in the year of acquisition. Regional grants are available.</p>
United States	No	Excess credits may be carried back 1 year and forward 20	States provide R&D credit in addition to various business incentives. In addition to the credit, R&D expenditures are deductible in determining taxable income.

PwC Global R&D Incentives Group

Country	Contact	E-mail	Telephone
Armenia	Robin McCone*	robin.mccone@ge.pwc.com	+1 (995) 32 250 8050
Australia	Charmaine Chalmers Tim Donald	Charmaine.chalmers@au.pwc.com tim.donald@au.pwc.com	+ 61 (7) 3257 8896 + 61 (2) 8266 5436
Austria	Rudolf Krickl Daniela Stastny	rudolf.krickl@at.pwc.com daniela.stastny@at.pwc.com	+43 1 501 88 3420 +43 1 501 88 3430
Azerbaijan	Arif Guliyev	arif.guliyev@az.pwc.com	+994 (50) 322 79 49
Belgium	Axel Smits Tom Wallyn Kris Smits	axel.smits@be.pwc.com tom.wallyn@be.pwc.com kris.smits@be.pwc.com	+ 32 (3) 2593120 + 32 (9) 2688021 + 32 (3) 2593109
Brazil	Nelio Weiss	nelio.weiss@br.pwc.com	+ 55 (11) 3674 2000
Canada	Shawn Reain	shawn.d.reain@ca.pwc.com	+1 (403) 509 6373
China	Roger Di	roger.di@cn.pwc.com	+ 86 (10) 6533 2268
Czech Republic	David Borkovec	david.borkovec@cz.pwc.com	+ 42 (02) 5115 2561
Denmark	Søren Jesper Hansen Lene Munk Rasmussen	soren.jesper.hansen@dk.pwc.com lene.munk.rasmussen@dk.pwc.com	+ 45 3945 3320 + 45 3945 9498
France	Rémi Montredon Guillaume Glon	remi.montredon@fr.landwellglobal.com g.glon@us.pwc.com	+ 33 (1) 5657 4154 + 1 (646) 471 8240
Georgia	Robin McCone*	robin.mccone@ge.pwc.com	+1 (995) 32 250 8050
Germany	Thomas Quente Frank Poppe	thomas.quent@de.pwc.com frank.poppe@de.pwc.com	+ 49 (30) 2636 5297 + 49 (30) 2636 4124
Hungary	Paul Grocott Norbert Izer	paul.grocott@hu.pwc.com norbert.izer@hu.pwc.com	+ 36 (1) 461 9260 + 36 (1) 4619433
India	Rahul Garg Indraneel R Chaudhury	rahul.garg@in.pwc.com indraneel.r.chaudhury@in.pwc.com	+ 91 (11) 2321 0543 + 91 (80) 4079 6001
Ireland	Stephen Merriman Aidan Lucey	stephen.merriman@ie.pwc.com aidan.lucey@ie.pwc.com	+ 353 (1) 792 6505 + 353 (1) 792 6792
Israel	Doron Sadan	doron.sadan@il.pwc.com	+ 972 (3) 7954584
Italy	Franco Boga Giuseppe Pigoli Federica Boleso	franco.boga@it.pwc.com giuseppe.pigoli@it.pwc.com federica.boleso@it.pwc.com	+ 39 0291605400 + 39 0291605402 + 39 02 91605412
Japan	Jack Bird Kazuhiro Mukaida Shougo Tsuruta	jack.bird@jp.pwc.com kazuhiro.mukaida@jp.pwc.com shougo.tsuruta@jp.pwc.com	+ 81 (03) 5251 2577 + 81 (03) 5251 2489 + 81 (03) 5251 2464
Kazakhstan	Mike Ahern	michael.ahern@kz.pwc.com	+7 (727) 330 3200 ext 4024
Kenya	Gilles de Vignemont	gilles.j.de.vignemont@us.pwc.com	+ 1 (646) 471 1301
Korea	Dong-Keon Lee Baek-Young Seo	dong-keon.lee@kr.pwc.com baek-young.seo@kr.pwc.com	+ 82 (2) 709 0561 + 82 (2) 709 0905
Latvia	Vita Sakne Agate Ziverte	vita.sakne@lv.pwc.com agate.ziverte@lv.pwc.com	+371 6 709 4400 +371 6 709 4400
Liechtenstein Lithuania	Marco Felder Kristina Krisciunaite Egidijus Kundelis	marco.felder@ch.pwc.com kristina.krisciunaite@lt.pwc.com egidijus.kundelis@lt.pwc.com	+41 58 792 44 18 + 370 (52) 39 2 365 + 370 (52) 39 2 357

*Eurasia R&D leader

PwC Global R&D Incentives Group

Country	Contact	E-mail	Telephone
Malta	Kevin Valenzia	kevin.valenzia@mt.pwc.com	+ 356 2564 6601
	Neville Gatt	neville.gatt@mt.pwc.com	+ 356 2564 6711
	Edward Attard	edward.attard@mt.pwc.com	+356 2564 6750
Mexico	Luis Lozano	luis.lozano@mx.pwc.com	+ 52 (55) 5263 8648
	Mario Alberto Rocha	mario.alberto.rocha@mx.pwc.com	+ 52 (55) 5263 8602
	Jesus Morquecho	jesus.morquecho@mx.pwc.com	+ 52 (55) 5263 6643
	Wendolin Sanchez	wendolin.sanchez@mx.pwc.com	+ 52 (55) 5263 8578
Mongolia	Tsendmaa Choijamts	tsendmaa.choijamts@mn.pwc.com	+976 (11) 329088 ext 2016
Netherlands	Richard Hiemstra	richard.hiemstra@nl.pwc.com	+ 31 (88) 792 7618
	Auke Lamers	auke.lamers@nl.pwc.com	+ 31 (88) 792 4542
	Roger Quaedvlieg	roger.quaedvlieg@nl.pwc.com	+ 31 (88) 792 3235
Poland	Andrzej Jarosz	andrzej.jarosz@pl.pwc.com	+ 48 (61) 8505151
Portugal	Pedro Deus	pedro.deus@pt.pwc.com	+ 351 (225) 433 131
Romania	Mihaela Craciun*	mihaela.x.craciun@us.pwc.com	+1 (646) 471 0428
	Andreea Mitirita	andreea.mitirita@ro.pwc.com	+40 (21) 225 3727
Russia	Natalia Kuznetsova	natalia.kuznetsova@ru.pwc.com	+7 (495) 967-6271
	Vasily Golovanov	vasily.golovanov@ru.pwc.com	+7 (495) 223-5174
Singapore	Ching Ne Tan	ching.ne.tan@sg.pwc.com	+ 65 6236 3608
Slovak Republic	Christiana Serugova	christiana.serugova@sk.pwc.com	+ 421 (2) 59 350 614
South Africa	Gert Meiring	gert.meiring@za.pwc.com	+ 27 (11) 797 4351
	Lizette Abbott	lizette.abbott@za.pwc.com	+ 27 (11) 797 5819
Spain	José Elías Tomé Gómez	jelias.tome@es.pwc.com	+ 34 (915) 684 292
Sweden	Jorgen Haglund	jorgen.haglund@se.pwc.com	+ 46 (10) 2133151
Switzerland	Stefan Schmid	stefan.schmid@ch.pwc.com	+ 41 (58) 792 4482
Taiwan	Shuo-Yen Lin	shuo-yen.lin@tw.pwc.com	+ 886 (2) 27296666 ext 3679
Turkey	Kadir Bas	kadir.bas@tr.pwc.com	+ 90 (212) 326 6526
	Ozlem Elver Karacetin	ozlem.elver@tr.pwc.com	+ 90 (212) 326 6456
Turkmenistan	Jamshid Juraev	jamshid.juraev@uz.pwc.com	+ 998 (71) 120 61 01
United Kingdom	Diarmuid MacDougall**	diarmuid.j.macdougall@uk.pwc.com	+ 44 (1895) 52 2112
	Rachel Moore	rachel.moore@uk.pwc.com	+ 44 (1223) 55 2276
	Chrissie Freear	christalle.r.freear@uk.pwc.com	+44 (1223) 55 2389
United States	Jeff Jones	jeffery.p.jones@us.pwc.com	+ 1 (415) 498 5340
	Tim Gogerty	timothy.c.gogerty@us.pwc.com	+ 1 (646) 471 6547
Uzbekistan	Jamshid Juraev	jamshid.juraev@uz.pwc.com	+ 998 (71) 120 61 01

*Central and Eastern Europe (CEE) R&D Leader

**Global R&D Incentives Group Leader

For more information, please contact our country specialists listed above, visit us online at www.pwc.com/gx/en/tax/international-tax-services, or contact Aoife Connolly at +353 1 792 8967 or aoife.connolly@ie.pwc.com

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ECONOMIC ANALYSIS

A History Lesson for A Future Patent Box

By Martin A. Sullivan — martysullivan@comcast.net

As Congress contemplates the possibility of enacting patent box legislation, it should review the decade of real-world experience that businesses and the IRS have had with the deduction for domestic production activities.

Businesses must incur considerable costs to comply with the complex provisions of section 199. For the IRS, it is a headache to administer, and as an incentive to promote investment and economic growth, it is poorly designed. Because the draft patent box proposal and section 199 share some critical architecture — in particular, they both provide a deduction for hard-to-measure net income from products with hard-to-define qualitative features — a patent box would generate many of the same problems.

Good Intentions

It is a wonder that Congress ever enacted the section 199 deduction for production activities. But at its inception in 2004, the deduction made a fair amount of practical and political sense. For decades the WTO had been threatening to impose sanctions if the United States did not repeal its extraterritorial income regime, a tax break for income from exports. And the WTO's patience had just about expired. On Capitol Hill the general feeling was that the revenues gained from the unavoidable repeal of the ETI regime should be used to fund a WTO-compliant tax provision that directed relief to those companies losing ETI benefits.

Bill Thomas, then-chair of the Ways and Means Committee, proposed a relaxation of various foreign tax credit and anti-deferral rules as the offsetting tax cut. A political vulnerability with the Thomas approach was that it left some large domestic exporters out of the money.

Some Democrats and a few Republicans proposed a deduction for a percentage of manufacturing income. Their approach had the political and economic advantages of spreading tax relief over a wider population of businesses than either the Thomas plan or the ETI provisions. Ultimately, supporters of the manufacturing deduction prevailed, but before its final enactment as part of the American Jobs Creation Act of 2004, Congress added a bunch of additional qualifying activities — a “curious hodgepodge,” in the words of one prac-

itioner — including mining, agriculture, construction, film production, engineering services, and the generation of electricity.

For 2005 and 2006, the section 199 deduction was equal to 3 percent of qualifying production activities income. For 2007 through 2009, the percentage was 6 percent. Fully phased in, the current percentage is 9 percent (except for the oil and gas industry, whose deduction percentage remains at 6 percent).

Looking now at section 199 with fresh eyes, there is little to recommend it. It blatantly violates the textbook policy goals of neutrality and simplicity. Why should tax benefits be targeted to manufacturing and other production activities? The statute states that income from “domestic production, growth, and extraction” qualifies. But what do these terms mean? The vagueness leads to uncertainty and controversy. Often qualification must be determined on an item-by-item basis. After the gross receipts from those items are identified, costs of goods sold, direct expenses, and indirect expenses must be allocated. Because books and records are not naturally organized this way, businesses developed new accounts, incurring compliance costs.

Parallel Tax Universe

Nobody denies the inordinate complexity of section 199. The American Jobs Creation Act of 2004 was signed into law by President George W. Bush in October of that year. By law the Joint Committee on Taxation is required to provide a complexity analysis of tax law changes affecting small businesses and individuals. The JCT's comments included in the conference report to the 2004 act apply equally to large and small businesses:

Extensive additional regulatory guidance will be necessary to effectively implement the provision. It is anticipated that the provision will result in an increase in disputes between small businesses and the IRS. Reasons for such disputes include the complexity of the provision and the inherent incentive for small businesses and other taxpayers to characterize their activities as qualified production activities. . . . Small businesses will have to perform additional analysis and make subjective determinations concerning whether their activities constitute qualified production activities. . . . It will be difficult for the Treasury Secretary to define qualified production activities administratively. . . .

Small businesses will be required to undertake complicated calculations to determine the amount of costs that are allocable to gross

income from qualified production activities. . . . In general, it is expected that the multiple calculations and analyses required by this provision will lead to intentional or inadvertent noncompliance among small businesses, as well as other taxpayers.

One year later, Treasury issued proposed regulations and a preamble that occupied 57 single-spaced pages in the *Federal Register*. In June 2006 final regulations and their preamble filled 67 pages of the *Federal Register*. In the June 2006 release, the IRS rightly put the blame on Congress for the pain and suffering imposed on those unfortunate individuals trying to comply with section 199:

Several commentators objected to the complexity of the proposed regulations, and to the financial and administrative burden that the commentators believe the regulations will impose on taxpayers (particularly on small businesses). The complexity and burden of the regulations are a function of the statutory language and framework of section 199, which are complex and contain many requirements.

One of the more lively discourses from practitioners on the complexity of section 199 is an article by Carl M. Jenks in which the author notes:

Since the statutory percentage is multiplied by a measure of income, we need fairly detailed rules about any number of things, including how we measure gross receipts, allocate costs, deal with transfer pricing distortions, cut the calculation off at water's edge (this is, after all, a "domestic" production deduction), etc. In other words, we are about to create our own little parallel domestic income tax universe. . . . My advice would be to stock up on Kleenex. ["Domestic Production Deduction: FAQs and a Few Answers," *Tax Notes*, Aug. 28, 2006, p. 751.]

Alternatives?

Could Congress have enacted a manufacturing-oriented tax break that was more economically defensible and less complicated? The answer is yes. Instead of section 199, Congress could have simply reinstated the investment tax credit for machinery and equipment that was repealed by the Tax Reform Act of 1986. The bulk of personal property that qualifies for that credit is purchased by the same companies that benefit from section 199, so the politics would seem to work. Administrative and compliance costs would be lower because it is far easier to identify and value eligible equipment than it is to trace and measure income from manufactur-

ing and production. And then there is the economic advantage of providing an incentive for new investment rather than a windfall for income from pre-effective-date investments.

Alternatively, if Congress could have tolerated the fallout from a different distribution of tax benefits (broader because all taxable C corporations would benefit, narrower because passthroughs would not benefit), it could have simply lowered the corporate tax rate across the board. Again, Jenks says it well:

It is easy to lambaste the rules as Byzantine and devoid of any coherent set of organizing principles that would help the practitioner resolve the endless questions not covered by published guidance. Perhaps the best one can hope for is that cooler heads will eventually prevail and that before too much longer we will . . . simply replace section 199 with a slightly lower corporate tax rate. Only then will the pain begin to subside.

Repealing section 199 would raise enough revenue to reduce the corporate rate by approximately 1 percentage point. In 2012 (the latest year that data are available from the IRS) corporate deductions for domestic production activities totaled \$32 billion. Corporations classified as manufacturing businesses accounted for 69 percent of the total.

Where to Draw the Line?

Like section 199, a U.S. patent box would provide tax relief to businesses that are about to lose a major tax benefit. Section 199 replaced the ETI regime. A patent box would compensate intangible-rich multinationals for the imposition of tough anti-base-erosion rules that will almost certainly be part of any international tax reform.

More important than similarities in the circumstances of their birth are the similarities in basic underlying structures of section 199 and a patent box. Both provide a deduction for a slice of income that in many cases may be difficult both to identify and to measure.

On July 29 Ways and Means Committee members Charles W. Boustany Jr., R-La, and Richard Neal, D-Mass., released a discussion draft of patent box legislation. Under the draft, most qualified deductions are determined in a multistep procedure that includes: (1) identifying qualified intangible property; (2) identifying receipts of products in which that qualified intangible property is embedded; (3) allocating costs to qualified receipts; (4) subtracting (3) from (2) to arrive at a tentative qualified profit; (5) multiplying the tentative profit by a ratio of research expense to operating expense; and then (6)

Dictionary Definitions of Boustany-Neal Qualified Intangible Property

The Boustany-Neal July 29 discussion draft defines qualified intangible property as “patents, inventions, formulas, processes, designs, patterns, and know-how.” According to the statutory language of the draft, if a product “uses” one of these items, the profits from that product would be eligible for patent box benefits. Below are partial definitions of those terms (except patents) from the Merriam-Webster online dictionary.

Invention — “something, typically a process or device, that has been invented”

Formula — “a plan or method for doing, making, or achieving something”

Process — “a series of actions that produce something or that lead to a particular result”

Design — “the process of planning how something will look, happen, be made, etc.: the process of designing something”

Pattern — “something designed or used as a model for making things”

Know-how — “knowledge of how to do something well”

multiplying this last figure by 0.71. (Prior analysis: *Tax Notes*, Aug. 17, 2015, p. 707.)

The biggest difficulty for beleaguered congressional staff trying to design a patent box is figuring out how to draw the line between qualified and non-qualified intellectual property. That line must simultaneously be politically viable, economically defensible, and reasonably administrable.

To save revenue, and perhaps to focus tax benefits on more innovative technologies, qualified IP could be limited to patents. This is the approach adopted by the United Kingdom. Because patents are government-granted licenses that are easy to identify, this approach minimizes uncertainty, controversy, and tax compliance costs. But for a variety of reasons, many innovations are not protected by patents. There is no readily apparent economic justification for granting patented technologies more favorable tax treatment than other IP (and in fact, some would argue that there is less of a reason since this property already enjoys government-favored status). In any case, this limited approach is unlikely to be politically viable for the United States.

Complexity and compliance costs could also be minimized by going to the other extreme and adopting a broad definition of qualified IP. This is the approach taken in the Boustany-Neal draft, which defines qualified intangible property as “patents, inventions, formulas, processes, designs, patterns, and know-how.” There are no definitions of these terms in the draft. But based on the Merriam-

Webster definitions (shown in the box), the scope of qualified products with embedded qualified IP will be extremely broad. For example, almost any manufactured product will involve design. Almost any agricultural product or extracted mineral will involve know-how.

Under these circumstances, a patent box would very closely resemble section 199 except instead of multiplying qualified income by 9 percent, qualified income would be multiplied by 71 percent and the ratio of research expense to operating costs.

The worst-case scenario from an administrative point of view would be for Congress to adopt an intermediate approach in which the definition of qualified property includes more than patents but less than the full list in the Boustany-Neal definition. Suppose, for example, that legislators try shortening the Boustany-Neal list of qualified IP to include just patents, inventions, and formulas, or, alternatively, that they define qualified IP as patents and add a new concept, perhaps something like “technologies that add significant value.” This narrower definition would have the benefit of saving revenue and putting more focus on what some might consider to be more important innovation. But it would open up a Pandora’s box of administrative and compliance problems. With a middle-of-the-road definition of IP, there would be a vast no man’s land of tax controversy between products that clearly qualify and those that clearly don’t. Distinguishing between qualified and unqualified products would be a massive strain on the judgment of taxpayers and the IRS alike. In this case a patent box would almost certainly be even more complicated than section 199.

Slippery Mechanics

In addition to the vagaries of defining exactly what activities (in the case of section 199) and what IP (in the case of a patent box) can generate qualified income, the two tax breaks suffer from inherent imprecision and arbitrariness in the calculation of the slices of net income that qualify. This leads to uncertainty for those simply trying to comply as well as to opportunities for tax planning.

A few simple examples illustrate the issues. Suppose a business manufactures complex medical equipment (Product A), provides support services for that equipment (Service A), and manufactures some basic tools for servicing it (Product B). And suppose the following: Income from Product A is definitely qualified income (in the case of section 199, because it is manufactured entirely in the United States; in the case of a patent box, because its main source of value-added is patented technology). Income from Service A on a stand-alone basis does not qualify (according to the statutory language). It is unclear if income from Product B

Income Qualified for Tax Incentive of a Business With 3 Products and Total Income of 60 (Income in shaded areas qualifies for tax benefit) (Income in bold and in shaded boxes is considered income from a single product)					
	Total Income	Components of Income			Qualified Income
		Product A Income	Service A Income	Product B Income	
Panel A					
(1)	60	20	20	20	20
(2)	60	20	20	20	40
(3)	60	25	10	25	50
(4)	60	25	10	25	60
Panel B					
(1)	60	40	-10	30	30
(2)	50	40	-10	20	40
Panel C					
(1)	60	35	35	-10	60
(2)	60	35	35	-10	70

qualifies (in the case of section 199, because of uncertainty about the sufficiency of manufacturing value-added in the United States; in the case of a patent box, because of uncertainty about whether the product incorporates or was produced with any qualified IP).

Panel A in the table assumes that this business generates total profit of 60 and the business's accounts show that there is an equal distribution of profit among Product A, Service A, and Product B. If just Product A qualifies, the business has 20 of qualified income (line 1). The first among several obvious tax-minimizing strategies is to get income from Product B qualified; this would raise qualified profit to 40 (line 2). The second strategy is to shift costs from qualified to nonqualified property. In line 3, qualified profits are increased to 50 from 40 by shifting 10 of cost to Service A from Products A and B.

A third strategy is to combine income from Service A into Product A so that the sum of the two is considered income from one qualified product. This would increase qualified profit from 50 to 60 (line 4). This may or may not be possible depending on the facts and circumstances, the details of IRS regulations, and the judgment of the taxpayer and tax collectors involved. The critical importance and arbitrariness of aggregating and disaggregating different categories of income (for example, product and service income in an integrated package of equipment and services) that receive different tax treatments is discussed in depth by professor Richard L. Doernberg ("Taxation Silos: Embedded Intangibles and Embedded Services," *Tax Notes*, Mar. 13, 2006, p. 1189). Doernberg concludes that "as long as the U.S tax system creates artificial categories for different types of [income], there can be little guidance on when we leave the boundaries of one category and enter another."

When some categories of income generate a loss, the dynamics move in the opposite direction. In this case, tax minimization involves disqualifying and disaggregating losses that would reduce tax benefits. In Panel B of the table, Service A generates negative net income of 10. In this case, the taxpayer that initially aggregated this service into Product A will want to separate it in order to increase qualified income from 40 to 30 (as shown in line 2).

Panel C shows a situation in which total income of 60 is initially all qualified. If the taxpayer is able to have 10 of losses from Product B disqualified, this raises qualified income to 70. Thus, disqualified income could exceed total income except that both section 199 and the Boustany-Neal draft prohibit qualified income from exceeding total income.

Conclusion

Like section 199, the Boustany-Neal patent box proposal would demand excruciating precision from taxpayers to promote vague policy goals. Under these circumstances, if Congress feels compelled to pursue this poorly targeted incentive, it should consider alternatives that yield a similar array of tax benefits but with much less hassle.

One possibility would be to discard entirely the facts and circumstances determinations of qualified IP and qualified net income and instead define the patent box deduction as total net profit times the ratio of research expense to gross receipts (times whatever constant is necessary to achieve revenue targets). This would be equivalent to a flat (non-incremental) research credit in which the rate of credit depends on profitability. Like Boustany-Neal, this would not be a particularly well-targeted research incentive, but it would tie tax benefits to income — which seems to be the defining characteristic of a patent box — without all the dreaded complexity. ■

NEWS AND ANALYSIS

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ECONOMIC ANALYSIS

Benefits of Boustany-Neal Patent Box Vary Widely

By Martin A. Sullivan — martysullivan@comcast.net

On July 29 House Ways and Means Committee members Charles W. Boustany Jr., R-La., and Richard E. Neal, D-Mass., released a discussion draft of their patent box proposal. Under the proposal, tax benefits depend on the ratio of domestic research spending to total operating costs and on the profitability of innovative products. Because profitability and the composition of costs can vary significantly, firms that conduct the same amount of domestic research would get widely different amounts of tax benefits from the Boustany-Neal patent box.

The incentive for increasing research spending would vary widely across firms. Like the overall tax benefit per dollar of research, the marginal incentive depends on profitability and the composition of costs. It also varies substantially with the expected profitability of additional research. Because all these factors vary in the normal course of business, under the Boustany-Neal approach firms would have widely different incentives to increase research.

Details

Here's a simplified version of the formula for the patent box deduction in the Boustany-Neal draft:

$0.71 \times \text{tentative innovation profits} \times \text{research intensity}$

With a 35 percent tax rate, the 0.71 factor yields an effective tax rate of 10.15 percent on qualified innovation profits.

Tentative innovation profits (the term used in the statutory draft) are gross receipts less allocable costs from the sale or licensing of a patent, invention, formula, process, design, pattern, or know-how; a motion picture; or computer software. Also included in the definition are the gross receipts less allocable costs from products using a patent, invention, formula, process, design, pattern, or know-how. In the numerical examples in this article (as in the example provided with the official explanation of the proposal), it is assumed that all products have embedded qualified innovations and that all tentative innovation profits are from the sale of these products. Because it is hard to conceive of a manu-

factured item that does not use a "design" or was not manufactured with "know-how," it is likely that nearly all profits from manufacturing would qualify.

Research intensity (not a term in the draft) is the sum of the current and four prior years' research spending divided by the sum of the current and four prior years' operating expenses. Operating expenses include advertising expenses, general and administrative (headquarters) expenses, and research expenses.

Benefits for Research Firms

Table 1 calculates the tax benefit from the Boustany-Neal patent box for 20 firms that all incur \$100 of research expenses. (For simplicity, this amount and all other costs are assumed to stay constant over time.) These firms get different tax benefits because of differences in their rate of profit and differences in their research intensity. The winners are firms with high research intensity ratios and high rates of profitability. For example, a firm with a research intensity of 0.5 (equal to \$100 of research divided by \$200 of total operating costs) and an operating margin of 6 percent gets a tax reduction of \$14.90 from the Boustany-Neal patent box. But a firm with a research intensity of 0.25 and an operating margin of 1 percent gets a tax reduction of only \$1.20 even though both firms do the same amount of research.

Table 1 provides a measure of a firm's tax benefit from the proposal. Loosely speaking, it is a measure of the fairness of the patent box. That's important to businesses and their lobbyists in deciding on their support for or opposition to the plan. And so it is important to Capitol Hill legislators in assessing the politics of the proposal.

Tax planners, of course, want to increase the ratio. They can increase their patent box benefits by increasing tentative innovation profits. They can increase these profits either by reducing costs allocated to patent box gross receipts or by designating more products as products using a patent, invention, formula, process, design, pattern, or know-how. They can also increase patent box benefits by reducing non-research operating costs, such as headquarters and selling expenses.

Incentive Effect

Economists are more interested in marginal tax benefits than total tax benefits. They want to know

		Research Intensity (= research spending/operating cost)				
	Rate of Operating Profit	0.67	0.5	0.33	0.25	0.1
(1)	1%	3.3	2.5	1.7	1.2	0.5
(2)	3%	9.9	7.5	5	3.7	1.5
(3)	6%	19.9	14.9	9.9	7.5	3
(4)	9%	29.8	22.4	15.9	11.2	4.5

Source: Author's calculations.

how a tax break like a patent box affects the incentive to do additional research. The incentive effect of a patent box on marginal research equals the change in patent box benefits because of an increase in research spending divided by that same increase in research spending. Table 2 calculates the change in patent box benefits for a one-time \$10 increase in research for the same 20 firms in Table 1 that had all been spending \$100 in research. (A detailed example of these calculations is in the notes at the end of this article.)

		Research Intensity (= research spending/operating cost)				
	Rate of Operating Profit	0.67	0.5	0.33	0.25	0.1
(1)	1%	6.6	5.3	3.8	2.9	1.2
(2)	3%	8.4	7.4	5.6	4.5	2
(3)	6%	11.2	10.5	8.4	6.8	3.1
(4)	9%	13.9	13.5	11.1	9.1	4.2

Source: Author's calculations.

It is assumed that the \$10 increase in the current year will increase profits in the following four years and that these profits generate an internal rate of return of 25 percent. This increase in future profitability increases future patent box benefits. Also, the \$10 increase in research increases patent intensity in the current year and the following four years. Both of these factors contribute to the positive incentive effect. As with the total tax benefits shown in Table 1, the marginal incentive effects shown in Table 2 vary considerably and are positively related to both research intensity and total firm profitability.

But that is not the end of the story. Incentive effects are dispersed even further by differences in the profitability of the \$10 of additional investment. This is shown in Table 3. The results from line 2 of Table 2 (that assume a 25 percent rate of return on the additional research) are reported again in line 2 of Table 3. Line 1 of Table 3 reports the marginal incentive effect for research with a 10 percent rate of return. Line 3 reports the marginal incentive effect for research with a 50 percent rate of return. For firms with a (starting) overall 3 percent operating margin and a 0.5 research intensity, the marginal tax benefit for an additional \$10 of research varies from \$0.27 (for a return to marginal investment of 10 percent) to \$1.93 (for a return to marginal investment) for each additional \$10 of research.

		Research Intensity (= research spending/operating cost)				
	Marginal IRR	0.67	0.5	0.33	0.25	0.1
(1)	10%	2.7	3.1	2.7	2.3	1.1
(2)	25%	8.4	7.4	5.6	4.5	2
(3)	50%	19	15.3	10.9	8.5	3.6

Source: Author's calculations.

Link Incentive to Profitability?

The economic justification for providing a tax subsidy for research spending is that research generates positive externalities — benefits to the economy beyond the profits to the firm doing the research. Tables 2 and 3 make it abundantly clear that the Boustany-Neal patent box does not provide an equal incentive across firms to increase their spending on research. Unless there is some reason to believe it is practically possible for the government to identify which firms' future research will generate more externalities than other firms' research — and that it can devise a formula to match tax benefits to these social benefits — the prudent policy for promoting innovation is one of simplicity and minimum intervention: Provide all firms with the same incentive to increase their research spending.

Sometimes the argument is made that tax benefits for research should increase with the profits generated by that research. Assuming that the profits from research can be identified, for this approach to be economically justified, the social benefits provided by the externalities from research would

	2016	2016	2017	2018	2019	2020
	Patent Box Benefit	Future Patent Box Benefit Without Additional Research				
Sales	2,000	2,000	2,000	2,000	2,000	2,000
R&D	100	100	100	100	100	100
Other operating costs	200	200	200	200	200	200
Cost of goods sold	1,640	1,640	1,640	1,640	1,640	1,640
Before-tax income	60	60	60	60	60	60
After-tax income	39	39	39	39	39	39
R&D intensity	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333
Tentative innovation profit	60	60	60	60	60	60
Patent box benefit	4.97	4.97	4.97	4.97	4.97	4.97
Present value		4.97	4.52	4.11	3.73	3.39
Sum of present values		20.72				
	Patent Box Benefit	Future Patent Box Benefit With Additional \$10 of Research				
Sales	2,000	2,000	2004.24	2004.24	2004.24	2004.24
R&D	100	110	100	100	100	100
Other operating costs	200	200	200	200	200	200
Cost of goods sold	1,640	1,640	1,640	1,640	1,640	1,640
Before-tax income	60	50	64.23	64.23	64.23	64.23
After-tax income	39	32.5	41.75	41.75	41.75	41.75
R&D intensity	0.3333	0.3377	0.3377	0.3377	0.3377	0.3377
Tentative innovation profit	60	500	64.23	64.23	64.23	64.23
Patent box benefit	4.97	4.2	5.39	5.39	5.39	5.39
Present value		4.2	4.9	4.46	4.05	3.68
Sum of present values		21.29				
Change in tax benefits from extra \$10 of research = \$0.56			Marginal effective credit rate = 5.62%			

have to be proportional to private sector profits from research. There is no readily apparent reason to expect a consistently positive relationship between measured profits and external benefits of research. In fact, the relationship may be negative. For example, basic research may generate large social benefits but relatively little profit for the firm incurring the expense. (Google Inc.'s speculative research projects — often called moonshots — that are not yielding any profit are a prime example.) Conversely, at the other end of the research spectrum, product development may generate little social benefit but large profits. Future empirical studies might prove otherwise, but so far there does not seem to be a good case for tying tax benefits to the rate of private profit.

Even if private profits and externalities were positively related, the marginal incentive provided by the Boustany-Neal patent box would be far from ideal. To provide a neutral incentive for generating externalities, marginal tax benefits would have to be proportional to marginal profits. But under the proposal, the relationship between marginal tax benefits and marginal profits would vary with research intensity and with the profitability of prior research in a manner similar to the variation shown in Table 2.

Notes

Table 4 provides an example (corresponding to the third column of the second row of Table 1) of a firm that has \$2,000 of sales, \$100 of research spending, \$200 of other operating costs, and \$1,640 in cost of goods sold. This yields before-tax profits — and, in this case, tentative innovation profit — of \$60. The operating margin is 3 percent. The research intensity is 0.33 (research cost/(research cost + other operating cost)).

The economic justification for providing a tax subsidy for research spending is that research generates positive externalities.

Assuming research and other operating costs were the same in the prior four years, the current-year tax benefit equals 35 percent of 0.71 of the research intensity multiplied by tentative innovation profit. That is $0.35 * 0.71 * 0.3333 * \$60$, which equals approximately \$4.97. (The figures in Table 1 are rounded to single-digit decimals.)

To calculate marginal incentive effects, the present value of patent box benefits with and without a one-time research investment of \$10 is calculated.

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The marginal investment is assumed to increase costs by \$10 in 2016 and then to increase profits by \$4.24 in each of the following four years. This gives the project an internal rate of return of 25 percent.

Without the marginal investment, the patent box provides a tax benefit of \$4.97 per year. The present value over five years (with a discount rate of 10 percent) is \$20.72.

With the marginal investment, the patent box provides a tax benefit of \$4.20 in the current year (lower than previously because of temporarily lower profits) and of \$5.39 in each of the four following years. The present value of patent box benefits over five years is \$21.29.

So the \$10 increase in research increases patent box tax benefits by \$0.56 (rounded, \$21.29 minus \$20.72). This is equivalent to a research credit with a rate of 5.6 percent. ■

NEWS ANALYSIS

Altera Alters the Landscape For Reg Challenges

By Marie Sapirie — marie.sapirie@taxanalysts.org

Longer preambles and more challenges to final tax regulations are likely because of a recent Tax Court decision.

In 2003 Treasury published T.D. 9088, which contained final regulations that required the inclusion of stock-based compensation in cost-sharing arrangements. This year, in *Altera v. Commissioner*, 145 T.C. No. 3 (2015), the Tax Court unanimously held that Treasury's explanation of its decision in the preamble was inadequate and therefore failed to meet the reasoned decision-making standard in *Motor Vehicle Mfrs. Ass'n of the U.S. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29 (1983). The administrative law aspects of the *Altera* decision extend beyond the cost-sharing regulations and represent a significant setback for the government.

The Tax Court in *Altera* held that Treasury's final rule was not the product of reasoned decision-making because: 1) it lacked a basis in fact; 2) Treasury did not disclose its factual findings, which made it impossible for the court to evaluate "whether Treasury reasonably concluded that the purported administrative benefits of a uniform final rule can justify erroneously allocating income in some of those cases"; 3) Treasury failed to adequately respond to comments; and 4) the final rule was contrary to the evidence before Treasury at the time it made the rule. *Altera* puts more pressure on the IRS and Treasury to ensure that they follow the Administrative Procedure Act (APA) when developing regulations and that they address and analyze reasonable comments before releasing final regulations.

Effect on Preambles

Expository preambles to final regulations are not a recent development, but their content and organization have evolved in response to the APA and related laws. The government has explained final rule changes that resulted from taxpayer comments on the proposed rules in Treasury decision preambles since the 1970s; one example is T.D. 7519, which addressed specific comments. Before the 1970s, the government's engagement with comments was often alluded to with blanket language — for example, saying that decisions reflected in the final regs were made "after consideration of all such relevant matter as presented by interested persons." (T.D. 7340.) The move toward more comprehensive analysis of comments was not consistent until the

Is It Time for the United States to Consider the Patent Box?

By Peter R. Merrill, Jim Shanahan, José Elías Tomé Gómez, Guillaume Glon, Paul Grocott, Auke Lamers, Diarmuid MacDougall, Alina Macovei, Rémi Montredon, Thierry Vanwelkenhuyzen, Alexandru Cernat, Stephen Merriman, Rachel Moore, Gregg Muresan, Pieter Van Den Berghe, and Andrea Linczer



Peter R. Merrill



James R. Shanahan, Jr.

Peter R. Merrill leads PricewaterhouseCoopers' national economics and statistics group, and Jim Shanahan is the leader of PwC's global research and development incentives group. Both are based in Washington. José Elías Tomé Gómez leads the PwC-Spain R&D practice; Guillaume Glon, a partner from France, leads PwC's French tax desk in New York; Paul Grocott is a partner based in PwC's Hungarian office; Auke Lamers, a partner from the Netherlands, leads PwC's Dutch tax desk in New York; Diarmuid MacDougall partner, leads PwC-United Kingdom's R&D and patent box practices; Alina Macovei, a partner with PwC-Luxembourg, leads the Luxembourg intellectual property key focus area; Rémi Montre-

don, a partner with PwC-Landwell & Associés in France, leads the French R&D practice; Thierry Vanwelkenhuyzen is a PwC partner based in Belgium; Alexandru Cernat is a senior manager based in PwC's Luxembourg office; Stephen Merriman, a director, leads PwC's Ireland R&D practice; Rachel Moore is a senior manager based in PwC's Cambridge, UK, office; Gregg Muresan is a director in the United States; Pieter Van Den Berghe is a senior manager based in PwC's Belgium office; and Andrea Linczer is a manager based in PwC's Hungarian office. The authors thank Dick Ruge, Carolyn Singh, and Phillip Galbreath for research and editorial assistance.

Merrill, Shanahan, and a team of specialists from PwC examine the patent box regimes adopted by six European Union countries and consider key issues to be addressed in designing a similar tax regime for intellectual property (IP) in the United States that would attract and retain domestic IP development and ownership.

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A. Overview

Over the last decade, six European Union countries have adopted "patent box" tax regimes designed to increase innovation activities, create and maintain high-value jobs, and foster global leader-

ship in patented technology.¹ Also, the U.K. government has committed to implementing a patent box regime effective April 1, 2013. Adoption of patent box regimes by EU member states is consistent with the 2000 Lisbon Strategy, an economic development

¹The "patent box" terminology apparently refers to the application of a lower tax rate to a separate schedule or "box" of income.

plan seeking to make the EU “the most competitive and dynamic knowledge-based economy in the world.”

As illustrated by Table 1, the qualification requirements and mechanics for the six EU patent box regimes now in effect and for the proposed U.K. regime differ significantly. For example, one regime may be limited to patents, while others may provide tax benefits applicable to other types of intellectual property (IP). The general objective is to reduce significantly the corporate tax rate on income from qualifying IP, for example to a nominal rate of 5 to 15 percent, with effective tax rates typically even lower.

Given the tax benefits provided in some EU countries for holding IP, the question arises whether the United States should adopt similar incentives and, if so, how they should be designed. The details of the different regimes adopted in other countries laid out in this article indicate key issues that would need to be addressed in designing a U.S. IP box to attract and retain domestic IP development and ownership. These questions include: What types of IP should be eligible? What types of IP-related income should receive preferential treatment? How should qualified IP income be taxed? What would be the revenue cost of adopting a patent box regime?

B. What Is a Patent Box?

Tax incentives can be provided at the front end of the innovation value chain, in the years when research and development expenditures are incurred, or at the back end, in the years when income is generated from exploiting IP. Front-end tax incentives include “super” deductions and tax credits for qualifying R&D expenses, such as the U.S. research tax credit and the recently introduced Dutch R&D “super” deduction. By contrast, patent box regimes are back-end incentives that provide a reduced corporate income tax (CIT) rate for certain income arising from the exploitation of IP, generally through a 50 to 80 percent deduction or exemption of qualified IP income.

C. EU Patent Box Regimes

Below are summaries of the current patent box regimes in six EU countries, as well as the proposal released by the U.K. government in December 2011.

1. Belgium. Introduced in 2007, the Belgian patent income deduction (PID) allows a Belgian company or a Belgian permanent establishment (PE) of a foreign company to deduct 80 percent of qualifying gross patent income. Therefore, only 20 percent of gross patent income is taxable at the normal corporate tax rate, resulting in a nominal tax rate of 6.8 percent, since the standard corporate tax rate is 33.99 percent (including the 3 percent surtax).

Development costs and other patent-related expenses, except license fees and amortization related to the acquired patents for which the PID is claimed, remain deductible at the regular corporate tax rate of 33.99 percent. The deduction of these other expenses, as well as other available tax benefits (e.g., notional interest deduction and R&D tax credits) may lower the effective tax rate (ETR) on qualifying patent income below 6.8 percent. The PID may not be used to create a net operating loss and thus may not be carried forward.

Patents and supplementary protection certificates (providing extended patent protection) qualify for the PID if owned by a Belgian company or PE as a result of that entity’s own patent development activities (partly or fully) in an R&D center in Belgium or abroad. The PID also applies when patents or supplementary protection certificates are acquired by a Belgian company or PE from a related or unrelated party — whether in full ownership, joint ownership, usufruct, or via license agreement — if the Belgian company or PE has further improved the patented products or processes in the company’s or the PE’s R&D center in Belgium or abroad. To qualify, these improvements do not need to lead to additional patents for the acquired IP.

To qualify under these rules, the R&D center must constitute a “branch of activity” or “line of business”; that is, the center must be a division of an entity that is capable of operating autonomously. The PID rules provide that the R&D center can be located outside Belgium as long as the center belongs to a Belgian legal entity.

Although the Belgian company or PE should have relevant substance to perform and supervise R&D activities, it may use related or unrelated subcontractors in its development of the patents or extended patent certificates. Belgian companies or PEs acting as “contract R&D” service providers on behalf of another company cannot qualify for the PID because they are not the owner, holder of beneficial rights to, or licensee of the resulting patents.

The PID is not available for know-how, trademarks, designs, models, secret recipes or processes, or information concerning experience with respect to trade or science. However, the Belgian tax administration has indicated that know-how closely associated with patents or supplementary protection certificates may qualify for the PID. The PID is not available for capital gain realized on the disposal of patents.

To the extent that the Belgian company or PE licenses the patents, the PID is calculated based on royalties received. The amount of royalties eligible for the PID is limited to the amount that is taxable

Table 1. Comparison of EU Patent Box Regimes and U.K. Proposal

Tax Factors	Belgium	France	Hungary	Luxembourg	Netherlands	Spain	U.K.
Nominal tax rate	6.8%	15%	9.5%	5.76%	5.0%	15%	10%
Qualified IP	Patents and supplementary patent certificates	Patents, extended patent certificates, patentable inventions, and industrial fabrication processes	Patents, know-how, trademarks, business names, business secrets, and copyrights	Patents, trademarks, designs, domain names, models, and software copyrights	Patented IP or R&D IP	Patents, secret formulas, processes, plans, models, designs, and know-how	Patents, supplementary protection certificates, regulatory data protection, and plant variety rights
Qualified income	Patent income less cost of acquired IP	Royalties net of cost of managing qualified IP	Royalties	Royalties	Net income from qualified IP	Gross patent income	Net income from qualifying IP
Acquired IP?	Yes, if IP is further developed	Yes, subject to specific conditions	Yes	Yes, from non-directly associated companies	Yes, if IP is further self-developed	No	Yes, if further developed and actively managed
Cap on benefit?	Deduction limited to 100% of pretax income	No	Deduction limited to 50% of pretax income	No	No	Yes, six times the costs incurred to develop the IP	No
Includes embedded royalties?	Yes	No	No	Yes	Yes	No	Yes
Includes gain on sale of qualified IP?	No	Yes	Yes	Yes	Yes	No	Yes
Can R&D be performed abroad?	Yes, if qualifying R&D center	Yes	Yes	Yes	Yes for patented IP; strict conditions for R&D IP	Yes, but must be self-developed by the licensor	Yes
Credit for tax withheld on qualified royalty?	Yes	Yes	Yes	Yes	Yes, subject to limitations	Yes, subject to limitations	Yes
Year enacted	2007	2001, 2005, 2010	2003	2008	2007/2010	2008	2013
Applicable to existing IP?	IP granted or first used on or after Jan. 1, 2007	Yes	Yes	IP developed or acquired after Dec. 31, 2007	Patented IP developed or acquired after Dec. 31, 2006	Yes	Yes

Source: PricewaterhouseCoopers. Information current as of December 31, 2011.

income in Belgium and corresponds to the fee that would have been agreed to between unrelated parties.

The PID applicable to patents used by the Belgian company or PE to manufacture patented products, either directly or by a contract manufacturer on its behalf, is 80 percent of the hypothetical

license fee (embedded royalty) that the Belgian company would have received had it licensed the patents used in the manufacturing process to an unrelated party.

Tax withheld on foreign-source royalties is creditable against Belgian tax liability, including royalties eligible for the patent box.

The PID generally is applicable for qualifying patents granted or first commercially used on or after January 1, 2007.

2. France. Under the French tax code, revenue or gain deriving from the license, sublicense, sale, or transfer of qualified IP is taxed at a reduced 15 percent corporate tax rate (the standard rate is 33.33 percent) under specified terms and conditions.

Qualified IP includes patents, patentable inventions, and improvements made to them; industrial manufacturing processes that are the continuation of patents or patentable inventions (but not improvements); and certificates relating to vegetal inventions. Qualified IP rights must also qualify as assets. If IP rights are acquired (that is, do not result from R&D activities performed by the company), they must be held for at least two years to qualify for the patent box regime. Related or unrelated subcontractors may be used in the development of qualified IP, which may take place outside France.

Qualified income includes:

- net royalty payments received under license and sublicense agreements (either exclusive or nonexclusive, covering a portion or all of the qualified IP rights), corresponding to the difference between the gross amount of royalties received and the related costs incurred (by the owner) to manage the qualified IP rights licensed; and
- net capital gain reported by the seller in case of transfer (via sale, contribution in kind, transfer of business, etc.) of qualified IP, corresponding to the difference between the transfer price and expenses incurred by the transferor for the purpose of the transfer.

If the licensee is a French corporation and actually uses the qualified IP licensed, the licensee may deduct the royalty payments from its current income taxable at the standard 33.33 percent rate even if the licensor is taxed at the reduced 15 percent rate.

Tax withheld on foreign source royalties is creditable against French tax liability, including royalties eligible for the patent box.

Income from qualified IP created before 2001, the original effective date of the French patent box regime, is eligible for the reduced tax rate.

3. Hungary. Under the Hungarian patent box regime, companies owning qualified IP may deduct 50 percent of the royalties that related or unrelated parties pay for use of the IP. This deduction, along with other special deductions available, may not exceed 50 percent of the company's pretax income. Currently, Hungary's corporate tax rate is 10 percent on taxable income up to €2 million and 19 percent for income above that amount, resulting in a maximum rate of 9.5 percent on qualified IP income.

Qualified IP rights include patents and other protected intellectual works, know-how, trademarks, business names, business secrets, and copyrights. Specifically, the 50 percent deduction applies to income from:

- rights to exploit patents, design of assets under industrial law, and know-how;
- rights to use trademarks, business names, and business secrets;
- rights to use copyrighted work and similar rights attached to protected work; and
- transfers of the property described above (except for trademarks, business names, and business secrets).

For IP developed by a taxpayer through domestic R&D activity, it is possible to deduct 200 percent of R&D costs if specific conditions are met. This "super deduction" results from the ability to expense R&D costs and also claim an extra 100 percent deduction. Alternatively, if the costs of R&D activities are capitalized, companies can reduce their corporate tax base by the annual amount of depreciation connected with that capitalized R&D in addition to the 100 percent normal deduction in the year incurred.

Tax withheld on foreign-source royalties is creditable against Hungarian tax liability, including royalties eligible for the patent box.

Income from qualified IP created before 2003, the effective date of Hungary's patent box regime, is eligible for the reduced tax rate.

As of January 1, 2012, additional incentives are available for holding IP. Any gain on the sale (or a capital increase that is not in cash) for qualifying IP is exempt from CIT if the seller reported the acquisition to the tax authority and held the property for at least one year. Alternatively, if this reporting was not made, gain realized on a sale still would be exempt if the taxable gain is used to purchase qualifying IP within three years of the sale.

4. Luxembourg. The Luxembourg patent box regime provides an 80 percent tax exemption for the net income derived from the use or right to use qualified IP rights acquired or self-developed after December 31, 2007. Therefore, only 20 percent of net qualified IP income is taxable at the standard corporate tax rate (28.8 percent for 2012), resulting in a nominal tax rate of 5.76 percent. Amortization, R&D expenses, interest charges, and other related expenses must be deducted against the gross qualified IP income. The 80 percent exemption also covers capital gain realized on the sale of qualified IP.

Qualified IP includes patents, trademarks, designs, domain names, models, and software copyrights. Know-how, copyrights not related to software, formulas, and client lists do not qualify for the beneficial treatment. Qualified IP may not be

acquired from a directly associated company (10 percent direct parent, subsidiary, or sister company).

For self-developed patents used internally by a taxpayer, a notional deduction against the operational income is available equal to 80 percent of the income that the taxpayer would have earned if it had licensed the right to use the patent to a third party.

Tax withheld on foreign-source royalties eligible for the patent box is partially creditable against Luxembourg tax liability, including royalties eligible for the patent box.

Income from qualified IP created before 2008, the effective date of the patent box regime, is eligible for the reduced tax rate if acquired by the Luxembourg company on or after January 1, 2008.

5. The Netherlands. The Netherlands originally adopted a patent box tax regime effective January 1, 2007, with an effective rate of 10 percent. As of January 1, 2010, the regime was expanded, and the rate for qualifying IP income was reduced to 5 percent. The new regime is referred to as the "innovation box."

Before 2010, the maximum amount of income that could benefit from the reduced rate was four times the development costs. Under the regime in force as of January 1, 2010, there is no maximum amount of income that can benefit from the 5 percent rate.

Both resident and nonresident taxpayers can benefit from the Dutch innovation box regime. Taxpayers can elect to apply the innovation box separately for each qualifying IP right. The election is made with the filing of a Dutch corporate tax return.

The Dutch innovation box regime applies to all net positive income (gross income minus related expenses and depreciation) attributable to, and net gains derived from, qualified IP. To qualify for the innovation box, IP must meet the following conditions:

- The IP must be a patent or R&D IP (defined below). Trademarks, logos, and similar rights do not qualify.
- The IP generally must be self-developed for the risk and account of the Dutch taxpayer. Acquired IP may qualify if it is further developed for the risk and account of the Dutch taxpayer.
- The IP must have become a business asset after December 31, 2006, in the case of patents, and after December 31, 2007, in the case of R&D IP.

R&D IP is IP that results from technical innovative activities conducted by or on behalf of a taxpayer for which the taxpayer has obtained an R&D declaration from the Dutch government. Consequently, the innovation box also can be used by

companies that do not intend to apply for patents for the products of their R&D efforts or that develop products that are not patentable under EU law, such as software-related intangibles and trade secrets.

For patented IP, the R&D must be conducted for the risk and account of the Dutch taxpayer, but it does not necessarily have to be performed in the Netherlands. For IP for which an R&D declaration has been obtained, generally at least 50 percent of the R&D must be performed in the Netherlands and the Dutch entity must play a decisive coordinating role in the development.

The Dutch innovation box is not restricted to the income directly attributable to the patent or R&D IP; it also can apply to the qualified IP remuneration embedded in the sales price of goods or services. More than 30 percent of the anticipated income to be derived from the IP must be attributable to the patent right (this requirement seems not to apply to R&D IP).

Allocation issues are resolved through transfer pricing methods and are eligible for advance pricing agreements with the Dutch tax authorities. The Dutch tax authorities have a dedicated innovation box team that deals with innovation box rulings. In liaison with taxpayers, the team has developed a practical application of the innovation box, particularly regarding allocation issues, recapture of previously deducted development costs, and grow-in models.

Under the Dutch innovation box regime, losses from qualified IP are deductible at the general corporate tax rate of 25 percent. Losses from qualified IP deducted from taxable profits in previous years first must be recaptured at the general rate of 25 percent before the lower ETR applies. This rule also applies to R&D costs that are deducted before an innovation box election is made for the qualified IP.

Tax withheld on foreign-source royalties is creditable against Dutch corporate tax liability, including royalties eligible for the innovation box, subject to certain limitations.

6. Spain. Effective January 1, 2008, Spain's patent box regime exempts 50 percent of the gross income derived from the cession of the use and the right to use qualified IP. (The Basque country patent box regime is similar, but the legislation states certain advantages.) The patent box regime supplements Spain's R&D tax credit regime.

Qualified IP includes patents, designs, models, plans, secret formulas or procedures, and rights on information related to industrial, commercial, or scientific experiments (know-how). Expressly excluded from the patent box are trademarks; copyrights of literary, artistic, or scientific work

(including cinematograph films, image rights, and software); and leases of industrial, commercial, or scientific equipment.

Qualified IP must have been self-developed by the licensor and must be used by the licensee in its business activities. If the licensee is a related company, those business activities cannot result in the provision of goods or services by the licensee that would generate a tax deduction at the licensor's level.

Since the Spanish regime exempts gross rather than net income, all expenses relating to the development and amortization of the qualified IP are deductible at the regular corporate tax rate. If an IP agreement includes other auxiliary services, consideration relating to the use of the qualifying IP must be clearly differentiated within the contract. The licensor must maintain all necessary records to ensure that such net income is properly determined.

The exemption will not apply beginning in the tax period after the revenue derived from the qualified IP exceeds six times the costs incurred to develop the qualified IP. All related revenue earned in the tax period in which the limit is reached is eligible for the tax incentive. Therefore, there is not any special limitation regarding the number of years to apply the incentive; for example, a company could exceed the six times limit in year 1, 4, or 10, etc.

Qualified IP does not necessarily have to be classified as an intangible asset on the licensor's balance sheet. However, there should be sufficient disclosure in the licensor's current or prior years' accounting records to determine properly the direct or indirect revenue and expenses corresponding to the qualified IP being licensed. Also, the taxpayer should maintain sufficient information detailing revenues and development costs and, for mixed contracts (that cover qualified IP rights and other ancillary services), the allocation of revenues.

The patent box exemption applies to intra-group transactions even if the licensee is in Spain or if the licensee belongs to the same Spanish tax-consolidated group as the licensor (in which case, the license transaction is not eliminated as part of the consolidated tax return).

Although Spain's patent box regime does not distinguish between qualified IP income from foreign and domestic sources, the licensee cannot be a resident of a Spanish-listed tax haven or a zero-tax jurisdiction. For royalty revenue generated from sources outside Spain, a credit is granted for withholding taxes paid, but it is limited to the lower of: (1) the amount effectively paid abroad because of a tax that is identical or analogous to Spanish CIT; or (2) the amount levied under this regime if such income would have been earned in Spain.

7. United Kingdom's proposed patent box regime.

On December 6, 2011, the U.K. government released a revised proposal for a patent box regime scheduled to take effect April 1, 2013.² The patent box regime — at a 10 percent rate — will supplement the United Kingdom's existing R&D tax incentives.

The fundamental design principles reflected in the U.K. patent box proposal include:

- limitation on qualified IP to patents and some other independently verified technological innovations;
- benefit based on *net* income from development and exploitation of qualified IP;
- the inclusion of income from qualified IP derived both directly (e.g., by license) and indirectly (e.g., by manufacture of a patented product);
- elective application of the patent box;
- minimization of compliance and administrative burdens through the use of a formulaic approach; and
- benefits limited to taxpayers that are actively engaged in development of qualified IP.

Only patents granted by the U.K.'s Intellectual Property Office (IPO) or the European Patent Office (EPO) will be regarded as qualifying patents for the patent box regime. However, the patent box will include worldwide income earned by U.K. businesses from inventions covered by a qualifying patent, not just income that falls within the territorial limitations of the particular IPO or EPO patent.

Supplementary protection certificates, regulatory data protection, and plant variety rights are included in the proposed patent box. Other non-patented IP — such as trademarks, copyrights, and designs — are excluded, because the government perceives them to be less directly linked to technological innovation.

The U.K. patent box will be available to companies that own patents outright or have an exclusive license (at least countrywide) to exploit a qualified patent. The patent may be developed by the taxpayer directly or through a partnership, joint venture, or cost-sharing arrangement.

To qualify, a taxpayer must meet a development and an active management test. The development test requires that the taxpayer or other group member have performed significant activity to develop the IP, any product containing the IP, or the method of applying the IP. The development activity may occur after the IP is acquired. Based on facts and

²HM Revenues & Customs, "Consultation Draft on Profits Arising from the Exploitation of Patents" and "The Patent Box: Technical Note and Guide to the Draft Legislation" (Dec. 6, 2011).

circumstances, a taxpayer's contribution may be significant by virtue of cost, time, effort, or value. The active ownership test requires that the taxpayer or other group member actively manage the IP, with consideration given to the company's resources and responsibilities, and the impact of its decisions in relation to the IP.

The U.K. patent box benefit is proposed to be determined using a five-step calculation:

1. identify relevant IP income (RIPI).
2. calculate RIPI using profit apportionment or income streaming.
3. remove routine return, yielding qualifying residual profit (QRP).
4. remove marketing return, yielding relevant IP profit (RIPP).
5. Apply patent box to RIPP.

a. Step 1 — Identify RIPI. The starting point for the patent box calculation is total gross income from the company's trade, excluding finance income, ring-fenced oil extraction income, and income from exploitation of nonexclusive patent rights. If the taxpayer has more than one trade, the patent box benefit is calculated separately for each trade. Five types of gross income can qualify as RIPI:

1. receipts from the sale of a patented item or an item that physically incorporates a patented item for its operating life, and receipts from spare parts and items designed to be incorporated into a patented item, if they are sold by the patent holder;
2. license fees and royalties from granting rights to use the company's qualified IP;
3. income from the sale or disposal of qualifying IP rights;
4. payments received as compensation for infringement of the company's qualifying IP; and
5. notional arm's-length royalties for use of qualified IP during the tax year to generate income not otherwise RIPI (e.g., process patents and provision of services using qualifying IP).

b. Step 2 — Profit apportionment or income streaming. There are two ways that a taxpayer may calculate net income attributable to RIPI: apportionment of total profits, or allocation of expenses to RIPI (referred to as streaming). Under apportionment, the simpler approach, qualified net income is determined by multiplying the taxpayer's total profits by the ratio of RIPI to total gross income. Alternatively, the taxpayer may elect to allocate expenses between RIPI and non-qualifying income on a consistent and "just and reasonable" basis. The

election applies to all trades and future years. In some cases, streaming is mandatory.

For purposes of apportionment or income streaming, several adjustments are made:

1. The enhanced R&D deduction (an incentive for R&D provided under U.K. law) is not taken into account, which increases the amount of income eligible for the patent box.
2. Financial income and expense are disregarded.
3. If during the first four years after the patent box election the R&D deduction is less than 75 percent of the average for the four years before the election (determined on a cumulative basis), the average rather than the actual deduction must be used.

c. Step 3 — Remove routine return to get QRP. Net income deemed attributable to IP is calculated as a residual by subtracting "routine" profits. Routine profits are calculated formulaically as 10 percent of the following costs:

1. personnel, including externally provided workers;
2. premises (if tax deductible);
3. plant and machinery (including capital allowances, lease costs, construction, maintenance, operating, and servicing costs); and
4. miscellaneous services (e.g., software, consultancy, utilities, and transport).

These costs are excluded from the calculation of routine profits:

1. expenditures qualifying for the R&D credit or the enhanced R&D deduction (since these are likely to relate to the creation of qualifying IP);
2. financing expense; and
3. costs of raw materials and goods purchased for resale.

d. Step 4 — Remove marketing return, yielding RIPP. The portion of residual profits deemed attributable to qualified IP is determined as a residual by subtracting from QRP the excess of the notional marketing royalty (NMR) over any actual marketing royalties. The NMR is determined by multiplying RIPI by the arm's-length annual royalty rate that an unrelated party would charge for the exclusive right to exploit marketing assets associated with RIPI (including trademarks, customer information, etc.). If the excess of the NMR over actual marketing royalties is less than 10 percent of QRP, no marketing deduction is required. Alternatively, the taxpayer may elect to deduct 25 percent of QRP, but the amount of income that can qualify for the patent box is limited to £1 million.

e. Step 5 — Apply patent box to RIPP. Relevant IP profits are taxed at an effective rate of 10 percent by allowing a deduction equal to X percent of RIPP, where $X = (T - 10)/T$ and T is the statutory corporate tax rate (23 percent in 2013). Rather than limiting the benefit of the patent box to IP developed after the effective date of the legislation, the patent box deduction will be phased in over five years. The portion of the patent box deduction allowed in 2013 will be 60 percent, increasing by 10 percentage points each year to 100 percent in 2017.

If a taxpayer has negative RIPP, referred to as a relevant IP loss (RIPL), the loss must be offset against RIPP of any other trade or any other group company. The balance of any RIPL must be carried forward and used to offset future RIPP of the group. For pending patents, RIPP earned in the six years before patent grant may be taken into account in the year of grant.

Credits for foreign royalty withholding taxes are allowed up to the amount of U.K. tax on royalty income after the patent box deduction.

The patent box will be available at the taxpayer's election, on a company-by-company basis, and will apply to all of the taxpayer's trades and future periods. If a company elects out of the patent box, it cannot elect back in again for five years.

f. Antiavoidance rules. The arm's-length standard will apply to transactions between associated companies.

To prevent abuse of the patent box, the U.K. government proposes to include rules that will prevent:

- inclusion of commercially irrelevant patents in products solely to qualify income for the patent box;
- addition of spurious exclusive rights to a license agreement solely to qualify income for the patent box;
- artificial manipulation of income or expenses; and
- transfers of patents within groups to artificially increase patent box income.

D. Designing a U.S. Patent Box Regime

Even if other countries had not adopted patent box regimes, the U.S.-tax system would be one of the least attractive among OECD member countries for developing and holding technological IP.

According to the most recent OECD data, as of 2009 the United States ranked 24 out of 38 countries (including 32 OECD members plus Brazil, China, India, Russia, Singapore, and South Africa) in the

value of tax incentives provided per dollar of R&D.³ Because the U.S. research credit expired December 31, 2011, the incentive provided for R&D is now even lower than indicated by the OECD ranking.

Moreover, according to 2011 OECD data, the combined federal and average state statutory corporate tax rate in the United States (39.2 percent) is second highest among OECD countries, and more than 14 percentage points greater than the average for the other countries (25.1 percent). Therefore, royalty and license income earned from U.S.-held IP is taxed at a 50 percent higher rate than IP held in the average OECD country. The disparity in taxation of IP is even greater when compared with countries with patent box regimes, where qualified IP typically is taxed at rates between 5 percent and 15 percent.

Because IP is relatively mobile, U.S. policymakers may wish to consider adopting a patent box — as a stand-alone measure or as part of more fundamental tax reform — to provide a more attractive tax environment for creation and commercialization of IP in the United States.

To design an IP box for the United States, several questions must be addressed, including:

1. What types of IP should qualify?
2. What types of IP-related income should receive preferential treatment?
3. How should qualified IP income be taxed?
4. What would the revenue cost be?

1. What types of IP should qualify?

a. IP definition. The first issue is defining the scope of qualifying IP. Some EU countries (Belgium, France, the Netherlands, and Spain) limit the scope of their IP box regimes to patents and certain IP with industrial application, such as secret formulae and processes resulting from qualifying R&D activities. Other EU countries (Hungary and Luxembourg) have included a much wider range of IP, such as copyrights (including copyrights on software, which generally is not patentable under EU law) and marketing intangibles, such as trademarks and trade names. Countries that have taken the narrower approach primarily seek to promote patent-based technological innovation, and countries that have taken the broader approach are more concerned with attracting and retaining IP within the national tax base.

b. Domestic development. A second issue is whether substantially all IP development activities should have to take place within the United States

³OECD, *OECD Science, Technology, and Industry Scoreboard 2009*.

to qualify for IP box treatment. This requirement would be consistent with the U.S. research tax credit, which is limited to research performed within the United States. None of the EU patent box regimes requires IP development activities to be performed domestically, because this would be a *prima facie* violation of the European Treaty.

c. Acquired IP. A third issue is whether qualified IP must be self-developed or can be acquired from others. Except for Spain, EU patent box regimes do not completely exclude acquired IP; however, to obtain patent box benefits, the taxpayer generally must further develop the IP and must deduct the costs of acquiring IP rights from patent box income.⁴ Thus, in principle, only the value added by the taxpayer to acquired IP qualifies for patent box benefits, and patent box benefits may not be claimed by more than one taxpayer on the same income.

d. Contract IP. A fourth issue is whether IP development activities must be carried out by the taxpayer directly or may be carried out by other persons, whether related or unrelated. Belgium, the Netherlands, and Hungary do not require that the taxpayer directly carry out IP development activities and permit contract R&D and cost-sharing arrangements under certain conditions.

e. Preexisting IP. A fifth issue is whether preexisting IP should be excluded from the patent box regime, as in Belgium, Luxembourg, and the Netherlands. This approach limits the revenue cost with no diminution of the incentive effects of the IP box. The disadvantage is the complexity in separating income attributable to new and preexisting IP, particularly for products covered by multiple patents. An alternative to excluding preexisting IP is to phase in the benefit of the patent box over several years, as has been proposed in the United Kingdom.

2. What types of IP-related income should receive preferential treatment?

a. Embedded royalties. Some countries (France, Hungary, and Spain) provide IP box benefits only for income derived from the licensing of qualified IP. As a result, a company that self-exploits qualified IP rather than licensing it to other parties generally does not qualify for IP box benefits in those countries. This limitation could be avoided by licensing to a related party that is not a member of the taxpayer's consolidated group (for example, a foreign affiliate).⁵

In other countries (Belgium, Luxembourg, and the Netherlands), companies that self-exploit qualified IP may claim patent box benefits for the notional (embedded) royalty that could be earned by licensing to an unrelated party. Although the determination of arm's-length values for embedded royalties raises complex transfer pricing issues, similar issues arise under present law when companies license IP to related parties outside their tax affiliated group (e.g., foreign affiliates).

b. Gross or net income. A second issue is whether gross or net IP income should be eligible for patent box benefits. Other than the Netherlands, EU countries with patent box regimes generally do not require that development costs be deducted from IP box income. As a result, the effective tax rate on qualified IP can be substantially lower than the nominal patent box rate; indeed, it can be negative.

Example: A patent is developed at a cost of \$100 and generates a stream of licensing income with a present value of \$200. Under the Belgian patent box, the present value of taxable income will be *negative* \$60 (20 percent of \$200 license income less \$100 of R&D expense) because only 20 percent of the license income is subject to tax due to the 80 percent patent income deduction. At the Belgian CIT rate of 33.99 percent, the present value of tax liability on patent income in this example is *negative* \$20.4 (-\$60 times 33.99 percent), corresponding to an ETR of *negative* 20.4 percent.⁶ If more than 100 percent of the R&D expenditures are deductible under Belgium's tax incentive for in-house R&D, the effective tax rate in this example would be even lower.

Requiring development expenses to be allocated against patent box income adds administrative complexity but protects against erosion of the tax base on unrelated income. As an alternative to expense allocation, some countries cap patent box benefits. For example, patent box deductions may offset up to 50 percent of pretax income in Hungary and up to 100 percent in Belgium (that is, the patent box deduction cannot create an NOL). In Spain, IP income in the patent box may not exceed six times development costs; however, this approach does not avoid the complexity of expense allocation.

c. Gain from sale. A third issue is whether gain from the sale of qualified IP should qualify for patent box benefits, as is the case in France, Hungary, Luxembourg, and the Netherlands. If gains from the sale of IP are excluded from the patent box regime, and buyers are ineligible for the same patent box benefits that the seller would have

⁴France also requires that acquired IP be owned for more than two years before qualifying for the patent box.

⁵In Spain, an intra-group license qualifies, because the intra-group royalty is not consolidated for purposes of the patent box.

⁶Determined as the present value of tax liability (-\$20.4) divided by the present value of net patent income (\$100).

received absent a sale, there will be a disincentive to sell, as opposed to license, qualified IP. In this case, if the IP is sufficiently valuable, the buyer may choose to purchase the company rather than its IP to preserve patent box benefits. One way to avoid such distortions is to include gain on the sale of qualified IP in the patent box and to require the purchaser to reduce its patent box income by the acquisition cost (so there is no double benefit).

d. Pre-patent income. The often lengthy patent approval process leads to a fourth issue — how to treat income earned pending approval of a patent. The United Kingdom has proposed to allow patent box benefits, in the year of patent grant, for pre-patent income (not to exceed six years). The Netherlands also has a mechanism to allow application of the innovation box effectively to qualifying IP income earned before the year of patent grant. The U.K. proposal avoids penalizing a patent holder for delays in the approval process that are outside its control (e.g., challenges by other inventors).

e. Foreign exploitation. A fifth issue is whether the patent box should include income from foreign exploitation — for example, where a related or unrelated company manufactures a patented product abroad and pays a royalty to the taxpayer for use of qualified IP. None of the six EU member countries limits its patent box regime to income from domestic exploitation of qualified IP, because this would violate the EU Treaty. But the United States would not be similarly constrained and could choose to limit IP box benefits to income from domestic exploitation. For example, Congress chose to limit the domestic manufacturing deduction (DMD) in this manner (see section 199).

f. Infringement payments. A sixth issue is the treatment of payments received by the owner of qualified IP for infringement of its IP rights. Under the U.K. patent box proposal, payments received for infringement of qualified IP are eligible for patent box benefits. To the extent infringement payments represent license fees that should have been paid but were not, treating the infringement payments in the same manner as license fees is consistent with the purpose of a patent box.⁷ Infringement payments should also be deducted from the patent box of the payer. A related issue is the treatment of revoked patents. In principle, patent box benefits claimed before revocation should be recaptured, but the United Kingdom has proposed a more lenient rule under which patent box benefits are denied only prospectively without any recapture.

⁷Any portion of infringement payments that represents punitive damages presumably would not be included in the U.K. patent box.

g. Bundled IP. In some cases, a company includes rights to a portfolio of IP within a single license agreement. If the license covers both qualified and non-qualified IP, it will be necessary to bifurcate license payments to ensure that only the portion attributable to qualified IP is included in the patent box. In theory, to avoid tax abuse, the license fee should be bifurcated based on arm's-length principles; however, as a practical matter, it may be difficult to assign separate valuations to the components of a portfolio of IP rights when the value in aggregate is greater than the value of the individual items of IP. Similar issues may arise where taxpayers cross-license IP with or without net cash payments.

3. How should qualified IP income be taxed?

a. Deduction or reduced rate. All the EU countries, except France, with patent box regimes implement the reduced rate on qualified IP income through a PID. This approach is similar to the U.S. DMD. One alternative would be to provide a separate tax calculation, at a reduced rate, for income qualifying for the patent box, like the U.S. reduced individual income tax rate on capital gains. Although similar tax treatment can be achieved through either mechanism, the deduction approach appears to be simpler and, unlike a separate income tax rate, has no effect on the valuation of deferred tax accounts for financial statement purposes.⁸

b. Eligible taxpayers. A second issue is whether the U.S. patent box regime should be limited to corporate taxpayers and, if not, whether it should apply to domestic branches of foreign companies.

c. Cap on benefits. Third, should there be a limitation on the amount of benefit claimed? As noted above, the IP deduction is limited to 50 percent of pretax income in Hungary and 100 percent of pretax income in Belgium. A related question is whether the benefit of an IP box regime should be taken into account in computing alternative minimum tax liability.

d. Elective nature. Fourth, should a patent box regime be elective or automatic and, if elective, should there be an option to elect on a company-by-company or item-by-item basis? The ability to make selective elections is particularly important if expenses must be allocated against IP box income; in that case, taxpayers will want to exclude losses from the IP box to maximize tax benefits.

⁸The timing and amount of tax under the separate tax calculation (schedular) approach may be different than a patent income deduction, depending on whether losses within each schedule may offset income in the other and how loss carryovers are treated.

e. Foreign tax credit. If foreign-source royalties were to be included in a U.S. IP box, it might be appropriate to impose additional limitations on the credit otherwise allowable for foreign taxes withheld on these royalties. For example, if an IP box deduction is allowed for 80 percent of foreign royalties, foreign tax credits might be allowed only for 20 percent of associated withholding taxes.

f. Antiabuse rule. Another issue is whether an antiabuse rule, similar to that in Spain, might be needed to address situations where royalties from a foreign related party qualify for the IP box and the U.S. taxpayer simultaneously makes deductible payments to the foreign related party. Such an antiabuse rule might be unnecessary because the U.S. anti-deferral rules are quite robust and include foreign base company sales and services income.

4. What would the revenue cost be? Although no revenue estimates of the U.S. cost of a patent box regime have been released by congressional or Treasury staffs, the experience of other countries may provide a useful reference point.

According to the Belgian Ministry of Finance, patent income deductions increased from €26.5 million in 2008 to €605.7 million in 2010, resulting in tax savings of about €206 million in that year. Scaled based on the relative levels of domestic expenditures on R&D, the U.S. cost of a Belgian-type patent box would be about \$11 billion at 2010 levels.⁹

Although the U.K. patent box proposal has not yet come into effect, the U.K. government estimates the revenue cost will be about £1.1 billion when fully phased in (about \$1.7 billion in 2017). Scaled based on relative levels of domestic expenditures on R&D, the U.S. cost of a U.K.-type patent box would be about \$14 billion per year in 2017.¹⁰ Assuming the revenue cost grows at 7 percent per year, the U.S. revenue cost would be about \$9 billion at 2010 levels.

By comparison, the Joint Committee on Taxation staff estimates that the tax expenditure for the research tax credit was about \$4 billion in 2010, less than half of the comparable cost of the Dutch and U.K. patent boxes scaled to U.S. levels. The cost of adopting a Dutch or U.K.-style patent box in the United States can also be viewed as approximately equal to the cost of a 1 percentage point reduction in the U.S. CIT rate.

E. Conclusion

The United States is a relatively unattractive location, from a tax perspective, in which to develop

and own IP. U.S. tax incentives for R&D rank in the bottom half of OECD countries, and the statutory CIT rate is second highest (and will be highest as of April 1, 2012, when Japan reduces its corporate tax rate). Adoption of IP box regimes in six EU member countries over the last decade has further reduced U.S. competitiveness. Consequently, U.S. policy-makers may wish to consider adopting a patent or IP box, either separately or as part of tax reform.¹¹

An IP box could have a significant revenue cost and impose substantial compliance and administrative burdens, so it is important that there be adequate time to develop a U.S. IP box. In the United Kingdom, the government announced its intention to introduce a patent box three years in advance, and it has thus far used this time to release a consultation document, solicit comments from the public, and issue a preliminary draft of statutory language. This deliberative and consultative approach would be a good model for the United States to follow.

¹¹As part of proposals for a territorial tax system, Treasury analyzed a proposal that would exempt half of foreign-royalty income. The rationale for this proposal was to offset the increase in tax burden on foreign-royalty income for taxpayers that use foreign tax credits on high-tax dividends to offset U.S. tax on foreign-royalty income. See Treasury, "Approaches to Improve the Competitiveness of the U.S. Business Tax System for the 21st Century" (Dec. 20, 2007), *Doc 2007-27866, 2007 TNT 246-31*. On October 26, 2011, House Ways and Means Committee Chair Dave Camp, R-Mich., released a territorial income tax proposal that included three anti-base-erosion rules, one of which would provide a 40 percent deduction for IP income of U.S. corporations (including intangible income of foreign affiliates included in the income of the U.S. parent as foreign base company intangible income) to the extent attributable to the provision of goods and services to non-U.S. customers.

⁹Based on \$1.2945 per euro as of January 2, 2012, and 2008 R&D expenditure data from the OECD.

¹⁰Based on \$1.5512 per pound as of January 2, 2012, and 2008 R&D expenditure data from the OECD.

Rosanne Altshuler

Rosanne Altshuler is Professor of Economics at Rutgers University and Chair of the Department of Economics. She returns to the Chair position after serving as the Dean of Social and Behavioral Sciences in the School of Arts and Sciences of Rutgers University.

Rosanne is currently the second Vice President of the National Tax Association and will be the Association's President in 2017. She is currently an editor of the Policy Watch section of *International Tax and Public Finance*. Rosanne has been editor of the *National Tax Journal* and a member of the Board of Directors of the National Tax Association, the Panel of Economic Advisers of the Congressional Budget Office and the Board of Trustees of the American Tax Policy Institute.

Rosanne has also been active in the policy world as Director of the Urban-Brookings Tax Policy Center, Senior Economist to the 2005 President's Advisory Panel of Federal Tax Reform, and Special Advisor to the Joint Committee on Taxation.

Alan J. Auerbach

Alan J. Auerbach is the Robert D. Burch Professor of Economics and Law, Director of the Burch Center for Tax Policy and Public Finance, and former Chair of the Economics Department at the University of California, Berkeley. He is also a Research Associate of the National Bureau of Economic Research and previously taught at Harvard and the University of Pennsylvania, where he also served as Economics Department Chair.

Professor Auerbach was Deputy Chief of Staff of the U.S. Joint Committee on Taxation in 1992 and has been a consultant to several government agencies and institutions in the United States and abroad. He served as an Executive Committee Member and Vice President of the American Economic Association, as Editor of that association's *Journal of Economic Perspectives* and *American Economic Journal: Economic Policy*, and as President of the National Tax Association, from which he received the Daniel M. Holland Medal in 2011.

Professor Auerbach is a Fellow of the American Academy of Arts and Sciences, the Econometric Society, and the National Academy of Social Insurance.

Sebastien Bradley

Sebastien Bradley is an assistant professor of economics at Drexel University, where he has taught since completing his Ph.D. at the University of Michigan in 2011. Prior to graduate school, Bradley worked as a research assistant at the Federal Reserve Board of Governors and completed his undergraduate degree in economics and biology at Williams College. He has also been affiliated with the U.S. Department of Commerce since 2010 as a special sworn employee of the Bureau of Economic Analysis.

Bradley's research examines the nature and scope of tax-induced distortions to consumer and firm behavior in environments distinguished by degree of tax transparency and visibility so as to provide practical and theoretical guidance in the area of tax policy design. His work ranges from consideration of tax-motivated investment and income reallocation by multinational corporations to the consequences of limited attention on the part of consumers with respect to property and airline taxes.

Mihir Desai

Mihir A. Desai is the Mizuho Financial Group Professor of Finance at Harvard Business School and a Professor of Law at Harvard Law School. Professor Desai's areas of expertise include tax policy, international finance, and corporate finance. His academic publications have appeared in leading economics, finance, and law journals. His work has emphasized the appropriate design of tax policy in a globalized setting, the links between corporate governance and taxation, and the internal capital markets of multinational firms.

He received his Ph.D. in political economy from Harvard University; his MBA as a Baker Scholar from Harvard Business School; and a bachelor's degree in history and economics from Brown University. In 1994, he was a Fulbright Scholar to India.

Lilian V. Faulhaber

Lilian V. Faulhaber is an Associate Professor at Georgetown University Law Center. Before joining the Georgetown faculty in 2015, she was an Advisor to the Base Erosion and Profit Shifting (BEPS) Project at the Organisation for Economic Co-operation and Development. Prior to working at the OECD, she was an Associate Professor at Boston University School of Law, where she won the Michael W. Melton Award for Teaching Excellence. Professor Faulhaber was an associate at Cleary Gottlieb Steen & Hamilton LLP in New York and clerked on the U.S. District Court for the District of Massachusetts.

She is a graduate of Harvard College, Cambridge University, and Harvard Law School, where she was editor-in-chief of the Harvard International Law Journal.

Professor Faulhaber teaches courses on federal income taxation, international business transactions, and taxation in the European Union, and she has published articles on international taxation, tax avoidance, charitable giving, and European Union law.

Jason Furman

Jason Furman was confirmed by the Senate on August 1, 2013 as the 28th Chairman of the Council of Economic Advisers. In this role, he serves as President Obama's Chief Economist and a Member of the Cabinet. Furman has served the President since the beginning of the Administration, previously holding the position of Principal Deputy Director of the National Economic Council and Assistant to the President. Immediately prior to the Administration, Furman was Economic Policy Director for the President's campaign in 2008 and a member of the Presidential Transition Team.

Furman held a variety of posts in public policy and research before his work with President Obama. In public policy, Furman worked at both the Council of Economic Advisers and National Economic Council during the Clinton administration and also at the World Bank. In research, Furman was a Senior Fellow at the Brookings Institution and the Center on Budget and Policy Priorities and also has served in visiting positions at various universities, including NYU's Wagner Graduate School of Public Policy. Furman has conducted research in a wide range of areas, such as fiscal policy, tax policy, health economics, Social Security, and domestic and international macroeconomics. In addition to numerous articles in scholarly journals and periodicals, Furman is the editor of two books on economic policy. Furman holds a Ph.D. in economics from Harvard University.

Michael J. Graetz

Michael J. Graetz is the Columbia Alumni Professor of Tax Law at Columbia Law School. Before coming to Columbia in 2009, he was the Justus S. Hotchkiss Professor of Law at Yale University, where he had taught since 1983. His most recent books are *The Burger Court and the Rise of the Judicial Right*, forthcoming from Simon & Schuster, and *Follow the Money: Essays on International Taxation*. Previous books include *The End of Energy: The Unmaking of America's Environment, Security and Independence* (MIT Press 2011); *100 Million Unnecessary Returns: A Simple, Fair, and Competitive Tax Plan for the United States*, (Yale University Press 2008); *Death by a Thousand Cuts: The Fight over Taxing Inherited Wealth* (Princeton University Press 2005); *True Security: Rethinking Social Insurance* (Yale University Press 1999); *The U.S. Income Tax: What It Is, How It Got That Way and Where We go From Here* (W.W. Norton & Co, 1999) (a paperback edition of the book originally published as *The Decline (and Fall?) of the Income Tax*); and *Foundations of International Income Taxation* (Foundation Press 2003). He is also the co-author of a leading law school coursebook, *Federal Income Taxation: Principles and Policies*, and has published more than 80 articles on a wide range of federal tax, international tax, health policy, and social insurance issues.

During January-June 1992, Michael Graetz served as Assistant to the Secretary and Special Counsel at the Treasury Department. In 1990 and 1991, he served as Treasury Deputy Assistant Secretary for Tax Policy. In 2013, Professor Graetz was awarded the Daniel M. Holland Medal by the National Tax Association for outstanding contributions to the study and practice of public finance. He has been a John Simon Guggenheim Memorial Fellow, and he received an award from Esquire Magazine for courses and work in connection with provision of shelter for the homeless. He served on the Commissioner's Advisory Group of the Internal Revenue Service. During 1969-1972, he served in the Treasury Department in the Office of Tax Legislative Counsel. He is a fellow of the American Academy of Arts and Sciences.

Professor Graetz is a graduate of Emory University (B.B.A. 1966) and the University of Virginia Law School (J.D. 1969). A native of Atlanta, Georgia, Michael Graetz is married to Brett Dignam and has five children.

Itai Grinberg

Itai Grinberg is a professor at Georgetown Law. Prior to joining the Georgetown law faculty, he served in the Office of International Tax Counsel at the United States Department of the Treasury. At Treasury, he represented the United States on tax matters in multilateral settings, negotiated tax treaties with foreign sovereigns, had responsibility for a wide-ranging group of cross-border tax regulations, and was involved in international tax legislative efforts. Earlier in his career, he practiced law as an attorney in the tax group at Skadden, Arps, Slate, Meagher & Flom LLP, where he focused on a wide range of international tax planning and controversy matters. In 2005, he served as Counsel to the President's Advisory Panel on Federal Tax Reform, a bipartisan advisory commission appointed by President Bush that proposed fundamental tax reforms for the United States.

Mr. Grinberg holds degrees from Amherst College and Yale Law School. He is a Term Member of the Council on Foreign Relations.

James R. Hines Jr.

James Hines teaches at the University of Michigan, where he is Richard A. Musgrave Collegiate Professor of Economics in the department of economics, L. Hart Wright Collegiate Professor of Law in the law school, and Research Director of the Office of Tax Policy Research. His research concerns various aspects of taxation.

He holds a B.A. and M.A. from Yale University and a Ph.D. from Harvard, all in economics. He taught at Princeton and Harvard prior to Michigan, and has held visiting appointments at Columbia University, the London School of Economics, the University of California-Berkeley, and Harvard Law School.

He is a research associate of the National Bureau of Economic Research, research director of the International Tax Policy Forum, former co-editor of the *Journal of Economic Perspectives*, and once, long ago, was an economist in the United States Department of Commerce.

Eric Ohrn

Eric Ohrn is an Assistant Professor of Economics at Grinnell College. His research focuses on corporate taxation and its effects on US business activity. In particular, Professor Ohrn has studied the impacts of policies such as Bonus Depreciation, the "Bush Tax Cuts", and the Domestic Production Activities Deduction on corporate investment, financial reporting, and merger behavior.

Professor Ohrn received his Ph.D. from the University of Michigan in 2014.

PAUL W. OOSTERHUIS

Mr. Oosterhuis is a senior international tax partner in the Washington, D.C. office of Skadden, Arps, Slate, Meagher & Flom. Mr. Oosterhuis has had extensive experience in international acquisition and disposition transactions, financing arrangements and tax planning for U.S. and foreign-based multinational corporations. He frequently represents clients on controversy matters, as well as regulations and rulings proceedings, with the Internal Revenue Service. In addition, he represents clients in intercompany pricing matters, including docketed Tax Court cases and Advance Pricing Agreement negotiations.

He received his B.A. from Brown University and his J.D. Degree from Harvard Law School. After law school he became a Legislation Attorney for the Joint Committee on Taxation, U.S. Congress, and later served as the Committee's Legislation Counsel. He has served as an Adjunct Professor at Georgetown University Law Center, where he taught International Taxation in the Master of Taxation graduate law program.

He has lectured at various professional seminars and institutes, has written on a variety of subjects relating to tax matters, and has testified before Congressional tax writing committees on various tax legislative issues. He is a member of the bar of the District of Columbia and is admitted to practice in the U.S. Tax Court.

John M. Samuels

John Samuels was GE's Vice President and Senior Counsel for Tax Policy and Planning from 1988 to 2015 and was responsible for the company's global tax policy, tax planning and tax compliance operations. Mr. Samuels led and helped build GE's global tax organization, which today is comprised of more than 1,000 tax professionals worldwide, into what is widely recognized as one of the best tax organizations in the world.

Mr. Samuels was also a member of GE's Corporate Executive Council (CEC), the Board of Directors of GE Capital, and the GE Pension Board. Mr. Samuels remains a consultant to GE on domestic and international tax policy issues with a focus on corporate tax reform in the United States.

Mr. Samuels is the Chairman of the Alliance for Competitive Taxation (ACT), a group of 42 major U.S. multinational corporations that supports comprehensive and revenue neutral corporate tax reform. Mr. Samuels is also the Chairman of the International Tax Policy Forum, a Washington, DC based group of major U.S. multinational companies and leading academic economists whose mission is to sponsor independent, nonpartisan economic research and conferences on international tax policy.

Mr. Samuels is the George W. and Sadella D. Crawford Visiting Lecturer in Law at Yale Law School, where he teaches U.S. taxation of international transactions. He was an Adjunct Professor at NYU Law School from 1975 to 1986, where he taught courses in corporate taxation.

Mr. Samuels is a graduate of Vanderbilt University (1966) and the University of Chicago Law School (1969), and serves as a member of the University of Chicago Law School Visiting Committee. He received an LLM in Taxation (1976) from NYU Law School, where he is a Weinfeld Benefactor.

Mr. Samuels writes and speaks frequently on important issues of corporate tax policy, and is widely recognized as a leader in the business tax community.

Martin A. Sullivan

Martin A. Sullivan, chief economist and contributing editor for Tax Analysts' daily and weekly publications and blog, is an expert on federal tax reform. Sullivan has written over 500 economic analyses for Tax Analysts' publications and is the author of two books on tax reform, including the recent *Corporate Tax Reform: Taxing Profits in the 21st Century*. He has testified before Congress on numerous occasions.

Previously, Sullivan taught economics at Rutgers University and served as a staff economist at the U.S. Treasury Department and later at the congressional Joint Committee on Taxation.

Sullivan graduated magna cum laude from Harvard College and received a PhD in economics from Northwestern University. In October 2013 he was the subject of a 4,500-word feature in The Washington Post by Pulitzer Prize-winning journalist Steven Pearlstein.

William M. Treanor

In 2010, Dean Treanor joined the Law Center from Fordham Law School, where he had been dean of the law school since 2002 and Paul Fuller Professor. He had been on the Fordham faculty since 1991. He has also been a visiting professor at the Sorbonne.

From 1998-2001, Dean Treanor served as Deputy Assistant Attorney General in the Office of Legal Counsel, U.S. Department of Justice. From 1987-1990, he was associate counsel, Office of Independent Counsel, during the Iran/Contra investigation, and in 1990 he served as a special assistant U.S. attorney, Misdemeanor Trial Unit, Office of the U.S. Attorney for the District of Columbia. Dean Treanor was law clerk to the Honorable James L. Oakes, U.S. Court of Appeals for the Second Circuit, Brattleboro, Vermont. He has published widely, with a focus on constitutional law and legal history.