



## Research

# Key Elements of a Potential U.S. Patent Box

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## INTRODUCTION

Innovation and technological advancement offer tremendous opportunities for future improvements in the nation's standard of living. Recognizing this potential, the United States employs myriad federal policies to incentivize innovation, including support for basic research, patent protections, as well tax policies that subsidize research and development. However, the United States is hardly unique in its desire to support new and existing research and development. A number of other nations have begun enacting preferential tax treatment for income derived from intellectual property (IP), including patents. Known as "IP boxes" or "patent boxes," these tax policy developments reflect not only nations' interest in locating innovation within their borders, but also attracting firms with highly mobile IP.

Were the U.S. to design a patent box tax structure, several major determinations must be made about exactly how it would function and what rates and treatment certain types of companies and intellectual property would face. This paper examines current U.S. law as it relates to intellectual property and policy considerations in the design of a "patent box" in the United States.

## DESIGNING A U.S. PATENT BOX IN A GLOBAL ECONOMY:



# CURRENT U.S. TAX POLICY FOR INNOVATION

The United States subsidizes technological innovation through several channels. Broadly, these channels are expenditures on research and development, grants of patent protection for qualifying innovations, and research subsidization through the tax code.<sup>[1]</sup> With respect to tax policy, the United States has two primary policies designed to incentivize technological innovation: a tax deduction for research and experimentation and a tax credit against incremental increases in research.

## ***Expensing of research and experimentation***

For typical assets with useful lives beyond the current year, costs associated with developing that asset must be capitalized and depreciated over the life of the asset. For research and experimentation however, taxpayers can deduct from their taxes these costs in the first year in which they occur. The ability to immediately expense these costs is more valuable to a firm than capitalizing and depreciating these costs over time. Examples of qualifying costs include salaries for those engaged in research or experimentation efforts, amounts incurred to operate and maintain research facilities (e.g., utilities, depreciation, rent), and expenditures for materials and supplies used and consumed in the course of research or experimentation (including amounts incurred in conducting trials).<sup>[2]</sup> The Office of Management and Budget estimates that this tax preference will cost the United States \$75.5 billion over the next 10 years.<sup>[3]</sup>

## ***Research Credit***

Federal tax policy also incentivizes research through a tax credit equal to 20 percent of an incremental increase in qualified research expenses. The incremental increase is calculated relative to a “fixed base percentage” that reflects the taxpayers’ ratio of research expenditures as a share of gross receipts over a historical time period. There is also an alternative 14 percent credit that is more easily calculated.<sup>[4]</sup> This credit also has an interaction with the tax *deduction* for qualified research expenses. Taxpayers must reduce their *deductions* allowed by the full amount of any research tax credit they receive, or they may claim the full *deduction* and elect to claim a reduced research tax credit. Another feature of the research tax credit is its temporary nature. While the credit itself is over three decades old, it has routinely expired only to be reinstated on a short-term basis. The credit is currently expired and inapplicable for incremental research costs incurred after December 31, 2014 unless Congress acts to extend it. One recent proposal to simplify and make the credit permanent was estimated to cost \$181.6 billion over the next 10 years.<sup>[5]</sup>

# THE RATIONALE FOR TAX SUBSIDIZATION FOR INNOVATION<sup>[6]</sup>

Economic literature supporting intellectual property falls into one of four related categories: (1) technological advances and growth; (2) tax incentives and technological advances; (3) effectiveness of tax incentives for research to develop technology; and (4) tax incentives for income derived from technology (e.g. patent boxes).<sup>[7]</sup>

## ***Technological progress and economic growth***

Technological progress emerges as the main driver of long-run economic growth in most economic research.<sup>[8]</sup> Researchers attribute the knowledge generated from research activities as the foundation for technological progress. One important feature of knowledge is that one firm's use does not preclude another firm from using the same knowledge, meaning that without patent laws and restriction on use, others can commercialize the technologies to their own benefit.

Because of this feature, economists believe that the social return to knowledge and technological progress often exceeds the private returns.<sup>[9]</sup> This discrepancy in returns may cause firms to underinvest in research (relative to what is socially optimal).

Patent laws exist to address this feature and provide the exclusive right to commercialize the technological advance for a fixed period of time. Economists believe that patents offer a temporary monopoly to allow firms to capitalize on the application of this knowledge and encouraging additional investment activities in technological research.<sup>[10]</sup>

## ***Tax policy and innovation***

Tax subsidies are a method of inducing firms to undertake additional research and development activities.<sup>[11]</sup> As mentioned previously, the U.S. tax system generally offers two tax benefits for research activities: tax credits for research activity and current expensing of research-related expenditures.<sup>[12]</sup> These two types of benefits each carry different incentives with potentially different effects on research activity. For example, the research credit is incremental and only benefits the expansion of research expenditures over prior year levels. To the extent that firms respond to tax credits (by lowering their costs), the research tax credit should increase research activities each year. However, the present law research credit contains certain complexities and compliance costs that diminish its usefulness; thus making expensing of research costs preferable to incremental credits.

## ***Effectiveness of R&D Credits***

Most published studies report that research credits induce increases in research spending.<sup>[13]</sup> Generally, review of these empirical studies of the research credit suggests that an additional dollar of the research credit generates an additional dollar of investment in research.<sup>[14]</sup> However, these studies report a range of estimates of the price elasticity for research.

One of the issues with evaluating the effectiveness of tax credits and deductions (or expensing) of research spending is that it focuses exclusively on the development costs. Patent boxes differ from tax credits for research and development, because patent boxes operate on the “back end” of the production cycle while R&D credits operate on the “front end.” Patent boxes apply after technologies are developed and are in place, by focusing on the sale and commercialization of existing IP assets.

Countries design patent boxes to stimulate research activities, maintain technological advances within their borders, stem the outflow of technology, and reap the benefits of increased productivity derived from domestic technological research.<sup>[15]</sup>

## ***Research on Patent Box Effectiveness***

While patent box tax regimes have been in place since 2001, widespread use of patent boxes has been limited to periods after 2007.<sup>[16]</sup> This limited experience means that there is a limited amount of empirical evidence, which makes evaluating the policy’s efficacy difficult. However, prior to the implementation of patent boxes, a number of economic studies considered the potential for tax benefits to influence the location of IP and since the implementation, a limited number of studies review the available evidence.

Prior to implementation of patent boxes, two studies considered the effect of tax policy to influence the location decisions of intellectual property. These studies, by Griffith, Miller and O’Connell and Bohm, Karkinsky, and Riedel concluded that tax rate was an important aspect of the location choice.<sup>[17]</sup> The authors focus their analysis on intellectual property and patent boxes, but Grubert had established previously the economic theory of taxes and multinational location choices for intellectual property.<sup>[18]</sup>

Hassbring and Edwall evaluated data from 21 OECD countries and concluded that patent box regimes have a positive effect on the number of patent applications to the European Patent Office.<sup>[19]</sup> Their analysis found that domestic inventors had a 14.6 percent increase and foreign investors had a 20.6 percent increase in their propensity to patent.<sup>[20]</sup>

Evers, Miller, and Spengel incorporate the existing patent box regimes into a measure of the cost of capital and average effective tax rates.<sup>[21]</sup> Their results indicate that regimes allowing a deduction for research expenses at the regular corporate tax rate (rather than the lower patent box rate) could result in negative average effective tax rates. They believe that this feature creates a subsidy to unprofitable projects and affects firm decision making, particularly when countries have significant differences in their patent box regimes.

Other recent empirical studies show that European firms' intellectual property is more likely to be held in low-tax subsidiaries than tangible assets (Dischinger and Riedel) and that the location of patents is responsive to corporate income tax (Griffith, Miller, and O'Connell).<sup>[22]</sup>

As empirical evidence on firm location choices, patent filings, and tax revenues become available, it is likely to demonstrate that patent boxes continue to have a significant influence on multinational corporation behavior. However, it is also likely that, without the proper design, countries may find that they are competing against one another to gain and retain firms holding the patents for intellectual property. The following sections identify the twelve existing patent box regimes in Europe and provide the framework for a U.S. system.

## SUMMARY OF EUROPEAN PATENT BOX REGIMES

The following table provides a side-by-side comparison of the current features of the existing European patent box regimes (prior to any changes to existing regimes).<sup>[23]</sup>

**TABLE 1 - PATENT BOX REGIMES**

Country	What are the IP Box and Corporation Income Tax Rates?	What is the tax base?	In addition to patents, what IP qualifies for the reduced tax rate?	Is there a limit on the benefit?	Can the IP be contracted out to a third party outside the border?	Can the IP be acquired?	Does existing IP qualify?
<b>Belgium</b> 2007	6.80/33.99	Gross Income	Supplementary Protection Certificates (SPC), certain know-how closely linked to a patent of SPC.	Deduction limited to 100 percent of pretax income	Yes, with certain restrictions	No, unless further developed <sup>a</sup>	No
<b>Cyprus</b> 2012	2.50/10.00	Net Income	Secret formulas, designs, models, trademarks, service marks, client lists, internet domain names, copyrights (including software), and know-how.	No	Yes	Yes	No
<b>France</b> 2001, 2005, 2010	15.50/34.43	Net Income	SPC, patentable inventions, manufacturing processes associated with patents, improvements of patents.	After 2011, there is a limit on subcontracted expenses (€2m)	Yes, within the EU	Yes	Yes

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<b>Hungary</b> 2003	9.50/19.00	Gross Income	Secret formulas and processes, industrial designs and models, trademarks, trade names, copyrights (including software), know-how, business secrets	Deduction limited to 50 percent of pretax income	Yes, no limitation	Yes	Yes
<b>Liechtenstein</b> 2011	.250/12.50	Net Income	Designs, models, utility models, trademarks, copyrights (including software)	No	Yes, no limitation	Yes	No
<b>Luxembourg</b> 2008	5.84/29.22	Net Income	SPC, designs, models, utility models, trademarks, brands, domain names, copyrights on software.	No	Yes	Yes	No, unless from a related company and acquired after 2007
<b>Malta</b> 2010	0.00/35.00	Not Applicable	Trademarks, copyrights (including software).	Not Applicable	Yes	Yes	No
<b>Netherlands</b> 2007, 2010	5.00/25.00	Net Income	IP for which R&D certificate has been obtained (includes inventions, processes, technical scientific research, designs, models, certain software)	No	Yes, within the EU	No, unless further developed <sup>a</sup>	No
<b>Portugal</b> 2014	15.00/30.00	Gross Income	Models and industrial designs, protected by IP rights (excludes explicitly trademarks and other IP)	No	Yes, with certain limits	Yes	Yes
<b>Spain</b> 2008	12.00/30.00	Net Income	Secret formulas and procedures, plans, models	Yes, 6 times the cost incurred to develop IP	Yes, within the EU or European Economic Area	No <sup>a</sup>	Yes
<b>Nidwalden, Switzerland†</b> 2011	8.80/12.66	Net Income	Secret formulas and processes, trademarks, copyrights (including software), know-how	No	Yes	Yes	Yes
<b>United Kingdom</b> 2013	10.00/23.00	Net Income before Interest	SPC, certain other rights similar to patents.	No	No	No, unless from related group that developed the IP and acquiring company must manage use of the patent <sup>a</sup>	Yes

<sup>a</sup> By limiting the acquisition of the IP, these regimes attempt to ensure that the tax break relates to real economic activity.

**TABLE 1, CONTINUED - PATENT BOX REGIMES**

Country	Credit for withholding taxes for royalties received from abroad?	Can the firm perform R&D abroad?	How do the rules treat past R&D expenses associated with the IP?	Does qualifying income include embedded royalties?	Does qualifying income include sales of qualified IP?
<b>Belgium</b> 2007	Yes	Yes, but only at qualifying centers.	No Recapture	Yes	No
<b>Cyprus</b> 2012	Yes	Yes	No Recapture	Yes	Yes (four-fifths of the value)
<b>France</b> 2000	Yes	Yes, within the EU	No Recapture	No	Yes
<b>Hungary</b> 2003	Yes	Yes	No Recapture	No	Yes
<b>Liechtenstein</b> 2011	Not applicable (no WHT)	No	Recapture	No	Yes, tax exempt
<b>Luxembourg</b> 2008	Yes	Yes	Recapture (capitalized development costs)	Yes	Yes
<b>Malta</b> 2010	Not applicable	Yes	Income not eligible if R&D expenses previously deducted	Yes	Yes
<b>Netherlands</b> 2007	Yes, with limits	Yes, within EU; strict conditions apply to R&D IP	Recapture	Yes	Yes
<b>Portugal</b> 2014	Not available	Not available	Capitalization of development costs (regular tax system)	Yes	No
<b>Spain</b> 2008, 20	Yes	Yes, within EU	No Recapture	No	No
<b>Nidwalden, Switzerland</b> 2011	Yes		No Recapture	Yes	Yes
<b>United Kingdom</b> 2013	Yes	No	R&D Expenses allocated to patent income overall.	Yes	Yes

## DESIGNING A PATENT BOX FOR THE UNITED STATES

The basic feature of a patent box tax regime is a preferential rate on IP-derived income, but additional issues, including the scope of the income, location, timing of the preferential treatment must also be considered. In addition to behavioral concerns, the revenue implications of a given policy can limit the generosity of the preferential treatment of IP-derived income.

## **Preferential Rate**

Ultimately, the goal of a patent box is to offer preferential rates to IP-sourced income. As noted above, IP location is sensitive to tax rates, so determining the appropriate rate in the context of revenue constraints is important. Among European nations that have implemented patent box regimes, tax rates range from 0 (Malta) to 15.5 percent (France). Further these are *effective* rates that can be achieved through two separate approaches. The first applies a reduced tax rates on qualifying income (e.g. France, Netherlands, and the UK). The second provides an exemption for a portion of revenues attributable to the IP (e.g. Belgium, Hungary, Luxembourg, Spain, and Cyprus). While these approaches are different in technical terms, the effects of the regimes are quite similar.<sup>1241</sup> However, what does create significant differences in the effects of the patent box regime is the revenue base on which the tax rate (or exemption) applies, and existing patent box ranges do not define tax-preferred income uniformly across forms of IP.

Additional factors can determine the scope and the revenue implications related to the preferential rate. For example, determining whether taxpayers can deduct losses and expenses associated with the qualified IP at the maximum corporate rate instead of the preferential rate could have significant implications, particularly in the U.S. where a rate-sensitive deduction is one of two primary IP-related tax policies. Limiting losses and expenses to the lower rate would serve to mitigate revenue losses. Other limitations could involve restricting the benefit to income of some multiple of the R&D expense or some ratio of a firm's total income.

## **Location**

The location of the IP development is an important consideration in the design of a patent box. Notionally, a patent box could encourage domestic research and development, and any domestic firm with income derived from IP would benefit from preferential rates. However, some patent box regimes do not require that the research be conducted within the nation's borders. Such a design is less concerned with the location of the research activity, as attracting multinational firms that would benefit from preferential rates on IP-derived income. Determining the scope of the patent box would necessarily require determining whether income from foreign-based IP could benefit from preferential rates.

## **Timing**

Timing is an additional element that must also be considered in the design of any potential U.S. patent box system. Timing in this context relates to the maturity of the IP from which

tax-preferred income is derived. For example, would a new patent box regime benefit income from existing U.S. patents? Or would the new regime only be granted prospectively? These design choices would have important behavioral and revenue consequences. Granting preferential treatment to existing IP-derived income could act as a windfall to older IP still enjoying patent protection, but could also preclude the relocation of that IP to more favorable tax climates. Limiting the patent box treatment to prospective IP-sourced income could incentivize greater innovation in the future, and could mitigate the revenue loss from a full grandfathering of all qualified income. However, to the extent that IP is mobile, “old” IP under this new regime would be disadvantaged. Timing *and* location must also be considered with respect to past income earned abroad derived from U.S. IP that has not been repatriated.

## CONCLUSION

It has been longstanding federal policy to subsidize innovation and technological advancement in the tax code. Current U.S. policy achieves this through deductions and credits for research, which generally increases research activity beyond what would otherwise occur, benefiting society at large. However, other nations are reforming their tax code to benefit from increased research activity, as well as the domiciling of IP-intensive firms within their borders. While these new tax regimes, “IP boxes” or “patent boxes,” have yet to register as complete policy successes or failures, indications from initial evidence suggests IP is sensitive to the key features of these new tax regimes. However in crafting a potential patent box for the United States these features, specifically related to the appropriate rate, as well as consideration of location of IP and the timing of the preferential treatment must be carefully weighed.

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[1] Federal expenditures can include basic, applied, developmental, and acquisition of R&D facilities and equipment,  
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