Tax Incentives for R&D in Switzerland

Competitiveness of R&D Tax Investment Promotion in Switzerland

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Content

This study has been created by KPMG AG on behalf of the State Secretariat for Education, Research and Innovation ("SERI"). KPMG AG is responsible for its contents.

Preface

Research and development (R&D) is the essential basis for innovation and thus also for new product developments, new or improved services and technologies, and ultimately also for Switzerland's further economic development. R&D is essential for addressing social and economic challenges, including a recently emerged pandemic. For this reason, Switzerland has been further developing the framework conditions for its attractiveness as a business location for years, with a targeted education, research and innovation policy, and improving its economic appeal through strategic, targeted investments. A key element has been added since 1 January 2020 with the implementation of the Tax Reform and AHV Financing ("TRAF") bill: Providing tax incentives to encourage R&D, both on the expenditure side and on the side of the income generated from it. A distinction must be made between these tax incentives and any subsidies that are paid out irrespective of a company's profits.

Switzerland is globally recognized as one of the most innovative countries in the world. In international innovation indexes and rankings, Switzerland often occupies a top position. In the recent past, however, there have been increasing signs that further efforts are needed to maintain this position, as the international competition for attractive research locations has become increasingly intensifying.

To keep Switzerland attractive to R&D-performing companies while preserving in-house R&D activities by companies in Switzerland. However, the number of Swiss companies conducting R&D has been declining steadily for several years, making R&D investment increasingly concentrated in a small number of companies. Based on this initial situation, KPMG was commissioned by the State Secretariat for Education, Research and Innovation ("SERI") to prepare this study on the competitiveness of R&D investment tax incentives in Switzerland and to conduct a survey on the topic among Swiss companies.

KPMG already conducted similar surveys in 2011 and 2015 together with the Swiss-American Chamber of Commerce. The latest survey again includes numerous SMEs in addition to major international corporations.

This study not only takes a look at foreign states to assess the competitiveness of Swiss R&D tax incentives, but also includes recent international developments in the corporate tax environment. Therefore, this publication should also be seen as a contribution to the current discussion regarding an expected global minimum taxation and its impact on R&D tax incentives.

Olivier Eicheneberger
Director
Head R&D Tax Incentives
KPMG Switzerland

0 Executive Summary

Today, Switzerland has a strong innovative power and is commonly listed as the world's most innovative country. Switzerland owes this important position not only to the large multinational companies resident here but also to the numerous SMEs that boast of a high level of innovation. However, many of these companies are already increasingly conducting R&D abroad, either because of the proximity to sales markets or production sites, or because of lower costs or other more attractive conditions. It is important to counteract this tendency to relocate R&D – especially in view of the strong international competition. In order to maintain or strengthen Switzerland's position as an R&D location and its innovative strength, it is essential to create a framework that promotes innovation.

By adopting the TRAF bill and introducing the patent box as well as the additional R&D deduction as of 1 January 2020, Switzerland has taken further measures to preserve its appeal as an R&D location. The aim of this study is to show Switzerland ranks in the international competition for tax incentives for R&D after the TRAF has entered into force and to what extent international developments (in particular BEPS 2.0) affect the tax incentives for R&D in Switzerland.

The situation in Switzerland after the TRAF measures have been implemented

In Switzerland, at the federal level, it is still only possible to set up reserves for future R&D contracts with third parties up to the amount of 10% of the taxable profit, but not exceeding a total of CHF 1 million. Reserves for future R&D contracts with third parties are also often possible on cantonal level.

As the TRAF entered into force, the cantons were authorized to grant an additional tax deduction of 50% on R&D expenses to the extent that they represent scientific research and science-based innovation within the meaning of the Federal Act on the Promotion of Research and Innovation ("RIPA") and were generated domestically.

Furthermore, the TRAF allowed for the introduction of a patent box at the cantonal level. The patent box provides for reduced taxation of the net profit attributable to patents or comparable rights. The statutory reduction is 90%, but cantons could also provide for a lower reduction. The legislator has limited the TRAF measures' relief effect to a maximum of 70%, i.e. TRAF deductions may not reduce the taxable profit prior to these deductions by more than 70%. However, the cantons may provide for a lower relief limit also in this regard.

So how does Switzerland compare to other countries?

The country ranking shows that Switzerland is still in a top position in the international tax competition. However, this is because (ordinary) tax rates in Switzerland are comparatively low, with a low of 11.85% in Zug and an average of 14.87% across all cantons. When comparing Switzerland's R&D tax incentives with those of other countries, Switzerland performs modestly. When it comes to the additional R&D deduction, Switzerland ranks last among the countries considered here, with an additional (cantonal) deduction of 50%. In the case of the Swiss patent box, even though the maximum reduction of 90% is on par with other countries, it must be taken into account that this reduction only applies at the cantonal and municipal level. Due to the overall rather lower tax rates in Switzerland, the taxation level in the patent box is in line with that of other countries. Also, it should be noted that the patent box in Switzerland is limited to patents and comparable rights, which is why unlike in other countries, unpatented software protected merely by copyright and intangible property rights such as designs/utility models or other technical know-how do not qualify for the patent box. In this respect, Switzerland still has potential for development.

Current developments and impact on R&D investment tax incentives

There are international taxation projects that have an impact on existing R&D incentives in Switzerland, particularly as part of the BEPS 2.0 project (Pillar 1: Reallocation of taxation rights and adjustment of profit allocation rules in favor of market countries; Pillar 2: global minimum taxation). In particular, the planned global minimum taxation must be taken into account. In brief, it can be expected that the tax incentives for R&D recently introduced with the TRAF (additional R&D deduction and patent box) will be significantly affected by the minimum taxation. In particular, the global minimum taxation will most likely prevent the application of the patent box in many cantons by companies concerned, whereas in case of high-tax cantons, the patent box can still help lower the tax burden to the level of the minimum taxation. The additional R&D deduction might benefit from possible substance-based exemptions, which could allow continued benefits for certain companies. Thus, R&D incentives should be maintained and developed as an important instrument. However, for companies affected by the minimum taxation and applying the patent box, there is a need for action for other tax incentives, which are internationally accepted.

Results from the survey

Based on an online questionnaire, KPMG conducted a survey to explore the current situation of R&D-performing Swiss companies and to gain an impression of the views and opinions of these companies on the current tax incentives for R&D in Switzerland and internationally. The respondents ranged from SMEs to international corporations. It should be noted at this point that the companies participating in the survey experienced a closer proximity to R&D activities than other companies in Switzerland. The results of the survey are therefore not representative of the economy as a whole.

According to 73% of the companies surveyed, tax incentives for R&D activities were important or very important when choosing a business location. The survey also indicates that slightly less than half (43%) of the participating companies already use or would like to use one of the two R&D tax incentives introduced with TRAF in the future. The reasons given by the 57% of companies for not using any of the two measures are as follows: R&D activities do not qualify (31%), administrative burden too high (19%), difficulty to collect the necessary information (16%), too little benefit (14%).

The majority of these companies justify not using them with the fact that the instruments are not sufficiently known or that the necessary know-how is not available in the company to take the necessary steps to claim the deduction. In view of these responses, we would like to use this study to help raise awareness of the instruments available in Switzerland. Moreover, the survey showed that the companies still consider the instruments to be very relevant in the future or that their importance will even increase, and this regardless of whether the global minimum taxation (Pillar 2) is introduced or not. In the survey, companies had the opportunity to make suggestions on how the additional R&D deduction and the patent box could be improved. Primarily, the companies demand a more simplified administrative application of the instruments as well as a reduction of the effort involved (e.g. lower complexity of the required data, pragmatic implementation). Furthermore, many companies call for a broader application of the instruments. In this context, the companies demand, for example, that the scope of qualifying rights for the patent box be expanded or that the definition of "R&D" be broadened. Ranked third, the companies state that the instruments are still too little known at the moment and that there should be more clarity in this regard.

1 Research and Innovation in Switzerland

In Switzerland, research and innovation are of major importance. Switzerland's high prices in particular make manufacturing mass-produced goods too expensive and it has not few significant natural resource deposits. Accordingly, Switzerland has already in the past focused on the development of products and provision of services with high added value.

1.1 Switzerland's leading position

Switzerland is a leader in research and innovation compared to other countries. Switzerland is considered the most innovative country according to the *Global Innovation Index 2021*.[1] Furthermore, Switzerland is number one on the innovation scale in Europe according to the *European Innovation Scoreboard 2021*.[2] According to this study, Switzerland's strengths are in particular attractive research systems, qualified human resources and intellectual property. In terms of the indicators of this study, Switzerland performed particularly well with regard to international scientific co-publications, foreign doctoral students and "lifelong learning". However, although it still ranks first in the European comparison, Switzerland lost points on the rating scale compared to previous years, due in particular to a lower rating of government support for R&D in business, employment in knowledge-intensive activities, the export of knowledge-intensive services and environment-related technologies.[3]

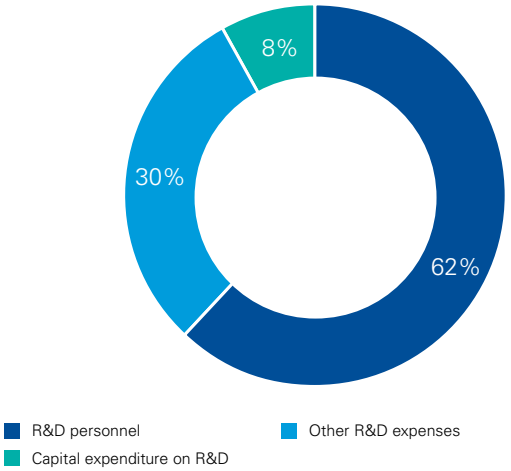
1.2 Some facts and figures

Large sums of money are spent annually on R&D in Switzerland. In 2019, Intramuros R&D expenditures[4] totaled around CHF 22.9 billion, representing around 3.15% of Switzerland's gross domestic product (GDP).[5] Of this, around 68%, (i.e. around CHF 15.5 billion) was incurred by the private sector, around 29% (i.e. around CHF 6.6 billion) by universities, 3% (i.e. CHF 610 million) by private non-profit organizations and 1% (CHF 214 million) by the federal government. Compared internationally, Switzerland lagged behind Israel, South Korea, Sweden, Japan, Austria and Germany in R&D spending as a percentage of GDP, but positioned itself well above the OECD average of 2.47% of GDP. Looking at the figures of recent years shows that Switzerland has been able to improve steadily its performance in this respect.[6]

The private sector played the largest role in financing R&D expenditure in Switzerland, accounting for 65% (around CHF 14.8 billion) in 2019. The federal government and the cantons together spent a total of CHF 6.3 billion on R&D, 85% of which went to universities. CHF 1.4 billion flowed into Swiss R&D activities from abroad. In contrast, CHF 7.6 billion was invested from Switzerland in research and innovation abroad, with around 89% of these funds coming from the private sector.[7]

Payroll costs account for the majority of R&D expenditures in Switzerland. In the private sector, around CHF 9.6 billion of the approximately CHF 15.5 billion in R&D spending in 2019 was spent on personnel. In contrast, around CHF 4.6 billion was spent on other R&D expenses, and capital expenditure on R&D accounted for around CHF 1.3 billion.[8] The ratio of these expenditures for 2019 can be represented as follows:

Distribution of R&D-Spending in the private sector in 2019

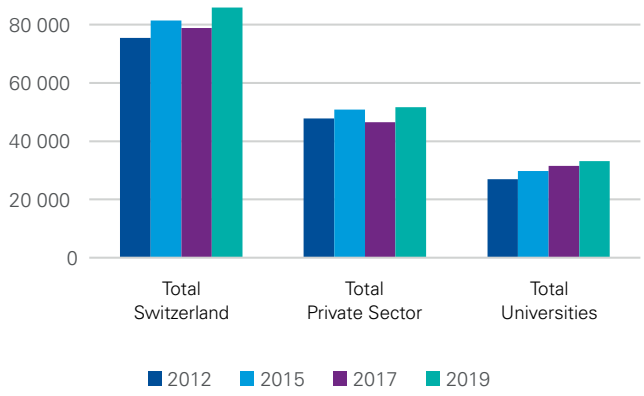


Source: Swiss Federal Statistical Office, R&D expenditure by the private sector, 2021

[1] World Intellectual Property Organization, Global Innovation Index, 14th Edition, 2021, page 4 f., https://www.globalinnovationindex.org/gii-2021-report# https://www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2021.pdf.
[2] European Commission, European Innovation Scoreboard 2021, page 29 f., https://ec.europa.eu/docsroom/documents/46013.
[3] European Commission, European Innovation Scorebord 2021, page 74, https://ec.europa.eu/docsroom/documents/46013.
[4] Intramuros R&D expenditure is the amount spent on the research and development activities of a given institution (company, university, etc.).
[5] In full Federal Statistical Office (FSO), Research and Development (R+D) Expenditure, published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/statistiken/bildungwissenschaft/technologie/indikatorsystem/zugang-indikatoren/w-t-input/f-e-aufwendungen.assetdetail.16984295.html
[6] Federal Statistical Office (FSO), Research and Development (R+D) Expenditures, published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/statistiken/bildungwissenschaft/technologie/indikatorsystem/zugang-indikatoren/w-t-input/f-e-aufwendungen.assetdetail.16984295.html.
[7] Federal Statistical Office (FSO), Research and Development (R+D) Financing, published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/aktuell/neue-veroeffentlichungen.assetdetail.16984296.html.
[8] Federal Statistical Office (FSO), Research and Development (R+D) Expenses of the private sector, published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/technologie/indikatorsystem/zugang-indikatoren/w-t-input/f-e-aufwendungen-privatwirtschaft.assetdetail.16984286.html.

In view of the importance of personnel expenses in R&D activities in Switzerland and the linking of the additional R&D deduction to personnel expenses for companies' R&D activities, the number of employees in the R&D sector over time is relevant. When looking at the figures for the last few years, it is noticeable that the number of full-time equivalent (FTEs) jobs in Switzerland has increased overall. The largest increase was at universities. At 46,510 FTEs, employment in the private sector decreased in 2017 compared to 50,825 FTEs in 2015. Fortunately, this number increased again in 2019 to 51,623, surpassing even the number of FTEs from 2015.[9] The following chart shows the development of FTEs in the various sectors since 2012:

FTEs by sector 2012 - 2019



Source: Federal Statistical Office (FSO), Personnel Research and Development (R+D) in Switzerland, by sector and activity, 2000-2019 [10], 2021

In an international comparison, Switzerland is behind some countries (Denmark, Finland, Austria, the Netherlands, Germany, Sweden) when calculating the number of FTEs for personnel working in R&D, at 16.1 FTEs per 1,000 employees. The frontrunner in this respect is Denmark, with 19.6 FTEs in R&D per 1,000 employees.[11]

The 2019 figures mentioned in this section do not yet indicate whether the introduction of R&D tax incentives in Switzerland from 2020 will have an effect and lead to Switzerland's position being strengthened internationally.

[9] Federal Statistical Office (FSO), Personal Research and Development (R+D), published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/technologie/indikatorsystem/zugang-indikatoren/w-t-input/f-e-personal.assetdetail.16984289.html.

[10] In this presentation, the employees of the federal government are not shown, since with 1,041 FTEs they make up a very small part of the total of 85,853 FTEs.

[11] Federal Statistical Office (FSO), Personal Research and Development (R+D), published on 27 May 2021, https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/technologie/indikatorsystem/zugang-indikatoren/w-t-input/f-e-personal.assetdetail.16984289.html.

2 Tax incentives for R&D in Switzerland

The Federal Constitution states that the government shall promote scientific research and innovation. Traditionally, this has mainly been achieved through targeted education, research and innovation policies and strategic investments in education. Tax R&D incentives have been somewhat neglected for a long time, especially in view of international developments and the introduction of corresponding tax measures in countless countries. The necessity to act, however, was for a long time less urgent, as special tax regimes allowed companies in Switzerland to collect income from intangible assets with tax privileges under certain conditions until the Federal Act on tax reform and AHV financing ("TRAF").

Swiss tax system

The Swiss tax system reflects the federal structure of Switzerland, which consists of 26 sovereign cantons with over 2,200 independent municipalities. Taxation in Switzerland takes place at the federal level as well as at the cantonal and municipal level. The reforms of the tax system carried out in recent years ensured that the formal aspects of the various cantonal tax laws have become more harmonized overall. Nevertheless, the cantons are still autonomous with regard to certain non-harmonized and quantitative aspects of taxation, in particular with regard to the determining the applicable tax rates. Therefore, there are differences between the individual cantons with regard to the tax burden as well as the design of individual regulations. Thanks to the vertical tax harmonization, most of the tax regulations at the federal level are identical or similar to those at the cantonal and municipal levels, although there are differences, especially in the case of tax incentives for R&D investment.

Before TRAF entered into force on 1 January 2020, Switzerland offered only very meager tax incentives for R&D. Companies and self-employed individuals had (and still have) the option of setting aside provisions (actually reserves)[12] for future R&D contracts. The canton of Nidwalden was the only canton that had already known a form of IP box (so-called license box) for cantonal and municipal taxes since 2011. The cantons of Geneva and Jura already had in place specific tax relief for innovative (young) companies. Furthermore, there were and still are tax holidays in certain regions, which, however, basically focus on the creation of jobs and not specifically on R&D activities.

Tax Reform and AHV Financing (TRAF)

In particular, the specific objectives of TRAF were to restore international acceptance of the Swiss corporate tax system, maintain the attractiveness of the country as a business location, and secure adequate tax revenues. It became necessary to reform Swiss corporate taxation as certain tax privileges offered to companies were no longer in line with international requirements. In parallel with the abolition of these tax privileges, new internationally recognized instruments for tax incentives for R&D were introduced. In addition to these measures in favor of companies, the political process also required compensatory measures for the population, hence the inclusion of additional financing in favor of the AHV in the package.

At the cantonal and municipal tax level, the TRAF bill provided for two R&D tax incentives new to Switzerland, namely the patent box and the additional R&D deduction, which were approved by about 66% of the popular vote and unanimity of the cantons in the referendum on 19 May 2019, entering into force on 1 January 2020. Other countries have had similar R&D tax incentives in place for much longer, so Switzerland has for the most part merely been able to catch up, without standing out in a positive way.

2.1 Federal level

In terms of direct federal tax, provisions can (and already could before TRAF) be made for R&D contracts that will be awarded to third parties in the future, up to the amount of 10% of the taxable profit, but up to a maximum of CHF 1 million in total. From an accounting perspective, this is an anticipated expense (so-called reserve) and not a provision. As a result of the option provided under tax law for the R&D reserve, a future expense is brought forward. This results in certain liquidity benefits. There are no other R&D tax incentives; in particular, the patent box and the additional R&D deduction do not apply. Potential tax holidays within the framework of regional policy is not discussed here, as it does not specifically depend on R&D activities.

[12] From an accounting perspective, this is an anticipated expense and thus a so-called reserve (and not a provision). The option under tax law to make an R&D provision (reserve under accounting law) means that the future expense is brought forward. This leads to interest or liquidity benefits.

2.2 Cantonal and municipal level

2.2.1 R&D reserves

At the cantonal level, reserves for future R&D contracts with third parties are (and were already before TRAF) also often possible (independently of the TRAF measures). Mostly similar to the federal provision. However, this R&D incentive is not harmonized or specified under federal law. The design of the deductible reserve for R&D (contracts) therefore differs in individual cantons. Some examples of the legal structure in individual cantons are given below, although the provisions may differ somewhat from one another:

Aargau: *The reserves can be formed for R&D contracts as well as for own R&D. The maximum amount is 10% but not more than CHF 1 million. In addition, a profit of at least CHF 100,000 must be reported in order for the reserve to be considered justified for business purposes. The reserve must be released within 3 years.*

Bern: *Reserves charged to income statement are permitted for future R&D.*

Geneva: *Reserves charged to the income statement for future research and development contracts awarded to third parties, up to a maximum of 10% of the taxable business profit, but in total up to a maximum of CHF 1 million (only for self-employed persons).*

Zurich: *Reserves for future R&D that are economically justified for business purposes are contracts with third parties up to 10% of the taxable business income or profit, but not exceeding CHF 1 million in total.*

The reserves for future R&D contracts (with third parties) basically have an impact that is independent of the additional R&D deduction and the patent box. In the case of SMEs, the reserves can at best be used to control the taxable profit by shifting periods in individual years in order to obtain an optimal result taking into account the relief limitation, depending on the amount of the additional R&D deduction.

2.2.2 Tax advantages for innovative start-ups in the cantons of Geneva and Jura

While the canton of Jura has (and had before TRAF) tax relief related to new innovative companies, the canton of Geneva foresaw and foresees in particular administrative simplifications for young innovative companies applying for tax relief. While the rules in Geneva can be classified as general tax relief, the rules in Jura are independent of or complementary to the TRAF measures.

2.2.3 Additional R&D deduction

2.2.3.1 Functionality

With the TRAF, the cantons have been authorized to grant an additional deduction of a maximum of 50% on R&D expenses provided they represent scientific research and science-based innovation within the meaning of the Federal Act on the Promotion of Research and Innovation ("RIPA") and have been incurred in Switzerland. Depending on the design used by the cantons, the qualifying expenses can thus – because these expenses are also already fully deductible independently of the additional R&D deduction – be deducted in total in the amount of between 100% and 150%.

2.2.3.2 Scientific research

In order to define what is in the scope of qualifying scientific R&D, the so-called Frascati principles are generally consulted in practice. The definition in the RIPA is similar to the one in the OECD Frascati Manual 2015, which is used to determine the activities that can be classified as scientific research for statistical purposes. These are the following five cumulative required principles[13]:

- Gaining new knowledge (novel)
- Based on original, non-obvious concepts and hypotheses (creative)
- Uncertainty in terms of the end result (uncertain)
- Following a plan and budgeted (systematic)
- Leading to results that are reproducible (transferable and/or reproducible).

Work performed in the phases preceding the actual R&D activity, such as initialization and market research as well as subsequent phases, such as quality control and troubleshooting, do not in practice qualify for the R&D additional deduction.[14] Also not considered qualifying activities are market introduction and market exploitation.

2.2.3.3 Science-based innovation

Science-based innovation under RIPA occurs through research and therefore also requires that the Frascati principles are cumulatively fulfilled. Accordingly, innovation without research does not qualify for the additional R&D deduction.

2.2.3.4 How to determine the additional R&D deductions

The initial value for the additional R&D deductions is the personnel expenses. Essential are the costs of the employees whose actual function and direct activity is in the R&D of a company. A 35% surcharge is applied to the flat-rate compensation of all other R&D expenses on top of the R&D personnel expenses in order to define the costs qualifying for the additional R&D deduction. In addition, expenses for contract research in the domestic market are also eligible, namely costs incurred from third parties as well as those incurred in the group relationship. In order to

[13] OECD Frascati Manual 2015, Guidelines for the survey and reporting of data on research and experimental development, October 2015, paragraph 2.13 ff. https://read.oecd-ilibrary.org/science-and-technology/frascati-handbuch-2015_9789264291638-de#page1.

[14] SSK analysis regarding the additional R&D deduction of research and development expenditure based on article 10a and article 25a Tax Harmonisation Act, 4 June 2020, paragraph 3.1.2. https://www.steuerkonferenz.ch/downloads/Dokumente/Analysen/Analyse_Abzug_Aufwand-F-und-E_DE.pdf.

prevent in-house research from being treated less favorably than contract research, only 80% of the invoiced amount qualifies for the deduction in each case, since experience shows that, in addition to pure R&D, a profit component and non-qualifying common costs are also charged on. This is intended to limit the tax incentive to the actual R&D component. On this basis, an additional R&D deduction of up to 50% can then be claimed.

The following is an example with a visual representation of what is explained (see graphic below).

Furthermore, the R&D tax deduction is not coordinated or in conflict with other government or voluntary third-party funding (foundations, funds, voluntary cash benefits, etc.). Such third-party benefits remain irrelevant to the qualification and calculation of the R&D additional deduction.

In this example, a company would record its R&D expenses of assumed 235 (of which 100 are R&D personnel costs and 100 are contract research expenses) as an expense in the income statement, which would reduce the profit and also be taken into account for tax purposes. The company could then reduce its taxable profit by an additional 107.5 in its tax return. In the example, the R&D expenses of an assumed 235 can be deducted at 145% ([235 + 107.5] / 235).

2.2.4 Patent box

2.2.4.1 Functionality

The patent box instrument has been implemented in many countries and is accepted by the EU and OECD under certain conditions (so-called OECD standard). With the patent box, the net profit attributable to patents or comparable rights is to be taxed at a reduced rate. It was mandatory for all cantons to implement the provision. The maximum reduction provided for by law is 90%, but the cantons could also provide for a lower reduction, with some partly using this possibility.

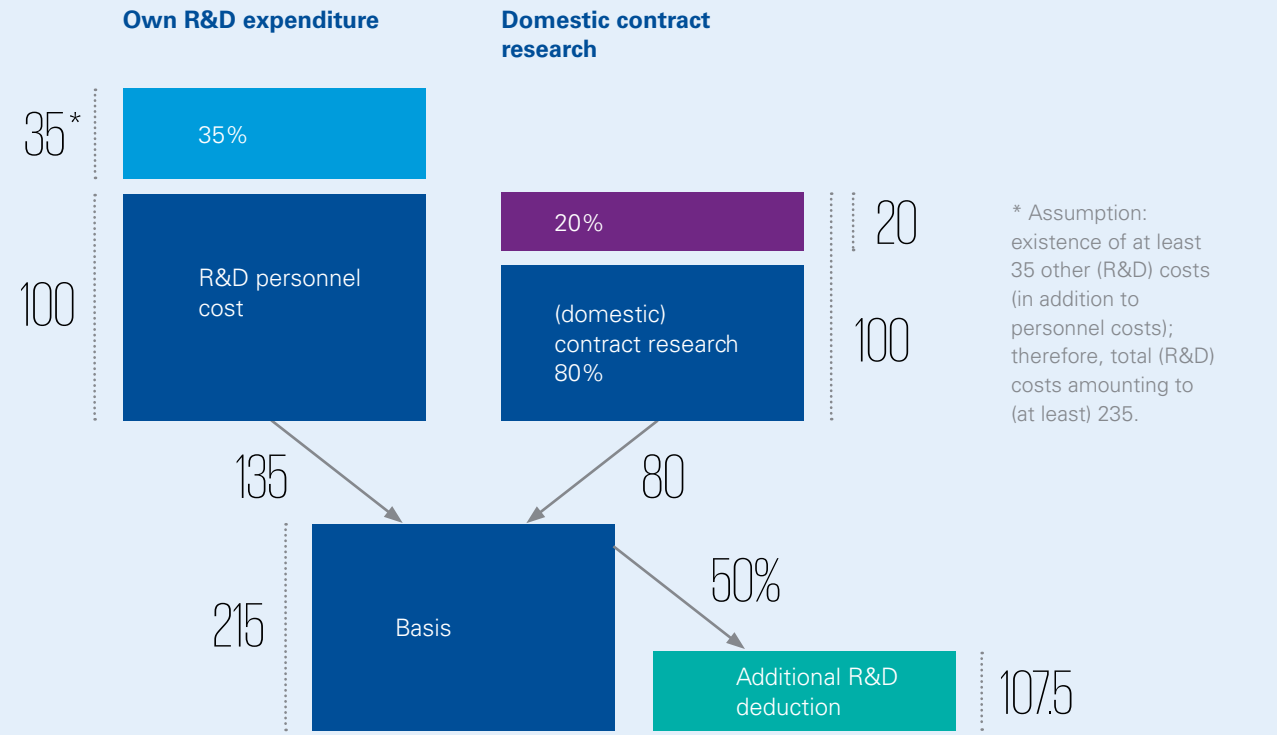
2.2.4.2 Qualified Intellectual property rights

All patents under the European Patent Convention and Swiss patents under the Patent Act qualify as patents. In addition, foreign patents also qualify for reduced taxation insofar as they correspond to European or Swiss patents.

Further registered intellectual property rights (so-called comparable rights) may also qualify for the patent box. These are the following rights:

- Supplementary protection certificates for medicinal products and pesticides
- Topographies (protection of semiconductor products)
- Protected plant varieties
- Protected documents according to the Therapeutic Products Law

Additional R&D deduction – Example



– Reports protected by the Plant Protection Products Ordinance
– Comparable foreign rights

2.2.4.3 Software and SME regulation

The OECD standard also provides an opportunity to include copyrighted software as well as non-patented inventions of SMEs in the catalog of rights qualifying for the patent box. For practical reasons, however, Switzerland has refrained from including these categories in the Swiss patent box. As an exception, software is included if it is part of an integral (patented) invention or if it is patented abroad (e.g. in the USA).

2.2.4.4 Nexus ratio

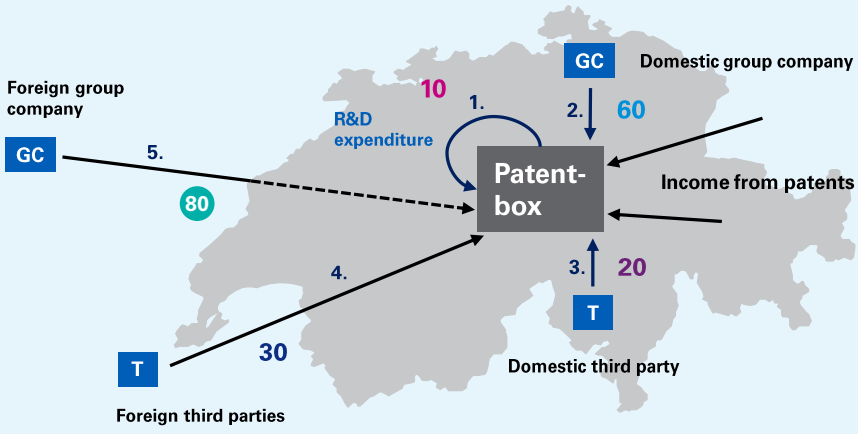
Intangible assets are easily "transferable" and mobile, i.e. they do not depend on location to a large extent, which has led to an increasing focus by industry and tax authorities due to the existing conflict potential. As part of the OECD/G20 project against Base Erosion and Profit Shifting ("BEPS"), the substantial business activity requirement was strengthened with respect to preferential tax regimes in order to align the taxation of profits with the substantial business activity from which they are derived. This is achieved using the so called "nexus approach", which is now an internationally recognized standard. This approach allows a taxpayer to use a patent box only to the extent that the taxpayer itself incurred qualified R&D expenses (taking into account a surcharge of 30% of the qualifying R&D expenses) that resulted in the relevant income. Using R&D expenses as an auxiliary variable for business activity, the nexus approach is based on the principle of patent boxes being designed to incentivize R&D activity and promote growth and employment. Subsequently, a substance requirement is intended to ensure that taxpayers who wish to make use of such regulations actually perform corresponding activities and have actually incurred expenses for this purpose. The substance reference is defined by the nexus ratio.

2.2.4.5 Identifying the qualifying patent box profits

Profits attributable to patents and comparable rights may be technical license fees or profits from the sale of such rights, which are recorded separately in the accounts and are comparatively easy to determine. The directly allocated costs are to be taken into account when determining the box profit before applying the nexus ratio and the cantonal relief.

A slightly different method is used to determine the profit if patents are included in products, whereby their value is compensated through the product price received. An example of such a product including various patents is a smartphone. The sales price compensates not only the

Patent box – Nexus ratio



"uplift" of 30% on the qualifying R&D expenditure

$$\frac{\text{qualifying R\&D expenditure}}{\text{total expenditure}} = \frac{10 + 60 + 20 + 30 + 36}{10 + 60 + 20 + 30 + 80} = \frac{156}{200} = 78\%$$

→ **Therefore, 78% of the qualifying IP income (box income) is subject to a reduced taxation (which means that 78% is partially exempt from taxation, up to a maximum of 90%)**

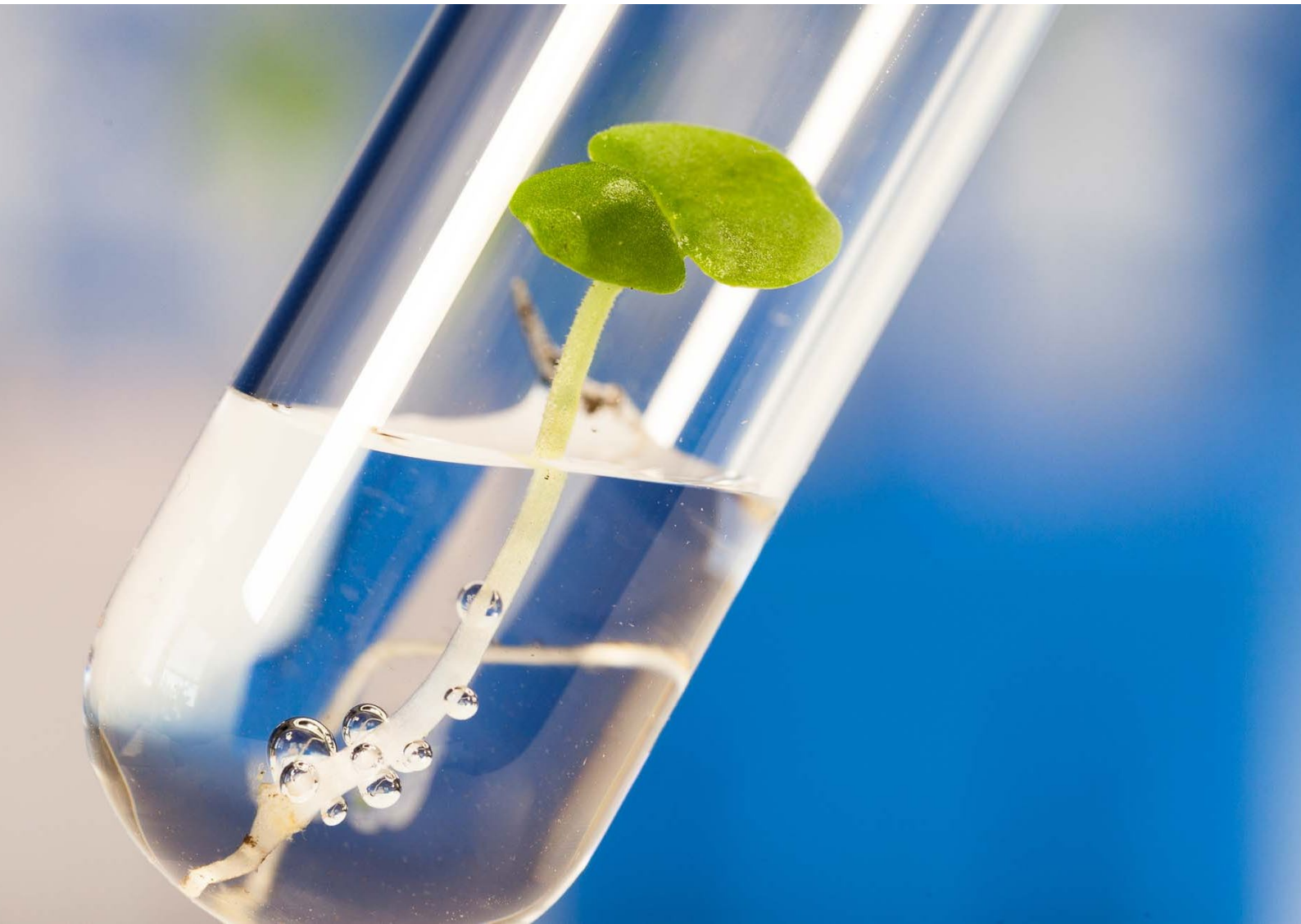
patents but also the trademark. In order to determine the exempted box profit, the income attributable to the patent in the product must first be separated from the total income on the product. For this purpose, the so-called residual method is used, where the profit on the product is the starting point or, if this cannot be determined, the total company profit is assumed. Subsequently, the part of the profit that is not related to patents or similar rights is deducted from the total profit (e.g. trademark fee). This ensures that ultimately only the profit related to patents and similar rights is taxed at a reduced rate.

2.2.4.6 Entry tax

However, the underlying objective of the patent box is to tax the net profits from R&D leading to patents at a reduced rate over time. Therefore, when the patent box is applied for the first time, sum of the R&D expenses for the development of the patents or products taken into account for tax purposes in the ten preceding tax periods must be added for tax purposes (capitalized) and subsequently amortized within the patent box. Cantons may also ensure such entry taxation in a different way within the first five years in which the patent box is applied. In this context, some cantons stipulate, for example, that instead of a one-time taxation of the historical R&D costs upon entry, patent box profits are offset against the historical R&D costs in the first five years and do not benefit from the reduced taxation in the patent box until they are fully offset. The purpose of this entry requirement is to prevent a situation in which the R&D expenses are fully tax deductible while the resulting future profit is only taxed at a reduced rate. This entry taxation ensures that the expenses and income or profits allocated to the patent box are treated equally.

2.2.5 What measures were implemented by the cantons?

To ensure that the special regulations will not result in a company paying zero taxes at the cantonal level, the cantonal tax laws provide for a relief limitation. The tax reductions are subject to an overall maximum relief limit of 70% of the taxable profit. However, the cantons were free to determine a lower maximum relief. Furthermore, no losses carried forward may result from the individual reductions, i.e. the reductions can only be applied if there is a taxable profit in the first place.



Canton	Additional R&D deduction	Patent box relief	Relief limitation	Effective corporate tax rate 2021*	Effective corporate tax rate with maximum relief 2021*	Effective corporate tax rate 2019* (before TRAF)
Aargau	50%	90%	70%	18.55% [15]	11.33% [16]	18.61%
Appenzell A. Rh.	50%	50%	50%	13.04%	10.51%	13.04%
Appenzell I. Rh.	50%	50%	50%	12.66%	10.31%	14.16%
Basel-Landschaft	20%	90%	50%	17.97%	13.19%	20.70%
Basel-Stadt	n/a	90%	40%	13.04%	11.03%	13.04% [17]
Bern	50%	90%	70%	21.04%	12.24%	21.63%
Fribourg	50%	90%	20%	14.12% [18]	12.93%	19.86%
Geneva	50%	10%	9%	14.00%	13.48%	24.16%
Glarus	n/a	10%	10%	12.32%	11.89%	15.68%
Graubünden	50%	90%	55%	14.77%	11.09%	16.12%
Jura	50%	90%	70%	17.00%	10.79%	20.53%
Lucerne	n/a	10%	20% [19]	12.32%	11.46%	12.32%
Neuchâtel	50%	20%	40%	13.57%	11.36%	15.61%
Nidwalden	0%	90%	70%	11.97%	9.12%	12.66%
Obwalden	50%	90%	70%	12.74%	9.36%	12.74%
Schaffhausen	n/a	90%	70%	13.94%	9.76%	15.82%
Schwyz	50%	90%	70%	14.06%	9.79%	15.02%
Solothurn	50%	90%	70%	15.75%	10.36%	21.38%
St. Gallen	40%	50%	40%	14.50%	11.95%	17.40%
Ticino	50%	90%	70%	19.16%	11.55%	20.55%
Thurgau	30%	40%	50%	13.36%	10.68%	16.43%
Uri	n/a	30%	50%	12.63%	10.30%	14.92%
Vaud	50%	60%	50%	14.00%	11.02%	14.00% [20]
Valais	50%	90%	50%	18.57% [21]	13.53%	21.74%
Zug	50%	90%	70%	11.85%	9.08%	14.35%
Zurich	50%	90%	70%	19.70%	11.75%	21.15%
Switzerland average				14.87%	11.06%	17.06%

* Maximum tax rates at the cantonal capital.

To illustrate the effect of the relief limitation, a simple[22] example is given below using the canton of St. Gallen (relief limitation of 40%):

Corporate profit according to the annual financial statement	CHF 1'000
– reduction patent box (assumption)	CHF 300
– reduction additional R&D deduction (assumption)	CHF 200
= profit subject to tax before relief limitation	CHF 500
+ correction relief limitation (max. 40% relief) [23]	CHF 100
= profit subject to tax after relief limitation	CHF 600

[15] Calculation examples: Statutory tax rate canton of AG of (max.) 8.5% * Tax multiplier of 168% equals 14.28%. Plus direct federal tax of 8.5% equals 22.78%. This corresponds to the tax rate on the after-tax profit. Since (international) profit tax rates are always compared on the pre-tax profit, the conversion is made at the effective tax rate (on the pre-tax profit): 22.78% / (100% + 22.78%) = 18.55%.

[16] Calculation examples: Due to the relief limitation in the canton of AG, the taxable profit on cantonal level can be reduced by max. 70%. Consequently, the cantonal tax rate of 14.28% (incl. tax rate) is reduced to no lower than 4.28%. In addition, the direct federal tax of 8.5% corresponds to 12.78%. Subsequently, the conversion to the effective tax rate takes place: 12.78% / (100% + 12.78%) = 11.33%.

[17] 2018: 22.18%, "TRAF tax reduction" has already been applied in 2019.

[18] Including "Taxe sociale".

[19] Assumption: no transitional measures are claimed.

[20] 2018: 21.37%, "TRAF tax reduction" has already been applied in 2019.

[21] No church tax.

[22] Without income from participations and loss carryforwards.

[23] With a relief limitation of 40%, the relevant deductions may reduce the corporate profit for tax purposes by a maximum of 40% - in the example: 40% of CHF 1'000 = CHF 400. Since in the example deductions of CHF 500 are claimed, CHF 100 must be corrected.

3 Tax incentives for R&D abroad

3.1 Overview situation abroad

To encourage corporate R&D investment and innovation, governments in many countries are adopting a mix of various financial and non-financial measures. Such financial support can take the form of direct government funding (e.g. R&D grants, government procurement of R&D services) or tax incentives, which often provide preferential treatment for R&D expenditures or for income from R&D and innovation. In the OECD countries, expenditure-based R&D tax incentives are currently the most popular policy instrument, accounting for more than half of total government support for R&D in the economy.[24] The role of R&D tax incentives in promoting business innovation varies from country to country. In general, direct funding represents a more discretionary and selective form of support which enables governments to fund specific areas of innovation where societal benefits are likely to be high. Taxation incentives, though, are in principle available to all companies that conduct R&D, provided some conditions are met. In general, their administration is simpler and less costly than direct funding measures, although administrative and monitoring costs can still be significant.

Cost-based R&D tax incentives aim to encourage R&D activities by reducing after-tax costs. There is a wide variation in the structure of these provisions from country to country, which makes it difficult to directly assess and compare the tax benefits of R&D tax incentives. Compounding the problem is the fact that the globalization of the economy has enabled companies to distribute their R&D activities as they are more flexible in choosing where to locate their R&D functions. Such a development may reinforce countries' efforts to attract R&D through policy measures. Tax policies that include R&D tax incentives also serve this purpose. Consequently, this increases the importance of indicators that illustrate the extent of such R&D tax incentives. After all, based on such indicators, R&D costs are determined, which are then used for R&D investment decisions.

In 2020, 33 of 37 OECD countries offer tax support for R&D expenditures at the national or local level. Estonia, Finland, Latvia, and Luxembourg are the only four OECD countries not offering expenditure-based R&D tax incentives at the national or local level in 2020.[25]

[24] OECD Measuring Tax Support for R&D and Innovation, July 2021, https://www.oecd.org/sti/rd-tax-stats.htm#countries.

[25] OECD R&D tax incentives database, 2020 edition, Deliverable 1.1: R&D tax incentives reporting (Year 1), 16 December 2020, page 4, https://www.oecd.org/sti/rd-tax-stats-database.pdf.

3.2 Typical basic types of R&D tax incentives

3.2.1 Tax allowance (multiple deductions, super deduction)

Tax allowances are used to provide a tax deduction in excess of 100% of qualifying R&D costs. In practical terms, this is usually achieved through multiple tax deductibility. In other jurisdictions, the majority of this multiple tax deductibility is between 200% and 250% or an additional deduction of 100% to 150% is granted, respectively. As a result, from a tax perspective, these increased R&D expenses can in addition be claimed as expenses and accordingly reduce the taxable profit and thereby also the profit tax burden.

3.2.2 Tax credit

Tax incentives to encourage R&D can take the form of a tax credit. This is done by generally offsetting the qualifying portion of the R&D expenses against the tax liability. In the absence of a tax liability, the qualifying R&D expense may also be reimbursed in cash. Although the corresponding R&D costs can be partially deducted from the actual tax liability, they also remain deductible for the determination of the taxable profit.

Example:

Income	**200**	Gross tax amount (20% of 120) =	**24**
./. Production costs	**50**	Tax credit (33% of 30) =	**10**
./. R&D costs	**30**	Net tax amount	**14**
= Profit	**120**		

Assumptions: Income tax rate: 20%; Tax credit: 33% of the R&D costs

3.2.3 IP Box regime

The patent box (international: IP Box regime) is designed to create tax incentives for investments in R&D that generate intangible assets by taxing profits from patents and comparable rights at a lower rate. This is a box insofar as such profits are separated from the rest of a company's profits and taxed at a reduced rate in this fictitious "box".

3.3 Country comparison

The following is an overview of R&D tax incentives offered by various countries. In this context, the focus is on the possibility of additional deductions of R&D costs and the application of an IP box. Most countries have other R&D tax incentives as well, but these cannot be covered in this overview. For an underlying and more in-depth description of each country's R&D tax incentives, see Appendix I.

Country	Additional deductibility of R&D costs (>100%)	Amount of additional R&D deduction	Tax credit	Amount limit on tax credit	IP Box	Property rights in IP Box	Effective net profit tax rate	Effective net profit tax rate IP Box [26]
China	✔	75%[27]					25%	
Germany			✔	✔			32%	
France			✔		✔	P, V, S	26.5%, 27.5%[28]	10%
India					✔	P	26% - 34.94%	10.4% - 11.65%[29]
Italy			✔	✔	✔	P, V, S, DM	27.9%	13.95%
Netherlands			✔[30]		✔	P, V, S, DM	25%	9%
Austria			✔	✔[31]			25%	
Switzerland	✔	0 - 50%			✔	P, V	11.85% - 21.04%	9.08% - 13.62%[32]
Singapore	✔	150%			✔	P, S	17%	5%-10%
Spain			✔	✔	✔	P, V, S, DM	25%	10%
Czech Republic	✔	100%					19%	
UK	✔	130%[33]	✔		✔	P	19%	10%
USA			✔				21%	

Legend: P = patents, V= similar rights, S = software, DM = design and models.
In preparing this overview table, certain simplifications and inaccuracies had to be accepted. For more information see Annex I

As shown in the table, countries provide the option of either claiming the additional R&D deduction or claiming a tax credit. In the United Kingdom, both R&D tax instruments exist, but they are basically applied in different constellations (e.g. company size). Switzerland has opted for the additional R&D deduction method. Compared to the other countries that also offer an additional R&D deduction, it is noticeable that Switzerland has the smallest percentage for the additional deduction at 50%. Furthermore, the additional deduction in Switzerland is only applied at the cantonal/municipal level. This means that the tax relief for R&D in Switzerland is lower than in comparable countries. Consequently, other factors in the choice of location for R&D (such as a generally low tax burden but also non-fiscal factors) take on greater importance from a Swiss perspective.

Among the countries that foresee a tax credit is, it is particularly worth noting that France, the United Kingdom and the United States do not have an upper limit on this tax credit. In contrast, Germany for instance does limit the tax credit. The maximum calculation base of R&D costs in Germany is EUR 4 million. Accordingly, the 25% tax credit for R&D costs would amount to a maximum of EUR 1 million. Even if a company spends more than EUR 4 million on R&D, it cannot benefit from a tax credit on any portion above this limit. In Switzerland, however, there is no upper limit on the additional R&D deduction (nevertheless, the tax relief limit of max. 70% must be taken into account).

In some countries with a tax credit system, such as Germany, Austria and Singapore, the tax credit is paid out to companies even if they have incurred a loss. This is a key difference compared to Switzerland, where companies can apply the additional R&D deduction only if they have generated a profit (in case of losses, the instrument cannot be applied).

Switzerland is one of the 6 countries out of the 13 mentioned in this study that have implemented both input and output support (additional R&D deduction as well as the patent box). The Swiss patent box includes domestic and foreign patents as well as comparable rights. Some other countries' patent boxes include, in particular, software that

[26] Only the effective corporate income tax rate after application of the IP box is shown in the table. The tax rate after application of the additional R&D deduction or the tax credit is not comparable due to the different systems (incl. limitations) in the countries and is therefore not shown.
[27] 100% for manufacturing company.
[28] For 2021, the tax rate is 26.5% or 27.5%, respectively, for companies with sales of more than EUR 250 million; from 2022, the tax rale will be 25% for all companies.
[29] Including surcharge and cess.
[30] As part of the so-called WSBO, a payroll tax credit is available for certain development projects.
[31] Only for R&D through contract with a third-party company.
[32] Under consideration of the relief limitation.
[33] An additional deduction is only possible for small and medium-sized companies.

has not yet been patented. In this respect, Switzerland has not fully exploited the scope provided by the OECD. In contrast to most other countries, Switzerland also has a so-called tax relief threshold[34] for the patent box, which makes it more complex to apply and reduces its benefit considerably, at times resulting in the patent box typically only paying off after a number of years. This creates additional uncertainty in the application given the rapidly changing international tax landscape.

For a holistic assessment and a classification of Switzerland in terms of R&D tax incentives, it is worth mentioning that in all countries there are other tax incentives related to R&D in addition to the measures mentioned above. These include, for example, lower taxation of real estate used for R&D (USA), additional tax deductions for innovative SMEs (Germany) or tax relief for setting up R&D sites (China).

Switzerland is among the countries that have already implemented both instruments (input and output promotion) in its tax legislation. However, by international benchmarks, both instruments provide rather limited relief, especially because they are applied solely at the cantonal and municipal level. Switzerland improves its position, though, by having rather low income tax rates in general. Taken together, this means for instance, that Switzerland's patent box tax rate is in line with that of other countries. In terms of additional measures related to R&D, Switzerland still has potential for expansion of the current and implementation of further measures. Whereas other countries already offer a variety of additional measures, Switzerland only offers the possibility of reserves for R&D as a direct additional tax incentive for R&D. Indirectly, depending on the location, certain regional policy measures (so-called tax holidays) as well as tax balance sheet disclosure with subsequent tax-effective depreciation (so-called immigration step-up) are also available for attracting companies and relocating operations to Switzerland, but that apply in principle independently of R&D activities.

At times, the preferential tax treatment of R&D varies significantly between countries. Some countries provide higher incentives for (new) R&D site investment, while others provide a greater incentive for existing businesses. Differences in the generosity of R&D tax incentives can be attributed to policy choices and the availability of other support measures (e.g. direct subsidies), among other factors.

On the whole, Switzerland is on a par with other countries in the global tax competition, but this is only because the overall tax burden in Switzerland tends to be low. In contrast, input and output support for R&D is comparatively lower. Also, in terms of additional measures to promote R&D through taxation, Switzerland ranks rather low when compared to the other countries.

[34] The so-called entry tax comes into effect when the patent box is applied for the first time. The aim is to ensure that the R&D costs (of a patent) are not fully deducted for tax purposes (at the ordinary tax rate), while the corresponding income (from the patent) is taxed only at a reduced rate.

4 Impact of current taxation projects on tax R&D Investment Promotion

4.1 General aspects

There are international taxation projects that have an impact on existing R&D incentives in Switzerland, particularly as part of the BEPS 2.0 project, which will be discussed below. In this context, also ongoing tax transparency projects are worth pointing out, most notable the public country-by-country reporting within the EU (EU public CbCR)[35]. As a result, R&D tax investment incentive will become more transparent, but not per se more restricted.

Apart from a possible future expansion[36] of the existing R&D tax incentives and a national implementation of the global minimum taxation (cf. below 4.2.2), there are currently no known national taxation projects that would affect R&D tax incentives.

4.2 Impact of BEPS 2.0 and a possible international minimum taxation on Switzerland's tax competitiveness with regard to R&D activities

Currently, the OECD is continuing to refine the BEPS work program. In addition to a redistributing of taxation rights, the aim of the current project on the challenges of taxing the digitalized economy (BEPS 2.0) is to prevent profit shortcuts and profit shifting to the greatest extent possible. On 1 July 2021, the OECD, resp. the Inclusive Framework on BEPS, announced that just over 130 countries have agreed on a tax reform.[37] Switzerland was among the countries who have signed on, although it has expressed "great concerns"[38] about it. Further details and the timetable for the implementation of the BEPS 2.0 project were published at the beginning of October 2021. The reform is based on two pillars. Pillar 1 is aimed at reforming the taxation of large global corporations by reallocating taxation rights and amending profit allocation rules. Pillar 2 is designed to close the gaps remaining after the original BEPS measures have been implemented in recent years by ensuring a global minimum level of taxation.

4.2.1 Pillar 1

4.2.1.1 Functionality

According to the current (international) corporate tax law system, companies' profits are generally taxed at their place of incorporation or where the relevant functions are performed. In principle, other countries can tax companies' profits only if there is a subsidiary or permanent establishment in that country. In the allocation of profits between companies and permanent establishments, the "arm's length principle" (acting as if between third parties) is applied.

Pillar 1 is aimed at reforming the taxation of large global corporations by reallocating taxation rights and amending profit allocation rules. Countries in which sales are generated (market countries) are now to be granted a right of taxation (nexus) above a certain threshold value – even if there is no subsidiary or permanent establishment in that country. A share of the global residual profit (after deduction of routine remuneration) is to be allocated to the market countries. This is to be done by means of simplified and flat-rate profit allocation principles – in a departure from the previous arm's length principle.

The Pillar 1 rules are applicable to multinational enterprises (MNEs) with a minimum global turnover of EUR 20 billion (or EUR 10 billion after seven years following the implementation of the rules) and a profitability above 10% on the global turnover. The only exceptions of this rule are the financial industry and the mining industry.

For such MNEs, 25% of the residual profit (i.e. profit exceeding a return on sales of 10%) should be allocated to the market countries (which up to now may have been allocated to the home country). For a market country to be allocated additional tax substrate, the MNE must generate at least EUR 1 million in sales in that country

[35] Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/34/EU with respect to the disclosure of income tax information by certain companies and branch offices, 9 June 2021. https://data.consilium.europa.eu/doc/document/ST-9547-2021-INIT/en/pdf.

[36] Expert Report on Switzerland as a tax location, published on 4 December 2020, margin no. 4.1.5, https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-82238.html.

[37] EFD press release – Switzerland endorses the parameters on international corporate taxation under certain conditions, 1 July 2021, https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-84315.html.

[38] Statement on a Two-Pillar Solution to Address the Tax Challenges Arising From the Digitalisation of the Economy, 1 July 2021, page 1, https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf.

[39] OECD/G20 Base Erosion and Profit Shifting Project, Addressing the tax challenges arising from the digitalisation of the economy, published on 1 July 2021, page 14, https://www.oecd.org/tax/beps/brochure-addressing-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf.

[40] EFD press release – Switzerland endorses the parameters on international corporate taxation under certain conditions, 1 July 2021, https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-84315.html.

[41] EFD press releases - Switzerland joins the benchmarks on international corporate taxation subject to the following conditions, 1 July 2021, https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-84315.html.

(or EUR 250,000 for small market countries with a GDP below EUR 40 billion).

4.2.1.2 The consequences of Pillar 1 for Switzerland

These measures result in a reallocation of taxable profits in other countries (or from foreign countries to Switzerland). As a result, Swiss-based MNEs in question may pay taxes on a smaller share of their global profits in Switzerland, at a tax rate that may be reduced by R&D tax incentives (especially the patent box). This does not, however, fundamentally undermine the R&D tax incentives in Switzerland. At most, such deductions could be reduced if less net profit remains in Switzerland overall as part of the relief limitation. However, the OECD assumes that only about 100[39] MNEs worldwide would be affected by this regulation based on the selected threshold on sales. In Switzerland, it is assumed that less than a handful of Group parent companies are affected.[40]

4.2.2 Pillar 2

4.2.2.1 Functionality

Pillar 2 provides for a global minimum taxation of 15%. The rules are applicable to group companies of multinational companies with total sales exceeding EUR 750 million (same threshold as for Country-by-Country Reporting). Exempt from this rule are government entities, investment funds, provident funds, international non-profit organizations as well as international shipping. This means that the number of companies affected is much higher than those covered by Pillar 1 (likely around 200 Swiss companies and a large number of Swiss subsidiaries of foreign groups)[41]. For the companies in question, it must be verified for each country whether the minimum taxation has been complied with. If this is not the case, various rules are used to ensure that a top-up tax is levied on other Group companies abroad in order to achieve the minimum taxation. The grafic below is an example of a foreign group with a subsidiary in Switzerland (inbound relationship).

For instance, if a company in Switzerland receives a deduction from its taxable profit based on R&D tax incentives (additional R&D deduction or patent box), resulting in a lower tax burden and therefore the minimum taxation requirement is not met.

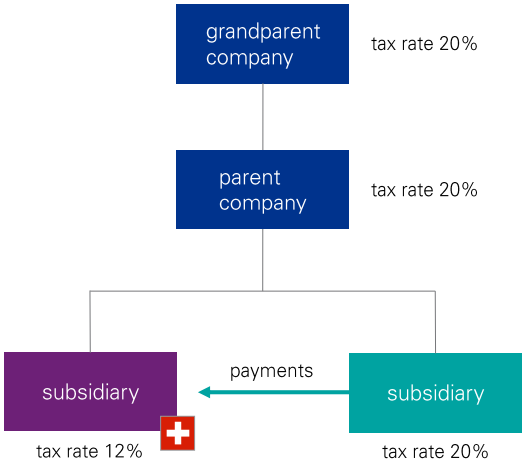
To determine whether the minimum taxation has been complied with, the effective tax rate (ETR) in the respective tax jurisdiction must be calculated. This is composed of the following:

$$ETR = \frac{(\text{covered Taxes})}{(\text{Tax Base})}$$

Pillar 2: Inbound-relation

Mechanism:

In this example, Switzerland has a tax rate that is below the minimum tax rate. This could result in the grandparent or parent company being subject to a **top-up tax** on the difference between 12% and 15%. Furthermore, payments made by the sister company to the Swiss subsidiary could partially lose their tax deductibility.



Order of priority:

1. allocation of top-up tax liability to the grandparent company; in the absence of such rule in that jurisdiction:
2. allocation of top-up tax liability to parent company; in the absence of such rule in that jurisdiction:
3. partial denial of deduction for intra-group payments to the sister company

Global minimum tax rate:15%

Remarks:

The tax burden of the Swiss subsidiary would be pushed from 12% up to the 15% minimum tax rate in this example. The overall tax burden of the group would increase accordingly (without Switzerland generating any additional fiscal income). Advantages of the lower taxation level in Switzerland would thus be diluted, and Switzerland would no longer be able to distinguish itself from a competing location with, for example, a 15% tax burden, since a 15% tax burden would ultimately result in both cases.

Covered taxes are taxes on the income or profit of the taxable entity. They include, in particular, taxes on profits, taxes as a substitute for a general profit tax (e.g. withholding taxes on interest and royalties and on other gross payments), taxes on retained earnings and contributed capital as well as taxes based on foreign provisions on inbound taxation. Not included, however, are sales taxes, consumption taxes, emission taxes, transfer taxes, payroll taxes, social security benefits and real estate taxes.

The tax base is the profit as reported in the individual financial statements in accordance with the accounting standard (IFRS or equivalent standards) that the Group uses for its consolidated financial statements, after taking into account certain permanent differences.

4.2.2.2 Exception for existing substance-based carve-out

There is to be a relief in the calculation of the ETR: It would be possible to apply a so-called formulaic substance-based carve-out, according to which the tax base would be reduced by a fixed amount of 5% of the carrying value of the tangible assets and the personnel costs (payroll). In the first year (presumably 2023), the reduction will be 8% of the carrying value of the tangible assets and 10% of the personnel costs (payroll). These percentages will decline annually thereafter by 0.2 percentage points for the first five years and by 0.4 percentage points thereafter for the carrying value of tangible assets and by 0.8 percentage points for payroll for the last five years of the transition period. This deduction then reduces the ETR calculation's denominator, which, with the numerator unchanged, increases the ETR. This would allow a company to demonstrate a sufficiently high tax rate, even if the effective taxation is lower.

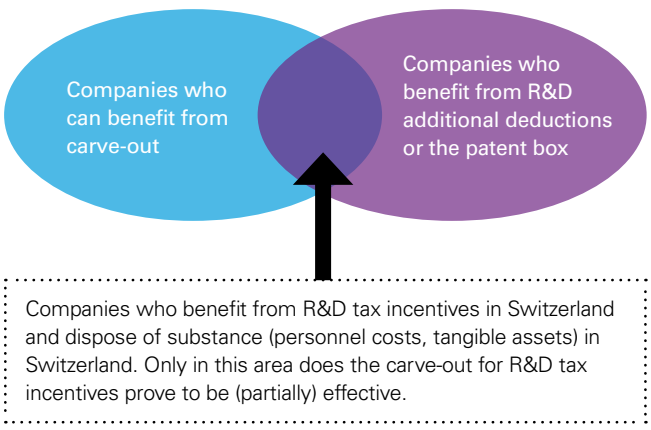
Personnel costs encompass all costs incurred with respect to personnel, e.g. salaries, social security contributions, bonuses, payroll taxes, etc. Such costs are recognized both in connection with employees and with independent contractors who are under the direction and control of the respective company and are involved in the day-to-day operating business activities. Property, plant and equipment includes depreciable fixed assets such as machinery, land and rights of use to leased assets that are used to generate profits. By contrast, assets held for sale and real estate held as an investment are excluded from the carve-out.[42]

It is argued that this relief is justified as the use of tangible assets and personnel can be viewed as an indicator of activities with substance. With activities that have substance (i.e. tangible assets and personnel), the risk of tax-driven profit reduction and, in particular, profit shifting is lower, as these activities are less mobile and thus the choice of their location is usually less tax-driven compared to very mobile activities such as financing or intellectual property management – and Pillar 2 is designed to close the gaps in combating profit reduction and profit shifting that still exist after the original BEPS measures have been implemented (by means of a globally applicable minimum tax).

By applying a fixed rate of return on tangible assets used or personnel costs disbursed, a limited portion of profits is exempted from the minimum tax requirement. This means that companies with substance and with only a limited profit are not affected by the minimum taxation, since for them only a reduced (possibly marginal) profit is taken into account in the calculation of the ETR according to the minimum taxation rule, and can thus continue to benefit (without restriction) from R&D tax incentives, which reduce the taxes due. By contrast, the carve-out has a relatively smaller effect on companies with higher profitability, as the carve-out generally reduces the tax base by a fixed amount (or percentage of the carrying value of tangible assets and payroll), which is a lower amount compared to high profits, thus having less impact on the tax/relevant profit (or ETR) ratio. In these cases, the carve-out reduces the tax base, but this will regularly (still) be an amount that results in an ETR below the minimum taxation of 15% in low-tax cantons.

4.2.2.3 How the carve-outs relates to the additional R&D reduction and the patent box

The additional R&D deduction and the patent box are available at the cantonal level to provide tax relief for innovative companies in Switzerland. ETRs are only affected by the carve-out in the case of companies that also have substance in the form of personnel and tangible assets in Switzerland. Accordingly, this also applies to innovative companies that benefit from tax relief in the form of a patent box or additional R&D deductions. However, the carve-out is not congruent with the instruments of R&D tax incentives. For example, there are activities that benefit from the carve-out but not from the R&D tax incentives (e.g., classical production) or vice versa (e.g. patent box with nexus, where the substance has been depleted in the meantime because no further development was carried out).



[42] OECD (2020), Tax Challenges Arising from Digitalisation – Report on Pillar Two Blueprint: Inclusive Framework on BEPS, OECD/G20 Base Erosion and Profit Shifting Project, 14 October 2021, page 93 ff. https://doi.org/10.1787/abb4c3d1-en.

4.2.2.4 Additional R&D deduction

As a rule, the additional R&D deduction is only applied if a company has substance, particularly in the form of personnel costs. Consequently, the carve-out is also taken into account when calculating the minimum taxation in such cases. The degree to which this is helpful depends on the ratios between substance, (qualifying) R&D costs and profit along with the extent to which the effective tax rate after the additional R&D deduction is below the minimum tax rate of 15%. This effect can be illustrated by the following example (the example refers to the period after the transition period, which is why a carve-out of 5% is assumed):

Alpha AG is part of Greek Group (worldwide revenues above EUR 750 million) and develops and distributes innovative products in Switzerland. The relevant balance sheet and income statement are as follows:

Balance sheet				
Current assets	100		Liabilities	100
Tangible fixed assets	100		Equity	100
Total assets	**200**		**Total liabilities**	**200**

Income statement (before taxes)				
Personnel expenses	150*		Revenues	300
General and admin. expenses	100			
Profit before taxes	**50**			

* of which qualifies for the R&D additional deduction: 30 – thus additional deduction of 20 ([30 + 35%] * 50%)

Assumptions:

- (pre-)tax rate of Alpha AG in Switzerland 15% (of which federal taxes: 7.5%; of which cantonal/municipal taxes: 7.5%)
- Taxable profit at federal level 50
- Taxable profit at cantonal/municipal level: 50 less additional R&D deduction of 20 = 30

Absolute tax burden:

50 (profit) x 7.5% (federal) + 30 x 7.5% (cantonal/municipal) = 3.75 + 2.25 = 6 (tax)

Determination tax base:

50 (profit) less Carve-out: 5% of 100 (tangibles) and 5% of 150 (payroll) =50 - 5 - 7.5 = 37.5 (tax base)

Relative Tax burden / ETR according to minimum taxation rules:

covered taxes (6) / tax base (37.5) = 16%

➜ therefore minimum taxation achieved thanks to the carve-out despite additional R&D deduction.

In this example, the carve-out is 12.5. Provided that Alpha AG's profit does not exceed 12.5, it would be completely excluded from the minimum tax and the extent of the additional R&D deduction or the local tax burden would not be relevant (or harmful).

The carve-out rules when calculating the tax base, which in turn is the basis for determining the ETR are not directly related to the additional R&D deduction, but at least the actual (personnel) expenses in the current year are relevant in both calculations – and not the amount that is ultimately recognized in the income statement. The carve-out and the additional R&D deduction are therefore both independent of any capitalization in the balance sheet.

4.2.2.5 Patent box

The patent box is based on the profit from the qualifying patents and thus focuses on output incentives. The tax relief is not directly related to personnel costs or tangible fixed assets. As a consequence, the carve-out as well is (mostly) useless, especially for profitable patent boxes. This in turn leads to patent boxes being affected by minimum taxation. Accordingly, there is a need for action for affected companies, but this will not be discussed any further in this study.

4.2.2.6 De-minimis exception

Finally, the second pillar provides for a de-minimis exception as a way of simplifying the implementation. Unless the turnover generated in a country is less than EUR 10 million and the group's profit before tax does not exceed EUR 1 million, the Pillar 2 provisions do not apply in that country. At best, groups that conduct R&D activities in Switzerland and generate a comparatively low profit in relation to the group's total profit could benefit from this de-minimis exception. This might be the case with contract research that is remunerated with a cost markup. It is unlikely, however, that (profitable) patent boxes will generate less than the share of total group profits provided for in the de-minimis exception, which is why this exception is unlikely to apply to groups with patent boxes in Switzerland.

4.2.3 Final thoughts

In conclusion, it can be stated that the additional R&D deduction and the OECD-compliant patent box as tax incentive instruments for R&D will fundamentally be affected to a significant extent by the minimum taxation under Pillar 2 of the BEPS 2.0 initiative. With regard to R&D activities, however, taxation below the minimum tax rate may be protected in some limited circumstances where a relevant company has substance in the form of tangible assets and personnel costs. In this scenario, it is more likely that the additional R&D deduction will benefit to some extent. As the carve-out is nevertheless limited to a low return (5% after the transition period) on tangible assets or personnel costs, it cannot as a rule be used for the patent

box to protect such income, which is taxed at a low rate in Switzerland. For this reason, it is likely that the global minimum taxation de facto prevents affected companies from applying the patent box in many cantons, because the carve-out linked to substance would bring relatively little benefit and the companies would have a tax burden that is too low due to the patent box. In this context, there is a respective need for action. In the case of high-tax cantons, however, the patent box can still be used reduce the tax burden, at least to the level of minimum taxation. The additional R&D deduction, by contrast, is likely to remain beneficial at least in part for most companies, that is for those companies that are not already below the minimum taxation level without the additional R&D deduction.

Consequently, the two existing tax reliefs for innovative companies in Switzerland should continue to be made available despite the introduction of a global minimum taxation, given the fact that numerous companies are outside of its scope. In applying these tax reliefs, companies affected by the minimum taxation must assess the exact impact on the ETR and – taking into account the carve-out – decide whether and to what extent it makes sense to claim the additional R&D deduction or the patent box.

Subsequently, the Swiss legislator will have to consider whether it should lower other taxes and levies (which do not fall under the minimum tax regime) as far as possible in view of the partial elimination or reduced effectiveness of the existing R&D tax incentives. Also, it could ponder expanding subsidies and grants, taking into account international regulations regarding government assistance and anti-subsidy rules.[43]

[43] In this context, reference can be made to the EU guidelines on regional aid (2021/C 153/01): https://eur-lex.europa.eu/legal-content/DE/TXT/HTML/?uri=CELEX:52021XC0429(01)&from=EN.

5 Survey

As a follow up to TRAF and the legal implementation of the patent box and possible additional R&D deductions for the purposes of cantonal and municipal tax as well as ongoing international developments regarding minimum taxation and the related discussion on the tax incentives for R&D, the opinions of those companies that are directly affected based on their R&D activities should also be taken into account. For this reason, KPMG conducted a survey of numerous companies using an online questionnaire. Based on the 2015 survey, the online survey sought (once again) to explore the current situation of Swiss companies conducting R&D and to gain an impression of the views and opinions of these companies on the current tax incentives for R&D in Switzerland and internationally. The results of the online survey conducted in English, German and French can be found in detail in Appendix II, although the number of questionnaires answered is not statistically representative (for the overall economy). Nevertheless, some trends can be identified.

The respondents ranged from SMEs to international corporations. Most of the companies surveyed are active in the manufacturing and consumer goods sectors. Life sciences were slightly less represented compared to the 2015 survey. Although the majority of the R&D-performing companies surveyed continue to have their R&D facilities or parts thereof in Switzerland, the survey confirms that companies are also turning to foreign countries in their search for new R&D locations. Besides China and USA, Germany is also a notable destination.

When it comes to choosing a location for R&D activities, tax incentive measures were rated as important or very important by 73% of the companies surveyed (which was about the same as in the 2015 survey). This value differs depending on the industry and the size of the companies. If we consider only life science companies, this figure is in fact 100%. For companies in the financial industry the proportion is slightly lower at 67%, and 65% for those in the consumer goods industry. For large companies with more than 250 full-time jobs, the ratio of 82% is above the average for all companies. The proportion is lower for very small companies (<10 FTEs) at 59% and medium-sized companies (50 - 250 FTEs) at 57%. For small companies (10 - 49 FTEs), the share is about the same at 68%.

Only the proximity to production sites (79%), the protection of intellectual property or patents (86%), the option of cooperating with universities and other institutions (91%), political and economic stability (88%), and access to qualified, international research personnel (92%) were considered to be even more important than tax incentives. Low income tax rates (57%) and subsidies for R&D activities (67%) were given slightly less importance, as were low operating costs of R&D centers and facilities (60%). In view of this, it is all the more important to continue to positively influence those parameters that a small country like Switzerland can still shape itself in order to favorably differentiate itself from other countries. The uncertainties arising from current international developments in the area of corporate taxation (in particular minimum taxation) emerge as negative influences for Switzerland as a country with a tendency toward lower income tax rates.

Barely 3% of the companies surveyed indicated that they might reduce their R&D activities in Switzerland in the future, while 47% of the participants were weighing a possible expansion. Additionally, 50% of the companies surveyed are indifferent on whether to expand or reduce their R&D activities in Switzerland.

The survey also indicates that slightly less than half (43%) of the participating companies already use or would like to use in the future one of the two R&D tax incentives introduced with TRAF. Among the companies that use at least one of the two measures, 71% use or would like to use the additional R&D deduction and 29% use or would like to use the patent box. From the 57% of companies that do not use any of the two measures, 31% justified this by saying that they do not have qualifying patents or costs for the additional R&D deduction. 19% of the companies consider the administrative effort too high and 16% find it difficult to collect the necessary information within their company, with almost the same percentage mentioning a too low tax advantage (14%). 13% of the company surveys indicated that there are other reasons for not making use of the incentives. The majority of these companies justify not using them with the fact that the instruments are not sufficiently known or that the necessary know-how is not available in the company to take the necessary steps to claim the deduction. In view of these responses, we would like to use this study to help raise awareness of the instruments available in Switzerland.

Moreover, the survey showed that the respondents still consider the instruments to be very relevant in the future or that their importance will even increase, and this regardless of whether the global minimum taxation (Pillar 2) is introduced or not. Consequently, 62% expect an increase in the relevance of R&D tax incentives should the minimum taxation not materialize, and 72% do not expect

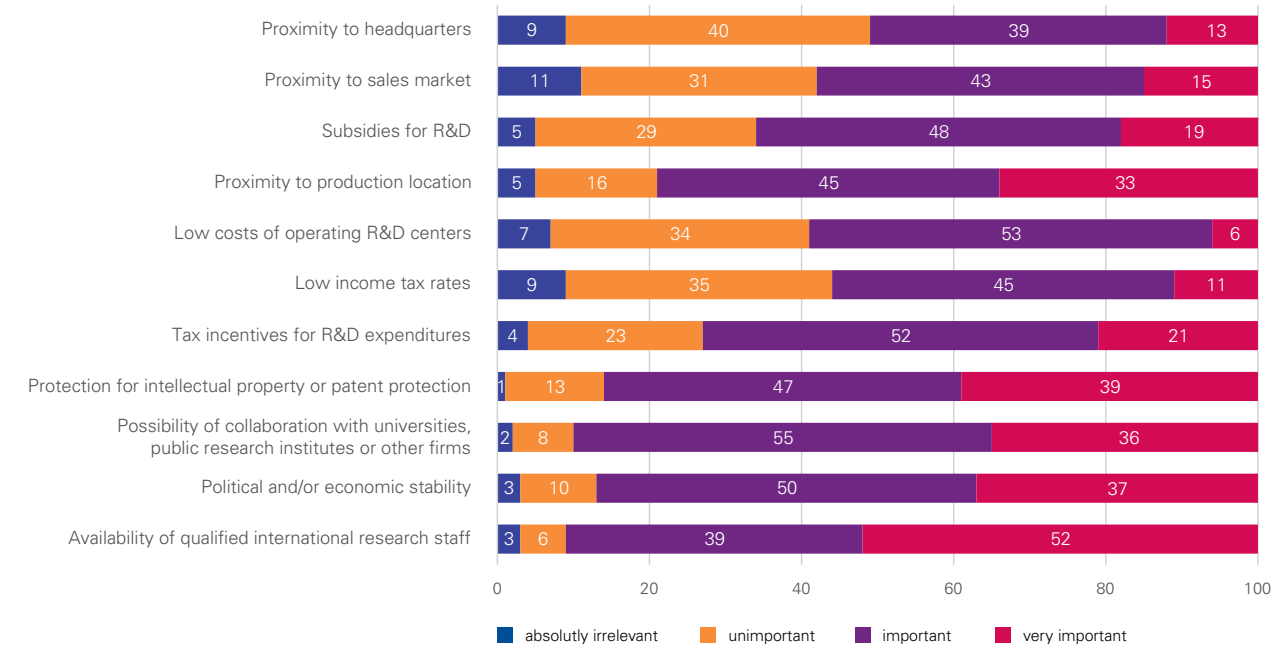
a decrease in the relevance of R&D tax incentives should the minimum taxation be introduced.

In the survey, companies had the opportunity to make suggestions on how the additional deduction for R&D and the patent box could be improved. This resulted in three categories, which are highlighted below based on the number of mentions. The most frequently mentioned suggestion for improvement is in line with the results already described above regarding the administrative burden. First and foremost, the companies demand that the instruments should be simplified and the associated effort reduced. Furthermore, many companies call for a broader application of the instruments. In this context, the companies demand, for example, that the scope of qualifying rights for the patent box be expanded or that the definition of "R&D" be broadened. Ranked third, the companies state that the instruments are still too little known at the moment and that there should be more clarity in this regard.

Altogether, the survey shows that the majority of companies continue to regard tax incentives for R&D as relevant also in the future, but that their application should be further simplified.

Relevance of the different factors for the choice of location for R&D activities

Figures in percent



6 Conclusion and Recommendations

Compared to other countries, Switzerland provides a rather low tax relief for R&D, ranking comparatively poorly on the relief aspect. Among other things, this becomes apparent when comparing Switzerland's additional R&D deduction with that of other countries. With an (additional) maximum relief of 50%, Switzerland ranks last (behind China with 75% and the Czech Republic with 100%). In addition, this relief is only applied at the cantonal and municipal level.

Although the apparent relief for the Swiss patent box of a maximum of 90% (or a maximum of 70% under the relief limit) is comparable to or even higher than in other countries (e.g. the Netherlands with 64% relief), it must be factored in here that this relief applies solely at cantonal and municipal level.

In terms of tax competitiveness of R&D investments, Switzerland makes up ground thanks to the generally rather low income tax rates. This is for instance helped by the fact that the Swiss patent box regime does not lead to a much higher tax rate compared to the other countries, at which profits covered by the patent box are taxed. Singapore leads with 5% to 10%, followed by the Netherlands with 9%, and some countries with 10% (India, United Kingdom, USA), while in Switzerland the cantons (at the respective cantonal capital) have a minimum tax rate of 9.08% to13.62%.

The patent box in Switzerland is limited to patents and similar rights. So, in contrast to other countries, software hat is only protected by copyright but not patented, and intangible property rights such as designs, or other technical know-how do not qualify for the patent box in Switzerland. On top of that, compared to other countries, there is an additional access hurdle in Switzerland with the patent box entry taxation, which makes this R&D tax instrument appear to be even more unattractive.

Consequently, there is potential to expand the corresponding R&D tax measures (in the case of the patent box, as is possible within the framework of the OECD requirements) or to expand the corresponding deductions.[44] This way, Switzerland could improve its position internationally when it comes to the tax competitiveness of R&D investments.

Ideas for expanding R&D tax incentives worth considering include, for example, a higher additional deduction for R&D as well as the extension of the qualifying rights of the patent box to non-patented software or a reduction or waiver of the entry tax. In the same way, a comparable relief at the federal tax level could be explored.

In view of the anticipated implementation of the global minimum taxation, the question also arose in the run-up to the study whether the expansion of R&D tax incentives is at all sensible in a low-tax country like Switzerland. Based on the study, the answer is yes – despite the discussion about an expansion of subsidies or other (compensation) measures. In particular in high-tax cantons, but also for groups of companies below the relevant threshold (consolidated sales of EUR 750 million) and with sufficient substance, R&D tax incentives would be key instrument for reducing their tax burden. The survey showed that a significant proportion of companies believe that R&D tax incentives will continue to be relevant even after the global minimum tax has been implemented. Even so, it is possible that certain companies may wish to or have to opt-out of the patent box again due to the minimum taxation rules. For this reason, it would be helpful if the cantons defined and communicated the framework conditions for a possible early opt-out of the patent box before a possible minimum taxation is introduced for affected companies.

[44] Expert Report on Switzerland as a Tax Location, published on 4 December 2020, margin no. 4.1.5, https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-82238.html.

7 Appendix I: Tax incentives for R&D abroad

In the following, the individual countries' R&D tax incentives are presented in more detail. The country-specific overviews provide a simplified outline of the respective tax R&D instruments in these countries. It does not claim to serve as a technical guide or to be complete, but rather aims at providing a general summary of R&D tax incentives in individual countries.

China

1 Overview

China has a variety of different tax incentives for R&D companies. On the one hand, R&D expenses can be deducted at a higher rate. On the other hand, there are specific tax statuses for R&D companies which affect not only corporate income tax but also business and value added tax. The standard corporate income tax rate is 25% in China.

2 Input tax incentive

2.1 R&D Super deduction

China-based companies under non-restricted industry sectors including HNTE-certified companies are eligible for super tax deduction of 175% (200% for manufacturing enterprises) on qualified R&D expenses incurred during the year, if:

- such R&D expenses do not give rise to the formation of intangible assets,
- qualified R&D expenses are capitalized as intangible assets, 175% or 200% respectively of the capitalized R&D expenses constitute the costs of intangible assets subject to amortization.

2.2 Definition of R&D

R&D can be defined as the creative application of new science and technology knowledge for the purpose of obtaining new scientific or technological knowledge or the execution of systematic activities with specific goals continuously for substantive improvement of technologies, product (services), and processes.

2.3 Eligible activities

Companies that perform eligible R&D activities and are operating within a non-restricted industry are eligible for the R&D super deduction. Eligible R&D activities include:

- Obtaining new knowledge of science and technology,
- Creatively using new scientific and technological knowledge,
- Substantially improving technologies, products (service), and process.

Restricted industry sectors are tobacco manufacturing, accommodation and catering industry, wholesale and retail, real estate industry, leasing and commercial service industry and entertainment industry.

2.4 Qualifying R&D expenditure

Staff costs, direct costs, fixed asset depreciation, amortization of intangible assets, new product design fees, new technical programming fees, clinical trial fees and other relevant expenses (considered with only 10%) qualify as expenses for the R&D super deduction.

2.5 Losses

Losses incurred relating to this higher deductibility can be set off during the next five years.

3 Output tax incentive

In China, output-side tax incentives are available for technology transfer income within RMB 5 million are exempt from CIT, and the income exceeding RMB 500 million is subject to corporate income tax at 50% reduction. All residential companies with eligible technology transfer income are eligible for the technology transfer tax relief.

4 Other tax related R&D benefits

4.1 HNTE status tax relief

China-based companies that qualify as high-and new-technology enterprises (HNTEs) are eligible for a reduced CIT rate of 15% for three consecutive years.

4.2 ATSE tax relief

China-based advanced technology service enterprises (ATSE) eligible companies can enjoy the following incentives:

- Resident companies that are qualified as ATSE are eligible for a reduced corporate income tax rate of 15%,
- Education fee not exceeding 8% of the total salaries of the ATSE can be deducted for CIT purposes, while the non-deducted part can be carried forward,
- Revenue derived from offshore outsourcing services may be exempted from VAT.

4.3 Software enterprise tax relief

Qualified software enterprises can continue to receive the corporate income tax exemption for the first and second year of profitability and a reduced corporate income tax rate of 12.5% for the years three through five.

4.4 Key software enterprise tax relief

Eligible key software enterprises will be exempted from corporate income tax for five consecutive years and subject to a reduced corporate income tax rate of 10% afterward.

4.5 Extra subsidy

Local governments may grant extra subsidy for accredited HNTE and/or claimed R&D expenses.

Germany

1 Overview

For the first time, as of 2020, Germany has introduced a tax incentive for R&D by way of so-called "research allowance". The standard corporate income tax rate is approx. 32% in Germany. Beside the "new" tax incentive scheme, there are several funding programs for R&D on regional, federal, or European level in Germany.

2 Input Tax Incentive

2.1 Research Allowance

Enterprises in Germany and enterprises abroad are equally eligible to the R&D tax incentive if they are subject to tax in Germany and not tax exempt, that is, taxpayers subject to resident and non-resident taxation are eligible to the allowance. As the allowance is technically settled in the assessment procedure (tax credit or refund), only non-resident taxpayers whose German income is determined in an assessment procedure (i.e. whose income is not settled by withholding taxes), can benefit.

The allowance is equally available to all enterprises irrespective of their size, their respective profit situation, their purpose, and their legal form. Partnerships are eligible themselves.

2.2 Definition of R&D

The definition and assessment of the eligible R&D areas follow the criteria set out in the European Commission Regulation (General block exemption Regulation; GBER).

2.3 Eligible activities / Requirements

The funding is limited to certain R&D areas, namely basic research, industrial research, as well as experimental development.

For state aid reasons, undertakings in difficulty, within the meaning GBER, are excluded from benefiting from the R&D tax incentive.

Cross-enterprise research cooperation's are also incentivized. Cooperation with at least one enterprise that is independent of the enterprise entitled to the allowance, with one or several research facilities or facilities for the dissemination of knowledge (such as universities or research institutions), are possible.

Contract research is tax privileged too insofar as the contractor is resident in an EU state or EEA state. It is the contracting entity that is eligible rather than the contractor carrying out research on behalf of a third party.

2.4 Qualifying R&D expenditure

Eligible expenditures are the wages and salaries of the eligible enterprise's own employees to the extent that they are subject to German wage tax. The eligible expenditure will result from the wages that must be kept for each employee. Tax-exempt compensation or tax-exempt benefits in kind will not be included. Incidental wage costs incurred by the employer to secure the employee's future (e.g., pension insurance, unemployment insurance, as well as healthcare and long-term care insurance) increase the eligible expenditure for personnel.

Only wages and salaries for employees, to the extent that they perform such incentivized R&D activities, are taken into consideration; personnel expenditure for cleaning staff, administrative staff, or managers who do not carry out research themselves, even though they are actively involved in an R&D project, are not considered.

In the case of contract research, the eligible expenditure amounts to 60% of the remuneration paid by the contracting entity to the contractor (invoice amount).

2.5 Calculation of R&D expenditure / Limitation

The tax incentive for research takes the form of an allowance (so-called research allowance) calculated based on the personnel expenditure for R&D projects. Hence, there is no link to the determination of taxable income or the income tax or corporate tax to be assessed. The allowance will be granted irrespective of the profit situation of an enterprise.

Eligible enterprises must keep a verifiable documentation of the employees in charge of R&D activities within the R&D project, which benefits from the tax incentive.

The assessment basis for the research allowance resulting therefrom is capped at EUR 4 million. This cap is applicable to affiliated enterprises altogether as a group. In the case of cooperation projects of nonaffiliated enterprises, however, the maximum amount is applicable to each eligible entity separately.

The research allowance amounts to 25% of the assessment basis. Considering the cap of the assessment basis, the maximum allowance will be EUR 1 million per enterprise and financial year. Moreover, for state aid reasons, a cap of EUR 15 million for R&D projects will be applicable to any granted state aid (including research allowance) per undertaking.

2.6 Losses

In case of a loss situation or in case the corporate income tax assessed is less than the R&D tax credit, the exceeding amount of the R&D tax credit will be paid out. As the R&D tax credit is credited or paid out irrespective of the income

situation the effect largely depends on the ex-ante tax burden. It can be stated that for corporations it is a tax-free cash pay-out.

3 Other tax related R&D benefits

Besides the new tax incentive scheme, there are several funding programs for R&D on regional, federal, or European level in Germany.

The regional funding programs mainly focus on SMEs developing innovative key technologies. Federal programs are open to a wide range of eligible industries. Funding programs at the EU level, such as the European Regional Development Fund, also provide funding for R&D activities performed in Germany. Those programs are highly attractive for multinational projects or companies due to their focus on collaboration projects-including partners from different member states of the EU. To provide an overview of existing funding programs, the German Federal Ministry of Industry and Energy offers access to a database including all available funding programs.

France

1 Overview

France granting tax credits for R&D activities carried out. In addition, there is a special tax status for young R&D companies and France has also has a patent box regime. The standard corporate income tax rate is 27.5% or 26.5% for companies and tax-consolidated groups with a revenue below EUR 250 million. The rate should be reduced to 25% in 2022.

2 Input tax incentive

2.1 Research Tax Credit

The Research Tax Credit (RTC), which is computed on a calendar-year basis, is equal to 30% of the portion of R&D expenses below EUR 100 million and is reduced to 5% for the portion exceeding EUR 100 million.

2.2 Definition of R&D

The RTC covers "scientific and technical" research operations (i.e., fundamental research, applied research, and experimental development):

- Fundamental research is aimed at making a theoretical or experimental contribution to the resolution of technical problems,
- Applied research is aimed at identifying possible applications of the results of fundamental research or at finding new solutions enabling the company to reach a given objective chosen in advance,
- The experimental development operations that fall within the scope of RTC are those carried out through the use of a prototype or pilot facilities, with the aim of gathering the information needed to provide the technical bases of decisions, in view of producing, or substantially improving, new materials, mechanisms, products, and/or service systems.

Research operations are RTC eligible if they meet the five essential criteria from Frascati-Manual 2015.

Research operations should reflect an originality or substantial improvement that does not result from a mere utilization of the current state of existing techniques to be eligible. In practice, the RTC is not limited to traditional R&D sectors, such as the pharmaceutical and automotive industries, but also extends to other industries such as banking and insurance, notably with respect to their development of innovative IT programs.

2.3 Qualifying R&D expenditure

Eligible expenses, which must be determined on a calendar-year basis, essentially consist of those relating to the human (staff) and physical resources (operating expenditure, amortization) allocated to R&D, outsourced R&D, technological watch, and patenting and patent protection.

Expenses may, in principle, relate to R&D operations located in the EU or in the EEA (excluding Liechtenstein). Hence, companies may benefit from the RTC on expenses incurred in the EU even if such expenses have been deducted locally and/or have benefited from a local R&D incentive.

Indeed, the fact that the qualifying expenses have been deducted from the taxable results of the company benefiting from the RTC does not restrict its right to the tax credit nor does the fact that the R&D expenses are totally or partially reinvoiced abroad, so long as they were initially incurred by the company benefiting from RTC.

To claim the RTC, companies are not required to hold the IP rights resulting from their R&D activities.

The RTC is immediately refundable to "newly created" companies (for the year of creation and the 4 following years), Young Innovative Companies (Jeunes Entreprises Innovantes, JEIs), SMEs, and distressed companies.

2.4 Calculation of R&D expenditure

The RTC, which is computed on a calendar-year basis, is equal to 30% of the portion of R&D expenses below EUR 100 million and is reduced to 5% for the portion exceeding EUR 100 million. The RTC is not capped.

In principle, the RTC is offset against any corporate income tax for the year in question and, if need be, for the following

3 years. After this 3-year period, any remaining unused portion of the company's receivable from the state will be reimbursed to the company. This receivable is also transferable as soon as it is booked.

3 Output tax incentive

3.1 Patent box regime

The licensing and transfer of patents are favourably treated at a reduced corporate income tax rate of 10%.

In addition, the patent or the patentable investment must be capitalizable and must have been owned for at least two years. This minimum period of two years does not apply if the patent or the patentable investment has arisen through the company's own R&D activities.

3.2 Qualifying IP

IP assets are defined as follows: patents (including the utility certificate), new varieties of plants, industrial method (e.g. trade secrets linked to the implementation of a patent), and software; as well as for SMEs only: revenue from certified patentable inventions.

3.3 Eligible IP income

The evaluation of IP income is made based on all revenue from selling or licensing qualifying IP assets. The revenue may hence be based for example on selling a patent or licencing a software. The reduced rate is applicable on the net proceeds determined after deduction of R&D costs and the application of the "nexus" ratio.

4 Other tax related R&D benefits

There is an innovative tax credit mechanism for certain innovation expenditure incurred by SMEs, such as prototype design and pilot plants for new products (a specific rate of 20% and a ceiling of EUR 400,000 of qualifying expenditure applies).

The tax status for young R&D companies (JEIs) is limited to the first eight years of the company. This status allows complete exemption from corporate profit tax in the first year and exemption from half the corporate profit tax in the second year. In addition, the company is also exempted from a variety of other taxes as well as from social security contributions.

India

1 Overview

India offers R&D companies a variety of R&D incentive measures, only a few of which are tax related. Only these R&D tax incentives are explained in detail below. For the Financial Year 2021 - 22 the standard corporate income tax rate varies between 26% and 34.94% depending on the taxable income and turnover. Furthermore, for some companies, there is a possibility to opt for a concessional tax rate of 17.16% for new manufacturing companies and 25.19% for other companies (subject to certain conditions as prescribed). Additionally, India has also R&D incentives in the area of Goods and Services Tax (GST) and customs.

2 Input tax incentive

2.1 R&D tax deduction

In-house R&D: In India, qualifying R&D expenses are deductible at a rate of 100%. This general deductibility is not dependent on sector and is also applicable to R&D costs already incurred within three years before the actual commencement of the company's activities. For in-house R&D, tax deduction is available even for companies that have opted for concessional tax rate.

In-house R&D with Government of India approval:A tax deduction of 100% of the expenditure incurred on in-house R&D facility (excluding capital expenditure on land/building) by a company engaged in the business of biotechnology or in any business of manufacture or production of any article or thing (other than few restricted articles such as alcoholic beverages, tobacco etc.). For such in-house R&D, tax deduction is not available for companies that have opted for concessional tax rate.

2.2 R&D Contributions

Another tax incentive relates to contributions to prescribed public institutions or eligible private companies which focus on R&D activities. The deductibility of these contributions is 100%. This tax deduction is not allowed for companies opting for concessional tax rate.

2.3 Definition of R&D

The term R&D is understood to refer to activities for the purpose of expanding knowledge in the field of natural sciences and applied research including agriculture, animal husbandry or fisheries. The activities subsumed under the term include the development of new technologies and techniques, product and process optimization and the elaboration of new analysis and test methods.

Scientific research related to a business or class of business includes:

- Any scientific research which may lead to, or facilitate, an extension of that business or, all businesses of that class,
- Any scientific research of a medical nature that has a special relation to the welfare of workers employed in that business or, all businesses of that class.

2.4 Eligible activities

Generally, R&D includes development of new technologies, design and engineering, process/product/design improvements, and developing new methods of analysis and testing; research for increased efficiency in use of resources such as capital equipment, materials, and energy; pollution control, effluent treatment, and recycling of waste products; or any other areas of research. However, market research, work and methods study, operations, and management research, testing and analysis of routine nature for operation, process control, quality control, and maintenance of day-to-day production and of plant are not considered R&D activities.

2.5 Qualifying R&D expenditure

R&D tax deduction - A tax deduction of 100% of the expenditure incurred by persons and entities that perform scientific research related to the business (excluding capital expenditure on land).

In-house R&D with Government of India approval - A tax deduction of 100% of the expenditure incurred by persons and entities that perform scientific research related to eligible business (excluding capital expenditure on land and building). However, the costs must be accepted by the Department of Scientific and Industrial Research (DSIR) in each case.

2.6 Losses carried forward

Tax losses, if any, arising in the financial year in which the deduction for R&D expenditure is claimed can be carried forward (i.e., the losses are generally eligible to be carried forward for eight assessment years, subject to conditions and provisions under the direct tax laws in India).

3 Output tax incentive

A reduced corporate income tax rate of 10% (plus applicable surcharge and cess) is applicable on royalty income earned from patents developed (at least 75% of the expenditure incurred in India) and registered in India without deduction of any expenses. All companies being resident in India and who is a patentee can benefit from this patent box regime.

4 Other tax related R&D benefits

4.1 R&D activities exported by unit setup in Special Economic Zones (SEZ)

Corporate income tax benefits on R&D activities carried out by a unit setup in SEZ ranging between 100% and 50% of eligible profits depending upon the year of operations. This deduction will be restricted to the unit that has received a

letter of approval on or before March 31, 2020 and operations have commenced on or before September 30, 2020. No tax deduction is allowed for companies opting for concessional tax rates. The benefit is as follows:

- First 5 years of operations - 100% tax benefit on eligible profits,
- Next 5 years of operations - 50% tax benefit on eligible profits,
- Next 5 years of operations - 50% tax benefits on eligible profits (as credited to specified reserve).
- Exemption from Customs Duty/GST on procurement of goods and services by SEZ unit for its authorized operations.

4.2 Other grants and incentives under indirect tax law

4.2.1 GST

Concessional GST rate at 5% is applicable on domestic procurement of various goods by public/private research institution (other than a hospital), registered with the DSIR, subject to various conditions.

R&D services (in relation to pharmaceutical sector) supplied to overseas recipient treated as export of service subject to the conditions stated in the GST law. Whenever services rendered by R&D unit qualify as export of services, R&D unit is entitled to claim refund of the GST paid on procurements/imports of goods and services.

4.2.2 Customs

Basic Customs Duty (BCD) is exempt on import of specified equipment, instruments, raw materials, components, pilot plant, and computer software for R&D projects undertaken by any company having an in-house R&D unit recognized by DSIR subject to various conditions. However, no exemption of Integrated Goods and Services Tax (IGST).

Concessional BCD rate of 5% and full exemption of IGST on import of research equipment by the public-funded research institutions or a university of an IIT or Indian Institute of Science, Bangalore or Regional Engineering College, noncommercial institutions, etc. (other than a hospital) subject to various conditions.

Italy

1 Overview

Italy offers various types of R&D tax incentives, such as several R&D tax credits and a patent box regime. In Italy, R&D tax credits can also be offset against other taxes (including VAT) and social security contributions. The standard corporate income tax rate is 27.9%.

2 Input tax incentive

2.1 Several R&D tax credits

A R&D tax credit ranging from 10% to 20% of qualifying R&D expenses, a tax credit ranging from 6% to 50% of qualifying expenses incurred for buying eligible new "Industry 4.0" and other capital goods and a tax credit ranging from 30% to 50% of qualifying expenses incurred for "Industry 4.0" employee training costs are available. Additionally, R&D tax credits can be offset against other taxes (including VAT) and social security contributions when the taxpayer is loss making and therefore still take advantage of those reliefs.

2.2 Definition of R&D

The definition of the activities considered as eligible for R&D tax credit purposes is in line with the guidelines provided by the OECD Frascati and Oslo Manuals.

2.3 Eligible activities

Taxpayers eligible for the R&D tax credit system include enterprises that are residents in Italy and Italian permanent establishments of foreign enterprises, provided they are not involved in insolvency proceedings and have not been placed under any "bans". The use of the tax credit is conditional on the enterprise: (1) complying with industry rules on occupational health and safety; and (2) paying its workers' national insurance and social security contributions. The R&D tax credit rewards three main categories of activity:

- Category A: Fundamental research, industrial research, or experimental development in the areas of science or technology,
- Category B: Technological innovation in areas-other than science and technology that could contribute to the development of new or substantially enhanced products or production processes,
- Category C: The creation of aesthetic and other designs, with a view to planning and producing new products and samples in various product sectors (textiles, fashion, footwear, eyewear, gold, furniture and furnishings, and ceramics).

For the tax credit on investments in "Industry 4.0" capital goods the following three requirements need to be met:

– they must be new,
– they must be capital goods, and
– they must be for facilities located in Italy, even if they have been purchased abroad.

2.4 Qualifying R&D expenditure

The R&D tax credits are predicated on specific categories of expenses, and the following types of costs are eligible:

– Personnel costs of researchers and technicians,
– Depreciation charges and leasing of tangible assets and software,
– Contracted research,
– Depreciation on the purchase of industrial or biotech inventions from third parties (for Category A activities only),
– Advisory and equivalent services related to the eligible activities,
– Costs of materials and supplies used in the eligible activities,
– For "Industry 4.0" other direct and indirect operating costs related to the training.

These expenses must be actual costs and be business-related and reasonable.

2.5 Calculation of R&D expenditure / Limitation

The R&D tax credit applies to eligible expenses incurred. The size of the tax credit varies for qualifying R&D expenses for the tax credit ranging from 10% to 20% according to the type of activity, as follows:

– For Category A activities, the tax credit amounts to 20% of the cost base, net of any subsidies or contributions received for the same eligible expenses. The maximum tax credit is EUR 4 million,
– For Category B activities, the tax credit amounts to 10% or 15% of the cost base, net of any subsidies or contributions received for the same eligible expenses. The maximum tax credit is EUR 2 million,
– For Category C activities, the tax credit amounts to 10% of the cost base, net of any subsidies or contributions received for the same eligible expenses. The maximum tax credit is EUR 2 million.

The tax credit for "Industry 4.0" is available for investments in new capital goods made. The size of the tax credit ranges widely from 6% to 50% and depends on the window (i.e. eligibility period) in which the purchase is made, the type of asset and the amount of expenditure incurred.
The tax credit for "Industry 4.0" employee training costs applies to eligible expenses incurred and is available to:

– Small businesses, that can claim a tax credit equal to 50% of the eligible expenses and capped at EUR 300,000 per annum,
– Midsize businesses, that can claim a tax credit equal to 40% of the eligible expenses and capped at EUR 250,000 per annum,
– Large businesses, that can claim a tax credit equal to 30% of the eligible expenses and capped at EUR 250,000 per annum.

For all businesses, the tax credit rises to 60% if the workers who receive the eligible training are classed as underprivileged or very underprivileged employees (the annual caps remain the same).

3 Output tax incentive

3.1 Patent Box

A patent box regime is available. It excludes part of the income attributable to the use of qualifying intangible assets from the tax base. Qualifying income is that deriving from the licensing or direct use of eligible intellectual property. The percentage of qualifying income that is not included in the tax base is 50%. The combined effective corporate income tax rate is 13.95% in patent box.

Entrepreneurs resident in Italy, or Italian permanent establishments of entities resident in countries that have signed a Double Tax Treaty and exchange information with Italy, can opt for the patent box regime if they carry out R&D activities in Italy.

3.2 Qualifying IP types

The IP types qualifying under the patent box regime are the following:

– copyrighted software,
– patents,
– designs and models that can be legally protected,
– processes, secret formulas and industrial, commercial, or scientific knowledge, including know-how, that can be legally protected.

3.3 Calculation of reduction

The eligible portion of qualifying income is given by the ratio of the R&D costs incurred in maintaining and developing the intangible asset to the total costs of producing that asset. This calculation method is compliant with the OECD "nexus approach".

3.4 Losses

If the portion of income eligible for the purposes of the patent box regime is higher than the overall taxable income, the taxpayer incurs a tax loss for the period, which can be utilized in accordance with ordinary rules.

It is also noted that losses attributable to the exploitation of the eligible IP need to be handled carefully. Indeed, on the one hand any tax losses derived from the qualifying IP once the patent box election is made can be used to offset any

ordinary income of the company electing for the regime. On the other hand though, once the company starts to derive income from the qualifying IP, this income will not benefit from the exemption under the patent box regime up to the amount of the IP losses used to offset ordinary income.

4 Other tax related R&D benefits

Tax incentives for non-resident researchers: qualified researchers willing to establish their tax residence in Italy shall benefit from a 90% exemption from individual income tax and from a full exemption from regional tax. The incentives shall apply in the year during which the researcher becomes a tax resident in Italy and for the following 5 years (the following 5 years are increased to 7, 10, or 12 years in case the researcher satisfies specific requirements).

Netherlands

1 Overview

In the Netherlands the main R&D tax incentive is an output-based innovation box. Furthermore, there are different tax incentives that may be used by any company and therefore can also be of interest for R&D-companies. The standard corporate income tax rate is 25%, whereby a reduced rate of 15% on the on first EUR 245,000 (in 2021) respectively on the first EUR 395,000 (in 2022) of taxable profit is applicable.

2 Input tax incentives

2.1 Super deductions

Additional super deductions are available for companies making eligible investments in a wide variety of environmentally friendly or energy-saving business assets (see section "Other tax related R&D benefits")

2.2 WSBO tax credit

A tax credit against payroll tax is available to companies with employees working on R&D projects or that otherwise spend money on R&D projects. Companies must apply to the Netherlands Enterprise Agency (RVO), a Dutch government agency independent of the tax authorities, for the tax credit before each R&D project starts.

The incentive is referred to as "WSBO" and covers development projects (i.e., the development of technically new products or product parts, production processes, or computer programs) and technical scientific research.

If RVO grants the incentive, it will issue a R&D Certificate to the taxpayer stating the amount of the payroll tax reduction. The incentive covers 3 types of expenditure on qualifying projects:

i. Salary cost of employees working on the project
ii. Cost items that are directly attributable to the project
iii. Fixed asset investments attributable to the project. Investments equal to EUR 1 million or more are factored by ways of five instalments, each being 20% of the invested amount.

The amount of tax credit equals 50% of the first EUR 350,000 of qualifying cost (employment related and other) if the company qualifies as a start-up and 40% in other cases. The rate is 16% on the excess over EUR 350,000. The company may set off the amount of the credit against its periodic obligations to remit payroll tax to the Dutch Tax Administration. If a company does not have sufficient wage tax basis to set off the tax credit, there is no refund.

2.3 Definition of R&D

In the Netherlands the interpretation of what constitutes eligible R&D generally follows the R&D Certificate issued by the RVO, which is a requirement to apply the tax credit against payroll tax and in additional also serves as the central entry requirement to the Innovation Box. The term R&D is interpreted in accordance with internationally accepted definitions.

3 Output tax incentive

3.1 Innovation Box

The Innovation Box applies to income earned from self-developed intangible assets (or a portfolio of intangible assets). The income is subject to a low 9% effective corporate income tax rate, which is achieved through exempting 64% of the Innovation Box. All companies subject to Dutch corporate income tax can apply for the innovation box, whereby all IP types (incl. exclusive license) according to OECD standard can benefit.

3.2 Eligible IP income

Qualifying income includes licensing income (i.e., royalties) but also includes other items such as a portion of product sales or service revenues, cost savings, and capital gains on disposal of the intangible asset. If the company has outsourced part of its R&D activities (whether within the Netherlands or abroad), it may still benefit from the Dutch Innovation Box. However, the income attributable to the Innovation Box is subject to a reduction following the modified nexus approach. An important feature of the Dutch modified nexus approach is that R&D costs incurred by a Dutch taxpayer as part of a Cost Contribution or Cost Sharing Arrangement are not treated as R&D cost for outsourcing to related parties and therefore negatively impact the nexus ratio. Participation in such an arrangement should thus not negatively impact the modifies nexus approach.

3.3 Losses

Innovation losses are deductible against the normal Dutch tax rates. However, these losses create a threshold that

needs to be set off against qualifying income first before the Dutch Innovation Box can effectively applied. Phase-in mechanisms are in practice applied in cases where R&D is an ongoing process in the organisation and new IP is constantly developed.

4 Other tax related R&D benefits

4.1 No capitalization of development costs

With respect to the development cost of intangible assets incurred in a particular tax year, the taxpayer may elect not to capitalize them but rather take an immediate deduction.

4.2 Super deduction for energy saving business assets (EIA)

Under the EIA scheme, an additional 45.5% of the invested amount up to EUR 126 million can be deducted for CIT purposes. In scope are assets that are energy saving and new. A list of asset types is published annually as part of these regulations.

4.3 Super deduction for environmentally friendly business assets (MIA)

Under the MIA scheme, depending on the asset class, an additional 27%, 36% or 45% (percentages for 2021, 2022) of the invested amount can be deducted for CIT purposes. In scope assets are environmental protection – related and new, and a list of asset tapes is included in the regulations.

4.4 Free depreciation scheme for environmentally friendly business assets (VAMIL)

Under the VAMIL scheme, 75% of the cost of certain investments in new environmentally friendly business assets can be depreciated at will, that is, without observing the general timing and other depreciation constraints that would normally apply to business assets.

4.5 30% ruling for inbound expatriates

If a company needs specialists from outside the Netherlands for carrying out its R&D program, the 30% ruling may act as an incentive to induce them to work in the Netherlands. Under Dutch tax law, the additional costs of a temporary stay outside the home country (extraterritorial costs) can be reimbursed tax-free.

Qualifying employees are deemed to incur extraterritorial costs amounting to 30% of their employment income. The employer is therefore allowed to pay 30% of the employment income as a tax-free allowance during a five-year period.

Austria

1 Overview

Austria offers an R&D premium for in-house R&D and to a certain amount for outsourced contract R&D. The standard corporate income tax rate is 25%.

2 Input tax incentive

2.1 R&D Premium

The Austrian system for R&D tax incentives provides for an R&D premium for qualifying activities, which is effectively a cash payment that is credited to the taxpayer's tax account. The premium can be claimed for in-house R&D and for outsourced contract R&D. The R&D premium amounts to 14% of qualifying expenses, however, expenses incurred in connection with outsourced R&D are limited to EUR 1 million. The taxpayer can claim the R&D premium even if a loss is incurred in the respective financial year. Furthermore, the R&D premium does not constitute taxable income in Austria.

2.2 Definition of R&D

For the purposes of the R&D premium, the Austrian R&D definition is based on the R&D definition of the OECD Frascati Manual. In addition, the Austrian tax authorities also require the use of scientific methods as a requirement for eligible R&D expenses.

2.3 Eligible activities

To be entitled to claim the R&D premium, the taxpayer must carry out R&D in his own business (in-house research and development) or commission R&D (contract research). In the case of a co-partnership, the research premium must be applied for by the co-partnership and not by the individual partners. Entitlement to research premium exists only to the extent that the underlying activity is amenable to taxation.

In terms of in-house R&D, the research activities must be carried out in Austria, either via a domestic company or a domestic permanent establishment. If R&D activities are outsourced, the research activities must be carried out in the European Union or in the European Economic Area.

2.4 Qualifying R&D expenditure

The following expenses constitute eligible costs for the R&D premium (if they are related to R&D activities):

- Actual salaries and wages including incidental wage costs regarding employees performing qualifying R&D activities. If such employees are not solely performing R&D activities, the portion of their salaries or wages that is attributable to such activities can be considered,
- Direct material for continuous R&D expenses as well as capital investments including investments into property if they are used for qualifying R&D activities,

– Finance costs attributable to R&D activities,
– Other indirect costs attributable to qualifying R&D-activities with the exception of distribution overheads.

Further, qualifying R&D expenses must be reduced by tax-free income, e.g. tax-exempt government or state grants.

2.5 Calculation of R&D expenditure

The calculation base for the R&D premium for contract R&D is limited to a maximum of EUR 1 million per financial year resulting in a maximum premium for contractual R&D of EUR 140,000).

There is no limitation on the calculation base for the in-house R&D premium. The tax premium can also be claimed if a taxpayer incurs a loss in a financial year. The tax premium is credited directly to the taxpayer's tax account.

Singapore

1 Overview

Singapore is regarded as a leading center for science and innovation and offers both input and output R&D tax incentive measures. Furthermore, various grants in relation to R&D activities are also available. The standard corporate income tax rate is 17%. For the first taxable income of SGD 10,000 an exemption of 75% and for the next SGD 190,000 an exemption of 50% applies.

2 Input tax incentive

2.1 Enhanced tax deduction for R&D expenditure

All businesses in all industry sectors in Singapore are eligible to claim an additional tax deduction of 150% for qualifying expenditure pertaining to qualifying R&D activities (in total 250% tax deduction).

2.2 Definition of R&D

R&D is defined as any systematic, investigative, and experimental study that involves novelty or technical risk carried out in the field of science or technology with the object of acquiring new knowledge or using the results of the study for the production or improvement of materials, devices, products, produce, or processes, but does not include certain activities.

2.3 Requirements

To claim the tax deduction, the following requirements must be fulfilled:

– The R&D activities are performed in Singapore,
– The claimant is the beneficiary of the R&D activities,
– The claimant bears the financial risk of the R&D activities,
– The nature of the activities satisfies the definition of R&D.

2.4 Qualifying R&D expenditure

The generally deductible R&D costs include the following:

– wage costs relating to R&D activities,
– consumables used in the R&D activities,
– outsourced contract R&D (the customer is entitled to claim the deduction in each case subject to the claimant being the beneficiary of the R&D activities).

For outsourced R&D payments and R&D cost-sharing arrangement expenditure, 60% of the costs are deemed as qualifying expenditure unless otherwise justified.

2.5 Benefit

There is a total tax deduction of 250% on qualifying expenditure available for all businesses, all industry sectors, effective from 2019 to 2025, for R&D carried out in Singapore. There is no cap on amount of eligible R&D expenditure. This provides effective benefit of up to 42.5% of the eligible R&D expenditure. Unutilized deductions may be carried forward indefinitely subject to the satisfaction of the shareholder test or transferred to other related entities under the local Group Relief system.

3 Output tax incentive

3.1 Intellectual Property Development Incentive (IDI)

An approved IDI company is eligible for a reduced corporate income tax rate of either 5% or 10% on qualifying IP income derived by it during the incentive period. The incentive period is limited to an initial period not exceeding ten years and may be further extended.

Companies must own qualifying patents and copyrights subsisting software and are required to carry out expansionary projects in Singapore (e.g., advancement of capabilities toward globally leading industries) and meet the necessary economic commitments.

Eligible IP income under the IDI includes royalties or other related income received by the IDI company as consideration for the commercial exploitation of an elected qualifying IP right.

3.2 Calculation of reduction

Qualifying income will be computed through the application of the modified nexus ratio, which is compliant with the OECD standards. The nexus ratio would consider qualifying IP assets and R&D expenditure incurred by the applicant. Losses incurred under the IDI may be carried forward subject to the prevailing tax rules.

4 Other tax related R&D benefits

Acquisition costs of eligible IP can be deducted for tax purposes on a straight-line basis over a period of 5, 10, or 15 years by way of a writing down allowance. The claimant must own the legal and economic ownership rights. If only

economic ownership rights are owned, an application to relevant economic agencies may be made for the writing down allowances.

Investment allowances are available for the acquisition of IPRs subject to application and approval by the relevant economic agency.

Various grants are available to encourage R&D activities in Singapore. The grant support provides up to 70% of eligible R&D costs for R&D undertaken in Singapore. The grants can support R&D activities in a wide range of industries such as fintech, financial services, insurance, marine, manufacturing, logistics, etc.

Spain

1 Overview

Spain has a variety of different tax incentives for R&D companies. On one hand tax credits for R&D related expenses are granted and on the other hand companies can apply for a reduction of positive net earnings obtained from the transfer of intangible assets. The standard corporate income tax rate is 25%, whereby a 15% tax rate is applicable for newly incorporated entities that carry out a business, for the first two fiscal years in which they obtain a positive tax base.

2 Input tax incentive

2.1 R&D tax credit

The R&D tax credit generally amounts to 25% of R&D-related expenses incurred in the tax period.

For Technological Innovation activities the tax credit is constant and amounts to 12% of related expenses incurred in the tax period. Different percentages could apply in some specific regions (Basque Country, Navarre, and Canary Islands).

A "cash refund" system is available for companies with tax losses or lower tax due than R&D tax credits.

2.2 Definition of R&D

For the purposes of the R&D tax credit, "Research" is an original, planned investigation aimed at attaining new knowledge and a greater understanding in the scientific and technology field. "Development" is the application of the results of the research or of any other type of scientific knowledge for the manufacturing of new material or products, or for the design of new processes or production systems, as well as for the substantial technological improvement of materials, products, processes, or preexisting systems.

Specifically, R&D activities include the materialization of the results of the research in a plan/draft, scheme or design; and the creation or initial, not-for-sale prototypes or demo projects, if they cannot be converted or used for industrial or business purposes. R&D activities also include the design and manufacturing of samples for the launching of new products. Additionally, R&D activities include the creation, combination, of configuration of "advanced software".

Technological Innovation is defined as activities resulting in advanced technology in new products or manufacturing processes, or in the significant technological improvement of already existing products or processes.

2.3 Qualifying R&D expenditure

Based on these principles, qualifying expenses include the following:

- personnel expenditure relating to R&D,
- costs relating to investments in assets used exclusively for qualifying R&D activities,
- depreciation expense on R&D assets insofar as they are directly related to a specific R&D project and are also entered accordingly. In addition, costs relating to technological innovations will then be regarded as qualifying if they are directly related to a technological innovation project and are entered accordingly.

To be entitled to claim the R&D tax credit, the following conditions should be met:

- Expenses incurred should correspond to activities carried out in Spain or in another state member of the EU or the EEA,
- The R&D activities could be carried out directly by the company eligible for the tax credit. Additionally, amounts paid to a third party (in EEA) for R&D activities, upon petition of the taxpayer, would qualify for the tax credit.

2.4 Calculation of R&D expenditure

The R&D tax credit amounts to 25% of R&D-related expenses incurred in the tax period. Where the expenses of R&D activities are higher than the average of those incurred in the two preceding years, 25% is applied up to that average and 42% applies to the excess. R&D tax credits applied each year, jointly with other Spanish tax credits, cannot exceed 25%, or 50% on certain cases, of the corporate income tax due for the year. Any unapplied credits may be carried forward for 18 years (30 years in the Basque Country). Taxpayers who are in a tax loss position or have reached the annual tax credits ceiling, can claim a cash refund of their R&D tax credit (or the excess) considering specific requirements.

In addition, a 17% R&D tax credit is allowed for the costs incurred that represent personnel expenses related to

qualified research workers engaged exclusively in R&D activities. An 8% credit is allowed for investments in intangible and tangible assets (excluding buildings and land) employed exclusively in the performance of R&D activities. A constant 12% tax credit is available for Technological Innovation activities. For the calculation of the tax credits, the expenses are reduced by 100% of the government subsidies granted for those activities and considered as income for the year.

The law specifies that the taxpayer will apply for only 80% of the original R&D tax credit. The refund will be limited up to EUR 3 million for R&D and Technology Innovation activities and EUR 1 million in case of Technological Innovation activities only. For companies with R&D costs higher than 10% of their turnover, the cap would increase from EUR 3 million to EUR 5 million.

2.5 Limitation

Certain upper limits apply within the framework of this variety of tax credits. If the qualifying R&D expenses exceed 10% of the tax owed (after the deduction of tax credits), the tax credits can be set off against a maximum of 50% of the tax owed (before the deduction of tax credits). If this 10% limit is not reached, the tax credits can be set off against a maximum of 25% of the tax owed (before the deduction of tax credits).

3 Output tax incentive

3.1 IP Box

The taxpayer is entitled to a 60% reduction of positive net earnings (revenuesdeductible amounts) obtained from the transfer of intangible assets for tax purposes. However, the reduction would only apply in relation to the proportion of income resulting from a specific ratio (numerator: expenses (excluding financials and depreciation of buildings)) incurred by the licensor directly related to the creation or development of an asset, including those derived from the outsourcing to unrelated parties. This expense would be increased by 30% with the limit of the amount of the denominator; (denominator: same expenses and including outsourcing with related third parties or expenses from the acquisition of the asset). A reduced corporate income tax rate of 10% is applicable on income qualifying for the IP-Box.

This exemption would also apply to the income derived from the transfer of qualifying intellectual property to a nonrelated party. This reduction is incompatible with the tax credit for reinvestment of extraordinary profit.

3.2 Qualifying companies

To qualify, the following requirements must be met:

- Licensee must use the licensed asset in an economic activity. This use cannot result in the sale of goods or provision of services to the licensor that generates deductibles expenses for the licensor in case of related parties,
- The licensee must not be resident in a no tax or blacklisted jurisdiction unless it is an EU member state and can demonstrate that the operation has a true economic basis and the entity has an economic activity,
- If any additional services are included in the licensing agreement, the consideration for such services must be included separately in the agreement,
- Accounting books for determining the income and direct expenses with respect to the licensed assets must be maintained.

3.3 IP types

Qualifying intangible assets are the transfer of right to use, or exploitation of patents, blueprints, complementary certificates for drug protection or plant protection products, drawings and models legally protected, resulting from an R&D or Technological Innovation activity, and advanced software registered resulting from R&D activity.

Intangible assets that are explicitly excluded are: trademarks, literary, artistic, or scientific works, including cinematographic films, personal rights susceptible to transfer (such as image rights, computer programs, industrial, commercial or scientific equipment), and any other right or asset other than those included before.

4 Other tax related R&D benefits

A 40% reduction on Social Security contribution for R&D staff (exclusively assigned to R&D activities) is allowed for innovative SMEs or for other companies but restricted to personal wages not included in R&D tax credit basis.

The Spanish Central Government and other regional/local administration provide a range of subsidies for the performance or R&D or innovation activities and for sustainability/capacity investments, digitalization, etc.

Czech Republic

1 Overview

The Czech Republic has a higher deductibility for certain R&D expenditure and an incentive system to invest in R&D centers. The corporate income tax rate is 19%. A 5% rate applies to income of certain investment funds, and a 0% rate applies to pension funds. Furthermore, there is a special CIT rate of 15% levied on dividend income of Czech tax resident entities from non-resident entities (unless subject to participation exemption).

2 Input tax incentive

2.1 Additional R&D deduction

A taxpayer may deduct additionally up to 100% of the costs associated with the projects of R&D as a special tax allowance. Furthermore, a taxpayer may increase the additional deduction by 10% for the year over year increase of costs related to the R&D projects. If this deductibility for qualifying R&D expenses cannot be used in the corresponding year, it can be used during the next three years.

2.2 Definition of R&D

R&D is defined as "creative work undertaken on a systematic basis in order to increase knowledge and the use of such knowledge, which includes an appreciable element of novelty, for resolving scientific and/or technical uncertainty." This definition complies with the international definition of R&D activities according to the OECD Frascati Manual.

Qualified activities include R&D of new technologies or improvements to existing technologies, systems, or services and research and development of new or improvements of existing materials, products, and equipment. Activities include especially design and construction works, production of samples or prototype products, or their parts, verification of prototypes, pilots, or demonstration equipment.

2.3 Qualifying R&D expenditure

The eligible groups of expenses include:

- Personal expenses of relevant employees (not only the R&D employees but also other employees of the taxpayer who are involved in the R&D projects, such as workpeople),
- Tax depreciation of fixed assets used in direct connection with the R&D projects,
- Other operational expenses directly related to the project, such as expenses for materials, inventory, and low-value tangible and intangible assets,
- Expenses incurred for the services received from a public university or research organization or services relating to certifications of the R&D outputs acquired from third parties provided these services were not subject of R&D tax allowance,
- A consideration for a financial lease of tangible movable assets that relates to the R&D project.

While expenses relating to outsourced R&D activities cannot be deducted, there is the option, provided all the conditions are met, to deduct R&D activities carried out for customers by the company itself. In addition, the qualifying activities can be carried out outside the Czech Republic if the expenses are incurred by the Czech taxable entity.

3 Other tax related R&D benefits

The Czech Republic has various incentive measures to promote investments in R&D centers and putting R&D outputs into practice. Besides subsidies and allowance, these also include a so-called "tax holiday". This exempts investments in technological equipment from corporate income tax for a period of 10 years.

United Kingdom

1 Overview

In the UK there are different R&D tax incentives for large companies and SMEs with the option to deduct certain R&D expenses at a higher rate. Furthermore, there is a patent box allowing the application of a lower tax rate on profits generated from patented innovation. The standard corporate income tax rate in the UK is currently 19%.

2 Input tax incentive

2.1 Tax credit and an additional tax deduction

Large companies can claim a taxable credit of 13%. The credit must be used to settle corporate or other tax liabilities due to the revenue authority before any cash amount becomes payable to the company. However, large companies can also claim a cash refund under certain circumstances.

SMEs can deduct an additional 130% of the qualifying costs from taxable profits and may be able to claim a tax credit if the company is loss making, worth up to 33% of the original qualifying expenditure.

2.2 Definition of R&D

The definition of R&D follows the principle of the OECD Frascati Manual. Broadly, for activities to qualify as R&D, the project must be seeking an advance in science or technology through the resolution of scientific or technological uncertainty.

2.3 Qualifying R&D expenditure

For both the large company and SME regimes, it is only the R&D proportion of any mixed expenses that can be claimed. The main qualifying categories for relief are staff costs,

payments to externally provided workers, costs of consumables used or transformed in the R&D and not sold on, and costs of software licenses where the software is used in the R&D.

There are slightly different rules for large and SME companies, particularly around the use of group or third-party resource. Broadly, relief on expenditure on subcontracting R&D to other entities is generally available for SMEs, but not for large companies.

For SMEs, relief for expenditure on R&D that has been subcontracted in is only available at the large company rate.

Costs relating to production activities are excluded from the R&D scheme. The same goes with subsidized expenditure under the SME regime and the costs incurred on acquiring intellectual property.

2.4 Losses

Both SMEs and large companies can set off unused incentives (for example due to a lossmaking situation) against subsequent years without any limits being imposed. SMEs in loss-making situations also have the option to receive an effective cash refund in the amount of up to 33% of the qualifying R&D expenses.

3 Output tax incentive

3.1 Patent Box

The patent box regime applies an effective 10% corporate income tax rate on profits generated from patented innovations and certain other types of intellectual property (such as supplementary protection certificates for pharmaceutical products).

3.2 Calculation of reduction

The UK patent box claims follow the 'modified nexus' approach linking relevant R&D expenditure to the patent or patented item. This requires an R&D fraction to be calculated for each type of IP (assets, products, or product families) to which relevant income is attributable. The calculation is based on the attributable R&D expenditure by the company in the accounting period of the patent box claim.

4 Other tax related R&D benefits

For R&D expenditures classified as capital for tax purposes, there is a regime of R&D Allowances. This scheme provides an immediate 100% deduction of capital R&D expenditure against taxable profits. All expenditure excluding expenditure on land is potentially eligible.

Grant funding is available in the UK through several different schemes. Through UK Research and Innovation, funding is available for innovation projects across a range of scientific and industrial themes. Local Enterprise Partnerships are another potential source of funding, particularly where job creation is involved. Other schemes to incentivize the digitization of manufacturing processes may also be available.

USA

1 Overview

The USA offers a tax deduction and the possibility of a credit on the federal tax level related to research and development (R&D) activities. Furthermore, many states and local jurisdictions provide R&D-related tax incentives, including tax deductions, credits and exemptions or preferential treatment for property used for R&D activities for the purpose of state and local income, sales, and property taxes. The corporate income tax rate is 21%. Due to pending legislation the corporate income tax rate is expected to increase during the next months.

2 Input tax incentive

2.1 Qualifying R&D expenditure

Generally, qualifying R&D expenditures are deductible at a rate of 100%.

The term "research or experimental expenditures" means expenditures paid or incurred in connection with the taxpayer's trade or business that represent research and development costs in the experimental or laboratory sense. The term generally includes all such costs incident to the development or improvement of a product. Expenditures represent R&D costs in the experimental or laboratory sense if they are for activities intended to discover information that would eliminate uncertainty concerning the development or improvement of a product. The ultimate success, failure, sale, or use of the product is not relevant to a determination of eligibility. Costs may be eligible if paid or incurred after production begins but before uncertainty concerning the development or improvement of the product is eliminated.

2.2 R&D tax credit

In addition to the deduction, at the federal level a tax credit model is offered which in principle provides two calculation alternatives.

The first calculation alternative is the traditional or regular research credit which provides for a 20% gross credit on the excess of the current year qualified research expenditures over a base amount. Alternatively, a tax credit of 14% can be claimed for R&D expenditures exceeding 50% of the average R&D expenditure from the previous three years. Generally, the tax credit is in the range of 6.5% of the annual R&D expenses but can be as high as 14%.

The tax credit can be claimed by corporations and passthrough entities (e.g. partnership, individuals).

A taxpayer is required to reduce its deductions in computing taxable income by the amount of any research credit determined. Similarly, a taxpayer is required to reduce amounts charged to a capital account where the taxpayer capitalizes rather than deducts expenses.

2.3 Definition of R&D

In particular, the term qualifying R&D expenditure is understood to refer to activities mentioned above and for expenses to qualify as R&D expenditures, they must be incurred within the US, Puerto Rico or a US territory. Within the context of these activities, qualifying expenses include the following:

- Wages of employees incurred in the performance, direct supervision, or direct support of R&D activities,
- Expenses for tangible property and other material expenditure used or consumed in conducting the R&D activities but not land or property that must be depreciated,
- 65% of expenses for contract R&D, and
- Certain computer related expense.

For the purposes of the R&D credit, qualified research is defined as research that is paid or incurred in carrying on a trade or business of the taxpayer that satisfies all four parts of a four-part test. Qualified research is research that is:

- Technological in nature: relying on the physical or biological sciences, computer science, or engineering,
- Undertaken to eliminate uncertainty: relating to capability, methodology, or appropriate design,
- Undertaken for a permitted purpose: relating to function, performance, reliability or quality, and
- Substantially all of which consists of a process of experimentation: evaluating one or more alternatives.

The R&D can offset the first USD 25,000 of regular income tax (it cannot offset alternative minimum tax) and then up to 75% of the regular income tax more than USD 75,000. If a R&D credit cannot be used in the year that it is generated, then it must be carried back one year if it can be used in that carry back year, or it can be carried forward for 20 years.

3 Other tax related R&D benefits

In addition to the federal R&D tax credit, many state and local jurisdictions provide R&D-related tax incentives, including current tax deductions, credits and exemptions or preferential treatment for property used in R&D activities for the purpose of state and local income, sales and property taxes. The federal government and many state and local governments also provide grants to conduct research. Many state and local governments also offer favorable loans, tax holidays, and other incentives to persuade businesses to choose locations in their jurisdictions.

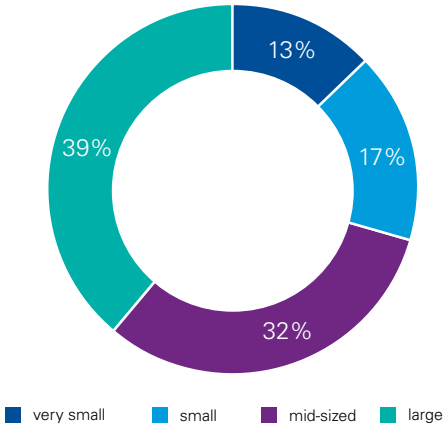
8 Appendix II: Supplement to the survey

In the following, results of individual questions, which were only mentioned summarily in the chapter "Survey", are presented in more detail.

8.1 General information on the participants

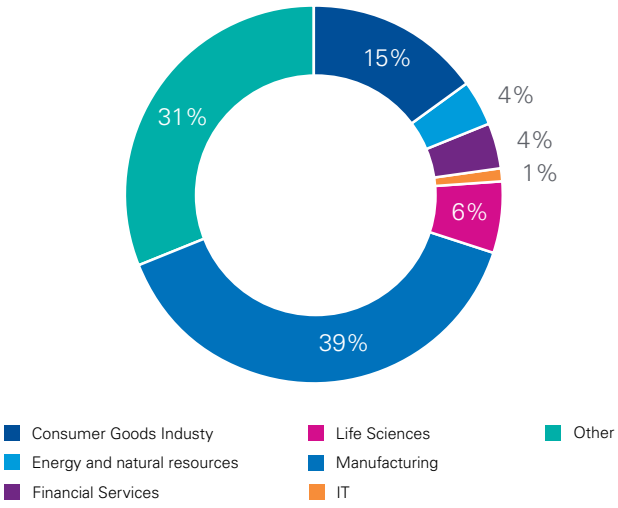
As shown in the following diagram, companies of all sizes took part (the classification is based on the European Commission's definition of SMEs)[45]. However, large companies (with more than 250 full-time jobs) represent the largest field of participants with 39%.

Company size according to the threshold values (number of employees) of the SME definition by the European Commission



Most of the companies surveyed are active in the manufacturing (39%) and consumer goods (15%) sectors. With 6%, life sciences were slightly less represented compared to the 2015 survey.

Participants by sector



A closer look at the sales figures of the companies participating in the survey shows that 49% of the companies have sales below CHF 50 million and 21% have sales above CHF 500 million.

8.2 Information on the R&D activity of the participating companies

86% of the participating companies conduct R&D (14% do not perform any R&D). Of the R&D-performing companies, 12% conduct basic research (some additionally also conduct applied research). 88% carry out applied R&D or science-based innovation or experimental development.

According to the data, 45% of the participants (or 52% of the R&D performing companies) have specific R&D facilities. 48% of R&D performing companies conduct R&D within their usual infrastructure. According to the 2015 survey, the proportion of companies operating R&D facilities was still at 65%. It might therefore be understood that R&D is increasingly being conducted outside of R&D facilities (possibly outside of actual R&D departments). It is important to note again in this context, however, that fewer companies from the life sciences sector (which tend to have specific R&D facilities) participated in this survey and that the participants are not representative of the economy as a whole.

These R&D facilities are mainly located in Switzerland, as expected and similar to the KPMG survey from 2011 and 2015. Notable other locations are Germany, USA and China.

The R&D expenditures of 40% of the relevant companies are between 1% and 5% of total expenditures. A further 29% of companies stated that their R&D spending was between 6% and 10% of total expenditures. 13% of the company state that their R&D expenditure is above 20%.

By focusing on Switzerland, more than half (59%) of the relevant companies indicated that more than 50% of their annual R&D effort is in Switzerland. Just a quarter of the participants have less than 10% of their R&D effort in Switzerland. Expressed in absolute figures, the R&D expenditure in Switzerland of 36% of the relevant companies amounts to more than CHF 5 million annually. 49% of the relevant companies stated that their R&D expenditure incurred in Switzerland amounts to between CHF 0.5 and 5 million annually. The R&D expenditure of the remaining 15% amounts to less than CHF 0.5 million annually.

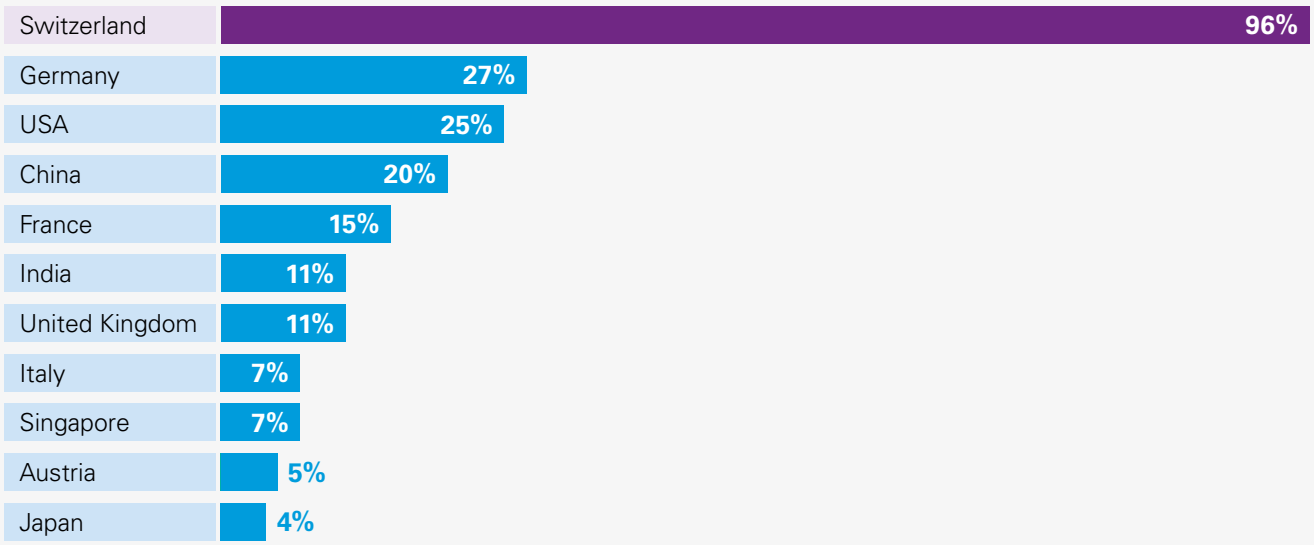
[45] The new SME definition – User's Guide and Model Declaration, European Commission, 2006.

48% of the companies operating an R&D center have established new R&D centers within the past five years. In particular, Switzerland and China were indicated as preferred locations for setting up new R&D sites. Furthermore, countries such as the USA and Germany are also considered as new R&D locations.

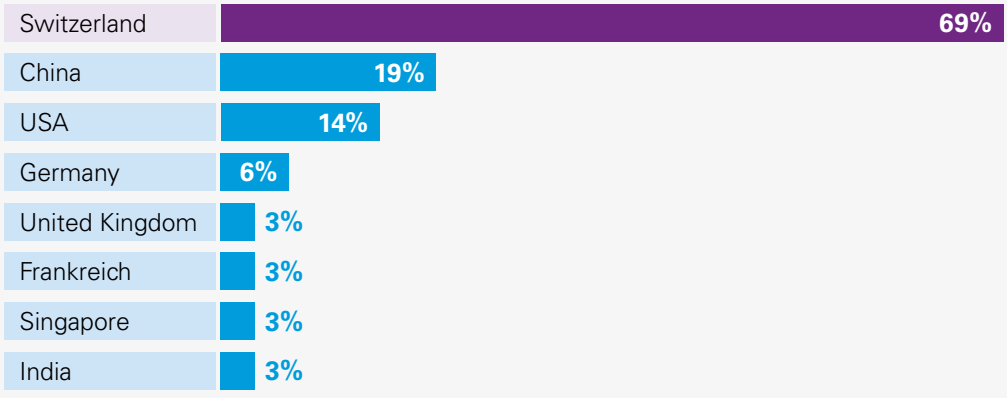
As attractive R&D locations from a tax point of view, the survey participants named Switzerland (68%), Germany (21%), the USA (16%), France (13%) and China (11%) in particular. Respondents were allowed to choose up to three countries here.

Of all the companies surveyed, 35% are already benefiting from R&D tax incentives (or 41% of R&D-performing companies). With 85%, Switzerland is the most frequently mentioned country, followed by the UK and China with 15% each, and the USA and France with 12% each, where such measures were used. In the 2015 survey, the USA was the most frequently mentioned country with 35%. The majority of the relevant companies benefit from input-based R&D tax incentives (58% of mentions, multiple mentions possible). In contrast, output-based tax incentives were mentioned by only 21%. A further 21% of the mentions were allotted to other R&D tax incentives (e.g. regional policy tax measures).

Countries mentioned with R&D centers (multiple answers possible)



In the last 5 years, where have R&D centers or facilities been established?
(To be answered only by companies that have established an R&D center in the last five years; multiple answers possible)



Contacts

KPMG AG
Badenerstrasse 172
P.O. Box
CH-8036 Zurich

Janick Pochon
Partner
Corporate Tax
+41 58 249 46 45
jpochon@kpmg.com

Olivier Eichenberger
Director
Corporate Tax
+41 58 249 41 67
oeichenberger@kpmg.com

Benjamin Bellwald
Senior Manager
Corporate Tax
+41 58 249 77 67
bbellwald@kpmg.com

kpmg.ch