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The Impact of Pillar Two on R&D Tax Incentives in Belgium's Pharmaceutical Sector

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Statement on the Use of Artificial Intelligence

I occasionally used OpenAI's ChatGPT to improve the clarity and fluency of certain English formulations. All content was critically reviewed and verified by myself to ensure academic integrity. All ideas, analyses, and written material are entirely my own.

1. Introduction

1.1 Acknowledgments

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1.2 General context

In recent years, European countries have intensified their efforts to stimulate research and development (R&D), recognizing its central role in driving innovation, competitiveness, and economic growth. The European Union's Lisbon Strategy initially set a target for member states to invest at least 3% of their GDP (Gross Domestic Product) in R&D, a goal that was reaffirmed in subsequent frameworks such as Europe 2020. (*European Parlement, 2009*) This objective has served as a catalyst for the implementation of incentive-based policies, particularly in the field of taxation.

One of the most prominent tax tools developed to support innovation is the Intellectual Property (IP) box regime, also known as a patent box. This mechanism offers preferential tax treatment for income derived from qualifying IP assets, aiming to both attract innovative activities and retain high-value functions within national borders. (Asen, 2019)

Within this competitive landscape, Belgium has distinguished itself as a leader in health biotechnology, also referred to as “red biotechnology”, according to several key indicators such

as investment, employment, and exports.(Essenscia, 2023; SPF Economie, s. d.) This strong positioning is the result of a dynamic industrial base and world-class research institutions, but also of a particularly advantageous tax environment, including the Innovation Income Deduction (IID) regime.

These tools have long been viewed as potentially harmful by the Organization for Economic Co-operation and Development (OECD). The primary concern lies in the mobility of intangible assets, which allows companies to easily choose the jurisdiction in which to locate their intellectual property. This can lead to tax base erosion and jurisdiction shopping, where economic substance becomes secondary to tax considerations. (OECD, 2015)

The OECD has taken a leading role in the fight against harmful tax practices, notably through its Base Erosion and Profit Shifting (BEPS) initiative. This comprehensive plan consists of 15 Actions and a Two-Pillar Solution, both designed to address tax avoidance and ensure a fairer allocation of taxing rights. (*OECD*, s. d.)

In this thesis, particular attention will be paid to Action 5, which introduces the Nexus approach. The nexus approach prioritizes substance in the use of the IP tax system. Under this approach, companies seeking to benefit from an IP box regime must demonstrate the presence of real economic activities within the jurisdiction, including tangible assets and qualified expenditures such as local R&D personnel and operational expenses.

As a result, many countries, including 17 in Europe, have adopted the nexus approach to make their IP box regimes comply with OECD rules (Graphic - Table 5). Under this revised framework, only the net income from qualifying intellectual property is eligible for tax benefits. A clear classification of eligible income components has been introduced, although differences remain across jurisdictions, with some countries applying a stricter interpretation of the nexus approach than others.

Belgium implemented these rules in 2017, and more definitively with the end of the transitional period in 2021. (Zwaenepoel, 2024) The new approach has already reduced the support provided to companies in Belgium. (Graphic - Table 1)

If we look at the data provided by OECD and Europe in term of R&D, we can see that Belgium has been progressing for the past years and more significatively since 2016. (Graphic - Table 2) Belgium is one of the leading countries investing in R&D, ranks number one in vaccination, and consistently invests more than 3% of its GDP in R&D and biotech largely participates to these results. (*World Bank Open Data*, s. d.)

With the onset of the COVID-19 pandemic, an increasing number of countries have prioritized the development of domestic biotechnology centers. This shift has the potential to challenge Belgium's position in this sector, particularly considering the significant changes in tax policy. (SPF Economie, 2024)

This thesis examines also a recent shift in the corporate income tax framework: the introduction of Pillar 2. Pillar 2 represents a key component of the two-pillar approach launched by the OECD under the BEPS project, aimed at addressing tax avoidance and adapting to the evolving landscape of digitalization. (*OECD*, s. d.) The primary objective of Pillar 2 is to establish a global minimum corporate income tax rate of 15% across jurisdictions. According to Pascal Saint-Amans, one of the principal architects of the initiative, tax policy consists of two fundamental elements: the tax rate and the tax base. Pillar 2 addresses both introducing a 15% minimum tax rate and a standardized tax base known as the "GloBE" (Global Anti-Base Erosion) result.(Saint-Amans, 2023)

The issue arises from the fact that certain tax deductions considerably reduce the effective tax burden of a jurisdiction. Consequently, this can result in a company's effective tax rate falling below the minimum threshold of 15%, thereby triggering a top-up tax as stipulated under Pillar 2. (Ferreira Liotti et al., 2022)

This may, as studies have shown, result in a different distribution and allocation of R&D activities to avoid falling below the 15% threshold in more generous jurisdictions such as Belgium. (Ferreira Liotti et al., 2022)

This situation has raised concerns in Belgium where a federal study in collaboration with Deloitte and the OIP (The Observatory of the Pharmaceutical Industry) has led to a reassessment of the Belgian regime. (SPF Economie, 2024) To mitigate this issue, Belgium has opted to provide non-refundable tax credits that can be carried forward when companies fall below the 15% threshold. This policy aims to preserve the intended tax benefits for these firms. (*EY - Belgium*, s. d.)

Other countries, such as Ireland or Singapore, focus on maximizing their incentives using qualified tax credits. A new approach that can be compared to subsidies.

This consideration leads us to our problematic.

« To what extent does Pillar 2 affect Belgium's tax effectiveness in the pharmaceutical sector?"

1.3 Structure

This thesis is structured into three main parts. The first part provides a review of the various tax mechanisms designed to encourage innovation and attract it within a country's borders. It also examines how these instruments are treated under Pillar 2 and the Nexus approach. Then, we will focus on the Belgian incentives and the potential impact of Pillar 2 on their effectiveness.

The subsequent section of the paper will focus on the pharmaceutical sector. This section provides a quantitative analysis of 26 companies subject to Pillar 2. The analysis examines their tax positions and assesses the impact of innovation incentives on their overall tax burden. In this context, consolidated revenue is used as a proxy for the GloBE result. The conclusions drawn from this analysis are important to understanding the sector, the financial structures of these companies, and their relevance to the subject

The final part refines the findings of the Canadian study by Latulippe et ally (2023), incorporating Belgium's specific response to the challenges posed by Pillar 2. It aims to assess how companies are likely to react to the implementation of a minimum tax burden, particularly if part of the incentives offered by Belgium are neutralised by a Qualified Domestic Top-up Tax. A quantitative case study involving a company operating exclusively R&D activities in Belgium with a fixed budget is presented to highlight the implications of such a scenario and to contrast the conclusions of the Canadian study.

1.4 Delimitation of the problem

To determine the precise scope of our study, it is essential to consider the scope of Pillar 2. As outlined in the GloBE rules, the provisions apply to multinational enterprises (MNEs) with a minimum annual consolidated turnover of €750 million on their accounts, mostly published in accordance with IFRS (and US GAAP).(*OECD*, s. d.)

Indeed, the consolidated income reported in the qualified financial statements (prepared under IFRS or US GAAP) will serve as the starting point for the calculation of the GloBE result. This figure will then be adjusted, notably by adding qualifying refundable tax credits to the income.(*OECD*, s. d.)

The study focuses on the interactions between Belgium's IP tax regime and Pillar 2. Therefore, the scope must encompass companies affected by this regime with a high intensity of R&D.

When examining the data, one sector stands out in Belgium: the chemicals and life sciences sector, which accounts for 25.7% of the country's total exports.(SPF Economie, s. d.) With

9,2 billion in surplus the Biopharmaceutical sector accounts for 56% of Belgium's trade surplus. (*Pharma*, s. d.). Moreover, this sector requires substantial investments in R&D. According to figures from a report by Pharma.be, an active industry association, the sector invested €5.7 billion in R&D in Belgium in 2023, representing 1% of the country's GDP. This industry is responsible for 17.5% of new patents in Belgium which makes the pharmaceutical sector one of the most patent-intensive industries in Europe, after the manufacture of power driven hand tools. (EUIPO, 2013, p. 51)

Also, the sector is largely shaped by the presence of major multinational companies, commonly known as 'big pharma' (Gautam & Pan, 2016). These firms typically surpass the Pillar 2 threshold and have strategically developed their presence in Belgium, reflecting the country's role as a hub for pharmaceutical innovation.

2. Literature review: Tax incentives for innovation

2.1 The IP Box: A Tool for Tax Competition

Governments have several tools at their disposal to incentivize R&D spending. This thesis focuses particularly on Intellectual Property (IP) boxes. IP boxes are tax regimes that allow all or a portion of income derived from an intangible property to be deducted from the tax basis. They are so called because to benefit from them, taxpayers must indicate to the tax authorities by ticking a box on their tax return that the income comes from innovation. (Chen et al., 2022) This tool rewards companies that have succeeded in developing a successful project in implementing the environment of 'high-risk-high-reward' evoked in *the MIT innovation ecosystem's approach highlighting the role of the government.* (Budden & Murray, 2019)

The primary objective of these schemes is to promote national R&D efforts. Nonetheless, a notable side effect was their tendency to attract only the IP-related revenues. While this could be considered a beneficial externality for governments, it competed with the presence of a genuine innovation cluster in a country. (Bradley et al., 2021)

The delocalization of IP without substantial economic substance, coupled with increased competition among states, contributed to a significant loss in corporate income tax (CIT) revenues. OECD estimated that preferential tax regimes result in revenue losses of between 4% and 10% of the total CIT revenues worldwide. (OECD, 2015) Between 2000 and 2016, seventeen countries introduced preferential tax regimes featuring reduced corporate tax rates on income derived from qualifying IP. (Bradley et al., 2021) The objective of the OECD is not to hinder R&D incentives. The government's support for this activity is justified because R&D,

by its nature, tends to be below the socially optimal level.(Schoonackers, 2020) While, expenses in R&D positively impact the economy, salaries, and are essential for economic growth (Chen et al., 2022) (Graetz & Doud, s. d.).

The objective of the Nexus approach is to prevent profit shifting and the associated harm to other jurisdictions. To benefit from preferential regimes, companies must demonstrate a substantial presence in the relevant jurisdiction. As a result, tax competition no longer focuses solely on attracting profits, but rather on attracting the entire structure involved in developing R&D activities.(Latulippe et al., 2023)

The Nexus approach encourages companies to locate their R&D activities based on a broader set of criteria, rather than purely on tax considerations. As a result, countries are encouraged to enhance the attractiveness of these non-tax factors such as the quality of infrastructure, the availability of skilled labor, and the strength of innovative ecosystems to remain competitive.

This broader perspective is particularly important given that the effectiveness of IP box regimes in stimulating genuine innovation remains debatable. While such regimes can increase a country's attractiveness to host innovative activities, they have not conclusively demonstrated an ability to raise the overall level of innovation beyond what would have occurred in their absence. (Gaessler et al., 2018; Griffith et al., 2011) In this context, the Nexus approach plays a crucial role by ensuring that IP-related tax benefits are linked to substantial R&D activity, thereby limiting the risk of base erosion and avoiding a reduction in global corporate income tax revenues.

The new Nexus approach has introduced several significant effects. Firstly, it has fundamentally altered the dynamics of competition between states. Merely shifting intellectual property is no longer sufficient; the focus of state competition has now shifted towards the strategic selection of infrastructure locations. (Latulippe et al., 2023)

Another aspect of the consequences to consider is that the application of a strict nexus approach within the IP box regime may significantly discourage companies from acquiring new patents.(Bradley et al., 2021) This outcome is undesirable. For example, smaller companies can use strategically the sale of an IP to finance other R&D activities. Effectively, in accordance with the substance principles, patents acquired will reduce the proportion of revenue eligible for a tax deduction. This highlights the fact that incentives for the largest companies are not always aligned with the primary purpose of these regimes, which aim to encourage investments in R&D within a country.

The IP box has historically played a central role in Belgium's strategy to attract investment in research and development (R&D).Since the implementation of the Nexus approach, this

measure has become significantly less attractive for companies operating in Belgium. (SPF Economie, 2024) Notably, the tax deduction now applies to net revenue rather than gross revenue, leading to a substantial reduction in its benefits. (*SPF Finance, 2022*) This shift has created a gap in Belgium's previous support framework for innovation. (Graphic - Table 1)
With the introduction of Pillar 2, this incentive faces further limitations. Specifically, these benefits will be treated as a reduction of the effective tax burden, potentially triggering a top-up tax if the ETR (effective tax rate) falls below 15%.
Companies falling within the scope of Pillar 2 must submit Qualified CbC (Country by country) Reports based on Qualified Financial Statements (QFS) detailing their financial results and tax burden. These figures are subsequently refined using the GloBE rules, which allow for an adjustment of the effective tax burden by considering tax credits and other specific tax incentives granted to the company.
The effective tax rate of a company will be computed as a fraction with the GloBE result as a denominator and the effective tax burden as a numerator. (*OECD*, s. d.) If a jurisdiction imposed a company with less than 15% of effective tax rate, this will result in a top-up tax in the same jurisdiction by the mechanism of QDMTT (qualified domestic minimum top-up tax).

This mechanism of QDMTT has been adopted by many countries, as Pillar 2 allows jurisdictions to tax income that has been undertaxed elsewhere (PricewaterhouseCoopers, n.d.). The first enforcement tool is the Income Inclusion Rule (IIR), which applies when the ultimate parent entity is located in a jurisdiction implementing Pillar 2. The second is the Undertaxed Profits Rule (UTPR), which serves to reallocate the group's residual profit to subsidiaries in jurisdictions applying the rule. However, these two mechanisms are generally not activated when most jurisdictions have implemented a Qualified Domestic Minimum Top-up Tax (QDMTT) (Saint-Amans, 2023).

The IP box grants a different treatment for the income generated from a patent, which results in decreasing substantially the effective tax rate within an area. The effective tax rate of a country that uses an instrument as the IP box can be computed as the weighted average of the applicable CIT for the IP-generate income and the CIT applicable for any other activities.

$$(\%\ income\ eligible * (1 - \%\ \ NTincome) + \%\ of\ non - eligible\ income\ ) * CIT$$

** NT = Non-taxable (set by the country - 85% in Belgium) see appendix 6*

Consequently, this mechanism directly lowers the company's Effective Tax Rate (ETR), at times bringing it below Pillar 2 minimum threshold. The higher the share of innovation in turnover, the greater the likelihood of falling below the 15% threshold in regions with favorable R&D incentives.(Latulippe et al., 2023)

2.2 The Qualified Refundable Tax Credit under Pillar 2

An important tool introduced by Pillar 2 is the qualified refundable tax credit. Because it is refundable, businesses can take advantage of the incentive regardless of their tax liability or their profitability.

To qualify as a refundable tax credit under Pillar 2, certain conditions must be met. The tax credit must be refundable within four years from the date when a constituent entity satisfies the eligibility criteria. Additionally, the refund must be provided in cash or a cash equivalent. (Lee Hadnum, s. d.)

The key criterion for determining whether the tax credit qualifies as refundable is whether the counterpart can be used to discharge liabilities other than covered tax liabilities. If the credit is restricted solely to reducing covered taxes, it does not qualify as a QRTC. (Lee Hadnum, s. d.)

This instrument is particularly relevant for the purposes of our study. Even if it can be compared to a subsidy, it allows the state to primary collect taxes from a company while providing a tax credit in any form, provided that the counterpart meets the required criteria if not utilized by the company within four years. In such cases, the tax credit will be classified as revenue in the GLOBE result. (Lee Hadnum, s. d.)

The implications are significant within the new framework of Pillar 2, as such income will trigger a top-up tax only if the increase in the tax base reduces the effective tax rate below the 15% threshold.

In each jurisdiction, for a fixed tax burden, the increase in the result can also trigger a top-up tax. Indeed, even if a tax credit is qualified, if it reaches a significant percentage of the tax base, it can reduce the effective tax rate below 15%. This rate can be computed as a percentage of gross income using the following formula: (see appendix 5)

$$\frac{CIT - 15\%}{15\%} * 100 = QRTC \max(\%\ income)$$

Effectively, a QRTC will be treated as revenue in the GloBE result, leading to the effective tax burden being considered equivalent. In contrast, under the same circumstances in Belgium, the

QRTC can represent up to 66.67% of the gross income before triggering a top-up tax, as demonstrated in the example provided. (see appendix 5)

Also, the formula discussed earlier demonstrates that a country implementing a CIT above 15% (as 17 or 18%) can nullify its tax burden without triggering top-up tax (see Appendix 2). This situation can be problematic as with a CIT at 18%, a country can decrease its tax liability below zero without triggering top-up tax. Other regimes, such as Bermuda, which have introduced their first 15% CIT, reflect the possibility of providing qualified refundable tax credits to nullify the impact of the top-up tax. (Hulehan, 2024)

The NQRTC (non-qualified refundable tax credit) will directly come in deduction of the tax burden. This classification triggers a top-up tax, effectively nullifying the advantages of such incentives that aim to reduce the effective tax rate below 15%. In Belgium, this occurs after a NQRTC of 10% of the gross income with a tax rate at 25%.

The combination of both advantages, the IP box and the NQRTC, can significantly reduce a company's effective tax rate, thereby increasing the risk of triggering a top-up tax under the Pillar 2 framework.

To address this issue, a fundamental reconsideration of the incentives granted to companies must consider the 'qualified' criteria to ensure their effectiveness. Numerous countries have already begun reevaluating their policies considering this situation.

Belgium also shortens the period in which their current tax credit would be refundable to 4 years to fit in the criterions of Pillar 2 and be qualified as a refundable tax credit. (*KPMG Belgium*, s. d.)

The QRTC holds significant potential for the country to create substantial incentives for large companies within the scope of Pillar 2. The QTPR represents a recent shift in approach; for instance, Ireland has strategically evaluated whether its incentives would meet the 'qualified' criteria.(Barry, 2023)

It is also important to highlight that a country implementing a QDMTT (Qualified Domestic Minimum Top-up Tax) is prohibited by the true intent of the law from providing any benefits that are related to the QDMTT. Indeed, jurisdictions are not permitted to refund the top-up tax to companies.

This restriction is particularly significant, as the interpretation of this provision may evolve over time, potentially influencing its application and impact. (Avi-Yonah, 2024) This strategy of refunding companies based on the amount leveraged through the QDMTT has notably been implemented in Singapore, where companies can receive a refund of up to 50% of their

investment in qualified refundable tax credit. The issue arises when the QRTC is granted in exchange for the top-up tax previously paid, as illustrated in Appendix 2.

This highlights the findings of studies showing that tax competition will shift from the corporate tax rate towards subsidies, in this case through a similar instrument known as the QRTC. (Janeba & Schjelderup, 2023) (Avi-Yonah, 2024) (Hulehan, 2024)

Due to its treatment—being added to the company's income—the QRTC is compared to a subsidy in this thesis. (see appendix 3) Effectively, a subsidy in accounting is progressively added to the result, with its tax effect separated from the advantage granted. In this case, under Pillar 2, QRTC will not trigger a top-up tax unless it exceeds 67% (see appendix 5) of the company's result.

It is crucial for companies to have a transparent process to easily determine which investments will qualify for support, thereby avoiding any surprises during the application process. Effective coordination between the tax administration, the government's R&D strategy, and the company's objectives is essential.

2.3 Other Incentives

Another policy instrument is the subsidy granted to companies engaging in R&D activities. This incentive is noteworthy because the qualified tax credit will be recognized and treated in accounting as such under the framework of Pillar 2 (OECD, 2021). It is a direct incentive, and government has more influence on encouraged investment depending on its objectives.

Various quantitative methods can be employed to evaluate its effectiveness, with the most robust approaches being those capable of eliminating selection bias. Companies receiving subsidies inherently possess specific characteristics, which must be accounted for in the analysis. A highly efficient method to address this bias is the matching method, which involves pairing two companies with similar characteristics, one that has received the subsidy and one that has not. This comparison allows for an assessment of whether the subsidized company has significantly increased its R&D investment due to the scheme.

This technique, as employed in the studies by Aerts and Czarnitzki (2004) and Duguet (2010), successfully demonstrated the positive impact of subsidies on R&D expenditures. Even though it is true that the state might grant support to projects that would have been undertaken regardless.(Schoonackers, s. d.)The study carried out in Belgium also proves that the income substitution hypothesis is not tenable and that firms have invested more in R&D than they would have done without subsidies. (Aerts & D, 2004)

The presentation of this tool is also pertinent, as a study has demonstrated that Pillar 2 and the implementation of a minimum tax rate can effectively neutralize the competitive effects on corporate income tax (CIT). This shift may prompt countries to engage in competition through alternative incentives, such as subsidies. In the study, this is highlighted as an unintended side effect that could undermine the intended impact of a global minimum tax.(Janeba & Schjelderup, 2023)

The advantage of the subsidy lies in its ability to provide benefits to companies undertaking risk-intensive operations. This aligns with the nature of R&D, which typically does not generate short-term benefits.

In Belgium, regional subsidies could be more substantial and more specifically targeted (SPF Economie, 2024). This point was also emphasized by Maximiliaan, a tax manager at KPMG Belgium, during our discussions. Naturally, such policies must take into account the government's budgetary constraints.

2.4 IP Tax system in Belgium

This section examines the specific context of Belgium's intellectual property (IP) tax system. It begins with an overview of the various tax incentives designed to support research and development (R&D), followed by an in-depth analysis of Belgium's IP box regime, the Innovation Income Deduction (IID), which aligns with the OECD's Nexus approach. The second part highlights key strategic choices available to taxpayers, aimed at optimizing the treatment of their revenue while adhering to the principle of economic substance.

2.4.1 Tax Incentives in Belgium: Mechanisms for Promoting R&D

The advantages granted to companies must be evaluated across the different levels of government in Belgium, including the federal and regional levels. For the purposes of Pillar 2 and the GloBE result, these tax incentives must be accounted for cumulatively.

The main tax incentives for R&D must be evaluated at the federal level, and there are three of them. The first is the withholding tax exemption for researchers (see Graphic-Table 1). The second is the Investment Deduction, or its technical alternative, the R&D tax credit. The third, which has already been discussed extensively, is the Innovation Income Deduction (IID), which carries a significant risk of triggering a top-up tax under Pillar 2.

Withholding Tax Exemption for Researchers

The withholding Tax Exemption for Researchers provides a partial exemption from the withholding tax that employers must pay on the salaries of researchers. This tax incentive for innovation does not affect the likelihood of a company triggering a top-up tax. Moreover, it benefits the company regardless of whether the R&D project is profitable or loss-making. By reducing the amount of tax due by up to 80%, this measure significantly lowers labor costs associated with R&D projects. It benefits both the researcher and the company, which gains access to a substantial tax reduction.

The accessibility of this measure contributes to its popularity. (*SPF Economie,* 2024) Companies employing highly qualified R&D personnel and registered with BELSPO (Belgian Science Policy Office) are eligible to benefit. The main eligibility criterion is the researcher's level of education, as detailed in the appendix.

Furthermore, in Belgium, companies may also receive a tax exemption for innovation bonuses granted to employees, with the bonus potentially reaching the equivalent of a full gross monthly salary. (SPF Economie, s.d.)

An additional advantage for the Belgian government is that all eligible projects must be registered with BELSPO, resulting in a comprehensive national database that facilitates tracking of R&D activities across the country.

The withholding tax exemption represents the most significant portion of Belgium's R&D incentive budget. It serves the dual purpose of attracting both innovative projects and qualified researchers to the country.

R&D Tax Credit and Innovation Deduction

To benefit from these credits on their eligible investments, an attestation from the regional government is required. However, the new government wishes to simplify access to this credit and is seeking to abolish the attestation requirement in the new government agreement. (*Tiberghien, 2025*).

Eligible companies must opt for one of these credits. The R&D tax credit, which lowers their tax obligation, and the innovation deduction, which lowers their taxable base. These two R&D incentives are mutually exclusive.

R&D investments are 100% deductible from the taxable base. Additionally, companies can claim a 15.5% deduction of the investment or, alternatively, 25.3% of the amortized amount annually, provided the amortization period spans at least three years.

The R&D tax credit is calculated based on the corporate income tax (CIT) rate, currently 25%, applied to the eligible deduction. If unused, the credit remains refundable within four years.
The fact that the deduction is applicable even prior to the R&D project producing revenue is one of its main benefits. According to the OECD's requirements for eligible refundable tax credits, the tax credit is also refundable within four years.
This framework provides an additional incentive to undertake substantial R&D projects in Belgium. The more a company invests in Belgian R&D, the more it can benefit from the broader incentive system, including the Innovation Income Deduction (IID). This, in turn, reduces the risk of triggering a top-up tax under international tax rules.

Companies may choose between the R&D tax credit and the innovation deduction. The tax credit is generally more beneficial for larger firms that are more likely to face a significant tax burden. These companies can also carry forward unused credits or request a refund after four years. This incentive helps to reduce the material costs associated with R&D.

As this incentive is considered a qualified refundable tax credit under Pillar 2, it makes the tax advantage particularly attractive. The new government has expressed its intention to facilitate access to these tax credits in two ways: by abolishing the requirement for accreditation and by introducing a specific status for companies to simplify their eligibility. (*Tiberghien, 2025*)
These measures are likely to be well received and underscore Belgium’s responsiveness in maintaining its tax attractiveness.

2.4.2 Belgian IID

The previous tax regime in Belgium the DPR (or DRB in French for Deduction for patent revenue) has been in 2021 completely remove from the Belgium tax legislation. The new regime is the IID for Innovation income deduction in which 85% of the net income of the innovation is subject to a deduction which makes a CIT at 3,75%.
The list of qualified revenue and IP can be found in appendix 4.
The treatment of revenue from innovation must restrain the global costs of the project, as followed. (*SPF Finance*, 2022)

When a company calculates the income, it earns from innovation (such as from a patent or an R&D project), it might sometimes end up with a negative result — meaning the eligible costs exceed the innovation-related income. In such cases, according to the standard rule (Appendix 1 – Illustration 1), the company cannot benefit from the innovation income deduction, since there is no net income to deduct from. Instead, the negative result must be carried forward and deducted from future positive income related to the same intellectual property, or to the same product, service, or group of products or services.

However, the company can choose a different method (Appendix 1 – Illustration 2): instead of deducting the expenses when the loss occurs, it may opt to spread the R&D expenses evenly over up to seven years. This choice is irrevocable once made.

An analysis of both approaches shows that this second option can be more beneficial,

- It allows the company to benefit from deductions sooner
- The company may still benefit from the innovation income deduction even if the project, taken as a whole, results in a loss.
- It provides more predictable and stable tax savings over time.
- When future cash flows are discounted, this method leads to a higher net present value (NPV).
- It remains advantageous across a range of growth scenarios, making it a more flexible tool for long-term planning.

Another advantage of this approach is that the project does not need to be profitable every year to benefit from the IP box regime. Even a loss-making project can still benefit from tax deductions in the years when it generates a positive result. This interpretation of the Nexus approach is convenient for companies. Let us now examine the impact of Pillar 2 on the use of this optional method.

Analysis: Impact of Pillar 2 in the use of the option: (Calculation and details in Appendix 8)

In this example, we evaluate the impact of exercising a tax option on the company's final financial outcome using two key performance indicators (KPIs): Net Present Value (NPV) and the average effective tax rate over the period.

The purpose of this analysis is to determine whether the introduction of the new Pillar Two rules alters the benefits provided by the Belgian tax mechanism. This mechanism allows

companies to allocate R&D costs over a period of seven years, enabling them to benefit earlier from the Intellectual Property (IP) box regime. Since the implementation of the Nexus approach, which was formally integrated into the Belgian tax system in 2021, the Innovation Income Deduction (IID) requires a positive taxable result to reduce the tax burden—this applies on a project-by-project basis.

In practice, the initial years of an R&D project often generate negative results due to the accumulation of development costs prior to commercialization. These negative results can be carried forward as expenses until the project becomes profitable. Companies may elect to allocate these R&D costs from the outset of IP box applications, thereby enabling them to benefit from the IID as early as the first year and enhance the NPV. This is advantageous, as the NPV places greater value on earlier returns due to the time value of money, as reflected in the discount rate.

Even when a project becomes profitable from the first year and can fully absorb R&D costs immediately, using the allocation is preferable; however, the absorption of the cost negatively impacts the NPV due to its effect on the first discounted cash flow.

Under Pillar Two, refraining from using the option may lead to extreme outcomes. During the initial years, the project did not benefit from the IID. In subsequent years, it may qualify but with significantly reduced deductions, potentially resulting in top-up taxes due to the absence of fixed costs to amortize. By contrast, allocating R&D costs over the period allows for earlier and more consistent access to IID benefits, which positively impacts NPV in most cases.

However, one specific simulation revealed a scenario in which exercising the option proved to be disadvantageous. This involved two consecutive projects with a period of overlap in which both projects generated tax deductions from the IID. The first, fully amortized and profitable, was nearing its end, while a second R&D project was underway. In the following years, only the second project still gave deductions, as the first began to decline and expire.

In this context, deferring the deduction of R&D expenses would have been more advantageous. Simultaneously claiming deductions from both projects triggered a top-up tax. The appropriate strategy would have been not to use the option, so that only the oldest project generated advantages from the IID during the overlapping period.

Belgium's adaptation of Pillar Two mitigates the consequences of such errors. Even if a top-up tax is paid, it can be reclaimed through NRTCs. Nevertheless, avoiding the option generates in this specific case larger cash flows in the final years as the project becomes fully amortized. In such cases, the NPV may not significantly benefit from earlier returns, rendering the use of the

option less advantageous. The gap may widen further if the company reduces other business activities during the overlapping periods of Projects 1 and 2.

While this situation is highly specific, it has shown a notable improvement in NPV in simulation. However, since such advantageous outcomes depend on very particular conditions, it is generally preferable to choose the option, especially under the Pillar Two framework.
To conclude, this analysis shows that the Belgian Innovation Income Deduction (IID) offers an interesting tool that provides greater flexibility. The possibility to spread R&D costs over a period of seven years makes the Belgian IID more attractive compared to other IP box regimes, such as the Dutch one, which requires a "successful" and profit-generating project. (Netherlands Tax Administration s. d.) This approach also makes the Belgian IID more adaptable to the Pillar 2 framework, as it leads to less extreme outcomes. It is also important to highlight that, under Pillar 2, the most favorable option is not always straightforward, as interactions between multiple projects can affect the optimal strategy.

2.5 Comparative international

There are currently 20 different Intellectual Property (IP) box regimes identified by the European Tax Foundation (Graphic - Table 5). These regimes vary in terms of the types of IP eligible for the incentive, the categories of income that qualify, and the preferential tax rate applied to such income. Among these, Malta offers the most favorable regime, with an effective tax rate as low as 1.75% on qualifying income, followed closely by Cyprus at 2.5%. All these regimes have been revised to comply with the OECD's Nexus approach, which links the benefits of the regime to the actual research and development activities conducted in the jurisdiction.(Tax Foundation, *2024*)
There are different Nexus approaches. For example, the Dutch Nexus approach is particularly strict: the IP must be entirely developed in-house by the company. If part of the development has been outsourced, only the internally produced portion qualifies for the tax benefit. Belgium instead allows a 30% threshold for outsourced costs and also offers the possibility to switch to a value-added approach when it is economically more meaningful, which provides considerable flexibility for companies (see appendix 3-4)
Also, to qualify for the IP box, the total income generated must exceed the production costs related to the IP. This condition makes it impossible to amortize IP development costs as allowed in Belgium. In the Netherlands, the project must be assessed as a whole to evaluate its profitability. (Netherlands Tax Administration s. d.)

Some governments, such as those of Israel and France, also orient their R&D tax incentives geographically. In France, the most widely used incentive is the CIR, a refundable tax credit that can be claimed within three years if unused. For instance, in the départements d'Outre-mer, the CIR can cover up to 50% of R&D expenditures for investments under €100 million, compared to 30% for equivalent projects located in metropolitan France. Israel applies a similar approach, differentiating the tax rate on innovation-related income depending on the region where the company operates.

It is not always possible for a government to manage all the incentives at the federal level. The issue of the separation of taxing powers must also be considered. In Switzerland, for example, the patent box regime is implemented at the cantonal and regional levels. (Swiss Tax Reform (TRAF), s. d.) Consequently, the applicable income derived from patent rate depends on the canton in which the project is carried out, resulting in significant regional disparities.

Also, certain governments grant all the activities of a company from a specific tax rate. (KPMG, 2025) This permits more stable and more certain support for the companies. Belgium in its new agreement has decided to give a specific status to certain companies eligible to provide more legislative certainty and more stable support. (*Tiberghien,2025)*

Rather than directly reducing corporate tax rates, which could contravene global tax regulations, Singapore mitigates the increased tax burden through selective, investment-based refundable tax credits. These credits are granted on an approval basis by the Singapore Economic Development Board and Enterprise Singapore, ensuring alignment with national economic objectives.(*ey*, 2025) However, the fundamental issue with this approach lies in the fact that the allocation of these tax credits is closely tied to the company's QDMTT liability, effectively neutralizing the intended impact of the minimum tax. (Hulehan, 2024) This mechanism raises concerns regarding market distortion and unfair competition, which could prompt OECD to intervene and restrict such practices. Indeed, as we have already seen these mechanisms can reduce the tax of a company below zero.(Appendix 2) Countries such as Vietnam and Bermuda have set their CIT at 15% but are simultaneously looking to implement a Qualified refundable tax credit. (Hulehan, 2024)

Within the European regulatory framework, this practice would be deemed illegal, as the financial incentives are selective and tailored to individual companies, based on the nature of their goods and services. However, similar incentives would be considered permissible if designed to support green initiatives or R&D projects, as Pillar 2 prioritizes the underlying purpose of tax credits rather than their mere existence. (Avi-Yonah, R.S. 2024)

To conclude, although Belgium is still considered a welcoming country for innovation, it is important to note that other countries have also developed attractive systems that yield strong results. Switzerland ranks first in the Global Innovation Index (WIPO, 2024), and China—recognized as a leading country in innovation—relies heavily on a "super-deduction" mechanism for R&D investments (KPMG, 2025). However, it is worth noting that these deductions currently do not meet the "qualified" criteria under Pillar 2 (KPMG, 2025).

3. Literature review: Pharmaceutical sector

3.1 Context

The pharmaceutical sector in Belgium is a cornerstone of the national economy, offering significant contributions both economically and scientifically. In 2021, it accounted for 23.4% of total corporate R&D expenditures, amounting to nearly €3 billion. That same year, the sector also received 15% of federal innovation support funds, which highlights an excellent balance between public funding and economic impact. (*SPF* Economie, 2024)

With more than 43,000 direct jobs and approximately 90,000 indirect jobs, the sector continues to thrive, supported by a vibrant ecosystem.(Essenscia, 2023) Belgium has positioned itself as a "Health & Biotech Valley," hosting over 600 companies ranging from start-ups to large corporations, and excelling in groundbreaking innovations such as gene and cell therapies, novel vaccines (mRNA, viral vectors), and nuclear medicine. (*Essenscia, 2023)*

Between 2010 and 2021, R&D investments grew from €2.2 billion to €5.3 billion, while biopharma exports tripled to reach €98 billion. (SPF Economie, 2019)

However, the COVID-19 pandemic heightened global competition, with countries such as France, Germany, and the United States significantly increasing their budgets and initiatives to bolster their biopharma industries. This intensifying competition underlines the need for Belgium to sustain investments and foster more robust public-private collaborations (Essenscia, 2023)

Despite these challenges, Belgium continues to play a significant role in the sector, owing to its advanced logistical infrastructure, including Brussels Airport, the first to receive CEIV (Center of Excellence for Independent Validators) accreditation for pharmaceutical logistics, and strategically equipped ports for healthcare product transport. However, to retain this leadership, the country must address pressing issues such as aging infrastructure, high labor costs, and an

escalating talent shortage, with 1,500 new direct jobs needed annually over the next five years (*Essenscia, 2023)*

New growth opportunities are emerging for the sector in Europe, notably through the agreements between the European Union and Mercosur, as well as the expansion of artificial intelligence. (European Commission, 2024)

The influence of data and its processing through artificial intelligence (AI) creates exponential opportunities for the pharmaceutical industry. Many experts believe that soon, most discoveries in this field will be driven by AI, thereby reshaping the landscape of scientific research. These projects, while demanding significant effort, are poised to redefine innovation paradigms in the coming years. (Deloitte Switzerland, s. d.)

3.2 Analytical review of the sector

This analytical review examines 26 selected companies in the pharmaceutical sector over the period from 2016 to 2024. These companies were selected through qualitative research based on their relevance to the scope of Pillar 2 regulations. Most of these companies have significant operations in Belgium (Graphic - Table 7). The data used in this review was sourced from the companies' official reports available on their websites, focusing primarily on reported financial figures.

The review shows that these companies (see list below) exhibit a high intensity of research and development, with R&D expenditures averaging 42.5% of their revenue during the reviewed period. All financial data were collected in the reporting currency used by each multinational enterprise and subsequently converted into euros using the applicable year-end exchange rates. (European Central Bank s.d.)

Overview

The 26 pharmaceutical companies have been analyzed. All entities exceed the Pillar 2 revenue threshold, in 2023-24. On average, the companies generate EUR 24 billion in annual revenue, confirming their inclusion within the scope of Pillar 2.

In the context of Pillar 2, both the cumulative tax burden and cumulative gross income may be used as proxies for the effective tax burden and the GloBE (Global Anti-Base Erosion) result. Based on this assumption, the average tax rate of the companies in the sample over the period 2016–2024 is estimated at 14.41%, which remains below the 15% minimum threshold set by

Pillar 2. This is also clearly below the average corporate tax rate set at 25,67%. (Enache, 2024). Due to the presence of extreme tax rates, either very high or very low and instances of negative gross income, the method used to compute the effective tax rate involved dividing the total tax burden paid by all companies over the period by the sum of their gross income.

In the overview presented below, the effective tax rate (ETR) for each company has been calculated solely for years in which the entity reported a positive result. For each observation, instances that would trigger a top-up tax under Pillar 2 have been identified and highlighted, representing 84 out of the 188 observations.

	2024	2023	2022	2021	2020	2019	2018	2017	2016
GSK	15,1%	12,5%	12,6%	6,4%	8,3%	15,3%	15,7%	38,5%	45,2%
RECORDATI		20,7%	22,2%	5,2%	12,9%	16,9%	25,2%	25,8%	25,2%
UCB		22,2%	17,8%	13,9%	13,5%	15,2%	19,7%	22,1%	26,0%
PFIZER		-105,4%	9,6%	7,6%	6,4%	5,4%	-7,4%	-73,5%	13,4%
TAKEDA		15,5%	-173,1%	23,9%	-2,7%		-5,9%	14,0%	19,4%
Sanofi	18,0%	22,4%	19,2%	20,0%	13,1%	4,9%	10,9%	31,1%	23,4%
MSD	14,1%	80,0%	11,7%	11,0%	22,9%	21,8%	28,8%	62,9%	15,4%
ALCON	18,9%	-17,1%	27,6%	10,0%					
BAXTER				7,4%	14,1%	-4,2%	4,0%	40,5%	
Roche	13,6%	9,6%	17,1%	14,2%	19,2%	17,8%	23,2%	27,9%	27,2%
Johnson&joh	15,7%	11,5%	15,4%	8,3%	10,8%	12,7%	15,0%	9,3%	16,5%
Astrazeneca	19,0%	13,6%	-31,7%		19,7%	20,7%	-2,9%	-28,8%	4,1%
Merck KGaA	21,2%	18,7%	22,1%	21,9%	24,2%	25,4%	25,2%	-20,1%	24,2%
ABBVIE		22,0%	12,1%	11,1%	-36,0%	6,5%	-8,6%	31,3%	24,5%
ELI & LILLY	16,5%	20,1%	8,3%	9,3%	14,3%	11,9%	14,9%	109,3%	18,9%
NOVARTIS	12,5%	6,0%	15,7%	8,1%	18,3%	20,1%	9,2%	17,6%	13,9%
Bayer	9,1%	81,5%	10,8%	50,0%		15,5%	26,2%	29,0%	22,6%
Amgen		14,5%	10,8%	12,1%	10,7%	14,2%	12,1%	79,4%	15,7%
CSL BEHRING	19,6%	15,7%	18,9%	18,8%	18,3%	18,0%	24,2%	20,9%	20,1%
DAIICHU SANKYO		15,3%	13,9%	8,9%	-2,3%	8,6%	-8,8%	26,2%	45,9%
BIOGEN		10,4%	17,6%	3,0%	19,7%	16,3%	24,2%	47,9%	25,1%
Bristol		4,7%	17,7%	13,4%		30,5%	17,1%	81,0%	23,8%
Moderna			12,7%	8,2%					
Incyte	89,7%	28,4%	35,6%	-66,3%		8,2%	4,5%		2,2%
BioNtech		22,6%	28,1%	29,9%					
Argenx									

R&D Intensity and Gross Margin Analysis

This overview presents the average R&D expenditure over the period, expressed as a percentage of revenue, alongside the gross margin, which reflects the income generated as a percentage of revenue.

Companies	R&D intensity	Gross margin
Argenx	278,7%	-270,2%
Moderna	225,0%	-178,4%
BioNtech	96,5%	-21,4%
Incyte	60,0%	9,2%
MSD	27,8%	18,5%
UCB	27,2%	15,2%
Astrazeneca	25,0%	10,3%
Bristol	24,9%	13,3%
ELI & LILLY	24,6%	20,8%
DAIICHU SANKYC	23,4%	9,0%
Roche	21,7%	26,6%
BIOGEN	21,3%	31,1%
NOVARTIS	20,5%	25,1%
ABBVIE	17,2%	18,5%
Amgen	17,1%	31,2%
PFIZER	16,7%	19,2%
TAKEDA	16,3%	6,1%
Sanofi	16,0%	18,8%
GSK	16,0%	15,5%
Johnson&johnson	15,4%	22,1%
Bayer	13,1%	2,5%
Merck KGaA	12,9%	15,2%
CSL BEHRING	10,0%	26,4%
RECORDATI	9,2%	30,4%
ALCON	9,0%	1,5%
BAXTER	5,3%	9,4%

This analysis reveals the presence of distinct company profiles within the sample. Companies such as Argenx and Moderna, which are highly active in R&D, adopt a high-risk strategy that involves mobilizing significant resources to develop treatments that will only generate revenue if the projects reach completion within the expected timeframe. These companies are generally loss-making. This approach enabled Moderna to evolve rapidly from a start-up focused on mRNA research into a global corporation, by delivering a COVID-19 vaccine just days after the publication of the virus's genetic sequence. (McKinsey, 2021) A similar trajectory can be

observed in the case of BioNTech, which experienced a revenue increase of over 3,000% between 2020 and 2021 as a result of its pandemic-related innovations.

On average, the companies in the sample invest 42.3% of their annual turnover in R&D, confirming their status as high R&D intensity firms. This high percentage is also attributable to the presence of companies with high R&D intensity. In total, 22.3% of the revenue generated by the 26 companies has been invested in R&D. These companies are also major generators of patents and innovation, which contributes to their attractiveness for host countries. Their presence supports the creation of specialized, high-value, and well-paid employment opportunities, an outcome that can be seen as strategically beneficial for national economies.

A direct link can be observed between R&D intensity and effective tax rates (see appendix 7). The higher a company's investment in R&D, the lower its tax liability tends to be for a given level of income, due to the availability of tax credits and deductions for eligible R&D activities. This dynamic may in turn encourage further investment in innovation, reinforcing the virtuous cycle between tax incentives and research-driven growth. Also, by introducing a binary variable into the model, we also highlight that the presence of an R&D center in Belgium has a statistically significant negative impact on the company’s effective tax rate.

3.3 Conclusion and limits

During this analysis, we have studied the financial data of 26 identifiable companies in the pharmaceutical sector. This analysis has been made available because of the published financial data. Unfortunately, a big limit of this study is our access to other source of data as the country-by-country report that would permit us to quantify their presence in Belgium their use of the Belgium IID and other tax incentives.

During this analysis, we found that these companies invest a significant percentage of their revenue in R&D. In total, 22.3% of the revenue generated by these companies during the reference period was directly invested in research and development.

Two distinct types of companies can be identified:

1. Companies that invest more than their revenue or margin in R&D: These companies aim to develop innovative solutions and sometimes scale up from start-ups to multinational enterprises once a breakthrough innovation is found. They played a crucial role in the resilience of the pharmaceutical system during the COVID-19 crisis.

Some of these companies provided innovative responses to the pandemic and partnered with others to ensure the production of their solutions.

2. Large pharmaceutical manufacturers: Companies such as GSK, AstraZeneca, and Pfizer demonstrated their significant production capacities by manufacturing large quantities of vaccines during the crisis. These companies also invest a considerable share of their revenue in R&D, ranging for the most from 15% to 27%.

Both categories of companies are essential for a robust pharmaceutical ecosystem. The first category often does not generate substantial income for several years and operates at a loss. As a result, they may not benefit from tax incentives such as the Innovation Income Deduction (IID) unless their innovations become profitable.

On the other hand, established manufacturers are more likely to benefit from such regimes, as they typically generate higher profits and manage multiple innovations.

Profit-generating companies can have a greater economic impact in a given region by employing more personnel and making substantial local investments. For example, GSK operates the world's largest vaccine production center in Belgium, exporting 99% of its output. Alongside companies like Pfizer, GSK contributes to Belgium's leading position in the global vaccine industry.(*Essenscia,*2024) The patent box regime acknowledges this reality by offering incentives for these companies to invest within a specific area. But the effectiveness of this regime depends on the profile of the company and its ability to generate income.

To enhance the inclusiveness and overall impact of the innovation support framework, expanding the scope of instruments—such as through the enhancement of the Belgian Qualified Refundable Tax Credit (QRTC)—could significantly strengthen Belgium's innovation ecosystem. This would ensure that both established and emerging firms can benefit from public support, regardless of their current profitability.

Switzerland, ranked as the number one country in the Global Innovation Index, and other innovation leaders such as China, offer "super-deduction" schemes to support innovative companies (*KPMG,* 2025). Unlike mechanisms that primarily benefit profit-generating firms, these models promote broader participation in R&D by lowering the financial risk for early-stage or loss-making companies.

In Belgium, by contrast, the most widely used tool to support innovation remains the deduction of withholding tax, which primarily affects the cost of labor for companies engaged in R&D. While this incentive is effective for firms with substantial payroll expenses, it may not fully address the needs of smaller or pre-revenue businesses.

A well-designed QRTC could foster a virtuous cycle: incentivizing innovation-led strategies, encouraging patent development and retention within the national territory, and ultimately driving long-term economic growth. For policymakers, the challenge lies in designing incentive structures that not only attract innovation but also maximize the positive externalities associated with sustained R&D investment.

Moreover, the structure of R&D tax credits plays a critical role in their effectiveness. In Belgium, these credits are currently reimbursable within a four-year period. While this provides some financial relief, it may fall short for early-stage or highly innovative firms that require more immediate liquidity.

Countries implementing similar incentives could consider introducing mechanisms that allow R&D tax credits to be offset against other liabilities—such as payroll taxes—as observed in the United States under the Inflation Reduction Act (IRA). (E.A, 2023) Such flexibility increases the usability of the incentive and ensures that companies can reinvest more rapidly in research and innovation, regardless of their tax position.

Integrating this kind of adaptive mechanism into national frameworks could significantly enhance the attractiveness and efficiency of R&D tax policies, particularly in sectors where innovation cycles are long and capital-intensive.

4. Remarks on literature and contributions

My analysis of the literature showed that most authors focus their approach on the level of R&D within a country and the negative impact that a Qualified Domestic Minimum Top-up Tax (QDMTT) may have on the patent box regime. Another focus that can also be emphasized is the positive impact that these regimes may have on the level of other business activities within a country offering an attractive IP box, a supportive environment, and favorable conditions for such activities. Indeed, the reallocation of R&D activities, as discussed by Latulippe & Ally (2023) in a study focused on Canada, can be further refined. Indeed, these authors have identified that companies could reallocate part of their activities in R&D in jurisdictions in which they was too exposed to a potential top-up tax.

However, if a company increases its level of activity in a given area, it may also reduce its exposure to the top-up tax. Furthermore, this study does not consider the specific Belgian approach to the issue. The Belgian system, which provides a non-refundable tax credit to be

carried forward, ensures that companies generating innovation are rewarded in the long term. This also has consequences for the company's balance sheet and financial structure.

A company that invests and derives a significant share of its income from patented products may also be more inclined to locate near its R&D center, particularly in jurisdictions where an advantageous IP box regime is in place. Moreover, the literature has shown that companies increasingly tend to relocate their R&D closer to their production centers. (Castellani & Lavoratori, 2020)

As other activities are also taxed under the standard corporate income tax (CIT), companies can simultaneously increase both their innovation income and other taxable income in the same country. A favorable IP box environment can attract not only R&D investment but also a wide range of complementary business activities, thereby creating clusters in areas where there is a specific competitive advantage for innovation.

5. Study case

This case aims to highlight the potential consequences of Belgium's adaptation to Pillar 2. Indeed, the implementation of a minimum top-up tax has raised serious concerns regarding its impact on jurisdictions that rely on tools such as the IP box. As previously discussed, Latulippe & Ally's study in 2023 has shown that the introduction of a minimum tax would discourage companies from maintaining a high-level of eligible operations in such jurisdictions in order to avoid triggering a top-up tax.
In this scenario, a company conducting 100% of its activities in Belgium would inevitably be subject to a top-up tax. The objective of this case is therefore to present an alternative solution to this issue including the Belgium's adaptation of its own system.

The choice to focus on a company using Belgium solely for R&D purposes is based on the assumption that the more eligible income a company generates, the more likely it is to trigger a top-up tax. By adopting a structure where Belgium hosts only R&D activities, the company increases its chances of top-up tax. (Latulippe et al., 2023)

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5.1 Case of an R&D center

In this case, we highlight the situation of a company that only has an R&D center in Belgium. This company uses the center to generate innovations that are then integrated into its products. By using the Belgian IID regime, the company applies the provision that allows it to collect "embedded royalties." (Appendix 4) This means that, through transfer pricing, the company reallocates a portion of the innovation-related income to Belgium, where it is taxed at 3.75%.

To apply this provision, the company must demonstrate the economic link between the innovation and Belgium by investing in labor or assets in the country, as required under the Nexus approach.

Assuming that 100% of the company's income is derived from innovation, this results in an effective tax rate (ETR) of 3.75%. Consequently, a QDMTT (Qualified Domestic Minimum Top-up Tax) is applied by Belgium. This tax impacts the company's budget and may lead to a decrease in its investment in Belgium. Indeed, company decisions on the budget are centralized. If Belgium represents the R&D segment, management will directly associate each cost related to the Belgian branch with the R&D process.

Since the sole economic purpose of the Belgian branch is to produce innovation, and assuming the R&D budget is fixed, the top-up tax will directly affect the company's R&D expenditure. This may lead to a reduction in investment in Belgium, either through a decrease in labor (i.e., fewer employees) or in asset investment.

In exchange for the top-up tax, the company receives non-refundable tax credits, which are carried forward. However, to benefit from these credits, the company must be subject to a tax rate above 15%.

	0	1	2	3
Embeded royalties	600,00	600,00	600,00	600,00
Other activities	0,00	0,00	0,00	3700,00
Revenue	**600,00**	**600,00**	**600,00**	**4300,00**
R&D expenses	360,00	360,00	334,00	360,00
Other expenses	0,00	0,00	0,00	2590,00
Total	**360,00**	**360,00**	**334,00**	**2950,00**
Income eligible	240,00	240,00	266,00	240,00
Other Income	0,00	0,00	0,00	1110,00
Income T (30% of sales)	**240,00**	**240,00**	**266,00**	**1350,00**
IID 1 (Ip box)	204,00	204,00	226,10	204,00
IID (Ip box)	**204,00**	**204,00**	**226,10**	**204,00**
Belgian CIT (1)	9,00	9,00	9,98	9,00
Belgian CIT (other)	0,00	0,00	0,00	277,50
Belgian CIT (Total)	**9,00**	**9,00**	**9,98**	**286,50**
% ETR	**3,75%**	**3,75%**	**3,75%**	**21,22%**
Top up tax	**11,25%**	**11,25%**	**11,25%**	**0,00%**
NRTC	27,00	54,00	83,93	0,00
Use of NRTC	0,00	0,00	0,00	-83,93
Tax burden	36,00	36,00	39,90	202,57
Final ETR	**15,00%**	**15,00%**	**15,00%**	**15,01%**
Net income	**204,00**	**204,00**	**226,10**	**1.147,43**
R&D budget	370,00	370,00	370,00	370,00
Tax burden	9	36,00	36,00	39,90
Real expenses	**369,00**	**396,00**	**370,00**	**325,97**
Variation	1,00	-26,00	0,00	44,03

In this case, the company allocates 600 units of income to innovation developed in Belgium. This income is integrated into the Belgian tax base, with the associated costs in Belgium exclusively linked to R&D activities. The Belgian tax base is subject to the Innovation Income Deduction (IID), under which 85% of the qualifying income is excluded from taxation, and only the remaining 15% is subject to the Belgian corporate income tax (CIT).

Each year, a specific budget is allocated to R&D. In this example, strategic decisions are centralized, and Belgium functions as an R&D department of the company. All Belgian costs are therefore considered part of the R&D budget. Belgium does not generate revenue directly, as the income arises from the sale of final products. The embedded royalties represent a fraction of the final price, allocated through transfer pricing mechanisms.

As a result, any increase in the top-up tax directly affects the company's R&D expenditure. In year 0, which serves as the initial scenario, total expenses are estimated at 360 units, with an additional 9 units (see tax burden) in tax liabilities resulting from prior year provisions. For the sake of simplicity, a one-year lag between the end-of-year result and the actual payment of tax provisions is assumed.
In the year 0, the company has 369 units in expenses, resulting in a positive budget outcome, given that the R&D budget was set at 370 units.

However, in this example, the company also triggers a top-up tax of 27 units, which will affect the following year's budget. As a result, the budget in year two becomes negative. To restore balance, the company is forced to reduce its fixed R&D expenditure from 180 to 154 units (-26 units). Consequently, the budget is balanced again in year two. During this period, the company accumulates non-refundable tax credits (NRTCs).

To benefit from these credits, the company must increase its "other activities" that are taxed above the 15% minimum rate. The company therefore allocates a larger portion of its budget to these other activities. Consequently, it can also increase its R&D expenditure, returning it to their previous level. The company is then able to fully utilize all its non-refundable tax credits. As a result, the company's effective tax rate decreases significantly, moving from 21.22% to 15.01%. These tax credits are allocated to the R&D function, as they originate directly from this segment of the business.

As a result, the R&D budget becomes positive again, and the company even retains a surplus. This surplus can be reinvested either in R&D or in other business activities. This example illustrates that a combination of innovation and other taxable activities yields more sustainable results than allocating innovation activities exclusively to a low-tax jurisdiction. In this scenario, the company has invested a sufficient amount in other activities to reclaim all the NRTCs from the first year. Nevertheless, one could imagine a more moderate increase in non-innovation activities, which would allow the company to identify the optimal balance between its two core functions.

In conclusion, due to the application of the top-up tax, the Belgian IID regime may be perceived as less efficient, initially, discouraging investment in R&D. Furthermore, it can negatively affect the company's cash flow, leading to a reduction in the R&D budget.

In response to the additional tax burden, the company may be forced to reduce other fixed costs, such as staffing or ongoing R&D projects. However, such reductions often represent a short-term reaction to the increase in tax liabilities.

These tax payments can eventually be reclaimed through non-refundable tax credits, provided the company increases its segment of other taxable activities. As a result, the company can continue to benefit from the IID regime by strategically combining it with other business segments that are subject to standard taxation.

5.2 Limits

The main limitation of this case lies in its hypothetical and deliberately simplified nature. The scenario is based on a fictitious multinational enterprise that exclusively carries out R&D activities in Belgium with a fixed budget, an extreme and uncommon configuration chosen for illustrative purposes. As such, the findings presented cannot be generalized to all multinational enterprises.

Moreover, the consequences described, such as reduced investment or the incentive for geographical realignment, are not supported by empirical data or quantitative modelling. They remain theoretical projections aimed at illustrating potential implications of Pillar 2 under specific set of assumptions.

5.3 Conclusion

In this case, we start from the hypothesis of a MNE that have specialize its value chain in Belgium to develop only R&D activities. We then highlighted the impact of a minimum worldwide tax burden.

This projection reveals two potential effects: in the short term, a decrease in investment due to the immediate tax burden; and in the longer term, an incentive for a geographical rapprochement between R&D centers and production facilities. Several studies have identified additional economic benefits stemming from the co-location of R&D and production activities. They also suggest that the need for such co-location becomes increasingly critical as firms grow in organizational complexity and operate through geographically dispersed structures.(Castellani & Lavoratori, 2020)

In this context, the new tax regulations may serve as a catalytic opportunity for companies to co-locate their R&D centers with other operational activities.

6. Conclusion of this thesis

In this thesis, we examined the impact of Pillar 2 on a key cluster of companies in Belgium. We emphasized Belgium's specific position in this sector and assessed the role of a major tax measure targeting innovation-driven revenues: the patent box regime.

Our findings show that pharmaceutical companies exhibit a high intensity of R&D, which often results in relatively low levels of taxation. We also identified a quantitative relationship between R&D intensity and lower effective tax rates. Additionally, we observed a link between the presence of R&D centers in Belgium and reduced taxation levels.

The analysis of relevant documentation reveals that the introduction of a minimum tax rate has raised significant concerns in Belgium, prompting the commissioning of a Deloitte study aimed at adapting the current regime to the new tax environment. This led to legal amendments introducing a non-refundable tax credit for companies exceeding the Pillar 2 threshold because of the IID.

This adaptation allows for a refinement of earlier academic conclusions suggesting that Pillar 2 would reduce R&D efforts in such sectors and lead to a reallocation of activities. In fact, our analysis supports literature advocating for the co-location of R&D and production. We conclude that Belgium’s adaptation could attract complementary activities in the country, enabling firms to benefit from the new tax credit while avoiding the triggering of a top-up tax.

Regarding the well-known IID (Innovation Income Deduction), we also examined a mechanism that allows companies to spread their R&D costs over a period of seven years. This enables earlier and more consistent access to the IID benefit. We found that this mechanism has enhanced Belgium’s attractiveness under the Nexus approach and continues to do so under Pillar 2. Except in specific cases, this approach enables more stable benefits from the IID and increases the net present value (NPV) of a company’s tax position.

We also highlighted the role of another OECD-introduced tax incentive: the Qualified Refundable Tax Credit. This credit has a greater incentive potential before triggering a top-up tax, due to its classification as income in the GloBE result. Consequently, countries like Belgium have adapted their legislation to align with the definition of a Qualified Refundable Tax Credit. These changes help Belgium remain an attractive environment for innovation, especially as the state’s willingness to attract such structures has increased, catalyzed by the COVID-19 crisis.

Despite this, the R&D refundable tax credit remains less commonly used in Belgium than the withholding tax exemption and the IP box in recent years. It would be interesting to examine the potential impact of the future Qualified Refundable Tax Credit, particularly its ability to encourage companies to invest in real infrastructure and tangible assets within the country. The growing role of data in R&D processes also underscores the importance of incentivizing investment in data centers and physical infrastructure to support innovation.

These credits can become a key instrument in the new international tax paradigm, and the Belgian government is also seeking to enhance its attractiveness. Furthermore, such incentives can support companies regardless of their profitability, as they help reduce the high costs associated with R&D—especially for firms where R&D is capital intensive. This means Belgium could continue to provide effective support for R&D activities, even in loss-making situations.

In addition, facilitating earlier access to these credits—potentially through mechanisms such as offsetting them against other liabilities like payroll taxes, as seen in the U.S. Inflation Reduction Act—could strengthen support for companies during critical phases when financial assistance is most needed. The flexibility of this tool lies in its ability to provide companies with immediate tax benefits, directly reducing the jurisdiction's effective tax burden. This empowers jurisdictions to promote real innovation within their borders, rather than focusing solely on attracting revenue streams generated by innovation.

Graphics & table

Table 1

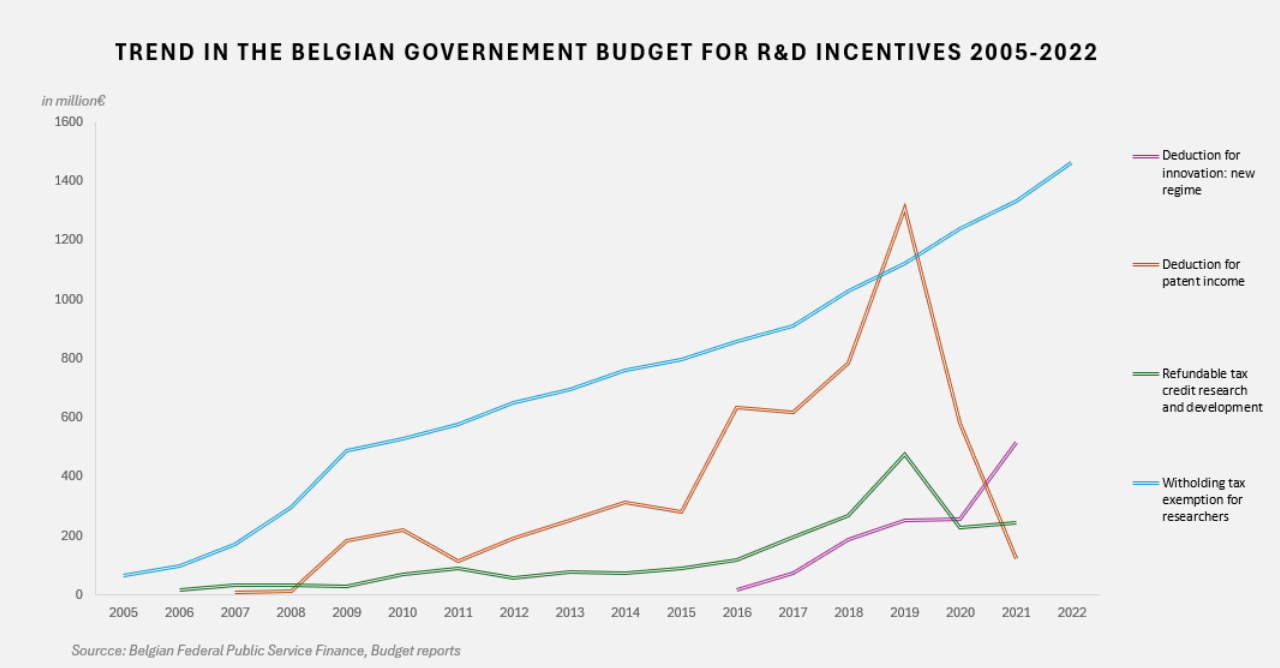
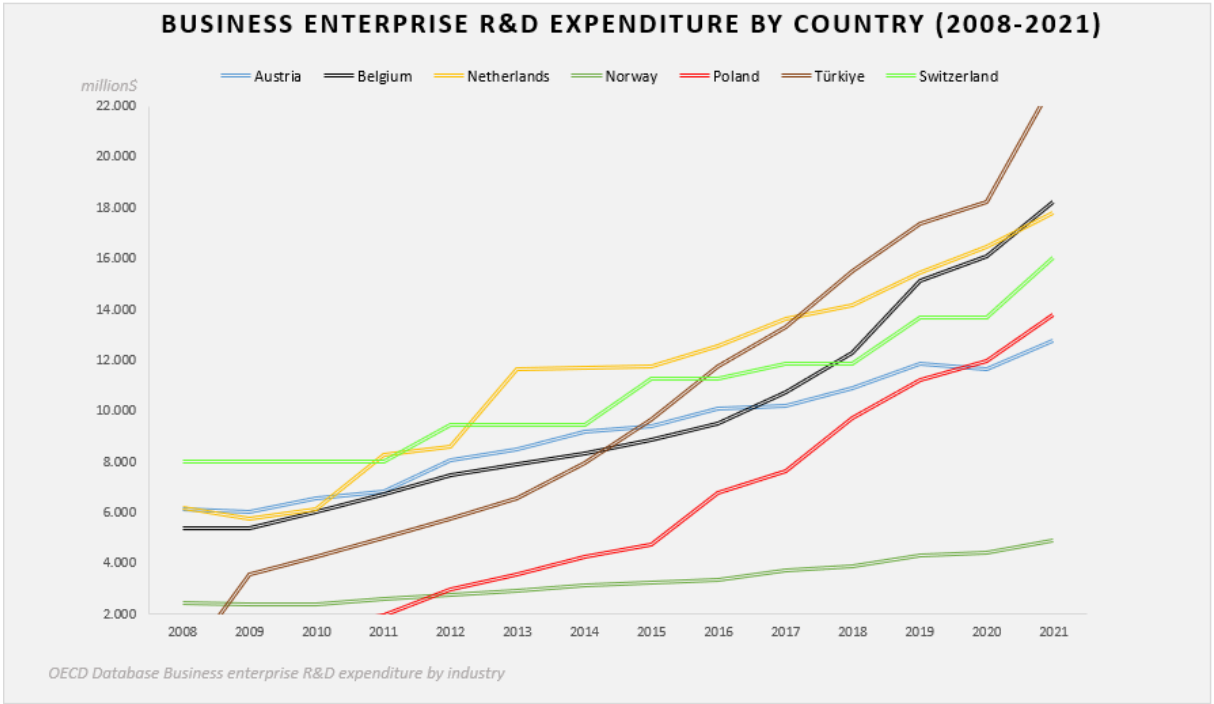


Table 2



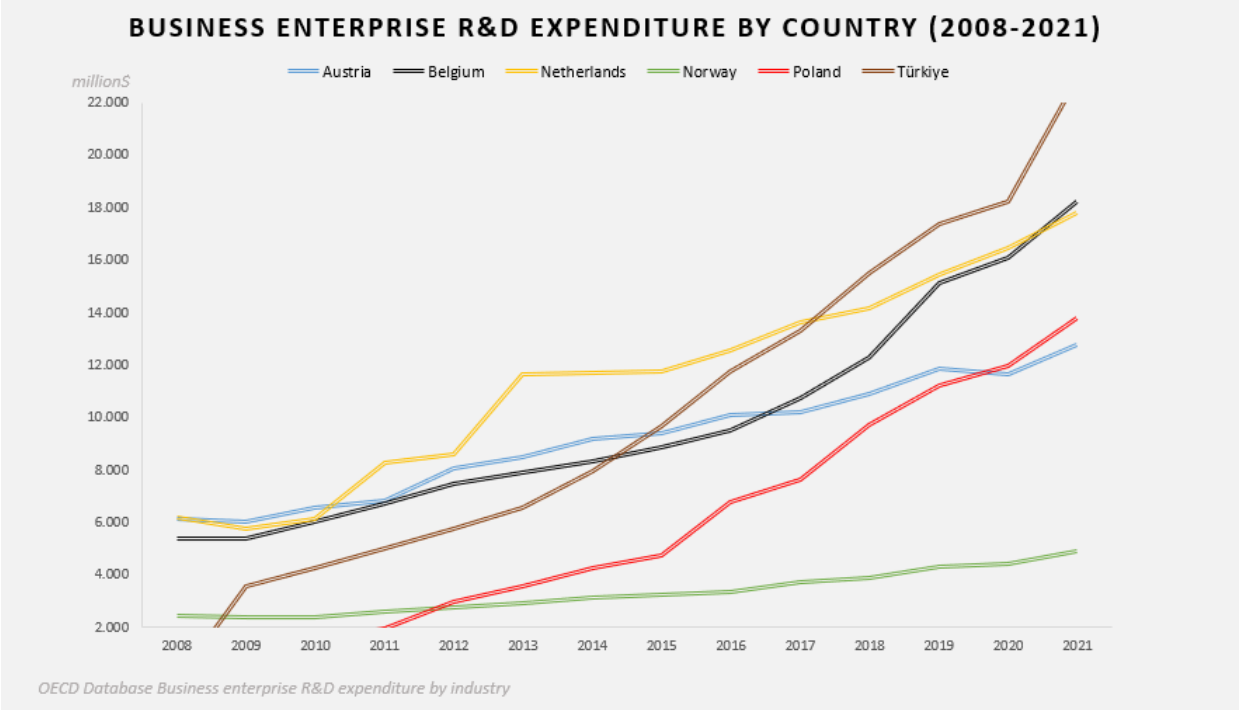

BUSINESS ENTERPRISE R&D EXPENDITURE BY COUNTRY (2008-2021)
million$
Austria
Belgium
Netherlands
Norway
Poland
Türkiye
22.000
20.000
18.000
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
OECD Database Business enterprise R&D expenditure by industry

Table 3

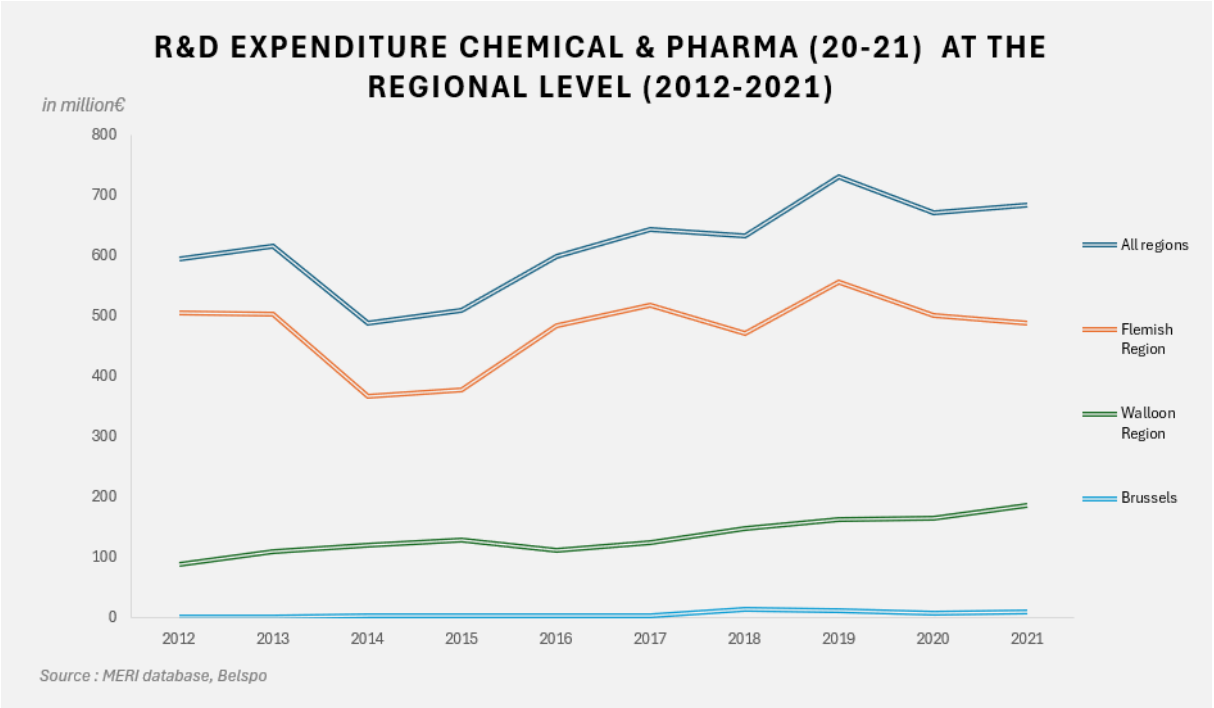
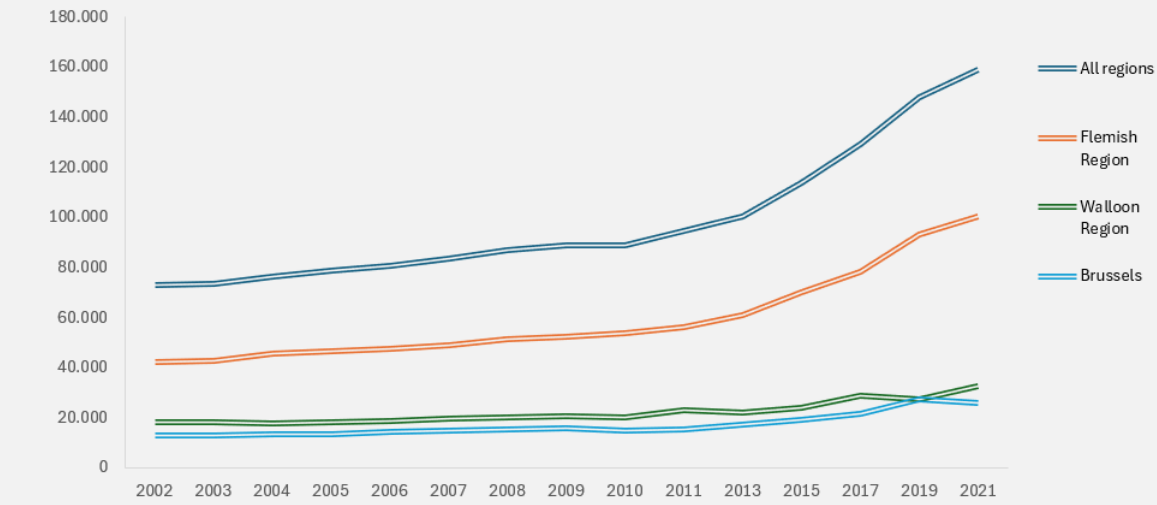
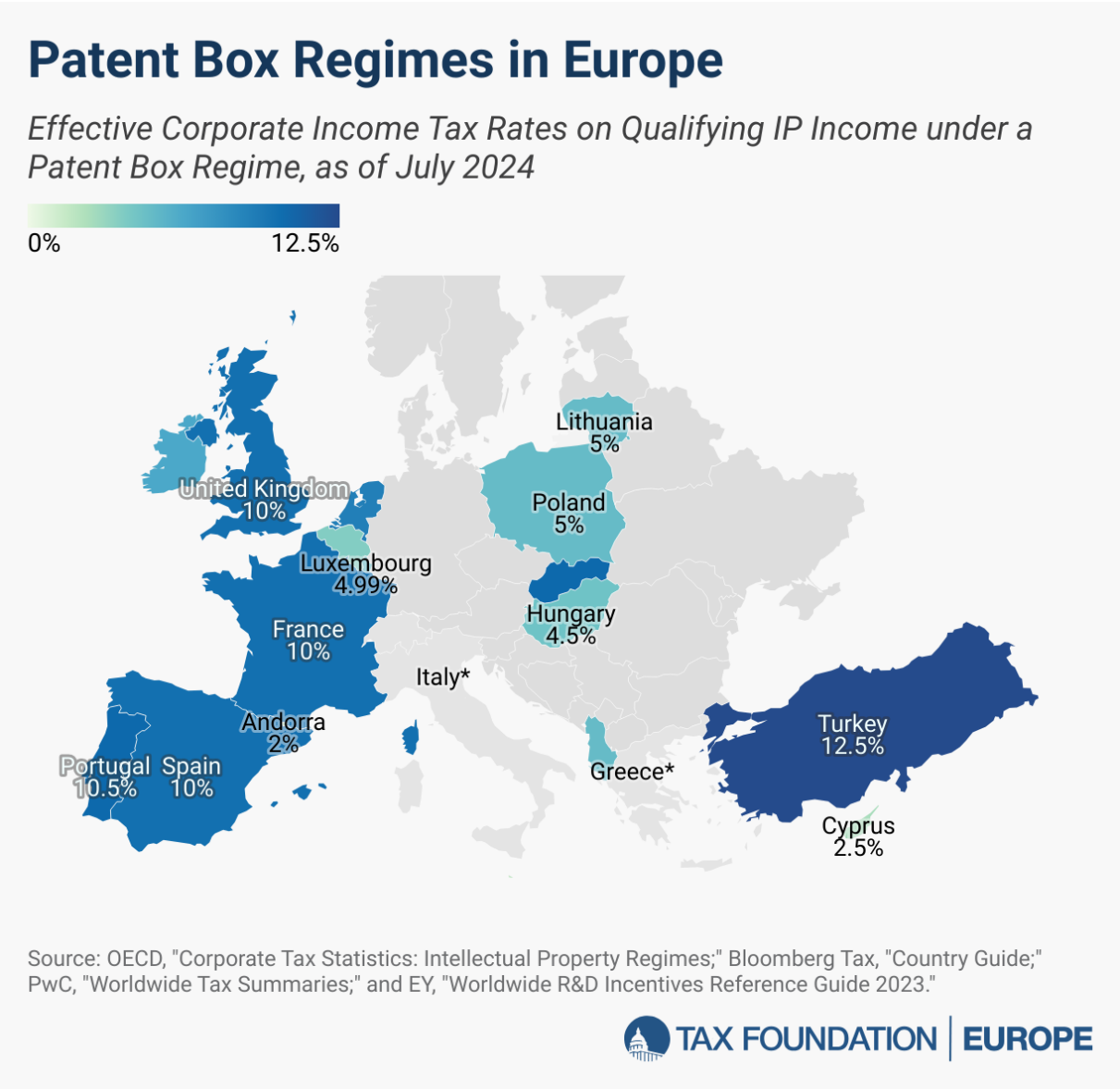

R&D EXPENDITURE CHEMICAL & PHARMA (20-21) AT THE REGIONAL LEVEL (2012-2021)
in million€
800
700
600
500
400
300
200
100
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
All regions
Flemish Region
Walloon Region
Brussels
Source : MERI database, Belspo

Table 4



Source : MERI database, Belspo

Table 5


Patent Box Regimes in Europe
Effective Corporate Income Tax Rates on Qualifying IP Income under a Patent Box Regime, as of July 2024
0%
12.5%
Lithuania 5%
Poland 5%
United Kingdom 10%
Luxembourg 4.99%
Hungary 4.5%
France 10%
Italy*
Andorra 2%
Portugal 10.5%
Spain 10%
Greece*
Turkey 12.5%
Cyprus 2.5%
Source: OECD, "Corporate Tax Statistics: Intellectual Property Regimes;" Bloomberg Tax, "Country Guide;" PwC, "Worldwide Tax Summaries;" and EY, "Worldwide R&D Incentives Reference Guide 2023."
TAX FOUNDATION | EUROPE

Country	Qualifying IP Assets			Tax Rate under Patent Box Regime	Statutory Corporate Income Tax Rate
	Patents	Software	Other (a)		
Albania	✓	✓		5,00%	15,00%
Belgium	✓	✓		3,75%	25,00%
Cyprus	✓	✓	✓	2,50%	12,50%
France	✓	✓		10,00%	25,83%
Hungary	✓	✓		4,50%	9,00%
Ireland	✓	✓	✓	6,25%	12,50%
Lithuania	✓	✓		5,00%	15,00%
Luxembourg	✓	✓		4,99%	24,94%
Malta	✓	✓		1,75%	35,00%
Netherlands	✓	✓	✓	9,00%	25,80%
Poland	✓	✓		5,00%	19,00%
Portugal	✓			3,15%	21,00%
Serbia	✓	✓	✓	3,00%	15,00%
Slovakia	✓	✓		10,50%	21,00%
Spain - Federal	✓	✓		10,00%	25,00%
Spain - Basque Country	✓	✓		7,20%	24,00%
Spain - Navarra	✓	✓		8,40%	28,00%
Switzerland	✓			Cantonal level (70-90% deduction)	Cantonal level (11,9-20,5%)
Turkey	✓			12,50%	25,00%
United Kingdom	✓			10,00%	25,00%

Data from (*Tax fundation, 2024*)

Table 6

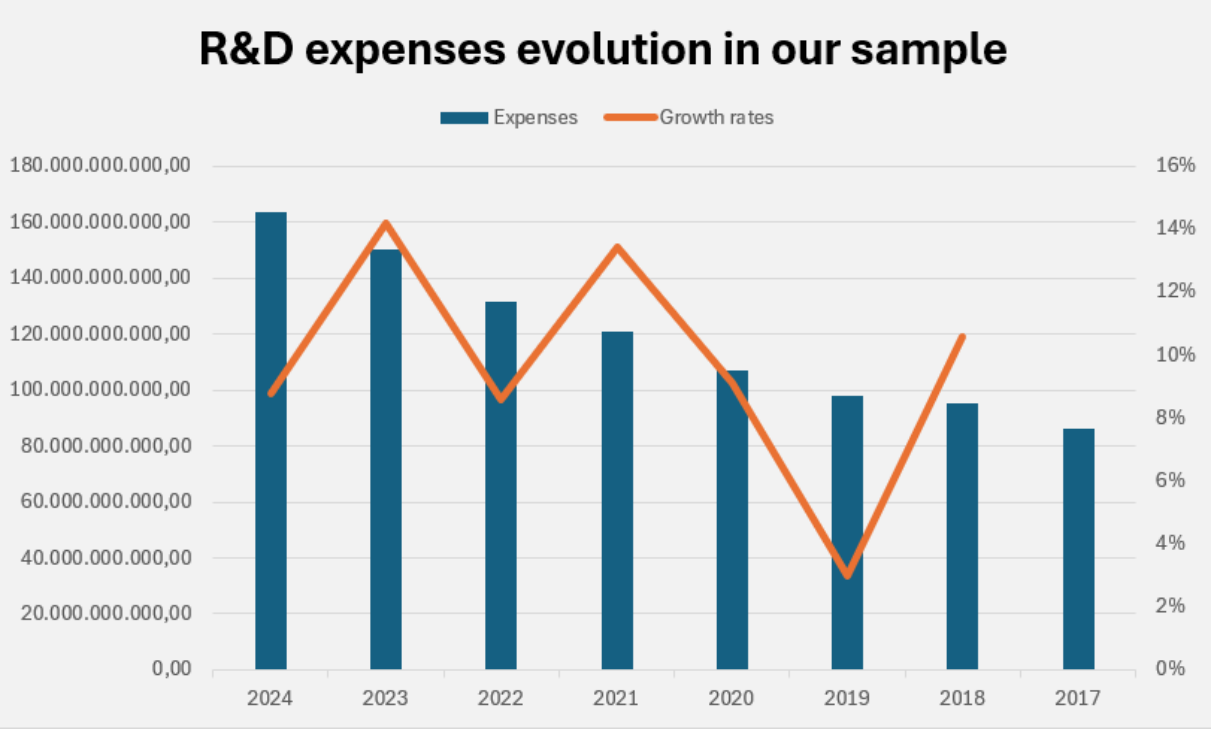


Table 7

Activities in Belgium			
Company	**R&D**	**Production**	**Commercial act.**
GSK			
RECORDATI			
UCB			
PFIZER			
TAKEDA			
Sanofi			
MSD			
ALCON			
BAXTER			
Argenx			
Roche			
Johnson&johnson			
Astrazeneca			
Merck KGaA			
ABBVIE			
ELI & LILLY			
NOVARTIS			
Bayer			
Amgen			
CSL BEHRING			
DAIICHU SANKYO			
BIOGEN			
Bristol			
Moderna			
Incyte			
BioNtech			
Total	**12**	**11**	**26**

Only clinical trial & support activities (as quality control)

Appendixes

Appendix1

Illustration: 1:

€ mill	0	1	2	3	4	5	6	7
Sales of the product	0	500	575	661,25	760,4375	874,503125	1005,67859	1156,53038
Income (30% of sales)	0	150	172,5	198,375	228,13125	262,350938	301,703578	346,959115
R&D expenses	350							
Report	0	-350	-200	-27,5				
Innovation income	-350	-200	-27,5	170,875	228,13125	262,350938	301,703578	346,959115
Deduction (85% of the I.I)	0	0	0	145,24375	193,911563	222,998297	256,448041	294,915248

In this example, the company incurs €350 million in expenses for an R&D project. This project generates €500 million in turnover in the first year. The direct expense related to the new product is set at 70%, meaning €150 million can be attributed to the new product. As observed, the result for deduction purposes was negative in year 0 and must be carried forward to the following year. Consequently, the company will not benefit from a deduction in years 1 and 2, despite already generating income from its innovation. In year 3, the company will be eligible for a deduction equivalent to 85% of the excess (€170.87 million). In subsequent years, no additional carryforward is reported, and the same rate (85%) is applied to calculate the deductible portion of income. The conclusion is that a company utilizing this method will experience a longer delay before realizing its first tax benefit.

Illustration 2:

€ mill	0	1	2	3	4	5	6	7
Sales of the product	0	500	575	661,25	760,4375	874,503125	1005,67859	1156,53038
Income (30% of sales)	0	150	172,5	198,375	228,13125	262,350938	301,703578	346,959115
R&D expenses	0	50	50	50	50	50	50	50
Report	0	0	100	122,5				
Innovation income	0	100	122,5	148,375	178,13125	212,350938	251,703578	296,959115
Deduction (85% of the I.I)	0	85	104,125	126,11875	151,411563	180,498297	213,948041	252,415248

The company employs the derogation and opts to allocate R&D expenses over the subsequent seven years. The effect of this approach is that the company can begin to claim deductions starting from the first year. Although the deductions are smaller compared to the initial scenario, they are distributed more evenly over time.

The conclusion is that this strategy allows the company to obtain tax benefits earlier and lower its taxable base. Additionally, when considering an internal interest rate (IIR) of 3%, the net present value (NPV) of the project is higher (€970 million compared to €952 million). Furthermore, this approach appears to be a dominant strategy, as it remains the optimal choice even under varying growth rate assumptions.

Nexus approach:

This new regime aligns with the Nexus approach. The deductible amount is proportional to the R&D expenses borne by the organization. Deductions related to the acquisition of a patent or those assumed by a parent company are not entirely exempt but are subject to a cap. Specifically, the amount of IP-related expenses assumed by another entity that can be deducted is limited to 30% of the qualified expenses (see Illustration 3).

Illustration 3

Case 1: The amount of unqualified expenses is caped

Global expenses = 350

Expenses due to an acquisition = 100

Expenses supported by a parent company = 50

Qualified expenses = 200

Maximum of unqualified expenses:

(200) * 30% = 60 < 150

➔ (200+60)/350 * Innovation Income * 85%

Case 2: All unqualified expenses can be deducted

Global expenses = 230

Expenses due to an acquisition = 20

Expenses supported by a parent company = 10

Qualified expenses = 200

Maximum number of unqualified expenses:

(200) * 30% = 60 > 30

➔ (200+30)/230 * Innovation Income * 85%

By derogation of this principle a company can also choose to as a fraction of the value added by itself. That can be relevant if a company sees that their expenses in R&D don't reflect the value added by the discovery. For example, firm A launched an R&D project that cost € 50 million. To functionate this technology needs the patent of the firm B. Firm B, which knows that the two discoveries in synergy will have a greater value sells its patent for €100 million even if the "Independent value" of the patent is €20 million.

Firm A	Firm B
Added value = 50*	Added values = 20
Expense = 50*	Cost = 100

*We make the hypothesis that the value added by firm A equals its cost

With the first technique, the fraction would be 65/150
*65= 50 + 30% of 50
150 = 100 + 50
Using the second approach, it would be 56/70
*56 = 50 + 30% of 20 million
*70 = 50 + 20

For the company to apply this rule, it must demonstrate that the Nexus approach is not applicable to its specific situation(*code des impots sur le revenu - exercice 2022.pdf*, s. d.)
In the example above, the exceptional circumstance is that Company B overvalued its asset due to its insider knowledge of the specific conditions surrounding that asset. The over cost is not due to the value of the asset but by what we can call a goodwill. As mentioned, this specific aspect must be proved by the company.

Appendix 2

$$Tax\ rate_{OCDE} = \frac{tax\ provision - NQRTC}{income} \qquad Tax\ rate_{OCDE} = \frac{tax\ provision}{income + QRTC}$$

Example in Singapore:

Tax basis	100	100	100
QRTC or refund		5	12
Globe result	100	105	112
Tax burden	17	17	17
Incentives	7		
Effective tax burden	10	17	17
ETR	10%	16%	15%
Minimum tax under pillar 2	15%	15%	15%
QDMTT	5	0	0

In this example, the company has a stable income of 100 units and is subject to the Singaporean corporate tax rate of 17%. Initially, it receives a non-qualified incentive of 7 units, resulting in an effective tax rate (ETR) of 10% and triggering a top-up tax of 5 units. However, in the following year, the same amount is reimbursed through a qualified refundable tax credit (QRTC). As a result, the tax base increases to 105 units while the tax burden remains at 17 units, leading to an ETR of 16%, which no longer triggers a top-up tax. In the final scenario, both the initial incentive (7) and its reimbursement (5) are treated as qualified refundable tax credits and therefore do not give rise to any top-up tax obligation.

This demonstrates that Qualified Refundable Tax Credits (QRTCs) are more advantageous for a country, as they can help avoid the application of Pillar 2 rules. Indeed, a jurisdiction could collect the Qualified Domestic Minimum Top-Up Tax (QDMTT) and, based on the amount collected, allocate an equivalent amount of QRTCs to companies, thereby neutralizing the top-up tax effect. (Avi-Yonah, 2024)

Also from a mathematical perspective, applying a tax rate at 17% (and not at 15%) permits to confer a tax advantage of 13,3% of the income before triggering a top up tax. More the CIT is above 15% and more the jurisdiction can reduce the tax burden below 0% of CIT. From 17,64% the tax burden can be reduced to 0 without triggering a top-up tax.

For example, a company with an income of 100, active in a country with a CIT of 18%, pays a tax burden of 18. If this country provides a qualified refundable tax credit of 18. It increases the tax basis at 118 but the tax liability stays at 18. This results in an effective tax rate of (18/118) 15,25%.

Appendix 3

	QRTC	Subsidy
Definition	Qualified Refundable Tax Credit is a refundable tax credit paid as cash or available as cash equivalents within four years from the date when a constituent entity satisfies the conditions for receiving the credit. (*OECD*, s. d.)	An assistance by government in the form of transfers of resources to an entity in return for past or future compliance with certain conditions relating to the operating activities of the entity. » (*IFRS*, s. d.)
Type of support	Indirect support	Direct support
Role of the government in the direction of funding	Less important	More important
Treatment in IFRS	Tax asset (IAS12)	Revenue -IAS 20
In pillar 2	Include in the GloBe result	Include in the GloBe result

Appendix 4

The qualified income with documented example for the sector: (SPF Finance, 2022)

License fees

These refer to payments made in exchange for the right to use a patent or solution, including when transferred to a related party. Unlike royalties, license fees are typically paid as a lump sum at the time of the transaction. Royalties, on the other hand, are recurring payments and are not included in the Income Inclusion Rule (IIR).

IP income embedded in the sales price of self-manufactured products (so-called 'embedded royalties')

This refers to the portion of a product's sale price that reflects the value of embedded intellectual property, calculated on an arm's length basis. In the pharmaceutical industry, the innovative component of a drug can represent a significant share of the final sales price, and a third party would be willing to pay for access to this IP.

IP income derived from process innovation

This involves income generated from internal improvements to manufacturing or operational processes. The financial benefit can be reflected either through cost savings or increased production capacity attributable to the patented innovation.

Compensation awarded through court/arbitral decisions, amicable settlements, or insurance claims

This includes income awarded by a court or arbitral body, as well as that resulting from a settlement or insurance compensation, provided it is directly attributable to the use or infringement of the patent.

The qualified assets are : (SPF Finance, 2022)

Patents and Supplementary Protection Certificates (SPCs)

Patents and SPCs are eligible provided they have not been used for the sale of goods or services to independent third parties before 1 January 2007.

Plant Breeders' Rights

These rights are eligible if they have been requested or acquired on or after 1 July 2016.

Orphan Drugs

Drugs developed to treat rare diseases (classified as orphan drugs) qualify, limited to the first ten years of protection, if they were requested or acquired as of 1 July 2016.

Data and Market Exclusivity

Eligibility extends to data and market exclusivity rights granted by the relevant authorities after 30 June 2016. This includes, for example, market exclusivity for orphan drugs or data exclusivity granted for documentation related to pesticides, and clinical studies for generic or veterinary medicinal products.

Copyrighted Software

Software protected by copyright is eligible provided it results from a research or development project, as defined for the purposes of the partial exemption from wage withholding tax (WHT) for R&D and has not generated income prior to 1 July 2016.

Software

Excluded from the IID in 2023, this asset should be added to the Belgium IID by the new government. (*Tiberghien, 2025)*

Appendix 5:

The Pillar 2 rules distinguish between two types of incentives: QRTC (Qualified Refundable Tax Credits) and NQRTC (Non-Qualified Refundable Tax Credits). This distinction is crucial, as it significantly impacts a company's effective tax burden.

In the examples below, we will apply an incentive to a company for a fiscal year, with the incentive varying as a percentage of the company's revenue. We will conduct this analysis across three revenue bands:

1. Below 10% of gross income
2. Between 10% and 66.67% of gross income
3. Above 66.67% of gross income

The objective is to evaluate how these different incentive levels influence the conditions under which a top-up tax may be triggered, considering a Corporate Income Tax (CIT) rate of 25%, as applied in Belgium.

		QRTC	NQRTC
Belgium CIT	Income	100	100
	Belgium CIT	25	25
	Tax credit	7	7
OECD GloBE rules	Effective tax burden	25	18
	GloBe result	107	100
	Effectvie tax rate	23%	18%
	Top-up tax	0%	0%

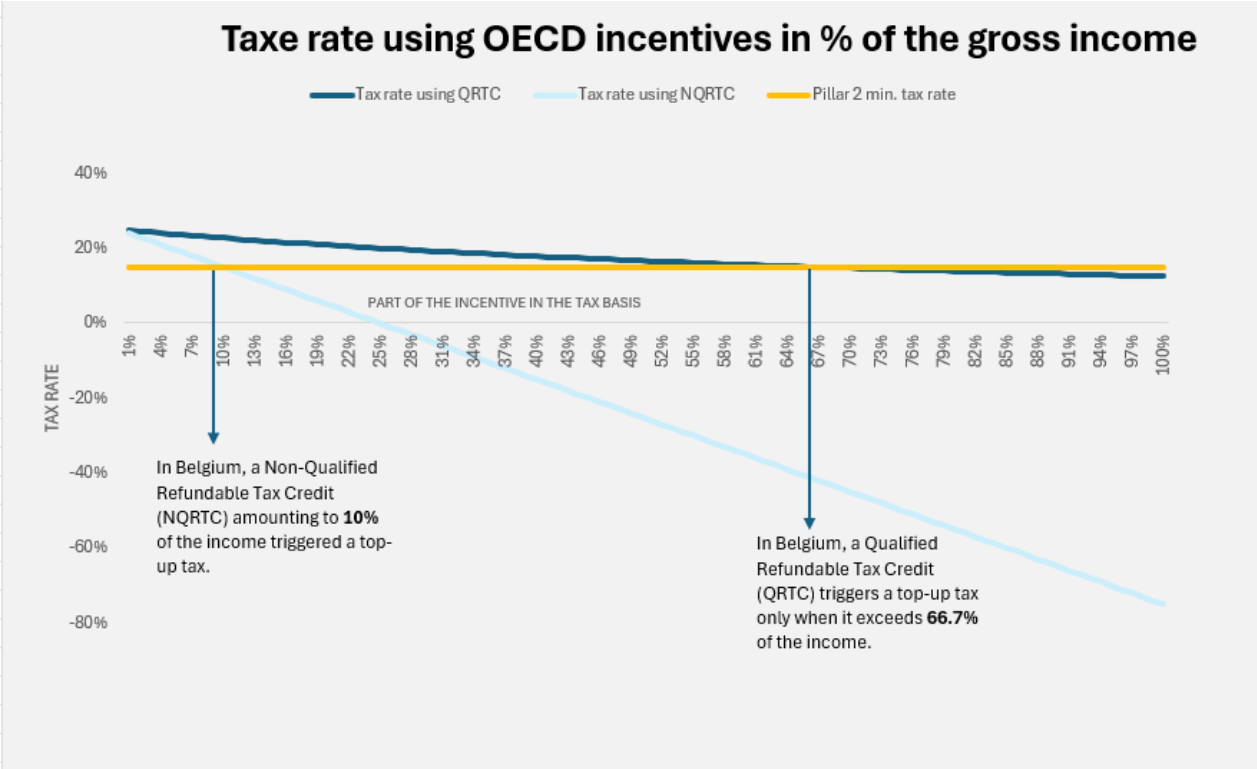
The first example demonstrates that no top-up tax is triggered, as the incentive set at 7% of the company's revenue remains viable under the Pillar 2 rules. In this case, the company can fully benefit from the incentive without the need to determine whether the advantage granted is qualified or not. However, this situation already highlights a fundamental difference in the treatment of incentives. When the incentive is classified as qualified, the effective tax rate reaches 23.36% of the revenue, whereas in the case of a non-qualified incentive, the effective tax rate falls to 18%.

		QRTC	NQRTC
	Income	100	100
Belgium CIT	Belgium CIT	25	25
	Tax credit	12	12
OECD GloBE rules	Effective tax burden	25	13
	GloBe result	112	100
	Effectvie tax rate	22%	13%
	Top-up tax	0%	2%

In this second example, the incentive has been set at 12%. In this case, the non-qualified tax incentive triggers a top-up tax, as it directly reduces the tax burden. The ETR falls to 13%, requiring the application of a QDMTT at 2% to ensure that the jurisdiction maintains a minimum corporate income tax of 15%. This scenario highlights the critical impact of incentive classification on the overall tax liability under the Pillar 2 framework.

		QRTC	NQRTC
	Income	100	100
Belgium CIT	Belgium CIT	25	25
	Tax credit	70	70
OECD GloBE rules	Effective tax burden	25	-45
	GloBe result	170	100
	Effectvie tax rate	14,7%	-45%
	Top-up tax	0,3%	60%

In cases where the incentive is set above 66.67% of the company's revenue, both types of incentives trigger a top-up tax. This situation arises when the revenue generated by the company falls below its usual level of activity, leading to an obligation to reimburse part of the advantage granted. This effect is particularly pronounced in the case of a non-qualified refundable tax credit (NQRTC), where 60% of the income (and most of the incentive must) be repaid through the top-up tax. This illustrates the significant financial impact that revenue fluctuations can have on companies benefiting from tax incentives under the Pillar 2 framework.



Appendix 6:

$$(\%\ income\ eligible * (1 - \%\ \ NTincome) + \%\ of\ non - ellible\ income\ ) * CIT$$

In Belgium, the rate for the eligible income is (1-85%) of the CIT (=25%), which is *3.75%*. The rate of elligible activities at wich the IID would triggredered a top up tax is 53%.

Indeed, the whieghted average of the tax rate is calculated this way :

3,75% * 47% + 25% * 53% = 15%[1]

[1]The minimum tax rate under pillar 2

Appendix 7

Regression Results: Impact of R&D Intensity on Effective Tax Rate

$$Log(Tax\ rate) = B0 + B1 * revenue + B2 * Log\left(\frac{RD}{REV}\right) + B3 * (Income)$$

A multiple linear regression was performed to analyze the impact of revenue, income, and R&D intensity (log-transformed) on the effective corporate tax rate, using data from 2016 to 2024. The model was estimated on a sample of 199 observations, after removing 20 entries.

Variable	Estimate	Std. Error	t-value	p-value	Significance
Intercept	-31.79	5.88	-5.41	< 0.000001	***
log(Revenue)	0.983	0.279	3.53	0.000518	***
log(R&D / Revenue)	-2.279	0.464	-4.91	0.00000188	***
Income	2.38e-9	6.57e-10	3.54	0.000495	***

The test performed using R Studio indicates that, for comparable levels of income and revenue, the percentage of investment in R&D has a direct impact on the effective tax rate. Based on data from the period 2016 to 2024, we found that companies allocating just 1% more of their revenue to R&D (e.g., from 20% to 20.2%) benefited from an average reduction of 2.27 percentage points in their effective tax rate (e.g., from 23% to 22.4%). A simulation using a company with €10 billion in revenue and €800 million in taxable income further suggests that over 20% of R&D-related investment can effectively be reclaimed through tax deductions, decreasing the cost from 20m€ to 15,8m€.

Adding the presence of a R&D centre in Belgium

$$Log(Tax\ rate) = B0 + B1 * revenue + B2 * Log\left(\frac{RD}{REV}\right) + B3 * (Income) + B4 * BelgR\&D$$

Variable	Estimate	Std. Error	t-value	p-value	Significance
Intercept	-31.55	5.817	-5.41	< 0.000001	***
log(Revenue)	1.0067	0.276	3.65	0.000334	***
log(R&D / Revenue)	-2.135	0.463	-4.61	0.000007196	***
BelgR&D	-1.51	0.65	-2.304	0.022233	*
Income	2.25e-9	6.55e-10	3.856	0.000156	***

By introducing a binary variable into the model, we also highlight that the presence of an R&D centre in Belgium has a statistically significant negative impact on the company's effective tax rate. From a probabilistic standpoint, this effect is considerable: the presence of such a centre reduces the average tax rate by 1.51 percentage points compared to what it would have been in its absence

Appendix 8

Discount rate	3%				END OF IP (1)					
	0	1	2	3	4	5	6	7	8	9
Sales of the product (1)	600,00	690,00	793,50	912,53	349,80	88,74	75,43	64,12	54,50	46,32
Sales of the product (2)				300,00	345,00	396,75	456,26	524,70	603,41	693,92
Other activities	648,00	745,20	856,98	500,00	500,00	524,33	574,23	635,92	710,54	799,46
Revenue	**1248,00**	**1435,20**	**1650,48**	**1712,53**	**1194,80**	**1009,82**	**1105,92**	**1224,74**	**1368,44**	**1539,70**
R&D expenses (reported) 1										
R&D expenses (2)				150,00	46,50					
Other expenses	453,60	521,64	599,89	350,00	350,00	367,03	401,96	445,15	497,38	559,62
Total	**453,60**	**521,64**	**599,89**	**500,00**	**396,50**	**367,03**	**401,96**	**445,15**	**497,38**	**559,62**
Income 1 (30% of sales)	180,00	207,00	238,05	273,76	104,94	26,62	22,63	19,23	16,35	13,90
Income 2 (30% of sales)	0,00	0,00	0,00	90,00	103,50	119,03	136,88	157,41	181,02	208,18
Other Income	194,40	223,56	257,09	150,00	150,00	157,30	172,27	190,78	213,16	239,84
Income T (30% of sales)	**374,40**	**430,56**	**495,14**	**513,76**	**358,44**	**302,95**	**331,78**	**367,42**	**410,53**	**461,91**
IID 1 (Ip box)	153,00	175,95	202,34	232,69	89,20					
IID 2 (Ip box)	0,00	0,00	0,00	0,00	48,45	101,17	116,35	133,80	153,87	176,95
IID (Ip box)	**153,00**	**175,95**	**202,34**	**309,19**	**177,17**	**123,80**	**135,58**	**150,15**	**167,77**	**188,76**
Belgian CIT (1)	6,75	7,76	8,93	10,27	3,94	6,66	5,66	4,81	4,09	3,47
Belgian CIT (2)	0,00	0,00	0,00	22,50	13,76	4,46	5,13	5,90	6,79	7,81
Belgian CIT (other)	48,60	55,89	64,27	37,50	37,50	39,32	43,07	47,69	53,29	59,96
Belgian CIT (Total)	**55,35**	**63,65**	**73,20**	**70,27**	**55,20**	**50,44**	**53,86**	**58,41**	**64,17**	**71,24**
% ETR	**14,8%**	**14,8%**	**14,8%**	**13,7%**	**15,4%**	**16,7%**	**16,2%**	**15,9%**	**15,6%**	**15,4%**
Top up tax	**0,22%**	**0,22%**	**0,22%**	**1,32%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**
NRTC	0,81	1,74	2,81	9,61	8,18	3,18	0,00	0,00	0,00	0,00
Using NRTC	0,00	0,00	0,00	0,00	-1,43	-5,00	-3,18	0,00	0,00	0,00
Tax burden	56,16	64,58	74,27	77,06	53,77	45,44	50,68	58,41	64,17	71,24
Final ETR	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,27%**	**15,90%**	**15,63%**	**15,42%**
Net income	**318,24**	**365,98**	**420,87**	**436,69**	**304,67**	**257,50**	**281,10**	**309,02**	**346,37**	**390,67**
Discounted	**318,24**	**355,32**	**396,71**	**399,64**	**270,70**	**222,13**	**235,42**	**251,26**	**273,43**	**299,42**

VAN	**3022,24**
Average Tax Rate	15,22%
Tax burden total	615,78

In the scenario described above, the company sells Product 1, which is protected by a patent and thus qualifies for the Innovation Income Deduction (IID). In Year 3, the company launches a second project, also protected by a separate patent, leading to the management of a second IP box regime. As shown, Project 1 enters a phase of decline, with its patent fully expiring by Year 5.

In Year 4, both projects generate eligible innovation income — €89.2 for Project 1 and €48.45 for Project 2. In Year 3, however, Project 1 does not produce any innovation income, as it is still amortizing its development costs. The remaining amortizable amount of €46.5 is then absorbed in Year 4.

All remaining business activities that do not fall under the IID regime are subject to the standard corporate income tax (CIT). The effective tax rate (ETR) is calculated based on total income,

Discount rate	3%				END OF IP (1)					
	0	1	2	3	4	5	6	7	8	9
Sales of the product (1)	600,00	690,00	793,50	912,53	349,80	88,74	75,43	64,12	54,50	46,32
Sales of the product (2)				300,00	345,00	396,75	456,26	524,70	603,41	693,92
Other activities	648,00	745,20	856,98	500,00	500,00	524,33	574,23	635,92	710,54	799,46
Revenue	**1248,00**	**1435,20**	**1650,48**	**1712,53**	**1194,80**	**1009,82**	**1105,92**	**1224,74**	**1368,44**	**1539,70**
R&D expenses (reported) 1										
R&D expenses (2) -allocated				21,43	21,43	21,43	21,43	21,43	21,43	21,43
Other expenses	453,60	521,64	599,89	350,00	350,00	367,03	401,96	445,15	497,38	559,62
Total	**453,60**	**521,64**	**599,89**	**371,43**	**371,43**	**388,46**	**423,39**	**466,57**	**518,80**	**581,05**
Income 1 (30% of sales)	180,00	207,00	238,05	273,76	104,94	26,62	22,63	19,23	16,35	13,90
Income 2 (30% of sales)	0,00	0,00	0,00	90,00	103,50	119,03	136,88	157,41	181,02	208,18
Other Income	194,40	223,56	257,09	150,00	150,00	157,30	172,27	190,78	213,16	239,84
Income T (30% of sales)	**374,40**	**430,56**	**495,14**	**513,76**	**358,44**	**302,95**	**331,78**	**367,42**	**410,53**	**461,91**
IID 1 (Ip box)	153,00	175,95	202,34	232,69	89,20					
IID 2 (Ip box)	0,00	0,00	0,00	58,29	69,76	82,96	98,13	115,58	135,65	158,73
IID (Ip box)	**153,00**	**175,95**	**202,34**	**309,19**	**177,17**	**123,80**	**135,58**	**150,15**	**167,77**	**188,76**
Belgian CIT (1)	6,75	7,76	8,93	10,27	3,94	6,66	5,66	4,81	4,09	3,47
Belgian CIT (2)	0,00	0,00	0,00	7,93	8,43	9,02	9,69	10,46	11,34	12,36
Belgian CIT (other)	48,60	55,89	64,27	37,50	37,50	39,32	43,07	47,69	53,29	59,96
Belgian CIT (Total)	**55,35**	**63,65**	**73,20**	**55,69**	**49,87**	**55,00**	**58,41**	**62,96**	**68,72**	**75,79**
% ETR	**0,15**	**0,15**	**0,15**	**0,11**	**0,14**	**0,18**	**0,18**	**0,17**	**0,17**	**0,16**
Top up tax	**0,22%**	**0,22%**	**0,22%**	**4,16%**	**1,09%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**
NRTC	0,81	1,74	2,81	24,18	28,08	18,51	18,51	9,86	2,02	0,00
Using NRTC	0,00	0,00	0,00			-9,57	-8,65	-7,84	-2,02	0,00
Tax burden	56,16	64,58	74,27	77,06	53,77	45,43	49,76	55,12	66,70	75,79
Final ETR	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**15,00%**	**16,25%**	**16,41%**
Net income	**318,24**	**365,98**	**420,87**	**436,69**	**304,67**	**257,52**	**282,02**	**312,30**	**343,83**	**386,12**
Discounted	**318,24**	**355,32**	**396,71**	**399,64**	**270,70**	**222,14**	**236,18**	**253,93**	**271,43**	**295,93**

	3020,21
Average Tax Rate	15,27%
Tax burden	618,65

and a top-up tax is applied if this ETR falls below the 15% minimum set by the OECD Pillar Two rules. In this case, the Qualified Domestic Minimum Top-up Tax (QDMTT) is triggered in Belgium solely due to the application of the IID. To mitigate this effect, a non-refundable tax credit can be granted, ensuring that the company pays at least 15% in Belgium. As noted in a previous discussion, this results in a practical principle: "15% is the new 0."Finally, cash flows are discounted at a rate of 3%, and the overall tax burden is aggregated accordingly.

In this second scenario, all conditions remain identical to the first, with the sole difference being that Project 2 has opted to allocate its R&D costs over a 7-year period. This method is generally known to yield better results by enabling a faster return on investment. However, under the Pillar 2 framework, the outcome diverges, as reflected in the overview.

Both Project 1 and Project 2 generate eligible innovation income in Years 3 and 4, resulting in effective tax rates (ETRs) of 11% and 14%, respectively. The accelerated returns from Project 2 are, in this instance, largely offset by the application of the top-up tax under the Pillar 2 rules. Although the company is entitled to a non-refundable tax credit to compensate for this excess taxation, the R&D costs of Project 2 have not yet been fully amortized and will continue to be amortized over the following five years.

Compared to the first scenario, the company experiences reduced cash flows during those five additional years. As a result, it ultimately pays €3 million more in taxes, which negatively affects its net present value (NPV) by more than €2 million.

This comparison highlights that, under the Pillar 2 framework, the management of the IP box becomes more complex and requires careful strategic planning. The benefits of IP-related tax incentives are not uniformly achieved through a single approach; rather, they depend on the specific context and timing of income recognition and cost amortization. It is also important to emphasize that the situation described here is highly specific. In most cases, opting to spread R&D costs over time generally yields more favorable outcomes, both in terms of effective tax rates and return on investment.

Abbreviation Glossary

BEPS – Base Erosion and Profit Shifting

CIT – Corporate Income Tax

ETR – Effective Tax Rate

GDP – Gross Domestic Product

IID – Innovation Income Deduction

IIR – Income Inclusion Rule

IP – Intellectual Property

NPV – Net Present Value

NQRTC – Non-Qualified Refundable Tax Credit

NRTC – Non-Refundable Tax Credit

OECD – Organization for Economic Co-operation and Development

QDMTT – Qualified Domestic Minimum Top-Up Tax

QRTC – Qualified Refundable Tax Credit

R&D – Research and Development

UTPR – Undertaxed Profit Rule

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