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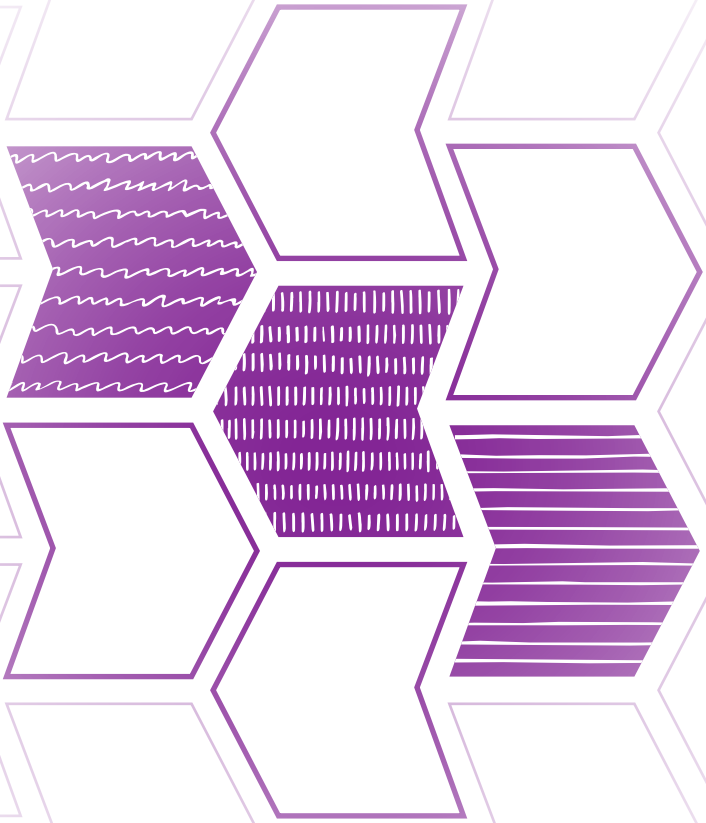

ANNUAL REPORT ON TAXATION 2023

REVIEW OF TAXATION POLICIES IN EU MEMBER STATES

Taxation and Customs Union

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Foreword

This Annual Report on Taxation 2023 presents an **indicator-based analysis of the design and performance of Member States' tax systems**. It aims to provide policymakers across the EU with insights that can help them to improve the functioning of their tax systems.

Just as the **EU economy** was strongly recovering from the COVID-19 pandemic, **new challenges** presented themselves. Since our 2022 Report, EU Member States were confronted to high inflation (9.2 % in 2022 to fall to 6.7 % in 2023) and deteriorating economic prospects. According to International Monetary Fund and European Central Bank studies rising corporate profits explain close to half of the inflation rise measured in the euro area, as companies increased prices by more than the spiking input costs while the wage catch-up process was much slower. In a context where households and public finances have taken a large part of the brunt of Europe's inflation crisis started with the energy shock caused by the war in Ukraine, the solidarity contribution was conceived as an exceptional temporary measure to provide the EU Member States with a tool to sustain the most vulnerable.

The historic OECD Two-Pillar Solution will structurally tackle issues of **fairness and transparency in corporate taxation** globally and will ensure aggressive tax planning is disincentivised. The EU was first to adopt a Directive on Pillar Two and the Member States are now adopting the necessary national legislation for the enter into force on 1 January 2024. Negotiations on the Multilateral Convention to implement Pillar One are also about to be concluded before summer so as to proceed with signature this winter. Building on this, the Business in Europe: Framework for Income Taxation (BEFIT) will propose a deeper, more structural corporate tax reform simultaneously **simplifying tax systems for businesses including SMEs** and administrations in the EU. It will be designed to reduce compliance costs in line with simplification commitments made by President Von der Leyen.

Looking ahead, **tax systems must deliver the revenues needed** to support public funding and social support in an efficient, effective, sustainable, and fair manner. Tax revenue (including social contributions) in the EU stood at 41.7 % of GDP in 2021 and accounted for nearly 90 % of general government total revenue. This shows that we must cast a careful look on the ability of our tax systems to generate crucial revenues, without either jeopardising economic activity in the short term or losing sight of the long-term challenges that we need to confront. The impact of megatrends such as demographic change, digitalisation, globalisation, inequalities and climate change is already visible in all areas of our society. These call for proactive action from policymakers, including in terms of tax system design.

Corporate **taxation should not hinder investment and the Capital Market Union.** The European Commission has proposed a Directive on "Faster and safer relief of excess withholding taxes". For far too long, cumbersome withholding tax procedures have discouraged cross-border investment and obstructed a well-functioning EU capital market. At the same time, it is important that **tax incentives do not lead to harmful or excessive tax competition.** The Code of Conduct on Business Taxation has played an important role in tackling harmful regimes for over two decades, within Europe and beyond. From 2024, the Code will have a renewed mandate and extended scope of action, to make it more effective in the clamp down on unfair competition. The Commission is also working actively to reduce the negative impacts of tax competition, including by the proposed directive on preventing shell companies from misusing their structure for tax purposes (UNSHELL).

Value added tax (VAT) is a significant source of revenue for the EU and its Member States. VAT was responsible for 17.8% of all tax and social security revenues in 2021, making it an important source of financing for the government budgets of the EU Member States. VAT proceeds also contribute directly to the EU budget, as they are partly allocated to the EU's own resources. We need to **ensure that our VAT systems perform to optimal effect**, both now and in the future. EU Member States lost an estimated €93 billion in Value-Added Tax (VAT) revenues in 2020, according to the 2022 European Commission Report on the VAT Gap, dropping by approximately €31 billion compared to the 2019 figures. **Harnessing the opportunities of digitalisation** is key. EU initiatives like VAT e-commerce and the Central Electronic System of Payment information (CESOP), and also important national initiatives, can further combat VAT fraud through e-invoicing. Once adopted, the VAT in the Digital Age proposal can also significantly improve tax collection (up to €18 billion more in VAT revenues annually), reduce compliance costs (€5 billion of cost savings for businesses per year) and help to combat tax evasion and fraud (up to €11 billion a year).

Climate change requires ambitious action in every policy field, **including taxation**. Extreme weather events remind us every day of how crucial the European Green Deal is, as Europe's response to climate change and long-term growth plan. The reforms of the EU's Energy Taxation Directive, the Emissions Trading System and the Carbon Boarder Adjustment Mechanism (CBAM) are central to the Green Deal. Environmental taxation can reinforce these policies and serve as an avenue to encourage more environmentally sustainable behaviour. Other behavioural taxes are also Beeing Analysed, as a means to broaden the tax base and lift some tax burden away from labour.

Ageing and other socio-economic changes, such as remote working, increasingly have implications for tax revenue. We need to decide how to face up to these new trends. Ageing is expected to enhance dependency by reducing the working-age population and, as such, will diminish the contributory base. The growing trend of teleworking from abroad also brings policy challenges, as people work across several countries each year. Which country should be entitled to tax? How should the tax base be apportioned? How to prevent unfair competition arising from mobile workforces? At the same time, existing disincentives to work associated with labour taxation, notably for low and second earners, need to be tackled with greater determination.

Last but not least, we need **well-functioning tax administrations and higher cooperation** among them. Along with effective policies, these two are indispensable elements for optimising tax collection, while fighting against tax abuse, tackling tax avoidance and evasion.

This report provides a valuable assessment into the progress being made to adapt to all of these challenges, and more. I hope that it will provide a useful analytical base to all who read it and a support for national and EU policymakers in their work. It also will contribute to the reflections and debates at the **EU Tax Symposium**, which DG TAXUD, under the leadership of Commissioner Gentiloni, will co-host with the European Parliament on 25 October 2023.

Gerassimos Thomas

Director-General

Directorate-General for Taxation and Customs Union

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Abbreviations and acronyms

COUNTRY ABBREVIATIONS

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia

ACRONYMS

AML	Anti-Money Laundering
APA	Advance Pricing Agreement
ATAD	Anti-Tax Avoidance Directive
ATP	Aggressive Tax Planning
B2B	Business-to-Business
BEFIT	Business in Europe: Framework for Income Taxation
B2G	Business-to-Government
BEPS	Base Erosion and Profit-Shifting
BMI	Body Mass Index
CASP	Crypto-Assets Service Provider
CBAM	Carbon Border Adjustment Mechanism
CbCR	Country-by-Country Reporting
CESOP	Central Electronic System of Payment Information
CIT	Corporate Income Tax
CO_2	Carbon Dioxide
CoC	Code of Conduct
CPI	Consumer Price Index
CRS	Common Reporting Standards
CTC	Continuous Transaction Control
DAC	Directive of Administrative Cooperation
DC	Digital Culture Building
DeFi	Decentralised Finance
DLT	Distributed Ledger Technology
DRR	Digital Reporting Requirement
EAP	Economic Adjustment Programme
EATR	Effective Average Tax Rate
ECEC	Early Childhood Education and Care
ECOFIN	The Economic and Financial Affairs Council of the European Union
EFTA	European Free Trade Association
E-Commerce	Electronic commerce
EIGE	European Institute for Gender Equality
EMTR	Effective Marginal Tax Rate
EMCS	Excise Movement Control System
ESA 2010	European system of national and regional accounts
ESF+	European Social Fund+

ETD	Energy Taxation Directive
ETS	Emissions Trading System
EU	European Union
EU-27	European Union (AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK)
FASTER	Faster and Safer Relief of Excess Withholding Taxes
FDI	Foreign Direct Investment
FTE	Full Time Equivalent
GBF	Global Biodiversity Framework
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HFSS	High in Fat, Sugar and/or Salt
IAPR	Independent Authority for Public Revenue
IMF	International Monetary Fund
IP	Intellectual Property
IT	Information Technology
ITR	Implicit Tax Rate
MiCA	Markets in Crypto-Assets
MLC	Multilateral Convention
MNE	Multi-National Enterprise
Mt	Million Tonnes
MTIC	Missing Trader Intra-Community
NFT	Non-Fungible Token
NID	Notional Interest Deduction
NOE	Non-observed economy
NOx	Nitrogen Oxide
OECD	Organisation for Economic Cooperation and Development
OFC	Offshore Financial Centre
OLAF	European Anti-Fraud Office
OSS	One Stop Shop
PIT	Personal Income Tax
PP	Percentage Points
R&D	Research and Development
RRF	Recovery and Resilience Facility
SAF-T	Standard Audit File for Tax
SDG	Sustainable Development Goal
SEZ	Special Economic Zone
SME	Small and Medium sized Enterprise

STEM	Science, Technology, Engineering and Mathematics
SSB	Sugar Sweetened Beverages
SSC	Social Security Contributions
SO_2	Sulphur dioxide
TADEUS	Tax Administration EU Summit
TFEU	Treaty on the Functioning of the European Union
TSI	Technical Support Instrument
UTPR	Undertaxed profit rule
VAT	Value Added Tax
ViDA	VAT in the Digital Age
VIES	VAT Information Electronic System
WHO	World Health Organization
WHT	Withholding Tax
WTO	World Trade Organization

Executive summary

The 2023 Annual Report on Taxation (ART) presents the state of play of taxation and tax systems in the European Union (EU). The report looks at the challenges faced by different types of taxes, and how the design of taxes can affect different economic agents and their behaviour. The report aims to describe the most recent reforms in tax systems and the main indicators used by the Commission to assess taxation policies in EU Member States and at EU level.

The 2023 ART's general theme is centred around a discussion and analysis of the tax mix and of how to re-design our tax systems in the light of dramatic structural changes that have been reshaping our societies and economies. Each chapter focuses on a different type of tax, assessing both: (i) the challenges posed to different tax types by a variety of dramatic structural changes in the future – also known as 'megatrends'; and (ii) possible developments in terms of tax design. Throughout the analysis, the report takes into consideration three important properties of tax systems: (i) fairness (looking at the contribution of tax systems to social fairness and prosperity); (ii) efficiency and simplicity (making sure that tax administrations are effective and efficient in achieving tax compliance and reducing unnecessary tax complexity for economic agents); and (iii) stability (including the need to ensure fiscal sustainability, especially given the impact that different megatrends will have on taxation systems).

In the past decade, the EU has experienced multiple crises that affected its economy and taxation systems. The Great Recession of 2008/2009 was followed by the COVID-19 pandemic and the resulting economic crisis. This crisis led to increased deficits and public debt, as governments introduced policies to support households and companies. Recovery from the pandemic had only just set in when Russia's war of aggression on Ukraine had a very significant impact on the energy market, pushing up energy prices – and therefore also inflation – to levels not seen in decades. This situation called for action both: (i) in the energy market, to ensure the rapid phase out of Russian fossil fuels and the acceleration of the European Green Deal; and (ii) by increasing support to households and companies. Support given by governments included direct income support to individuals; energy-price caps; and several temporary tax measures including reduced rates of VAT and excise duties. There was also significant action at EU level: the EU Regulation on an emergency intervention to address high energy prices, which included a mandatory temporary solidarity contribution on the profits of businesses active in the crude petroleum, natural gas, coal, and refinery sectors. This was another measure that helped to give financial support to households and companies and mitigate the effects of high retail prices for electricity. In addition, the European Commission presented in May 2022 its REPowerEU plan for saving energy, producing clean energy, and diversifying our energy supplies. This came on top of the EU's Recovery and Resilience Facility which was designed in response to the COVID-19 crisis.

Tax systems will be affected by significant structural changes in the future, also known as megatrends, in particular in the areas of demographic change, digitalisation, globalisation, inequalities, climate change and environmental degradation. These megatrends are increasingly noticeable across the world. For example, in the area of demographic change, ageing populations can lead to: (i) a dramatic reduction in the number of people of working age; (ii) an increase in dependency ratios (i.e. a growing percentage of people not working, and a shrinking percentage of people working and paying taxes); and (iii) an increase in ageing-related expenditure (pensions, healthcare, long-term care). Governments are currently heavily reliant on labour taxation to generate government revenues and will therefore need to also take action on taxation, otherwise the declining share of economically active people will reduce tax revenues and put welfare states at risk. Digitalisation and globalisation are two other megatrends that will have an impact on the labour market, causing both opportunities (e.g. better tax information; improved tax collection and analysis; increased labour mobility, etc.) and challenges (e.g. increased automation that can pose a risk to the sustainability of labour tax revenues if there is a capital labour substitution; the risk of aggressive tax planning; excessive tax competition, etc.). This may in turn reduce the ability of tax systems to generate the necessary revenues and make it harder for governments to ensure their tax systems are sufficiently progressive. Climate change and environmental degradation are having a significant impact on parts of the economy and put at risk our very existence. In this context, taxation has a role to play in influencing behaviour and helping the EU to reach the ambitious green objectives it has set to face these challenges.

In 2021, tax revenue in absolute terms accounted for 40.6 % of gross domestic product (GDP) across the EU, 0.6 percentage points more than in 2020. The EU relies heavily on labour taxation which, including social-security contributions (SSCs), accounts for more than half of all tax revenues in the EU-27 in any given year. Value added tax (VAT) is also a significant source of revenue, having increased from 6.9 % of GDP in 2020 to 7.4 % of GDP 2021. Revenues from corporate income tax as a share of GDP increased from about 2.4 % in 2020 to 3 % in 2021. Environmental taxes remained unchanged at 2.2 % of GDP in the EU in both 2020 and 2021.

The recent phenomenon of relatively high inflation has the potential to affect both: (i) the real effective tax burden on taxpayers; and (ii) nominal tax revenues. This occurs when nominal tax bands are not adapted to changes in the real value of money caused by inflation. For example, progressive personal income taxes generally operate using a set of tax brackets. When somebody's income increases beyond a certain level, the portion of their income above that certain level is usually taxed at a higher rate. When the thresholds for crossing into these higher tax brackets are kept constant, inflation in wages might push a household's income into a higher tax bracket, even though its income has not increased in real terms. This is called 'bracket creep'. Similarly, a nominally fixed threshold for a basic-income allowance (i.e. income support) will lose its real value under inflation. In addition, the value of nominal specific taxes, excises, fees, and fixed penalties are also eroded by inflation over time. Governments can correct these issues by applying suitable and automatic indexation to the parameters of the tax systems.

Labour taxation (including social-security contributions) generates 51.4 % of all tax revenues in the EU. Labour taxation has an impact on growth as it influences incentives to work and hire. There is compelling evidence that shifting some of the tax burden from labour taxation towards consumption and property taxation could foster economic growth. The EU's average tax 'wedge' on labour (a measure of the labour tax burden) is falling but remained at 39.6 % of labour costs in 2021. Cross-country differences are significant, but this EU average remains above the OECD average of 34.6 %. The overall tax burden on employment needs to strike a balance between funding welfare systems and public services and not stifling job creation and employment. Given the megatrends just described, it is important to ensure strong participation in the labour market by all, and this is why it is important to look at the tax burden faced by low earners and 'second-earners' (i.e. people living in a household where the spouse/partner's earnings represent the household's main income) for whom the tax burden and disincentives to work – including via the design of the tax system – can be higher.

Personal income taxation, including the taxation of labour income, not only plays an important role in generating revenues but is also a significant redistribution tool. The tax system has been shown to help address income inequality and poverty. However, between 1995 and 2022, there has been a decrease in the top tax rates in all EU countries except for Greece, Portugal, and Latvia, all of which had notable increases. The reduction of the tax rate on top earners has reduced the scope for redistribution through personal income tax. Data also show that the wealthiest 1 % of the population in the EU hold 25.6 % of all wealth, while many countries in the EU do not have wealth taxes.

Appropriately designed tax policy can play a key role in determining the distribution of disposable incomes. Labour taxes are likely to remain a major source of public funding. Nevertheless, broadening the tax base and the tax mix, including through well-designed and balanced taxes on behaviour (including environmental taxes and taxes to promote health), property (including inheritance taxes) and capital income can help generate revenues, encourage sustainable behaviour, and address inequalities.

Corporate income taxation remains a significant source of tax revenue and increased in 2021 compared with 2020. Nevertheless, there has mostly been a constant decline in the rate of corporate income taxation over the past decade. In the EU, revenues from corporate income tax accounted for 7.1 % of total revenues in 2021. The average top tax rate on corporate income in the beginning of 2023 stood at 21.5 %, and this is more than 2 percentage points less than in 2009. Forward-looking effective tax rates measure the tax burden of a hypothetical investment project and have fallen from about 21.1 % in 2008 to 15.8 % in 2022.

To promote research and development (R&D), which is an enabler of innovation and productivity growth, Member States have been providing special tax incentives on both income from – and

expenditure on – R&D activities. Direct support through grants and loans is also used together with tax incentives, although the level of this direct support varies from one Member State to another. The average direct support for private R&D in the EU amounts to 0.1 % of GDP, while the average value of tax incentives for private R&D is worth 0.08 % of GDP. Some Member States design tax policies to attract and/or maintain investment and production activities. This can have positive effects and contribute to improved competitiveness, but it can also have negative effects if the tax policies are designed in a harmful manner.

Economic integration and globalisation have increased national tax policy effects on other countries, stimulating tax competition. In this context, tax competition is intensifying as countries try to attract or maintain mobile assets within their national tax systems. Tax competition in the area of corporate income tax includes, for instance, schemes that try to attract R&D. For personal income taxes, tax competition to attract high-net-worth and highly skilled individuals has become more relevant in recent years, with the increasing mobility of people prompting the introduction of specific tax schemes. Some of these schemes provide new residents with tax benefits depending on their profession or qualifications or depending on their purchasing power.

The EU is using a number of initiatives – including the minimum effective tax rate for corporate income and the Directive on Faster and Safer Relief of Excess Withholding Taxes (FASTER) – to promote a less complex tax environment that can support businesses. FASTER aims to introduce a common EU-wide system for withholding tax on dividend or interest payments, thus reducing red-tape and boosting cross-border investments.

Environmental taxation can be a useful policy tool to help reach climate and environmental policy goals. Certain economic activities harm the environment. Environmental taxation can put a price on these environmental costs and therefore alter decision-making and incentivise behavioural changes by companies and the public. Environmental taxation is still underused in many Member States, as it accounts for only 5.5 % of total tax revenues in the EU. In 2021, energy taxes accounted for 78 % of total environmental tax revenues, followed by transport taxes (which accounted for 18 % of environmental tax revenues) and resource and pollution taxes (which accounted for 3.5 % of environmental tax revenues). In this context, the revised rules for the EU's Emissions Trading System provide for an accelerated path to reduce emissions, partly by phasing out the distribution of free allowances by 2034. The use of environmental taxation needs to take into account the distributional impact of these environmental taxes. Some Member States have shifted some of the tax burden away from labour taxation to environmental taxation, but revenues from labour taxes remain significantly greater than environmental tax revenues in most Member States. Environmental tax revenues by themselves are insufficient to assess how well Member States are steering their taxation systems towards environmental objectives, and a careful analysis is necessary by considering other factors such as tax rates.

The report presents progress on the EU's taxation and regulatory measures to support the European Green Deal. These measures include: (i) the recasting of the Energy Taxation Directive (ETD), which aims to review the way that energy products and electricity are taxed in the EU to encourage a green transition for all; (ii) the EU's Emissions Trading System (EU ETS), which sets a cap on the total amount of some greenhouse gases that can be emitted by operators covered by the system; and (iii) the carbon border adjustment mechanism (CBAM), which requires importers of certain carbon-intensive goods to pay a levy on their imports corresponding to the charge imposed on comparable domestic industries under the EU ETS.

Value added tax (VAT) is another important source of tax revenue in the EU. In 2021, EU revenue from consumption taxes represented 11.2 % of GDP, and VAT accounted for 7.4 % of GDP in EU. The EU's average standard VAT rate remained almost unchanged between 2017 and 2022 at 21.5 %. The implicit tax rate on consumption in the EU increased in 2021 to 17.9 % (0.8 percentage points more than in 2020), the highest value registered since 2009.

Digitalisation can simplify compliance, reduce associated costs, and be a significant tool for tackling tax evasion and VAT fraud. The use of information technology (IT) makes it easier for firms to calculate the amounts they have to pay and keep track of other related administrative tasks. The Member States that have introduced digital reporting requirements (DRRs) have experienced an increase in their VAT revenues. DRRs are likely to help tax administrations in their fight against tax evasion, but they also present

the risk that a multitude of different digital reporting systems could emerge across the EU. To address these challenges, the Commission presented in December 2022 its initiative on VAT in the digital age (ViDA), which will alter the way intra-EU transactions are reported, while harmonising the main features of reporting for domestic transactions.

The report also discusses what makes a tax administration efficient and looks at how tax administrations work to estimate tax abuse and optimise tax collection. Indicators for measuring the efficiency of tax administrations include indicators on: the timely calculation and payment of taxes; the setting of compliance costs for taxpayers; and the use of digital tools by tax administrations. On estimates of tax compliance, tax avoidance, and tax evasion, there are billions of euro of corporate tax revenues lost due to aggressive tax planning and tax avoidance. Overall, tax revenue losses (2013 estimates) could amount to around USD 190 billion (EUR 172.7 billion) worldwide, USD 75 billion (EUR 68.2 billion) of which are in Europe. On tax evasion by individuals, estimates indicate that worldwide revenue losses due to international tax evasion on personal income tax amounts to over EUR 100 billion (0.6 % of GDP) per year. EU revenue lost due to international tax evasion was estimated at EUR 124 billion in 2018 compared with 46 billion in 2016. For corporate income taxation, studies estimate that the global scale of profit shifting has led to a total global tax-revenue loss of between USD 200 billion and 300 billion (EUR 183 billion and 274 billion).

A proposal for a directive to combat the use of shell companies for tax purposes within the EU was tabled by the European Commission in 2021 and is currently being discussed at the Council of the European Union. In addition, the continued improvement in administrative cooperation among Member States can foster information exchange across EU tax administrations and thus tackle tax fraud, tax evasion, and tax avoidance. For example, in June 2023, Council reached agreement (general approach) on amendments to the directive on administrative cooperation in the area of taxation (DAC 8) mainly concern the reporting and automatic exchange of information on revenues from crypto-assets transactions and information on advance tax rulings for the wealthiest (high-net-worth) individuals.

The report is structured as follows:

- **Chapter 1** sets the context for the rest of the report. It looks at the current macroeconomic environment and analyses the most recent developments in the tax mix. It also presents the latest tax-policy reforms announced by Member States and the main megatrends that have an impact on taxation systems. It ends by considering the framework underpinning our taxation systems and how they can be used to promote fairness, efficiency, simplicity, and stability.
- **Chapter 2** focuses on labour taxation and social-security contributions. It examines: (i) the importance of labour taxation and social-security contributions for overall tax revenues; (ii) the role of tax policy in fostering equality; (iii) the effect of inflation on progressivity and tax fairness; (iv) the potential loss of revenue stemming from globalisation and digitalisation; and (v) the fairness and taxation of capital income and capital assets.
- **Chapter 3** discusses corporate income taxation and how tax systems are securing revenues while promoting innovation.
- **Chapter 4** looks at environmental taxation and taxation to support health.
- **Chapter 5** analyses the impact of digitalisation on VAT and the role of VAT in redistribution.
- **Chapter 6** elaborates on the role of tax administrations in estimating tax abuse and optimising tax collection.
- Finally, **Chapter 7** summarises the policy discussion on the future-proof tax mix and the main takeaways.

1 MAIN DEVELOPMENTS AND KEY CHALLENGES TO TAXATION SYSTEMS

This chapter presents the developments and the challenges that may have an impact on taxation systems in the short to the longer term. It analyses the current macroeconomic environment with a special focus on inflation, it looks at the most recent developments in the tax mix, and it sets out the key megatrends that have an impact on taxation systems. It presents the framework of principles underpinning our taxation systems: fairness; efficiency and simplicity; and stability (including the impact that the new megatrends have on taxation systems). It ends by presenting the latest tax policy reforms announced by Member States. This chapter sets the scene for the analysis present in other parts of the Report.

1.1 Multiple crises and their impact on taxation policy

Recent and ongoing crises have important impact on our economies and exacerbate the challenges faced by our societies' and our taxation systems. As the Great Recession marked the previous decade, the COVID-19 pandemic profoundly shaped the economic growth trajectory in 2020, disrupting consumption, production and global value chains. It resulted in increased deficits and public debt as governments put forward policies to support households and companies and to prevent an even deeper crisis. Just as the economic recovery had started and production and consumption resumed with some vigour, Russia's war of aggression on Ukraine has contributed to a steep and long unseen increase in inflation, fuelled by energy supply concerns. Again, the EU and its Member States have been called to act in support of more vulnerable households and businesses. All these developments add further pressure to the existing fast-paced structural changes, the *so-called* megatrends, that have been reshaping our societies and economies. These megatrends include an ageing population, technological change, globalisation, climate change and increased inequalities. Along with the multiple crises, these megatrends require agile tax policy responses to address urgent fiscal and social needs and a systematic rethink of our tax systems' design to make them more sustainable and resilient.

The COVID-19 pandemic has had lasting economic and social consequences. EU economies are still recovering from the severe recession induced by the necessary pandemic-related restrictions. At the same time, unprecedented fiscal support and EU coordinated action, including EU level procurement of vaccines and the NextGenerationEU programme worth EUR 800 billion to support reforms and investments through the recovery and resilience facility (RRF) in particular, played an important role in limiting the impact of the pandemic and boosting the recovery. However, some disruptions to global value chains remained and the rise of remote work, as well as the call for more sustainable growth are set to have lasting impacts on work, production, consumption and trade patterns. Their implications for taxation policy require thorough analysis and agile policymaking. Moreover, fiscal support increased budget deficits and public debt, highlighting the need to design a tax mix and ensure high tax compliance that can generate sufficient revenue as the roll-out of national and EU-wide measures continue.

High inflation and energy security concerns are among the consequences of Russia's war of aggression against Ukraine. Due to its geographical proximity and its - albeit now diminishing - reliance on fossil fuel imports from Russia, the EU is one of the most exposed regions. Russia's limitation of supplies and, in turn, the political decision to sanction Russia, resulted in energy prices jumping to record highs. Natural gas wholesale prices (TTF benchmark) briefly peaked above 300 EUR/MWh in August 2022. Energy inflation exacerbated underlying inflationary pressures stemming from pent-up demand and disrupted global value chains

after the pandemic. The magnitude of energy inflation, in turn, has had dire distributional consequences for vulnerable households and small and medium sized companies, especially energy-intensive companies, and weighed negatively on overall economic growth. As the EU moves towards alternative energy sources, including greener sources of energy to replace Russian natural gas and oil imports, and as energy consumption declines, energy prices have declined significantly. Natural gas wholesale prices are forecast to stabilise around 50 EUR/MWh, levels that are still more than twice the pre-crisis levels (European Commission, 2023a). Moreover, Russia's war of aggression against Ukraine has also had an impact on food supplies, and food prices continue to increase sharply. In large part as a consequence of these developments, overall inflation rose sharply from 2.9 % to 9.2 % in 2022, with a peak in October [1], and is projected to moderate to 6.7 % in 2023, still far above the ECB's headline target for inflation (European Commission, 2023a). Inflation, in turn, can have several impacts on taxation systems. The various channels through which inflation can impact taxation are set out in the Box 1 below.

Box 1: Inflation and taxation

Inflation can impact public budgets and distort tax systems [2]. A tax system is not neutral towards inflation and inflation can modify, for some taxes and types of taxpayers, the incentive structure that is part of taxation systems. Inflation induced distortions might require policy design adaptations to counteract inflation and achieve desired outcomes (incentives and distribution).

Non-adjustment of tax parameters, timing and nominal definitions of the tax base can cause non-neutrality of the tax system. Non-neutrality can readily result from unadjusted nominal parameters of the tax system. Timing issues also become important since the time-lag between tax payments/refunds and liabilities incurred will change the inflation adjusted or real value of the payment to be made. In addition, as the IMF has recently shown, nominal personal income taxation (PIT) and nominal corporate income taxation (CIT) can result in changes in effective tax rates due to inflation. For example, some authors look at the interaction between the CIT and inflation to gauge the effect of inflation on the optimal capital stock and how this propagated through the tax system (Beer, Griffiths, & Klemm, 2023). A negative impact suggests that the declining value of depreciation allowances outweighs the benefit of reduced cost of capital for debt financed investments (Beer, Griffiths, & Klemm, 2023). Their empirical results on U.S. data show that investments decrease in a range between -0.06 % and -0.24 % [3] in response to a 1 pp increase in the CIT rate when inflation is at 2 %, but it is -0.45 % [4] when the price level increases by 10 %. Following the same approach [5], we also find an impact (albeit smaller) on aggregate investments in the European manufactory sector (EU-27): -0.0136 % for inflation at 2 % and -0.088 %, when inflation reaches 10 %.

The real effective tax burden can change when nominal tax parameters are not adapted to changes in real values [6]. The progressivity of the personal income tax is determined by the tax schedule. When thresholds are kept constant, inflation might push households with constant real income into higher tax brackets, resulting in bracket creep (this is further discussed in Section 2.3). Similarly, nominally defined tax allowances and credits will lose their real value under inflation. By contrast, the value of nominal specific taxes, excises, fees

[1] See: Eurostat, HICP – monthly data (annual rate of change): https://ec.europa.eu/eurostat/databrowser/view/PRC_HICP_MANR__custom_3761882/bookmark/table?lang=en&bookmarkId=4ad27e6f-358a-4a3d-82a0-587d69a833eb

[2] For a comprehensive discussion of the distortions inflation can cause to the tax system see especially (Beer, Griffiths, & Klemm, 2023) and for a complementary the discussion see (Nowotny, 1980).

[3] The authors consider four different types of investment assets: intellectual property (lower impact) construction, ICT and machinery (higher impact).

[4] This is for investment in machinery that is the asset showing the strongest impact.

[5] Though using data from 1996 to 2017 while Beer, Griffiths, & Klemm (2023) cover the period 2000-2021.

[6] The term real values is used to account for the adjustment for inflation.

and fixed penalties are eroded by inflation over time. Fixed interest rates for late payments will also decline in real value, reducing incentives for a timely payment of taxes. Inflation, if sufficiently high, could incentivise postponing tax payments.

Timing of tax payments and refunds is important for inflation since longer time lags increase the difference between nominal and real tax values. For many taxes there is a considerable time-lag between the taxable event, the assessment of the taxes due, the taxes levied and finally the taxes collected. Personal and corporate income taxes are generally levied on incomes earned some time ago. The real value of the tax will thus diminish over time. The longer tax administrations take to assess tax liabilities and enforce their collection, the larger the loss in real tax revenues.

The differential impact of inflation on different types of taxes can change the tax structure, i.e. the relative importance of different taxes. The impact of inflation on various taxes depends on the elasticity of respective taxes (defined as the percentage increase in tax revenues resulting from a 1 % change in the tax base) [7]. In general, the elasticity of income taxation tends to be higher than the elasticity of consumption taxation. Thus, income taxation could become relatively more important compared to consumption taxation in a situation of inflation. On the other hand, if prices increase first and wages follow only with a lag, the tax base of consumption taxation would increase before the tax base of income taxation, which would at least temporarily increase the relative importance of consumption taxation.

The EU and its Member States used a wide range of measures to address rising energy prices. REPowerEU is one such important EU response to energy hardship, global energy market disruption and the increased urgency to transform Europe's energy system into a less dependent and more sustainable system. Key measures include energy savings, diversification of energy supplies, and an accelerated roll-out of renewable energy to replace fossil fuels in homes, industry and power generation. Moreover, the EU has introduced common emergency measures to reduce electricity demand and to collect and redistribute the energy sector's surplus profits/revenues to final customers [8]. One redistribution approach introduced was a mandatory temporary solidarity contribution on the excess profits of businesses in the extraction (crude petroleum, natural gas, coal) and refinery sectors. EU countries have also taken temporary relief measures to mitigate the impact of high energy prices on households and heavily exposed firms. These include price and income measures with a net cost of EUR 200 billion (European Commission, 2022a). Price measures, which accounted for roughly two thirds of the measures, impact the marginal cost of energy consumption. They were quick to implement in response to a fast-changing situation but as they distort the price signal, they are not the most efficient response, especially as they were often not targeted to vulnerable households and firms. Temporary income support measures tended to be better targeted, and do not distort energy-related price signals. Implementing them on a temporary basis and better targeting allows those measures to be effective in preventing energy poverty and poverty in general from rising, while not adding to inflation and limiting the budgetary impact [9] [10].

[7] On tax elasticity see for example: (Wolswijk, 2007) .

[8] Council Regulation 2022/0289.

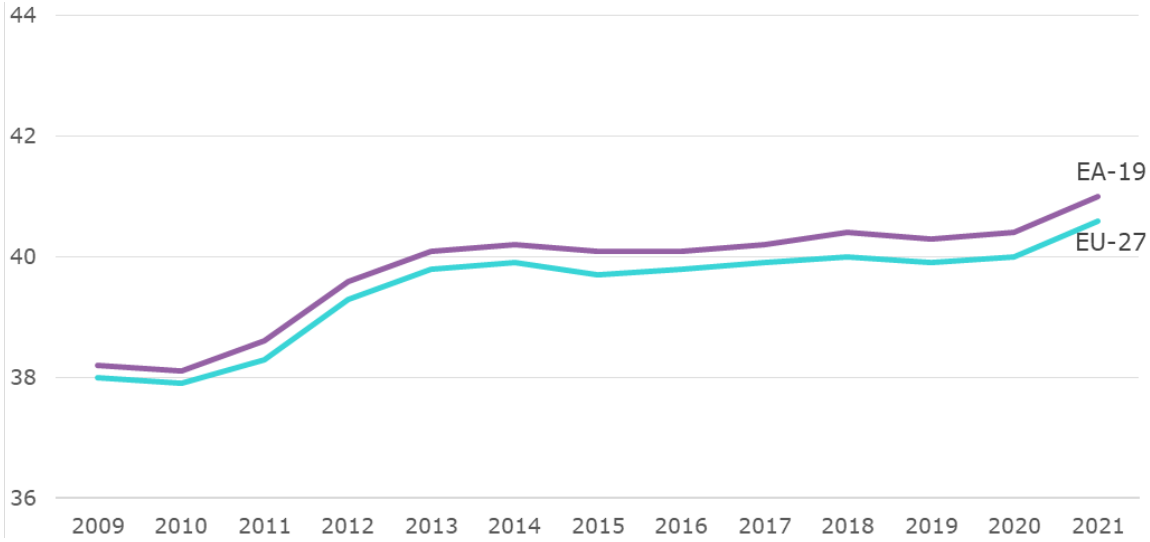
[9] COM(2022) 780 final.

[10] SWD(2022) 382 final.

1.2 Recent developments in tax revenue [11]

The overall level of taxation in the EU is relatively high compared to OECD averages. This reflects, among other things, European societies' very comprehensive welfare states, which require funding. In 2021, tax revenue increased in absolute terms in all EU Member States, in line with the strong increase in overall consumption and production. In 2021, tax revenue accounted for 40.6 % of Gross Domestic Product (GDP), that is, 0.6 percentage points (pp) more than in 2020 (see Figure 1). The tax-to-GDP ratio in the EU is higher than the OECD average of 34 %, and that of Japan (33 %) and the US (27 %). The uptick from 2020 to 2021 was probably associated with the relaxation of COVID-19 pandemic related measures restricting business and consumption activities and, in some cases, because temporary reductions in value added tax (VAT) and other temporary tax-support measures were terminated. Interestingly, overall tax revenues have grown more strongly than GDP.

FIGURE 1: TAX REVENUE (INCLUDING COMPULSORY ACTUAL SOCIAL CONTRIBUTIONS), EU-27 AND EA19, 2009–2021 (% OF GDP)



Source: Eurostat (online data code: gov_10a_taxag) (extracted June 2023).

There are important differences across countries as shown in Figure 2. In 2021, the largest tax-to-GDP ratios were registered in Denmark (48.1 %) and France (45.1 %) ahead of Belgium, Italy, Austria, Finland and Sweden (all with tax-to-GDP ratios above 42 %). The lowest ratios are observed in Ireland [12] (21.1 %) and Romania (26.5 %). Ireland's figures should be viewed with caution as the presence of large US multinationals distorts GDP figures and the tax-to GDP ratio.

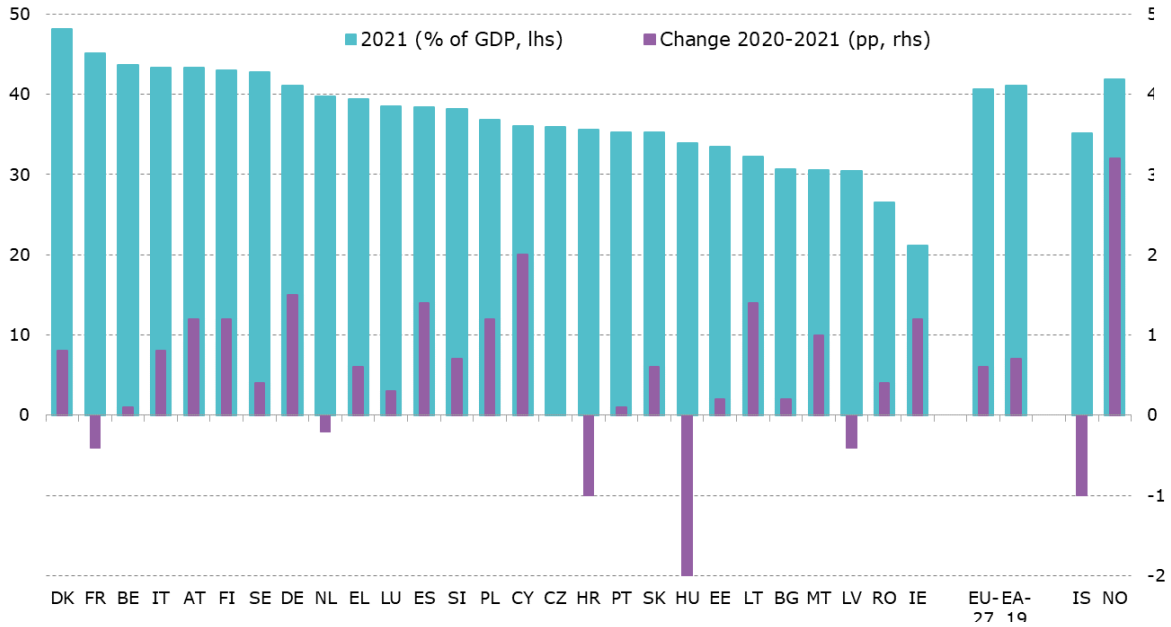
In 2021, tax revenue as percentage of GDP increased in most Member States (Figure 2) The biggest increase between 2020 and 2021 was registered in Cyprus (2 pp), followed by Germany (1.5 pp), and

[11] This section is based on the data and analysis that was previously provided in the wider Taxation Trend in the European Union Report (TTR). The TTR as a standalone report will not be produced this year. The vast majority of the taxation indicators is spread over the various chapters of the ART and available on-line (Data on Taxation Trends (europa.eu)). The definition of tax revenue employed in this section corresponds to the 'indicator 2' (Total taxes and compulsory actual social contributions payable to general government, including those for government as an employer) as defined by the Eurostat National Accounts Working Group in 2001 (General methodological notes online).

[12] Ireland's figures should be viewed with caution as the presence of large US multinationals distorts GDP figures and the tax-to GDP ratio. The Irish international economy created a disconnect between standard economic metrics, such as GDP, and developments in consumer spending and employment. To capture the underlying dynamics, the Irish Central Statistics Office publishes alternative metrics. One of the most useful is modified gross national income (GNI*) which strips out some of the volatile components of GDP.

Lithuania and Spain (1.4 pp). Decreases of the GDP ratio were registered in five Member States (Hungary, Croatia, France, Latvia and The Netherlands). Among them, the larger declines were observed in Hungary (2.1 pp) and Croatia (1 pp). Revenue changes can be driven by policy changes (i.e. tax rate and tax base changes) or by changes in the economic context (economic expansion or contraction). Tax policy reforms will further be discussed in Section 1.4 below. More detailed information on tax revenue changes per Member State is available in the country fiches online.

FIGURE 2: TAX REVENUE (INCLUDING COMPULSORY ACTUAL SOCIAL CONTRIBUTIONS), 2021 AND YEARLY CHANGE (% OF GDP LEFT, GDP PP RIGHT)

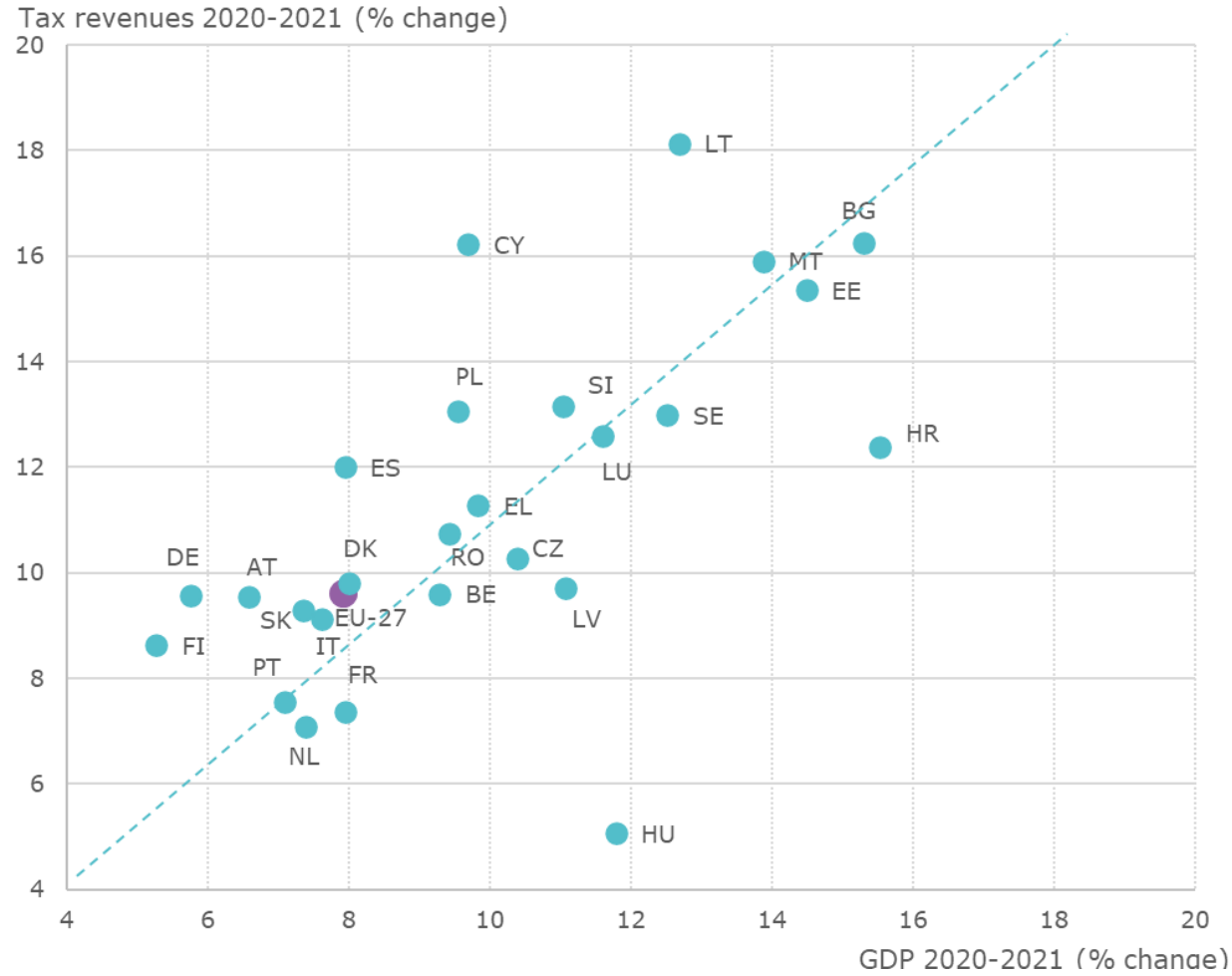


Source: Eurostat (online data code: gov_10a_taxag) (extracted June 2023).

Tax revenues as a share of GDP and their change over time may differ across countries for several reasons. Firstly, tax rates and the tax base differ across countries and therefore the ability to generate and collect tax revenues also varies. Secondly, countries have different approaches to the provision and financing of welfare services and public goods which may lead to different tax designs (e.g. what they finance and therefore how programmes are financed). Finally, the ratio of tax revenues to GDP can evolve differently depending on how GDP grows, and this may differ across countries. In periods of large economic changes, the evolution of the ratio must be analysed by looking at the specific growth of both tax revenues (numerator) and GDP (denominator). This can be easily checked by analysing Figure 3, which shows the percentage changes of both tax revenues and GDP. It is interesting to note that in 2021 revenues grew faster than GDP in most countries in the EU although there is no similar trend for all Member States (see Figure 3) [13].

[13] The dotted line has been added to ease the comprehension of the figure.

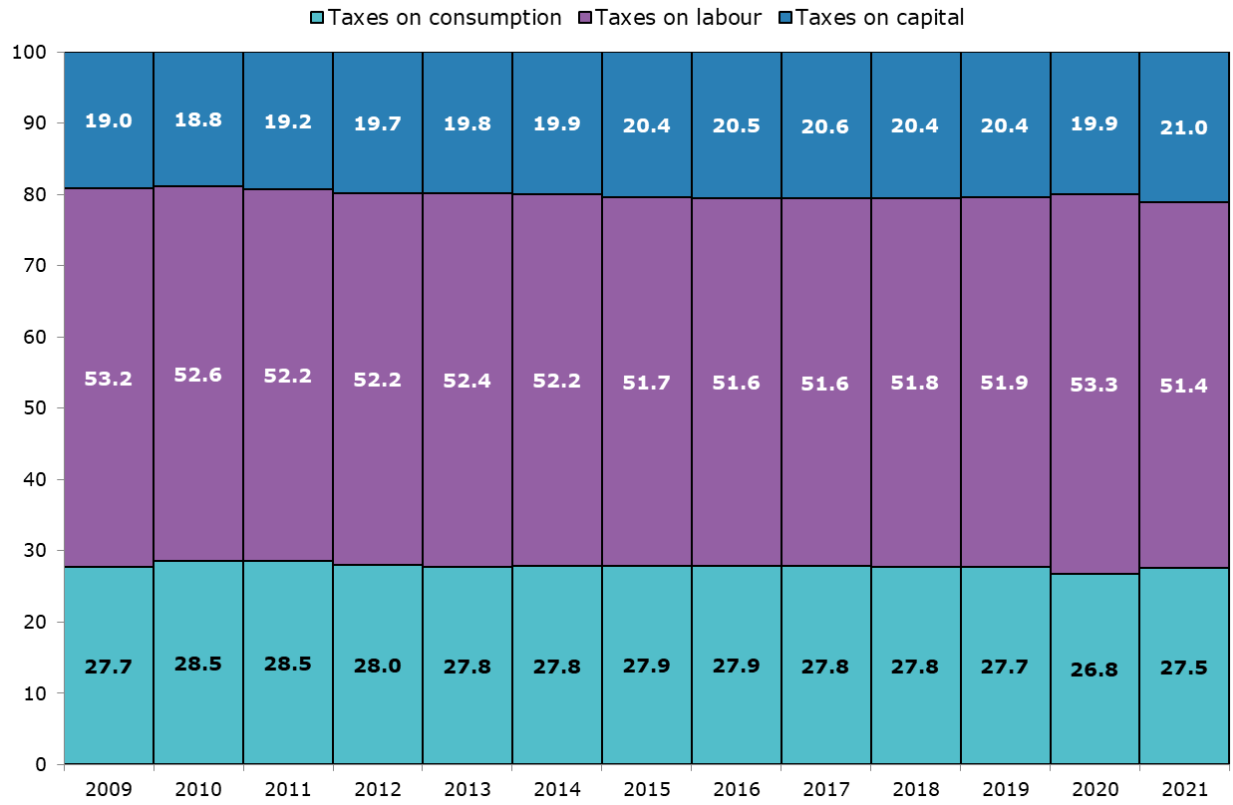
FIGURE 3: CHANGE IN GDP AND TAX REVENUES 2020-2021



Source: Eurostat (online data code: nama_10_gdp and gov_10a_taxag) (extracted June 2023).

In the EU as a whole, tax revenues derived from specific tax bases are rather stable over time. Figure 4 presents the distribution of tax revenues by tax base and its evolution since 2009. The figure shows that the EU relies heavily on labour taxation which, including social security contributions (SSCs), accounts for more than half of all EU-27 tax revenues, in any given year. Nevertheless, after some stability, the structure of EU taxes by revenue base had a pronounced change due to the COVID-19 measures implemented in 2020. This increased labour, and decreased capital and consumption, in the share of total taxes (Figure 4), in part due to the support measures put forward by governments to limit job destruction and to support households. By contrast, support measures to companies or VAT exemptions may have resulted in a lower tax base and/or tax revenues from these sources in 2020. This situation reverted in 2021, and as a result the share of capital taxes in all tax revenue increased (1.1 pp) as did the share of taxes on consumption (27.5 %), all to values similar to the pre-2020 period average. In turn, the share of labour taxes in total taxes was 51.4 % (1.9 pp drop) similar to pre-COVID-19 years. In absolute terms, tax revenues from corporate income, VAT and labour taxes and social security contributions all increased from 2020 to 2021.

FIGURE 4: EU-27 TAX REVENUE ACCORDING TO TYPE OF TAX BASE, 2009–2021 (% OF TOTAL TAXES)

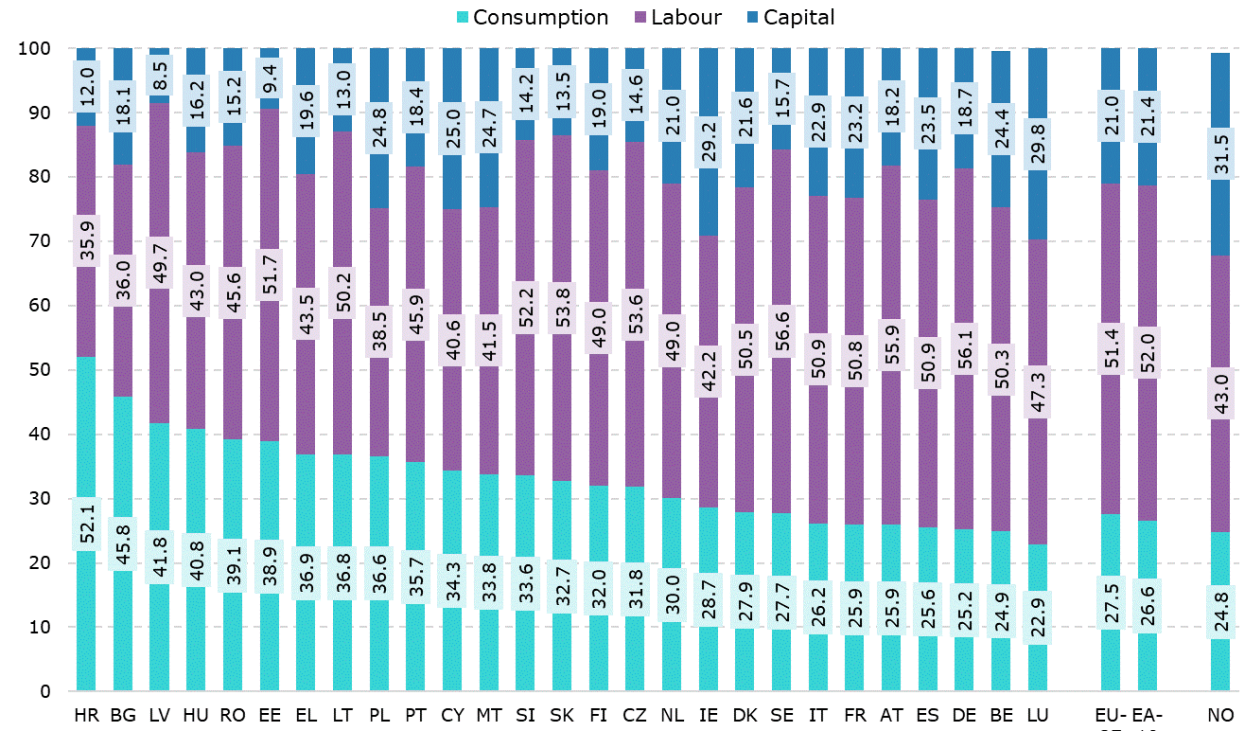


Source: European Commission, DG Taxation and Customs Union, Data on Taxation, based on Eurostat data.
Notes: In some cases, figures do not add up to 100 % because of rounding.

Considerable differences remain in the distribution of tax revenue by tax base across EU Member States. Labour taxation, including SSCs accounts for between 35.9 % to 56.6 %; consumption between 22.9 % to 52.1 %; and capital taxation 8.5 % to 29.8 % of total tax revenues. Croatia (52 %) has the highest share of consumption taxes followed by Bulgaria, Latvia and Hungary with over 40 %. Luxembourg (below 23 %) has the lowest share. Conversely, Luxembourg has the highest share of capital taxes (29.8 %), followed by Ireland (29.2 %). Estonia and Latvia with less than 10 % have the lowest share. For labour tax shares, the highest values are seen in Austria and Germany (over 55 %) while the lowest are found in Croatia and Bulgaria (36 %). Despite these differences, labour remains the largest tax base in all but these two Member States, Croatia and Bulgaria. See Figure 5 for the distribution of tax revenue by tax base and country.

The share of labour tax revenues in total revenues decreased in all Member States (2020 to 2021). There were significant decreases in Romania (3.6 pps), Spain (2.9 pps), Czechia and Germany (2.8 pps) and Netherland (2.5 pps). The sole exceptions were Malta (no change) and Latvia (0.2 pps increase). The proportion of capital tax revenue increased in most countries. Romania (2.6 pps) and the Netherlands and Czechia (2.3 pps) had the strongest increases while it dropped only in Croatia (0.8 pps) and France (0.2 pps). The share of consumption taxes followed different trends in different countries. Large increases were observed in Croatia (2.6 pps) and Poland (1.8 pps), while decreases were registered in Denmark (1.5 pps) and Finland (1.4 pps).

FIGURE 5: DISTRIBUTION OF TAX REVENUE ACCORDING TO TYPE OF TAX BASE, 2021 (% OF TOTAL TAXES)



Source: European Commission, DG Taxation and Customs Union, Data on Taxation, based on Eurostat data.

Direct and indirect taxes and social security contributions were each around a third of EU-27 revenue in 2021 (see Figure 6). Generally speaking, direct taxes are levied on taxpayers' income and property (e.g., income taxes or wealth taxes), while indirect taxes are based on transactions (e.g. VAT, excise, carbon taxes). Due to the economic recovery, revenue from indirect taxes increased by 0.6 pps to 34 % and from direct taxes by 0.4 pps to 33.6 % of total tax revenues. By contrast, social security contributions decreased by 1 pp, to 32.5 % of total revenues. In line with economic forecasts, indirect taxes saw the biggest growth during the post-pandemic recovery and are by a very small margin the largest tax revenue source.

The structure of taxes varies significantly across countries. Denmark has the highest share of direct tax revenues (67.6 %), followed by Ireland and Malta and, in turn, the share of social contributions in total tax revenue is correspondingly low in these countries. In Denmark, most welfare spending is financed by general taxation, which explains the low share of social contributions and the high share of direct taxation in total tax revenue. By contrast, the Czech and Slovak tax systems are characterised by high social contribution shares (46 % and 43.3 %, respectively), and relatively low shares of direct tax revenues. In four countries indirect taxes make up more than half of all tax revenues (Bulgaria, Croatia, Hungary and Sweden).

Changes in revenue shares could be due to external factors, institution structures or policy changes. Figure 6 depicts the year-on-year change in revenue shares. Note, it does not indicate if real tax revenues have increased or decreased. Since countries face different situations, one-year changes should be considered with caution. However, it is still interesting to note the decrease in the share of social security contributions in most (20) countries. Changes in revenue shares from direct and indirect taxes were more diverse, increasing by 2 pp or more in some countries (Croatia sees the share of indirect taxes increase by 2.4 pp) and others losing an equal share of tax revenues (the share of direct taxes decreased by 2.3 pp in Czechia).

FIGURE 6: STRUCTURE OF TAX REVENUE BY MAJOR TYPE OF TAXES, 2021 (% OF TOTAL TAXES LEFT AND PP CHANGE RIGHT AXIS)

Source: European Commission, DG Taxation and Customs Union, Data on Taxation, based on Eurostat data.

Tax revenue structure by level of government also varies widely among EU Member States. Some Member States show a high degree of fiscal centralisation while some countries with federal governments grant local regions a certain degree of fiscal autonomy (Belgium [14], Germany, Spain, Austria).

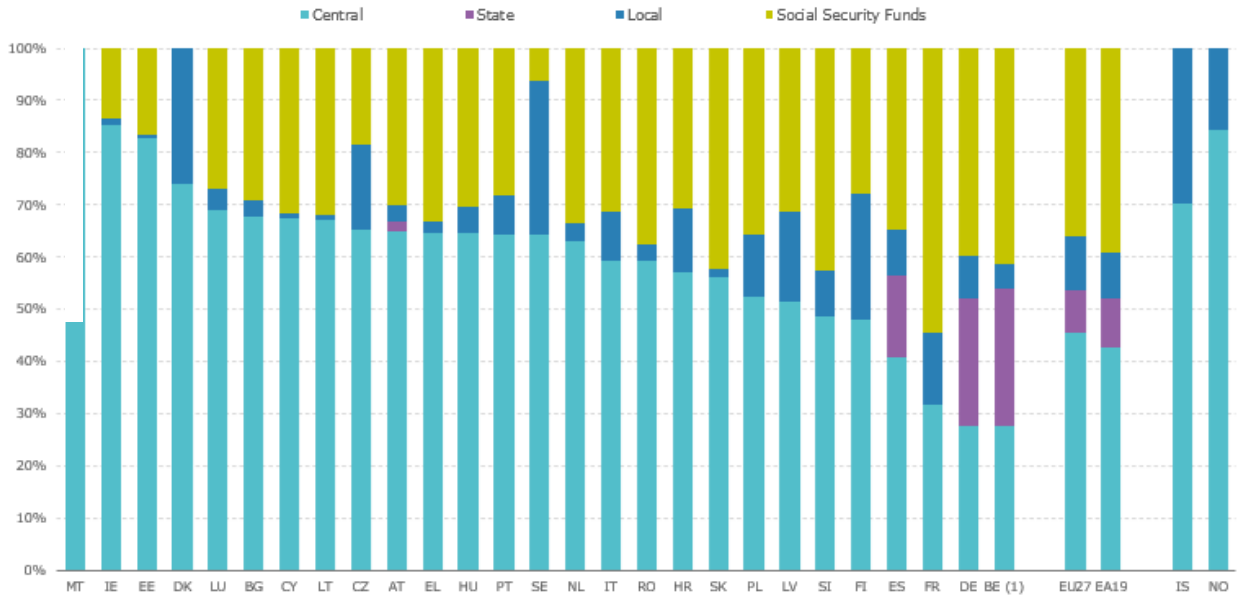
Central or federal governments claimed a 0.7 pp greater share of aggregate tax revenue, including actual SSCs (45.3 %), in 2021 compared to 2020. Figure 7 shows 18.2 % was accrued to local (regional) or state governments (0.3 pp more than in 2020). Social security funds represented 35.9 % in 2021, 1 pp less.

While in Malta the central government received all tax revenues, this is less than 30 % for Belgium and Germany. The difference pertains to the Member States' political and administrative organisation. There are federal states such as Germany and Belgium, or those with a high degree of decentralisation such Spain, with large tax revenues received by states/regions. Other administrative models provide for higher level of

[14] For Belgium, DG TAXUD calculates two alternative tax revenue allocations by subsector: 'ultimately received tax revenue' and tax revenue as transmitted under ESA 2010 rules to Eurostat. For compiling the EU and EA aggregates, the national accounts definition is used. Additional data from the National Bank of Belgium are used to provide 'ultimately received taxes' by general government subsector.

decentralisation to local governments, with respectively higher local tax revenues, notably the Nordic countries (Sweden, Denmark and Finland).

FIGURE 7: REVENUE STRUCTURE BY LEVEL OF GOVERNMENT, 2021 (% OF TOTAL TAXES)



Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.
Notes: Alternative allocation of tax revenue by subsector according to 'ultimately received revenue'. Total revenue, excluding that claimed by the EU. In national accounts following the European system of accounts 2010 (ESA 2010), the social security fund subsector is not specified for Iceland, Malta and Norway.

Commission forecasts indicate a further recovery of economic output (GDP) and tax revenue. Table 1 shows the expected tax-to-GDP developments for Member States, the EU-27 and the euro area, based on the latest available estimates. At Member State level, the tax-to-GDP ratio is expected to decrease significantly in several countries (18 Member States), mainly in Denmark (6.2 pp) Slovenia (2.9 pp) and Greece (2.5 pp) by 2024. However, the tax burden is expected to be higher in Cyprus (1.3 pp), Romania (0.9 pp) Portugal (0.5 pp) as well as in Belgium and Hungary (0.4 pp) by 2024.

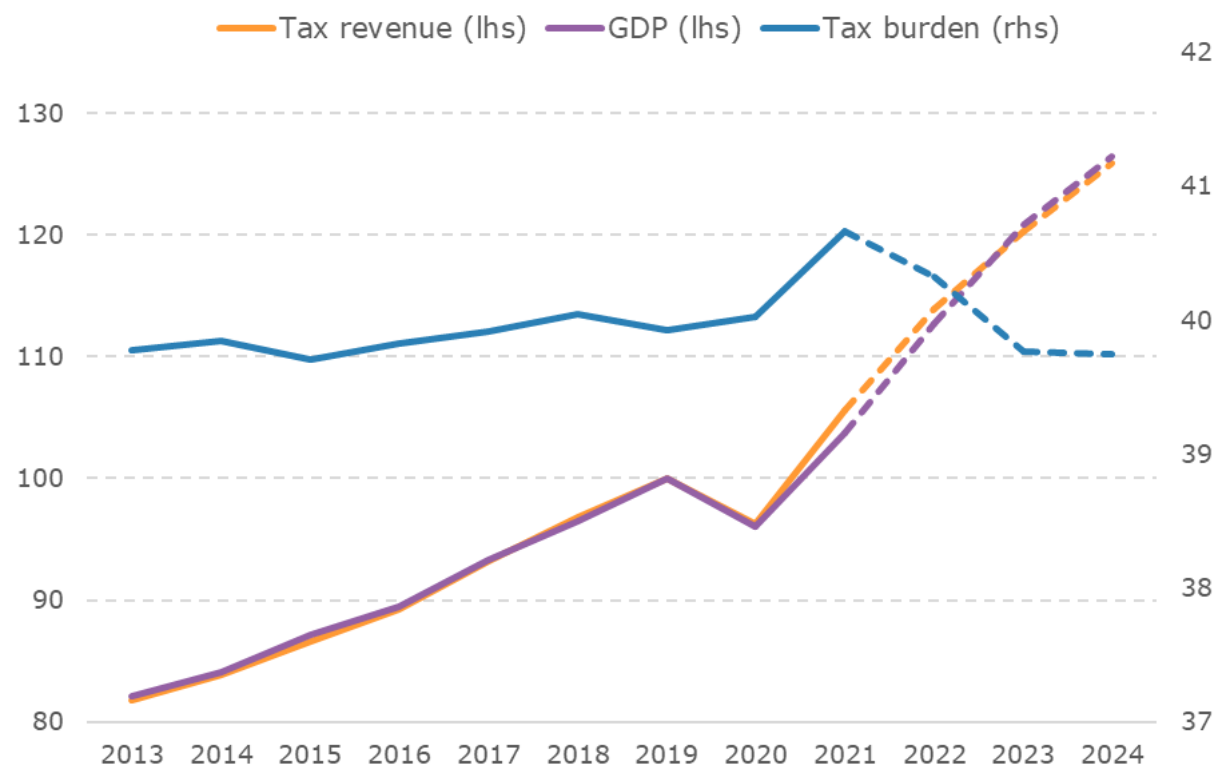
TABLE 1: TAX REVENUE (INCLUDING COMPULSORY ACTUAL SOCIAL CONTRIBUTIONS) 2019–2021 (ACTUAL) AND 2022–2024 (FORECAST) (% OF GDP)

				Forecast			Trend
	2019	2020	2021	2022	2023	2024	Diff 2021 – 2024
EU-27	39.9	40.0	40.6	40.3	39.8	39.7	-0.9
EA-19	40.3	40.4	41.0	41.1	40.4	40.5	-0.5
Belgium	43.5	43.5	43.6	43.4	43.8	44.0	0.4
Bulgaria	30.3	30.5	30.7	31.2	29.7	29.9	-0.8
Czechia	35.9	35.9	35.9	34.9	34.2	33.7	-2.2
* Denmark	47.1	47.3	48.1	42.3	42.6	41.9	-6.2
Germany	40.1	39.6	41.1	40.9	40.1	40.6	-0.5
* Estonia	33.5	33.3	33.5	32.8	32.0	31.6	-1.9
Ireland	21.9	19.9	21.1	21.1	20.2	19.8	-1.3
Greece	39.5	38.8	39.4	40.8	38.3	36.9	-2.5
Spain	34.8	37.0	38.4	38.2	38.5	38.2	-0.2
France	45.3	45.5	45.1	46.0	45.3	45.3	0.2
Croatia	37.3	36.6	35.6	36.2	36.0	35.9	0.3
Italy	42.2	42.5	43.3	43.4	42.4	42.4	-0.9
Cyprus	34.2	34.0	36.0	36.9	37.1	37.3	1.3
Latvia	30.6	30.8	30.4	30.2	29.8	29.7	-0.7
Lithuania	30.2	30.8	32.2	31.8	30.8	31.0	-1.2
* Luxembourg	39.6	38.2	38.5	38.4	37.7	36.8	-1.7
Hungary	36.3	36.0	33.9	34.6	35.4	34.3	0.4
Malta	29.8	29.5	30.5	29.3	29.2	28.8	-1.7
Netherlands	39.3	39.9	39.7	39.3	39.3	39.7	0.0
Austria	42.7	42.1	43.3	43.1	42.8	42.6	-0.7
Poland	35.2	35.6	36.8	34.3	35.5	35.1	-1.7
* Portugal	34.5	35.2	35.3	36.4	35.7	35.8	0.5
Romania	25.9	26.1	26.5	26.6	26.8	27.4	0.9
Slovenia	37.4	37.5	38.2	36.1	35.4	35.3	-2.9
* Slovakia	34.4	34.6	35.2	34.7	34.4	34.1	-1.1
Finland	42.3	41.8	43.0	43.2	42.5	42.2	-0.8
* Sweden	42.8	42.4	42.8	41.7	41.3	40.5	-2.3

Source: European Commission, DG Taxation and Customs Union, based on Eurostat and DG Economic and Financial Affairs, Annual macro-economic database.
Notes: Data from tax revenue in this table extracted in May 2023 (online data code: gov_10a_taxag)
(*) Those values for year 2022 are real values, not forecasted.

Figure 8 depicts past and recent developments and current forecasts by the Commission for tax revenues, GDP and tax burden (tax revenue as a share of GDP) until 2024. **As can be seen, the tax burden which had been fairly constant up to 2020, increased significantly during the COVID-19 pandemic, achieving its maximum in 2021. It is then expected to decrease significantly.** The contraction in economic output due to the pandemic in 2020 is clearly visible. The recovery is noticeable in 2021 and a positive upward trend for output and tax revenues is forecasted for the years 2022-2024. As a result, tax revenues as a share of GDP are expected to decrease in coming years and the ratio is expected to go back to the value of a decade ago.

FIGURE 8: EU-27 TAX BURDEN, TAX REVENUE AND GDP (2013-2021), FORECAST (2022-2024) (INDEX 2019=100, LEFT-HAND SIDE, % OF GDP, RIGHT-SIDE)



Source: European Commission, DG Taxation and Customs Union, based on DG Economic and Financial Affairs, Annual macro-economic database (extracted May 2023).
Notes: Dashed lines indicate forecasts. Tax revenues and Tax burden excluding imputed social contributions.

1.3 Megatrends: how long-term structural changes may impact the EU's tax systems

Our economies and societies are undergoing important changes induced by wide-ranging structural shifts across global economies, so-called megatrends. These include demographic change, labour market shifts, digitalisation, globalisation, climate change, inequality as well as significant changes in global trade (e.g., supply-chain shifts, offshoring versus onshoring, etc.). All such trends and structural changes have important effects on, among others, production processes, consumption decisions, labour market movements, migration, as well as political economy or governance-related matters. These tectonic structural changes affect the sustainability of our tax systems, creating a growing urgency to be aligned with ongoing and future economic, demographic, and social developments.

Demographic change

The EU's population is ageing and projected to start declining by 2030. This forecast is due to longer life expectancies and lower fertility rates and accounts for migration trends. Demographic ageing is set to bring about an imminent and significant change in society and the economy for which the EU is not yet well prepared. The strong reliance on labour taxation to generate revenues necessitates policy change without which, ceteris paribus, the declining share of the working age population will reduce tax revenues and put the pension and

healthcare systems' sustainability, and more broadly our welfare states at risk. These issues are discussed in detail in section 2.1.1.

Technological advancement, especially digitalisation…

Technological advancement and digitalisation are also reshaping labour markets. The increasing automation of labour markets can pose a risk to the sustainability of labour tax revenues if there is a capital labour substitution. The development of artificial intelligence, for example, could see a disappearance of certain jobs (or an acceleration of it). Digitalisation can also enable new ways of work to be created, such as teleworking, including working from abroad, and platform work, which may help create employment. However, it can also bring along new tax challenges, for example in terms of calculating the tax base (see section 2.1.1 for more details).

Digitalisation produces new developments such as big data and crypto assets, both offering opportunities and challenges. On the one hand, the generation of big data offers opportunities for better and more advanced risk assessment capabilities and foresight systems in taxation, and digitalisation of tax procedures can simplify information flows between tax administrations and taxpayers improving the efficiency of tax procedures. On the other hand, the increasing economic relevance of crypto assets, although currently experiencing turbulences, is creating new questions on how best to tax such assets and their derived income (see section 6.3). In particular, the decentralised nature of these assets enhances the risk of non-taxation, as it is often unclear where the assets are produced, traded, or located and to whom they are distributed.

…which amplifies another megatrend: globalisation

Globalisation and technological advancement are two megatrends that complement and amplify each other. Technological change has been one of the main drivers of globalisation and related tax consequences. It is widening markets and prompting higher levels of labour and capital mobility but also facilitates aggressive tax planning (ATP). However, recent developments, such as COVID-19 pandemic and Russia's war of aggression against Ukraine, have increased concerns over the lack of resilience of EU economies due to excessive dependence on foreign suppliers. The resulting focus on re-onshoring of production capacity and stronger reliance on EU inputs may mean that globalisation could thus take another shape in the future, with an increased focus on regional economic integration.

While globalisation and technological advancement have increased workers' access to international labour markets (see section 2.1.1), capital remains more mobile. The increased use of intangible assets in global value chains and the ease of locating and relocating them across jurisdictions have enabled multinational companies to navigate different jurisdictions' tax rules, often considerably reducing their corporate tax liabilities. ATP creates advantages for multinational enterprises vis-à-vis their competitors. Jurisdictions were offering advantageous tax regimes to either attract or retain the increasingly mobile corporate tax bases. These developments led the OECD to initiate its global efforts on base erosion and profit shifting (BEPS), resulting in the Inclusive Framework two pillar approach (see section 3.4.1.) agreed in October 2021.

Indeed, the core of the current international corporate tax system was designed more than a century ago. It was based on the principles of tax residence- and source-based taxation. With companies being able to register in one country while conducting large parts of their activities in another, the principles underlying corporate taxation increasingly do not fit today's economic, social, and demographic circumstances.

Economic integration due to globalisation has also increased national tax policy effects on other countries. This has in general spurred tax competition which may have led to the general reduction of CIT rates that we can observe. In some cases, some forms of tax competition have also developed regarding PIT rates with tax regimes becoming potentially and increasingly more conducive to ATP. As the world becomes ever more digital and integrated and interdependent, questions arise regarding the fairness, growth-friendliness, and sustainability of tax revenues, as well as the underlying tax sovereignty, as each jurisdiction is constrained by the policy choices of others.

Inequalities

Inequality is of increasing concern in the EU and beyond. While globalisation and technological advancement have brought significant progress and increased overall wealth globally, they have also led to growing disparities between richer and poorer individuals. According to data from the World Inequality Database, the top 1 % of the world's population now holds over 50 % of the world's wealth. The COVID-19 pandemic has exposed and exacerbated many pre-existing inequalities, including those related to income, education, health, and access to social protection. The economic fallout of the pandemic has hit low-income and precarious workers, as well as women and minorities, particularly hard.

Inequalities in the EU are generally less pronounced than in the rest of the world. After a strong increase between the 1980s and the mid-90s, income inequalities (as measured by the Gini coefficient) in the EU decreased until the 2010s [(15)] and have since remained relatively stable [(16)]. However, income inequality dynamics vary widely across regions and the EU average hides an increase in Southern Europe, notably during the financial and sovereign debt crises [(17)].

Income inequalities disproportionately affect certain groups. For example, women are disproportionately affected by income inequality. The EU gender pay gap has been narrowing, albeit at a slow pace. The proportion of people at risk of poverty or social exclusion has also declined slightly, from 24.5 % in 2008 to 21.7 % in 2021, according to Eurostat. However, this improvement has been uneven across countries and population groups, with persistent gaps between Member States and high levels of poverty among children and single-parent households. Further, persistent at-risk-of-poverty rates declined over the period to 11.9 % in 2020 from 13.7 % in 2011.

Climate change and environmental degradation

Climate change and environmental degradation issues are more pressing than ever. Global warming, deforestation and the overuse of natural resources call for immediate action. Climate change with more frequent and more severe extreme weather events will impact all economies. The green transition has costs as the convergence towards net-zero emissions will require new investments and will increasingly lead to stranded assets (i.e., investments in carbon-intensive assets, such as fossil fuel, will lose their value) in the coming decades. Water and air pollution and biodiversity loss are also pressing environmental issues in the EU.

The EU has set ambitious objectives to face these challenges. The European Green Deal [(18)] aims to ensure zero net emissions of greenhouse gases by 2050 through a just and inclusive transition with economic growth decoupled from resource use.

Taxation has a clear role to play in influencing behaviours to fight climate change and environmental degradation. Environmental taxation can help correct negative externalities by internalising their cost (i.e. the 'polluter pays' principle). Tax policy in this area can be used to influence behaviours, by either incentivising (e.g. tax breaks) or disincentivising (e.g. taxing) certain behaviours with environmental impacts. The use of taxation and similar tools to influence incentives and behaviour is at the heart of EU's initiatives such as the emission trading system (ETS) or the carbon border adjustment mechanism (CBAM). The revenue effect of environmental taxation can be uncertain because if taxes successfully change behaviour the tax revenue can decrease.

[(15)] https://www.bruegel.org/blog-post/income-inequality-has-been-falling-eu

[(16)] https://ec.europa.eu/eurostat/databrowser/view/tessi190/default/table

[(17)] https://joint-research-centre.ec.europa.eu/jrc-mission-statement-work-programme/facts4eufuture/beyond-averages-fairness-economy-works-people/income-inequality-dynamics-within-europe-and-across-macro-regions_en

[(18)] COM/2019/640 final.

1.4 Principles to underpin tax systems and stabilise tax revenues

The next chapters will look at different types of taxes in the context just set out i.e. that of recent multiple crisis and the important changes induced by wide-ranging structural shifts that our economies and societies are facing. The assessment of the various types of taxes will be guided by a set of principles as described below. These principles help to explain the assessment provided in the 2023 edition of this report. The subsections below group taxation systems' aspirations under broad principles: fairness, efficiency and simplicity, and stability. These are relevant for how the revenue is collected. The other side of the coin is how this revenue is used and to what effect, nonetheless it still impacts citizens' willingness to comply with and not avoid, paying tax.

Taxation is a tool to collect revenues but also to influence behaviour. The primary function of taxation is to collect revenue to fund societally shared services such as infrastructures like roads, defence, education and health services as well as other less obvious functions such as economic stabilisation measures. These aim to protect or maximise citizens' wellbeing, opportunities, and outcomes in a fair manner. Beyond this revenue-raising function, there is an increasing focus on taxation as a tool to encourage or discourage companies' and citizens' behaviours as deemed appropriate. Taxation can be used to induce healthier behaviour while also raising revenue to offset costs associated with certain behaviours e.g., taxes on tobacco can induce a reduction in smoking while increasing revenue to offset healthcare costs associated with smoking or drinking (World Health Organization, 2017). Taxation can also incentivise research and innovation activities, thus producing economic benefits such as increased GDP, employment, enhanced human capital and so on. This, in turn, shows the importance of clever tax design to induce the desired behaviour and avoid or minimise unintended negative consequences. For example, joint taxation systems introduced in support of families are shown to have adverse effects on women's labour market attachment.

1.4.1 Fairness of the tax system

Striving for fair taxation systems is in line with the EU's broader ambition to achieve fairness, as outlined in the European Pillar of Social Rights. As President von der Leyen indicated in her political guidelines: "*I want Europe to strive for more when it comes to social fairness and prosperity. This is our Union's founding promise*". Perceived fairness has several implications for the sustainability and the success of taxation systems. What is considered fair and the extent to which fairness exists, differs across societies and, perceptions are linked to several factors including knowledge/awareness and perspectives/culture. Research by the Commission's Joint Research Centre (JRC) found a positive relationship between the extent to which respondents viewed their society as fair (proxied by its [the society's] equality indicators) and an individual's happiness (Berlingieri, et al., 2023). For the authors, fair taxation is broadly understood as setting tax levels as needed for transfers and services, etc., and favours progressivity or paying according to ones' means. EU citizens largely perceive (81 %) income inequalities as too great. Further, they are in support of greater redistribution (77 %) with strong correlation between support for redistribution and support for more social spending. Also, 51 % are in favour of increasing taxes or SSCs to achieve these aims. For example, the Eurobarometer 529 [(19)] shows that most respondents agree or strongly agree (67 %) that it is important that governments tax the rich to support the poor, whilst 29 % disagreed. Compared to the previous 2019 Eurobarometer, EU citizens were less likely to see their life as fair in 2022. They still supported increased spending most notably on health, long-term care and education and expressed willingness to pay for public services.

Beyond considerations of tax fairness within societies, the perceived fairness of the tax system on a global level has become an increasingly important feature of tax policy. While Member States have recognised "*the need for distributing general wealth more fairly, to support countries and people in need*" (European Union, 2023), it has been widely acknowledged that the international tax system must benefit

[(19)] https://europa.eu/eurobarometer/surveys/detail/2652

developed and developing countries alike. Numerous policy instruments have been developed in that regard, including supporting countries in domestic resource mobilisation, incorporating tax revenue considerations of developing countries in different policy fields (e.g. in trade policy and bilateral tax treaty negotiations), and actively strengthening partnerships and international cooperation in tax matters. In addition, to disincentivise unfair tax practices, the EU has started to strengthen good tax governance clauses in agreements with third countries and linked EU funds to good tax practices [20]. These efforts have made the EU a key contributor in creating a global level-playing field in tax matters, and thus directly responding to fairness considerations in international taxation.

1.4.2 Efficiency and simplicity of the tax system

The tax system's design should minimise administrative costs. The simplicity of the tax system can enhance compliance by making it easier to understand and fulfil tax rules. Simplicity could also enhance transparency and perceived fairness. Automating processes can help to simplify tax procedures. Efficiency requires collecting the revenue needed whilst minimising the cost for the administrations, citizens and businesses, processing or paying taxes. Furthermore, investing in strategic, value for money spending should ensure services and infrastructure that maximise outcomes such as highly skilled, educated and healthy populations. Optimising outcomes for recipients as individuals and as a society can be achieved through redistribution. Redistribution is realised in several ways, including through social protection and insurance e.g., to support people with disabilities or in retirement. The efficiency of taxation may also be measured through its ability to achieve a well-functioning market by stimulating desirable investments whilst discouraging those less so. For example, the EU is making efforts to promote clean and green solutions to address environmental threats or support the employment of workers with lower labour market attachments etc.

However, achieving these different ambitions through the tax system could compromise other underlying taxation principles by, for example making the system more complex. Simplicity can at the same time be either the solution or the driver of intended loopholes that facilitate tax avoidance, evasion and other forms of non-compliance, contradicting in turn the system's efficiency and fairness. A balance must therefore be struck among the different principles presented here.

1.4.3 Stable tax revenues

Stability of tax revenues is particularly pertinent given the developments and trends above. As said, population ageing, digitalisation, globalisation climate change, and increasing inequality combined with the recent pandemic and Russia's war of aggression on Ukraine all challenge tax systems ability to generate all necessary resources. Growing societal needs conflict with the need to capture fair shares of revenue to be used for social protection and public expenditure programmes. There might be a need to search for new sources, if other revenue streams dwindle and to adapt the design of taxation systems' to address these trends and remain fair, efficient and sustainable. Identifying and strategically addressing these developments will be crucial for the on-going viability and stability tax systems need to continue improving on its positive societal impacts in the decades to come.

For the EU, a joined-up, common marketplace focused on upward socio-economic convergence, requires stable taxations systems. They should work to mutually reinforce each other and not encourage a race to the bottom. This applies beyond the EU's borders as businesses and citizens can increasingly choose to relocate to maximise their gain (see chapter 2). Therefore, beyond ensuring an attractive market providing opportunities for thriving and flourishing, the EU should continue to drive beneficial taxation practices worldwide.

[20] COM(2020) 313 final.

1.5 Recent reforms announced by Member States

The Commission together with the OECD run a joint questionnaire annually to map the tax reforms in Member States. It is interesting to look at the changes in revenues described above in conjunction with the tax reforms implemented by Member States as this can give help explaining the possible evolution of tax revenues and the tax burden in Member States.

Table 2 provides an overview of the list of reforms that Member States have announced in 2022. As can be seen, Member States have proposed a wide range of reforms across many types of taxes and both in terms of direct and indirect taxation, from PIT to CIT, from VAT to environmental taxation. Many reforms focus on environmental taxes and VAT probably related to the energy crisis and the move towards more sustainable economy (see chapter 4 for more detail on the environmental taxation). PIT related reforms also took place due to the economic recovery after the COVID-19 pandemic as the temporary measures taken during the COVID-19 pandemic have slowly been adjusted back to those of normal times. For more information on these reforms, please refer to the country fiches available online and accompanying this Report.

TABLE 2: LATEST TAX REFORMS IN MEMBER STATES AS REPORTED BY MEMBER STATES IN THE JOINT EC/OECD QUESTIONNAIRE

Measure	Countries
Personal income tax: Earned income	AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, NL, PL, PT, RO, SE, SI
Personal income tax: Savings	DE, DK, ES, NL, RO, SI
Personal income tax: Unincorporated businesses/Self-employment income	AT, CZ, DE, ES, IT, NL, PL, RO, SI
Taxes on payroll and workforce	AT, HU
Social security contributions: Employee	BE, DE, EL ES, IT, RO, SK
Social security contributions: Self-employed	ES, FR
Social security contributions: Employer	BE, DE, EL, ES, FR, NL, SE, SK
Corporate income tax	AT, BE, CY, CZ, DE, ES, FI, FR, HU, IE, IT, LU, LV, NL, PL, PT
Other corporate taxes	BG, CY, DE, DK, FI, FR, HU, IT, PL, SK
Value-added tax	AT, BE, BG, CY, CZ, DE, EE, EL, ES, FI, FR, HR, IE, IT, LT, LU, NL, PL, PT, RO, SE, SK
Environmentally-related taxes	AT, BE, BG, DE, DK, EE, EL, ES, FI, FR, IE, IT, LT, NL, PT, RO, SE
Health-related taxes	BG, HU, IE, IT, LU, NL, SE, SI
Other excise duties	BE, CZ, EL, FR, HU, PT, SI, SK
Estate duties/inheritances/gift taxes	EL, NL, PL
Transaction taxes (movable and immovable property)	EL, PT
Recurrent taxes on immovable property (business and residential)	DK, EL, ES, IE, NL, PT, RO,
Multiple taxes	CY, DE, IT, PT, SE
Other taxes	CY, CZ, EL, FI, FR, HR, HU, IE, LV, NL, SK

2 FAIR AND EFFECTIVE PERSONAL INCOME TAXATION

This chapter focuses on the role of taxation in achieving societal goals and preventing excessive inequalities, with a focus on personal income taxation. The first section 2.1 demonstrates the importance of labour taxation and social security contributions for overall tax revenues and related incentive effects for labour market participation. It also discusses how demographic change can 'threaten' this source of tax revenues while at the same time creating increasing funding demands. Section 2.2 then emphasises the role of labour taxation for welfare systems and the achievement of distributional objectives by highlighting the importance of tax policy in fostering equality. The following section 2.3 considers distributional implications arising from non-neutrality of tax systems to inflation. The potential for revenue losses and tax competition due to preferential personal income tax systems are discussed in Section 2.4. This section zooms in on tax regimes designed to attract a widening group of highly qualified and highly mobile individuals and considers situations where the place of residence and the place of work diverge. The final Section 2.5 discusses the treatment of capital incomes in personal income taxation and evaluates the role that wealth, inheritance and gift taxes can play for a future-proof tax mix.

Labour taxation (i.e. the taxation of employment income and social security contributions) contributes, on average, just over half of the tax revenues in the EU. EU Member States use these funds to provide a wide range of services, including public programmes to assure minimum living standards for those in need, minimise inequality and maximise equality of opportunity, such as healthcare and education, support R&D and public infrastructure (roads and public transport). They also use such funds to govern and help manage vital resources such as the environment and many natural resources. In addition to being an important source of public revenues, the design of employment income taxation is crucial due to possible important implications for labour market participation. This is because as an excessive tax burden may reduce incentives to work. In this context, the chapter shows that the tax burden for low- and second earners has declined in several Member States, improving work incentives in a number of cases.

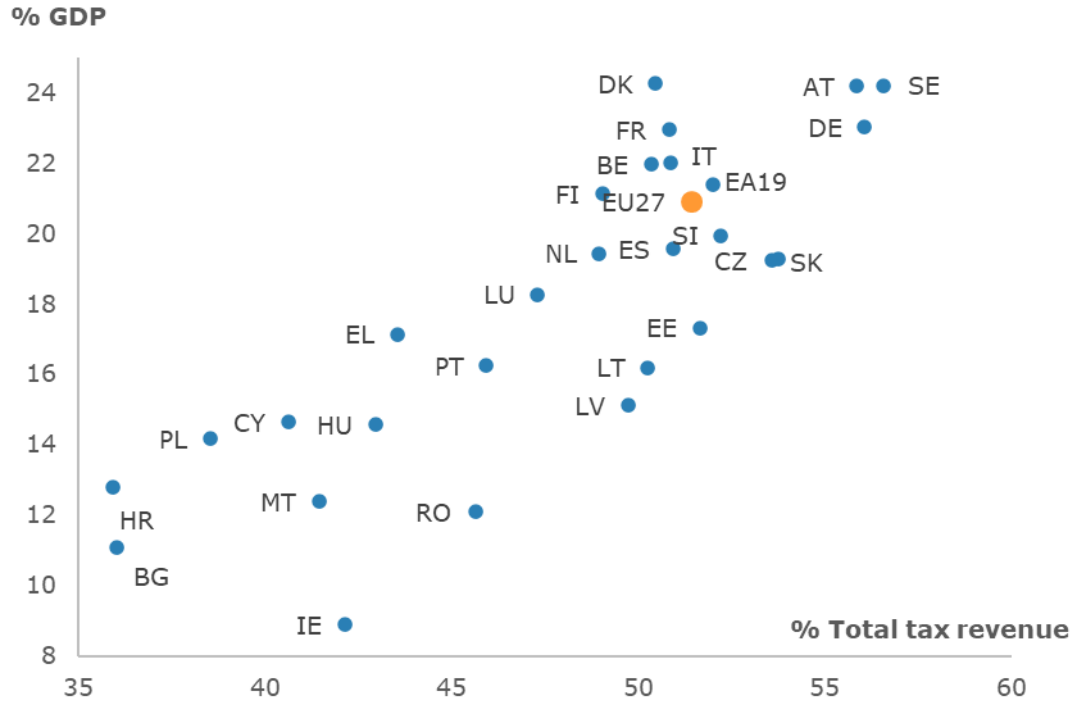
Progressive labour taxation is an important component of income redistribution and provides the revenues for funding important public services that also mitigate inequality. Nevertheless, in some Member States, labour taxation may have become less progressive, and some features (including joint systems or personal capital income taxation) are not gender neutral or income neutral. Using the tax system directly (via its design) and indirectly (via the use of the revenues generated) is shown to be crucial to address inequality and poverty. Inequality and poverty are associated with a range of negative individual and societal outcomes such as education levels, employment, productivity, and health. These all can unfavourably impact general wellbeing and material living conditions in the EU. The tax and benefit systems thus play an important role in fostering equality and achieving higher levels of wellbeing and better health. Taxation provides the funds to invest in people and capital for our economies to prosper and to address current and future needs of our societies.

Wide-ranging structural changes such as ageing, digitalisation and globalisation pose important challenges to the ability of labour taxation to generate the funds governments need. As working age population declines and labour becomes more mobile the current principles of labour taxation may be called into question.

2.1 Labour taxation including Social Security Contributions

A large proportion of tax revenues in the EU is collected through labour taxation including social security contributions. In 2021, it accounted for 51.4 % of tax revenues in the EU (Figure 9). Figure 9 shows the burden of labour taxation in the EU is highest in Denmark, Sweden, Austria, Germany, France, Italy, and Belgium, ranging between roughly 24 % and 22 % of GDP. By contrast, Ireland, Bulgaria, Romania, Malta, and Croatia levy lowest labour taxes (just 9-13 % of GDP). Revenues from labour taxation as a share of total revenues declined from 53.3 %, in 2020 to 51.4 % in 2021, in line with the economic recovery and an increase in production and consumption in several sectors (e.g., services), which led to an increase in corporate and consumption tax revenues. As a share of GDP, revenues from labour taxation dropped by 0.42 percentage points since 2020. However, it is important to remark that, in absolute terms, tax revenues from labour have increased by 5.7 % between 2020 and 2021, while GDP grew by 7.9 %. Both revenues indicators show values in line with pre-COVID-19 trends.

FIGURE 9 : LABOUR TAXATION 2021

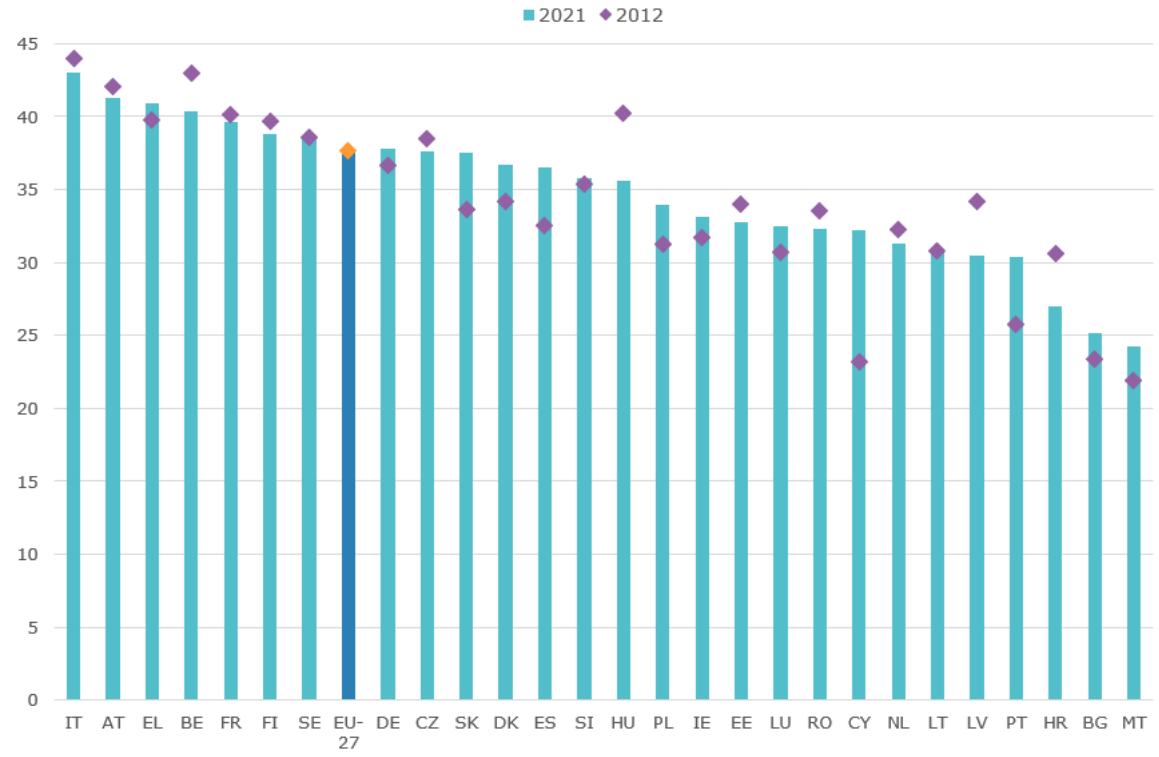


Source: European Commission, DG Taxation and Customs Union, Data on Taxation Trends (europa.eu).

The implicit tax rate (ITR) on labour has remained stable in the EU in the last decade. The implicit tax rate on labour income combines all taxes levied on labour, namely personal income tax, employees' and employers' Social Security Contributions, and payroll taxes [21]. The ITR varies across Member States (Figure 10). The EU average has remained stable at almost 38 % over the last ten years, while there have been large changes in a few Member States, such as the large increases in Cyprus and Greece and the significant decreases in Belgium, Latvia and Hungary.

[21] The ITR is computed by dividing the sum of all labour taxes and employees' and employers' SSCs by the total tax base, i.e. compensation of employees and the wage bill and payroll taxes.

FIGURE 10: IMPLICIT TAX RATE ON LABOUR, 2021 AND 2012



Source: European Commission, DG Taxation and Customs Union, Data on Taxation Trends (europa.eu).

2.1.1 The impact of labour taxation on labour market participation and growth

Labour taxation influences economic growth by affecting the incentives to work and hire. The European Commission and other international organisations such as the OECD and IMF have argued that shifting some of the tax burden from labour taxation towards consumption and property taxation could foster economic growth. This position is part of large debate involving academic scholars and policy makers on the implications of the structure of taxation (see Box 2). The next paragraphs will show the tax burden for different groups and how it impacts their labour market decisions.

Box 2: Taxation Structure and Growth: The role of labour taxation

The tax system, especially in modern and complex economies, is never neutral. Taxes change relative prices, which, in turn, change economic actors' behaviour. Taxes provide incentives or disincentives, affecting choices of workers and firms. A given level of revenue collected by the state could have very different impacts on economic growth and income inequality, depending on the structural design of the tax-benefit system. Indeed, the structure of taxation has important economic and social implications. In this context, a shift away from labour taxation is commonly considered a positive stimulus in the long run to the economy. In the economic literature, there are two main strands of research that deal with the link between fiscal policy and economic growth. One approach typically looks at the marginal impact of specific tax instruments, while the other one focuses on the tax composition, assessing the impact of a change of one tax under the assumption of revenue-neutrality assured through the other taxes in the tax mix.

1) Under the first approach, some authors look at EU Member States' tax systems and find that a tax shift away from labour can have a positive impact on the economy whilst emphasising potential

spill-over effects on equality (Astarita, Kalyva, Leodolter, & Princen, 2018)**.** Other authors, through empirical analysis, find that tax cuts on income and consumption are growth-enhancing (Durante, 2021). A few studies estimate growth elasticities and find that a one percentage point decrease of income tax, increases GDP by between 0.78 % and 6.6 % (Mertens & Montiel Olea, 2018); (Zidar, 2019); (Nguyen, Onnis, & Rossi, 2021). A meta-analysis including 49 studies on OECD countries finds that a 10 % decrease in distortionary taxes, or taxes that fund unproductive investment [22], increase GDP growth by 0.2 % (Alinaghi & Reed, 2021). Other authors still show that a tax structure that relies more on direct taxes is more efficient as it is more supportive to economic growth in the EU (Stoilova & Patonov, 2013).

2) Under the second approach, some authors use an error correction model (ECM) and, imposing the revenue-neutrality in a sample of OECD countries, find that income taxes are associated with lower economic growth than taxes on consumption and property (Arnold J. M., 2008). This finding supports the notion of a growth-enhancing shift from direct to indirect taxation. It has been generally confirmed by other scholars (Arnold, et al., 2011); (Acosta-Ormaechea, Sola, & Yoo, 2019), but questioned by others (Baiardi, Profeta, & Puglisi, 2019), who challenge the robustness of the standard results, showing that many relationships are no longer significant if standard errors are clustered at country level.

Some other authors (Peschner & Piroli, 2023) **analysed EU-27 Member States over the period 1995-2019 following the second approach and found reducing the share of personal income taxes in total tax revenue positively associated with an increase in output growth over the long term.** The authors could confirm these findings through simulations with the Commission's Labour Market Model [23]: reducing labour taxes for both employees and employers while increasing VAT leads to higher output, more investment, and more jobs.

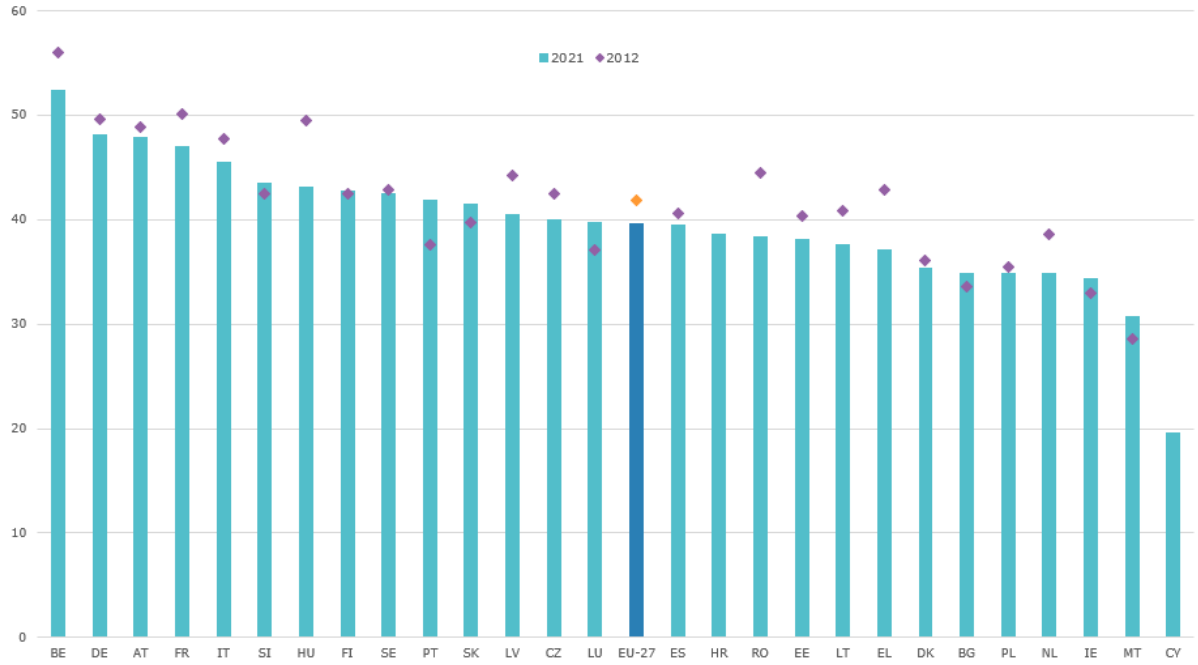
Labour taxation impacts labour market decisions. Despite recent declines, the tax wedge between workers' net pay and employers' labour costs remains high in the EU. The tax wedge indicates the tax and contribution burden borne by employers and employees. A tax wedge of 30 % for example, indicates that 30 % of the total labour costs result from taxation and social security contributions. High tax wedges are seen to negatively influence both workers' incentive to take up and keep work [24]. From the employers' perspective, they reduce hiring incentives as they increase labour costs. The EU's average tax wedge for a single person on an average wage declined (by about 2 pp) since 2012, to 39.6 % in 2021 (see Figure 11) but remains considerably above the OECD's average of 34.6 %. Since 2012, 17 EU Member States recorded tax wedge declines, notably Hungary, Romania and Greece. Conversely, for the same period, significant increases occurred in Portugal, Luxembourg, Malta, and Slovakia (Figure 11).

[22] Following (Kneller, Bleaney, & Gemmell, 1999), the authors classify the taxes on income and profit as distortionary and the social security and welfare expenditures as unproductive investments.

[23] The Labour Market Model (LMM) is a computable general-equilibrium model developed for the European Commission and used by Commission Services for different analyses of the labour market.

[24] The decision of hours worked is driven by effective marginal tax rates. These are discussed in Box 3.

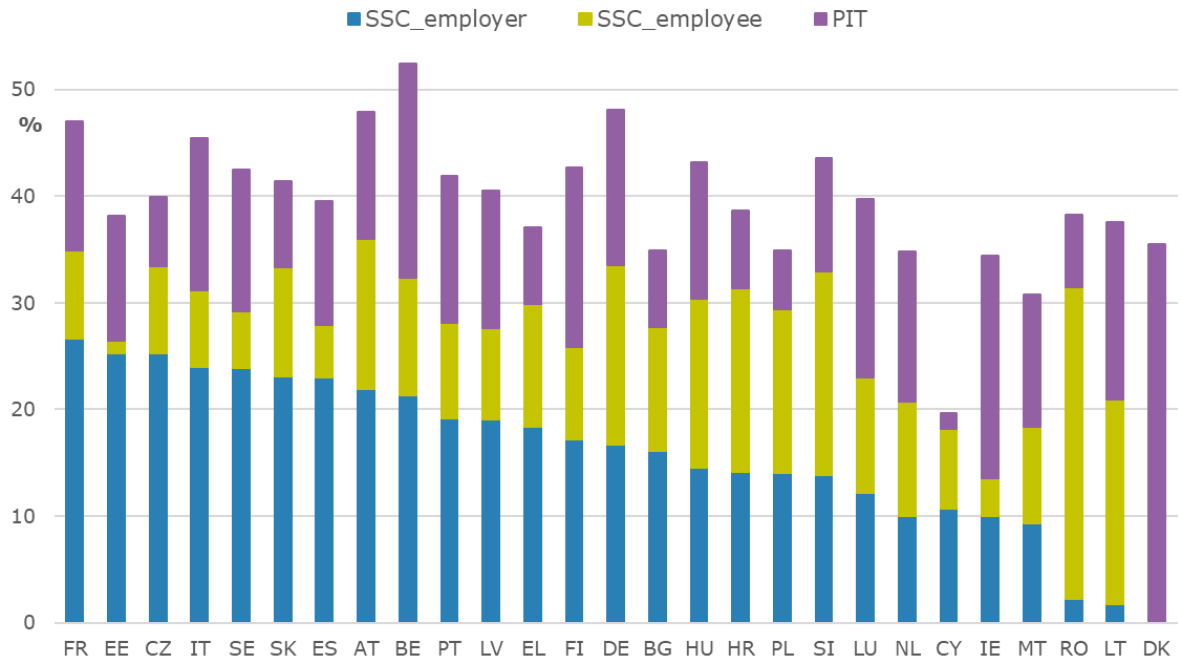
FIGURE 11: TAX WEDGE FOR A SINGLE PERSON ON AVERAGE WAGE, 2021 AND 2012



Source: European Commission, DG Taxation and Customs Union, based on DG Economic and Financial Affairs, Tax and Benefits database, based on OECD tax/benefit model (updated December 2022).
Notes: 2012 data missing for Croatia and Cyprus.

A breakdown of the tax wedge in 2021 shows France, Estonia and Czechia to have the highest employer SSC contributions, accounting for over 25 % of labour costs. Breakdowns for a single worker on the average wage (Figure 12) also show employers SSCs are around 2 % in Lithuania and Romania, while the Danish tax system does not have social contributions. Overall SSCs (employer and employees) are largest as a proportion of employment costs in Austria (36 %) followed by France, Germany, Czechia, and Slovakia. Apart from Denmark, Ireland (13.6 %) Cyprus (18.1 %) and Malta (18.4 %) have the lowest overall SSC contributions as a proportion of labour costs. Romania, Lithuania, and Denmark have the highest proportion of tax wedge (PIT and employee SSCs) paid by employees. The lowest proportions are found in Cyprus (8.6 %), Estonia (12.8 %) and Czechia (14.7 %).

FIGURE 12: TAX WEDGE COMPOSITION, 2021

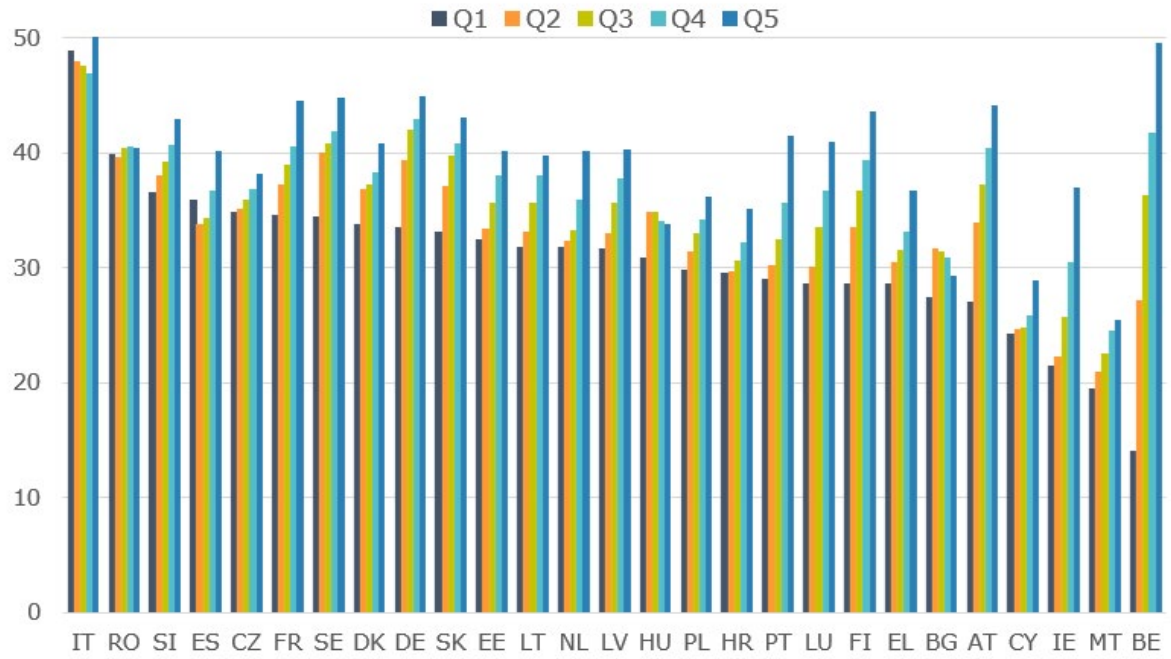


Source: European Commission, DG Taxation and Customs Union, based on DG Economic and Financial Affairs, Tax and Benefits database, based on OECD tax/benefit model (updated December 2022).
Notes: PIT is calculated assuming that wage is the only source of income.

The tax wedge tends to increase with income, indicating progressive labour taxation. In some countries, low-income earners face a considerable tax and social security burden, which may discourage labour market participation. Figure 13 depicts the average tax wedge for wage earners by income quintile. The figure highlights that the tax wedge usually increases from the poorest to the richest quintiles of the wage distribution. The difference in the tax wedge between low- and high-income earners, is generally considered a measure of the progressivity of labour taxation [(25)]. Labour taxation is very progressive in Belgium, Ireland, and Austria (i.e., the difference in the tax wedge between Q5 and Q1 is relatively high). In almost all countries (except for Romania, Bulgaria and Hungary), the tax wedge is highest for the highest wage quintile. In a cross-country comparison, Italy and Romania show the highest average tax wedge for the lowest income group, while Belgium and Malta show the lowest.

[(25)] Note that progressivity of wage taxation is generally measured as the difference in the tax wedge between synthetic taxpayers. Most commonly progressivity is measured as the difference in the tax wedge between a single earner with a wage of 167% of the average wage (high income earner) and 50% of the average wage (low-income earner). In contrast, Figures 13 and 14 are based on empirical tax wedges as calculated by EUROMOD and might not be completely consistent with Figures 11 and 12. This is because of the use of real data (EUROMOD) instead of hypothetical data (OECD TaxBEN), and also because the two models might follow different modelling assumptions (e.g. OECD TaxBEN applies 1 January tax rules, while EUROMOD uses rules as of 30 June).

FIGURE 13: LEVEL OF TAX WEDGE BY WAGE INCOME QUINTILE (2022)

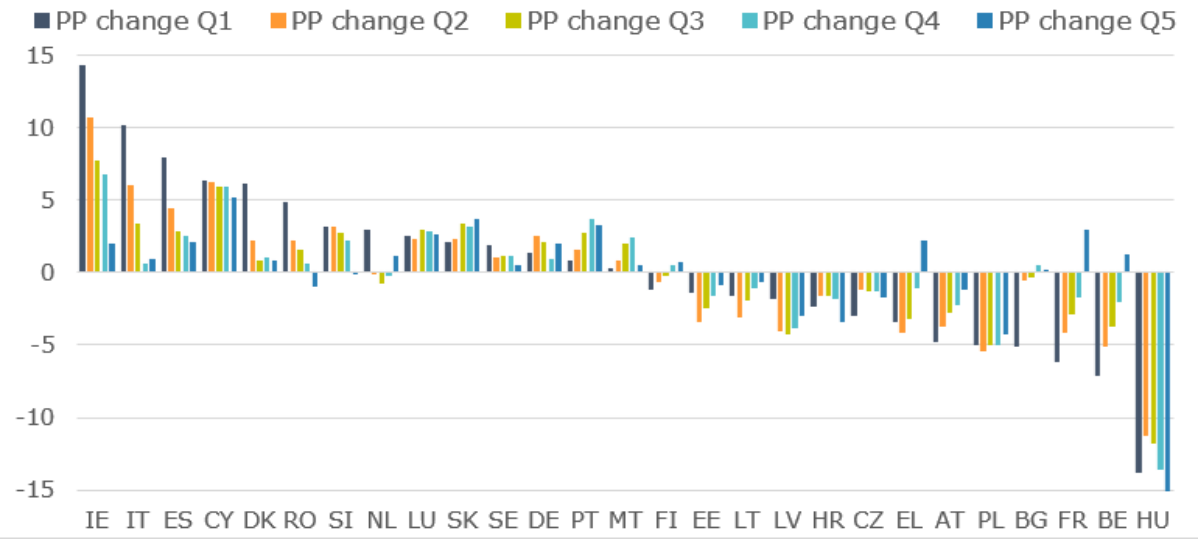


Source: European Commission Joint Research Centre, calculations based on EUROMOD I5.0+.
Notes: Tax wedges are computed for working-age individuals (aged 18 to 64) with positive employment incomes. Countries are sorted by decreasing level of average tax wedge of the first income quintile.

In some countries, the average tax wedge changed significantly for some income groups over the last ten years. Figure 14 shows the change of the average tax wedge by income quintile over time. The tax burden for low-income earners has declined in several countries i.e. incentives to increase labour market participation for respective individuals have been improved [(26)]. Hungary exhibits the largest decrease in the average labour tax wedge for both, high- and low-income quintiles, as a result of reforms reducing the labour tax burden while increasing consumption taxation. In Belgium, the average tax wedge for low-income groups fell considerably, while it remained broadly stable for high-income groups. In Cyprus, the tax wedge has increased similarly for all income groups. In Ireland, Italy and Spain the average tax wedge for the lowest income has seen the strongest increases.

[(26)] Note that this is an empirical statement about the tax wedge faced by the individuals in the lowest wage income quintile. This can be caused by changes in the tax system but also by changes in the composition of individuals in the lowest income quintile. To understand the causes, it would be necessary to consider a synthetic tax wedge for specific wage levels, e.g. 67 % or 167 % of average wage.

FIGURE 14: CHANGE OF THE TAX WEDGE BY WAGE INCOME QUINTILE IN PERCENTAGE POINTS (2012-2022)



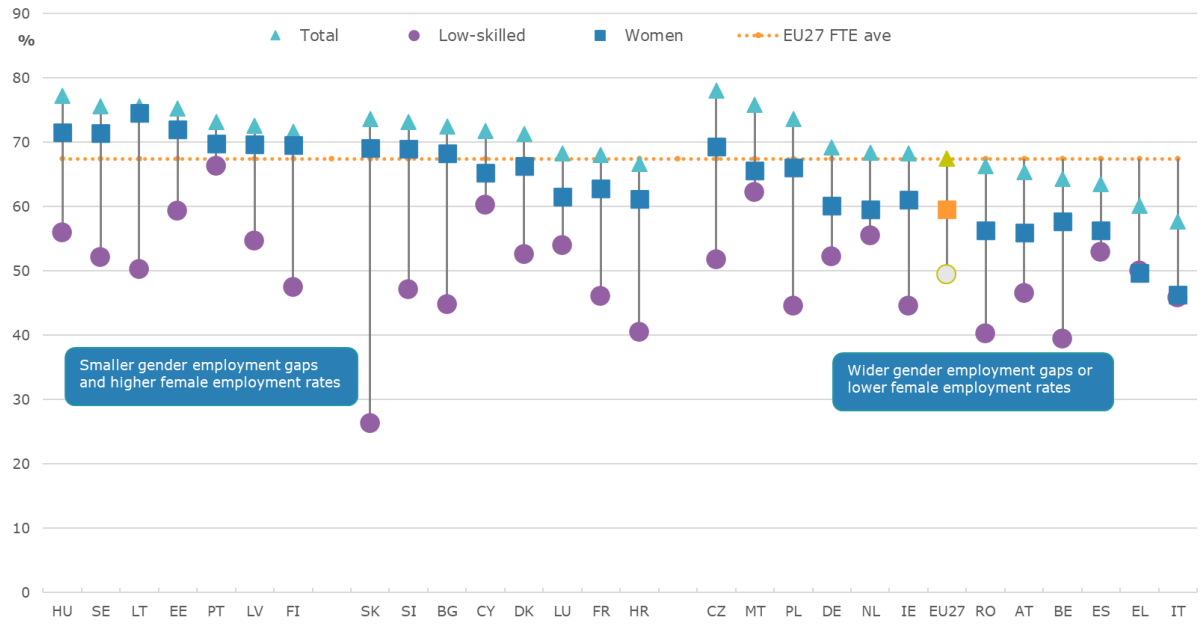
Source: European Commission Joint Research Centre, calculations based on EUROMOD I5.0+.
Notes: Tax wedges are computed for working-age individuals (aged 18 to 64) with positive employment incomes. Countries are sorted by percentage point change in the first income quintile. Changes are calculated between 2012 and 2022.

High taxes [27] on labour are problematic for low-wage earners, who are often more responsive to rate changes (European Commission, 2020a). Women and low-skilled workers are more often concentrated in the low-income earning brackets. They show below average employment rates and much higher incidences of part-time work. This is illustrated in Figure 15 which uses EU-27 working age, full-time equivalent (FTE) employment rates to compare the total population, (67.4 %), women (59.5 %) and low-educated workers (49.4 %), in 2021. FTE employment rates reflect hourly work patterns and capture the extent of part-time work, which is hidden in the overall employment rates. A major reason for these groups' low work intensity are explicit or implicit taxes on labour (Thomas & O'Reilly, 2016); (Kalíšková, 2015). The explicit form is a high tax wedge on labour, the implicit form encompasses other costs incurred or benefits removed if someone moves into employment or increase working hours. Examples of these include the loss of social benefits, or additional early childhood education and care (ECEC) or long-term care service expenses. These considerations are referred to as 'low wage' or 'inactivity' traps. Also, some design features of the tax system can impact on labour market participation. For example, if not properly designed, joint taxation, i.e. the calculation of personal taxable income and therefore personal income tax through filing income tax declarations jointly as married couples, can lead to a higher tax burden for the second earner and thus discourage full-time work or work altogether. This happens as Tax reforms can effectively strengthen work incentives for those population groups. This increases their labour supply and can alleviate labour shortages in some sectors and occupations [28]. Through the European Semester process, the EU has called on Member States to reduce the relatively high tax burden for second earners (often women) and low earners and do away with tax system designs that discourage labour market participation. This is to be complemented with benefit schemes, such as ECEC and long-term care, that support employment.

[27] This can be due to the level and progressivity of taxes on labour (including social contributions).

[28] Employment and Social Developments in Europe Annual Review 2023 (forthcoming).

FIGURE 15: EMPLOYMENT RATES, FULL TIME EQUIVALENT, TOTAL, LOW-SKILLED AND WOMEN, 2021



Source: Eurostat, extractions from EU Labour Force Survey microdata.

Box 3: Marginal effective tax rates impact work incentives (hours worked) at the intensive margin [29]

The marginal effective tax rate (METR) is the share of the last unit of income earned that is deducted for taxes, social insurance contributions and loss of benefits. METRs differ by household type and income levels. However higher METRs can discourage individuals from increasing the number of work hours as higher taxes on the last euro earned lowers hourly after-tax wages.

The disincentive effect of METRs is caused by an interplay of income earned, taxes and benefits. Households and individuals are often supported with numerous benefits in modern welfare states, many of which can be withdrawn if working hours are increased. If market income increases beyond certain thresholds, someone's taxes can also increase whilst benefits are reduced or lost. These METR effects caused by increasing earnings are examined to understand the disincentive potential of tax and benefit systems on households' working hours by income quintile.

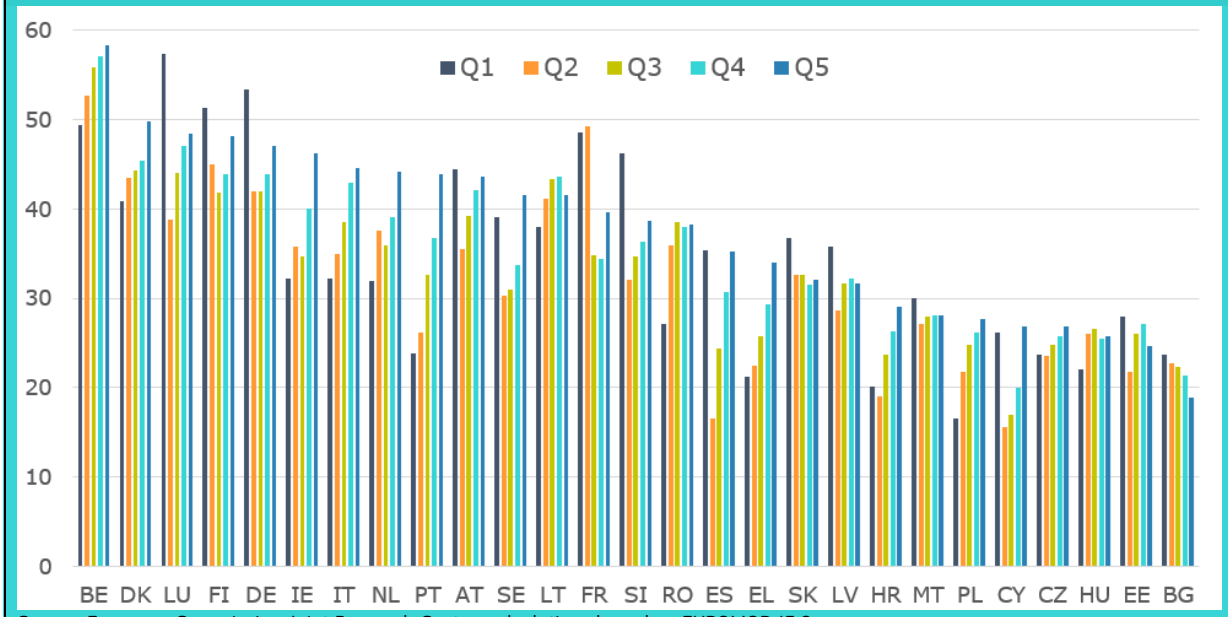
In some Member States the METRs are highest in the lowest income quintile. Figure 16 presents the marginal effective tax rates, averaged over all employees and self-employed per income quintile. It shows METRs increasing with incomes in ten countries. However, in ten other countries METRs are highest for the lowest income quintile, suggesting strong disincentives for increasing working hours.

While METRs shape hours worked decisions (intensive margin), work take-up decisions (extensive margin) are more linked to the tax wedge (discussed above) and effective average tax rates (EATR). These concepts interact: improving one aspect of the tax system, e.g., incentives at the extensive margin can come at the cost of deteriorating incentives at the intensive margin. Modern literature on optimal income

[29] The intensive margin refers to the decision of hours worked while the extensive margin refers to the decision to take up work or not. EMTR influence labour supply decisions at the intensive margin.

taxation, e.g. (Diamond & Saez, 2011), view the extensive margin as being more important for those at the bottom of the income distribution (unemployment trap).

FIGURE 16: LEVEL OF MARGINAL EFFECTIVE TAX RATE (METR) BY INCOME QUINTILE (2022)



Source: European Commission Joint Research Centre, calculations based on EUROMOD I5.0+.
Notes: METRs are computed for working-age individuals (aged 18 to 64) with positive employment or self-employment incomes. Countries are sorted by METR for the fifth quintile.

2.1.2 Population ageing, digitalisation, globalisation and inequality pose challenges to labour taxation

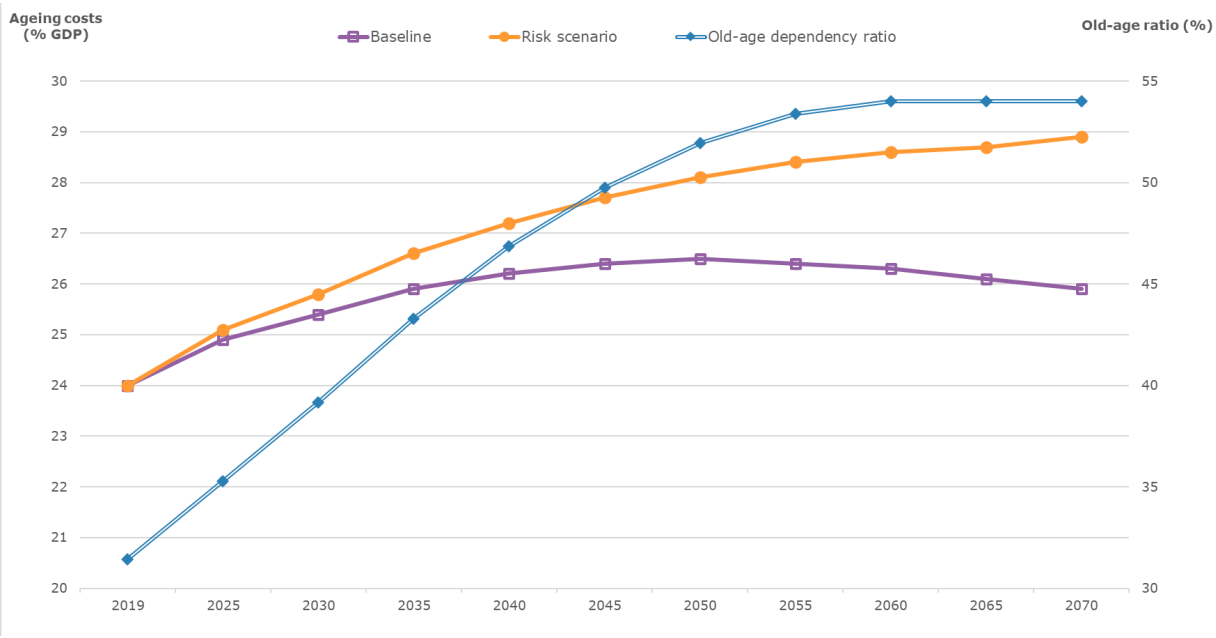
Several megatrends pose significant challenges to labour taxation's ability to secure sufficient tax revenue in the future. EU countries' comparatively high level of social protection - including pensions, healthcare, long-term care and unemployment benefits systems as well as public expenditure programmes more generally (education and infrastructure) – requires a high level of tax revenues, including from labour taxation. Labour taxes represent between 35.9 % to 56.6 % of total tax revenue, with social security contributions representing the biggest part of labour taxes. Important structural changes – or megatrends – pose significant challenges to labour taxation. Ageing and other societal shifts such as the emergence of working from abroad (supported by the increasing possibility of teleworking), development in health technologies, distribution of wealth, environmental and climate concerns, and more recently, emergence of war and disruptions to energy supply, have inevitable and often hard-to-project implications on tax revenue. Some of these issues are explored in more detail in this section given the importance they hold for labour taxation. Given labour taxation's significant contribution to e.g. welfare provision, addressing these challenges and adapting labour taxation systems has become crucial.

Population ageing will challenge EU Member States' welfare provision as the decline in working age population reduces the contributory base. Ageing is expected to increase dependency i.e. reduce the working age population and therefore the contributory base, limiting the ability of existing labour taxation systems to generate the necessary revenue (European Commission, 2017). The overall population is projected to start declining from 2030 [30] and the EU's old-age dependency ratio (i.e. the number of people aged 65 and over,

[30] https://ec.europa.eu/eurostat/web/population-demography/population-projections

compared to the number of people of working age (15-64 years)) will continue to increase from 34.4 % in 2019 to 59.2 % in 2070. An aging population is likely to reduce labour tax revenues [31]. Ageing is also expected to increase the budgetary expenditure associated with pensions, healthcare, and long-term care. Age-related expenditure is projected to increase from a baseline scenario, by 1.9 pp of GDP in the EU by 2070 (European Commission, 2021a). Figure 17 presents the evolution of the old-age dependency ratio and the age-related expenditure under two different hypotheses. A baseline scenario which accounts for the impact of demographic change on healthcare and long-term care expenditure and a risk scenario that includes non-demographic factors. These factors assume a partial continuation of upward healthcare expenditure trends, notably due to technological progress, and an upward convergence of coverage and costs of long-term care towards the EU average. In a few Member States, age-related expenditure is projected to fall slightly due to policy reforms already in place (e.g., raising retirement age, slowing down the annual indexation of benefits).

FIGURE 17: AGE-RELATED EXPENDITURE (BASELINE AND RISK SCENARIO) AND OLD AGE DEPENDANCY RATIO



Source: European Commission, DG Taxation and Customs Union, based on (European Commission, 2021a) and Eurostat data.
Notes: The baseline scenario accounting for the impact of demographic factors on healthcare and long-term care expenditure. The risk scenario capturing non-demographic impacts that assumes a partial continuation of upward healthcare expenditure trends, 2021 Ageing Report Old-age dependency ratio is measured on the secondary vertical axis.

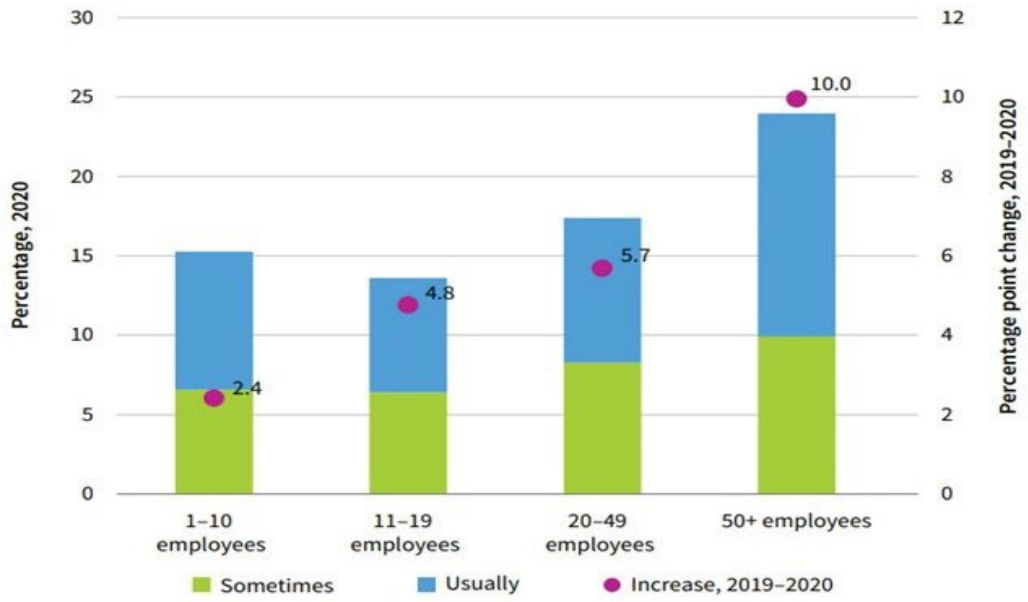
With pensioners becoming a larger share of the population, it may become increasingly difficult to keep labour taxes, and notably social contributions, from increasing without putting at risk fiscal sustainability of pension schemes. Most EU Member States still organise their pension systems Pay-As-You-Go: what is distributed to pensioners must be collected today from insured workers. Social contributions remain the main funding source of pensions. However, already today, increasing old-age dependency forces Member States to strongly subsidise pension insurance schemes through general tax revenue. In the absence of major reforms in pension schemes, the trend towards higher labour taxes (especially social security contributions) and more tax subsidy paid into pension schemes would have to continue. In addition, if not well designed, this may counter the objective of moving towards more growth-friendly taxation sources.

[31] The OECD calculates a revenue loss of on average 8% in OECD countries by 2040 due to the strong reliance on personal income taxes and social security contributions (Dougherty, de Biase , & Lorenzoni, 2022).

Ageing thus sharpens the trade-off between two different desirable objectives. On the one hand, the need to maintain high welfare standards also for older citizens. On the other hand, the need to contain the tax burden on labour, especially the contributions that workers and their employers pay into pension and other social protection schemes (e.g., healthcare, long-term care). Reducing the tax wedge on labour not only aims at stimulating growth, but also increases workers' take-home pay at given wage levels, making sure that they receive a fair share of the value produced. Indeed, in many tax systems an ever-increasing share of resources is allocated towards pension payments [32].

Globalisation and technological advances have increased workers' access to international labour markets and changed the ways of working. Workers, especially 'white collar' professionals, are increasingly performing their tasks remotely (e.g., by teleworking), increasingly allowing work to be performed across country borders. The COVID-19 crisis lockdowns accelerated these developments. According to recent research (Eurofound, 2022), the use of working from home in EU-27 has significantly increased during 2020, especially among larger business (Figure 18). Teleworking from abroad brought up new policy challenges such as: which country should be entitled to taxation, or how to apportion the tax base, as people work across several countries each year. In this regard, the principle of tax residence becomes increasingly complex to apply. Moreover, increased mobility will also enhance competition between countries for taxpayers liable to personal income tax (see section 2.4).

FIGURE 18: WORKING FROM HOME BY SIZE OF BUSINESS, 2020 (%) AND 2019–2020 (PERCENTAGE POINT CHANGE), EU-27



Source: (Eurofound, 2022), page 12, based on Eurostat (EU-Labour Force Survey data).
Notes: Two categories from the original graph, overlapping with those presented have been excluded. 'Increase, 2019-2020' includes the 'usually' and 'sometimes' categories for the variable 'working from home'.

Technological advance and digitalisation have enabled new forms of work and the ongoing transformation of labour markets pose challenges and create opportunities for labour taxation. Two main examples of transformations are the rise of teleworking and the development of platform work. With these

[32] For EU-27, in 2020, 13 % of the GDP was allocated to pensions, while in 2011 it was 11 %. Specific countries show higher figures highlighting their difficult situation: 18 % for Italy and Greece, 16 % for France, 15 % for Austria and Finland. For EU-27, in 2020 pensions represented 25 % of the total general government expenditure. It was above 30 % in Italy and Greece. The calculations are based on General government expenditure by function (COFOG) provided by Eurostat.

developments come new challenges: is the existing principle of tax residence suitable for teleworkers? Can the conditions of fair competition and equal treatment be maintained if platform workers (i.e., own account workers who provide paid labour services on online matching platforms) and regular workers face different tax burdens and insurance coverage in public social security schemes? At the same time, digitalisation of the economy could support the fight against tax fraud, tax evasion and undeclared work. This in turn has potentially positive effects on tax revenue collection and simultaneously support social protection coverage and improvements in public service provision (e.g. schools, transport infrastructure).

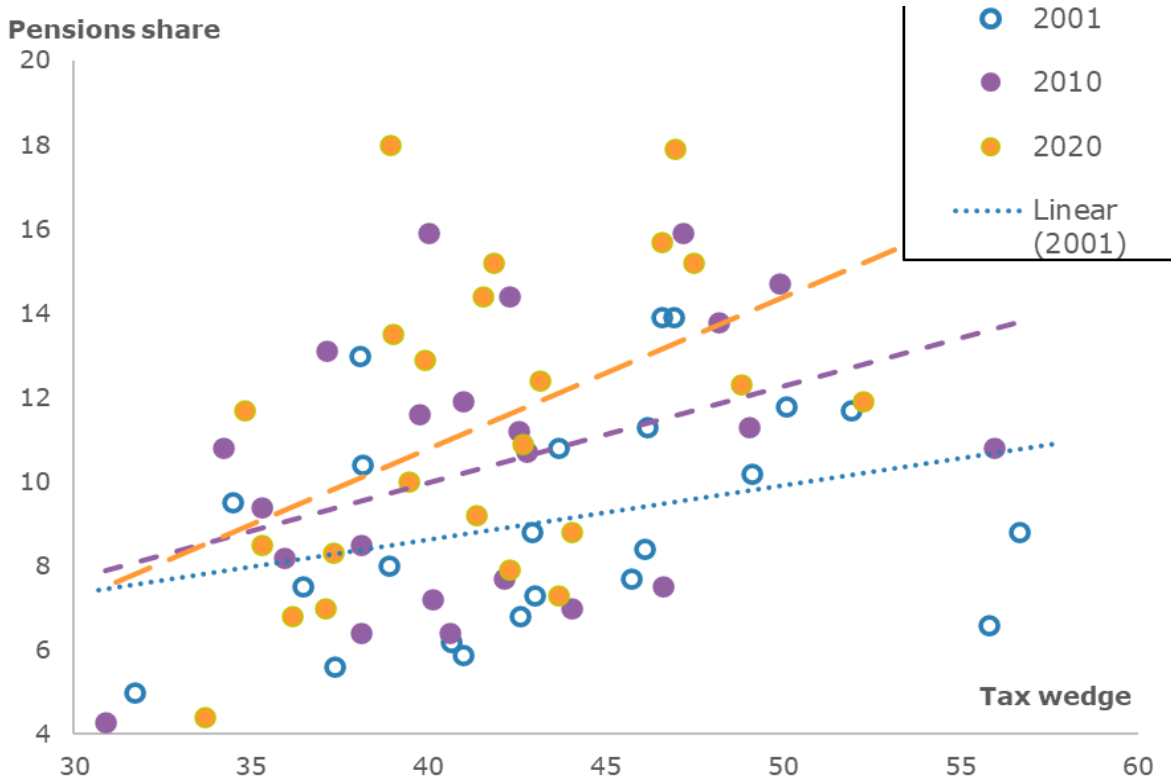
The increasing mobility of labour and automation may raise the question of whether the relative tax burden on labour and capital should be reassessed. Capital income is often taxed at a lower rate than labour in the EU, because it is seen as a more mobile resource. In many countries the share of capital income has been rising at the expense of labour.

Increased reliance on taxing wealth, inheritance or capital income may contribute to rebalancing part of the inter-generational redistribution. With ageing set to accelerate further, and a higher share of total household income falling on pensioners, a higher contribution of older people to public funding may receive more policy attention. The focus of raising taxes revenues could shift attention towards taxing capital income and stocks of wealth, especially because older households tend to hold more assets [33]. Figure 19 [34] indicates that there may be a positive link between the expenditure on pensions as a share of GDP and the tax wedge on labour by Member State. The correlation between the two variables becomes much stronger over time: from 0.31 in 2001 (blue points and line) to 0.46 in 2020 (orange points and line). This finding suggests that a significant reduction of the tax burden on labour likely requires reorganising social protection and ultimately reducing the share of GDP devoted to pensions or organising the way we fund pension systems and other social protection and public expenditure programmes. This is particularly true in a context where productivity growth in the EU remains sluggish (the following section addresses productivity), compared with competing global players (European Commission, 2017).

[33] Capital and wealth tend to increase over the life cycle. Nevertheless, large variations across the EU exist, especially between older and newer Member States. Old age poverty is a significant problem in some Member States.

[34] Due to the lack of data in some years, the Graph does not include BG, HR, CY, MT and RO.

FIGURE 19: TAX WEDGE AND PENSION SHARE



Source: European Commission, DG Taxation and Customs Union, based on Eurostat (Pension share) and European Commission, DG Economic and Financial Affairs, Tax and Benefits database, based on OECD tax/benefit model (Tax wedge).

2.1.3 Increasing labour tax revenue by increasing productivity – focusing on education levels, employment rates and optimising skills acquired with relevant job allocation

Increasing labour market participation of women, individuals with lower qualifications and disadvantaged groups could help counterbalance tax revenue loss linked to ageing. On the one hand it reduces the welfare burden or costs linked to unemployment and inactivity [35]. On the other hand, both higher skill levels and appropriate employment of some population groups such as women, including mothers of young children, older people and low and highly skilled people is likely to alleviate labour shortages and to increase GDP and tax revenues (on the relationship between employment and education specifically, see Box 4). This includes, for example, addressing labour market gender inequality which is to be seen as macro-critical, in that it undermines a country's growth and tax revenue potential.

Taxation design can promote greater gender equality by for example removing joint taxation (Bick & Fuchs-Schündeln, 2017). For example, research showed (2000-2008 data) that female labour supply would increase by 35 % in Belgium if there was no joint taxation. Joint taxation is considered fair in some respects as it allows families with the same total income to pay the same taxes. However, whilst couples' earnings do benefit from lower taxes through joint filing (compulsory or voluntary [36]) compared to separate filing, it increases

[35] In addition, well documented, spiralling effects of unemployment that leads to an accumulation of disadvantages such as loss of skills (scarring), health and economic problems that makes entering or re-entering the labour market increasingly challenging the longer one's unemployment spell lasts.

[36] In some EU Member States where joint taxation still exists couples can opt out of joint filing.

second earners' marginal tax rates. Moreover, there are many other associated joint elements in the form of tax reliefs and allowances that could impact the gains from a second earner either starting work or increasing earnings.

Women are more likely, in part linked to the wage gap, to be second earners in families. A 2015 report (Rastrigina & Verashchagina, 2015) found that in the EU on average women's income was around a third of couples' joint income. This is due to several barriers or disincentive effects as well as labour market patterns such as part-time working for women as second earners including as parents. Joint filing further disincentivises women's full labour market potential. One study (Bick & Fuchs-Schündeln, 2017) found that abolishing all elements of joint taxation would increase women's annual labour supply by between 70 and 154 hours a year in Poland, France, Spain, Italy, the Netherlands, Denmark, and Ireland [(37)]. A more recent study looking at Germany's economy in the aftermath of COVID-19 pandemic, found that moving to individual taxation would increase labour supply by more than a half million full-time equivalents and increase GDP by up 1.5 % (Bachmann & Jager, 2021). The World Bank developed a 'gender employment gap index' which is a simple measure of the economic gains from closing gender employment gaps and found that doing so GDP would increase by around 10 % in Europe (Pennings, 2022). The employment gap reduction would in part be achieved by a reduction in men's working hours due to an increase in women's employment. This latter finding is linked to the difference in parents of children less than six years old employment patterns where fathers' employment rates increases and for mothers it decreases.

Persistent gender pay-gaps contribute to women's second earner status in couple families. They play a significant role in families' decision making, particularly as parents. As mothers, women face an intersectionality of disadvantage further penalising their employment situation (Christiansen, Lin, Pereira, Topalova, & Turk, 2016). They experience wider employment and pay gaps. As mothers, they are further discouraged in countries with joint taxation (Coelho, Davis, Klemm, & Osorio Buitron, 2022) and high participation tax rates due to for example early childhood and education costs or availability caused by a lack of early childhood education and care provision in some Member States (European Commission, 2019a). This also has implications for fathers: the data shows higher employment rates for men with two children (at least one less than 6 years of age) compared to men without children (Eurostat, 2023a).

Box 4: Employment and education progress

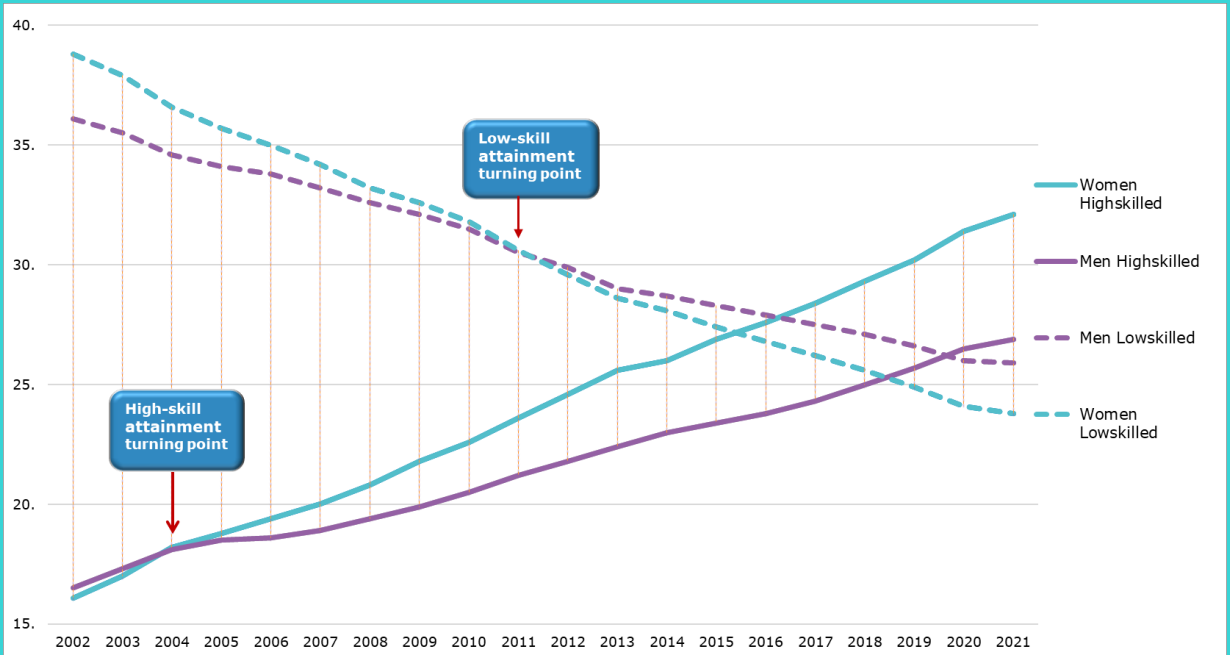
Women's qualifications and employment rates (Figure 20) are increasing. Since 2002 (earliest EU-27 Labour Force Survey data), the working-age population (15-64 years) saw progress in skill attainment levels. The proportion of low-skilled people declined, whilst tertiary levels have increased.

Women experienced the greatest academic progress while other disadvantaged groups maintain wide lags. Figure 20 shows that while both sexes experienced academic progress it was stronger for women. However, other disadvantaged groups continue to face much worse outcomes with for example, 39.9 % of non-EU born as low-skilled and only 36.1 % (30-34 years) vs. 41.6 % of EU-27 total population have tertiary level education, in 2021. Among people with disabilities, low skill levels were 10 pp higher and high-skill levels 9 pp lower than among those without (Eurofound, 2018).

Sciences, Technology, Engineering and Mathematics (STEM) graduates increased slowly (by 2.4 reaching 20.9 per thousand 20–29-year-olds, between 2014 to 2020), in the EU. The increase was greater for men, despite PISA results showing girls equal competence in mathematics and sciences (Encinas-Martín & Cherian, 2023) at school leaving age. Research found that women's lower representation in STEM fields of study is deepened by their greater likelihood to drop out of STEM studies due to microaggressions (Ong, Smith, & Ko, 2018).

[(37)] The study was based on 2001 – 2008 data looking at the impacts of removing joint taxation of married households.

FIGURE 20: EDUCATION ATTAINMENT TRENDS, 2021



Source: European Commission, DG Taxation and Customs Union, based on Eurostat (EU- Labour Force Survey data).

Research shows that women face lower returns on investment in higher education as gender pay gaps are wider for tertiary educated professionals. The difference is not explained by choice of study (STEM vs non-STEM) as within the same STEM fields the gender pay gap is even wider than on average (OECD, 2022a). On International Women's Day 08 March 2023, the Commission launched a campaign to address some of the challenges women face based on gender stereotypes [38].

Underutilising women's higher education has implications for both growth and tax revenue (Fruttero, et al., 2020). The European Institute for Gender Equality (EIGE) found that gender equality would potentially increase GDP per capita by up to 9.6 % by 2050 (European Commission, 2017). Several countries have successfully taken steps to address gender-related labour market barriers. In 2014, Malta has introduced free ECEC services for working or studying parents. As a result, the implicit tax on labour market participation [39] was reduced. Younger women (e.g., 24-29 years) employment rates increased steeply and are now amongst the highest in the EU. Further, due to ECEC's positive impacts on education and employment, they extended free ECEC to all parents, irrespective of their work and education status. This will help break the cycle of disadvantage that limits access for children from disadvantaged backgrounds. On 27 December 2022, a new Directive to improve gender in corporate decision-making positions in the EU largest listed companies came into force [40]. This Directive should support capitalising women's higher skill levels in the EU.

[38] https://end-gender-stereotypes.campaign.europa.eu/index_en

[39] Those moving into work can incur implicit taxes that may perpetuate inactivity. This happens when net gains in disposable income on taking up work are small, due to costs brought about by the tax/benefit system largely offsetting the increase in gross labour income. These costs are realised through increases in tax and social security charges as well as a reduction or even withdrawal of cash and in-kind benefit support, including for housing. See: (European Commission, 2022b).

[40] Directive (EU) 2022/2381.

Gender mainstreaming and gender budgeting is increasing in prominence across EU Member States (Bova & Jorosch Herold da Costa Reis, 2022). Gender mainstreaming entails weaving gender perspectives, implications and impacts into the design of policies and their implementation. Gender budgeting which falls under gender mainstreaming is one aspect of equality budgeting that is being used to increase gender equality in some EU Member States. Ireland is the only EU Member State that applies equality budgeting. Equality budgeting '*…involves providing greater information on the likely impact of budgetary measures across a range of areas…*' [41] e.g. income and gender. The OECD presents gender budgeting as an important tool that governments can use to assess how budget decisions impact gender equality. The EIGE explains that it '*…can improve budgeting when fiscal policies and administrative procedures are structured to address gender inequality*' [42]. The 'Study on distributional impact assessment' (Bazoli, et al., 2022). was produced to support these objectives with guidance to develop these types of assessments in budgetary processes. Gender budgeting is applied to varying degrees and formats in Austria, Belgium, France, Italy, Spain, Netherlands, Sweden and Germany. These findings could lead to more inclusive gender and equality budgeting approaches. As part of the overall gender budgeting approaches tax policies and implications can also be considered.

2.2 The role of tax policy in fighting income inequality

Beyond its substantial contribution to EU governments' revenues, personal income tax is an essential redistributive tool. Redistribution is achieved in several ways, notably via social transfers, the provision of public services and public goods and progressive taxation. On average, in OECD countries, tax policy accounts for approximately 25 % of all redistribution (Causa & Hermansen, 2018). Progressive taxation is the key means of redistribution at the top of the income distribution (Gerber, Klemm, Liu, & Mylonas, 2020).

Redistributive policies aim to mitigate the detrimental effects of income inequality on the social, economic and political systems in the EU and its Member States. High levels of income inequality may negatively affect economic growth and have been associated with a series of negative social outcomes related to education, health, violence and general well-being (Joint Research Centre, 2021). Thereby, high income inequality is also a barrier to the realisation of the European Pillar of Social Rights. Furthermore, income inequality both within and between Member States has a potential negative effect on trust in the European institutions (Milanovic, 2010); (Morgan & Neef, 2020).

The redistributive effect, i.e. the difference between market income inequality and after-tax income inequality, is an important feature of the tax-benefit system and depends both on the level and the progressivity of taxation. The redistributive effect of taxation can be seen as twofold. The first is through its immediate effect on disposable income inequality and secondly in the way the funds are used to finance transfers. In general, a tax can be neutral, regressive, or progressive. A neutral tax will not alter income distribution after taxes, a regressive tax structure will widen inequality and a progressive tax structure will reduce disposable income inequalities. Beyond the structure of a tax, its overall level also matters for redistribution. Research has shown that there is a trade-off between a high overall level of taxation [43] and high progressivity, and it remains unclear which one is more important for redistribution (Guillaud, Olckers, & Zemmour, 2019). The trade-off is a political choice. Indeed, countries can either compress market-income distribution using labour market restrictions for example through minimum wages or they can reduce income inequality through redistribution of taxes.

[41] https://www.gov.ie/en/policy-information/aec432-equality-budgeting/

[42] https://eige.europa.eu/gender-mainstreaming/methods-tools/gender-budgeting

[43] Note, however, that consumption taxes, corporate taxes and employer social-security contributions are not included in the analysis.

Using EUROMOD indicators [44], Figure 21 shows the redistributive effect of tax and benefit systems [45], which increases moving away from the axis's origin, as the combination of relative progressivity [46] and level of taxation [47] for each country. The "iso-redistribution curves" represent the multiple combinations of progressivity and level that lead to the same level of the redistributive effect. Nordic and Central European countries (Ireland, Denmark, Belgium, the Netherlands, France and Austria) exhibit the strongest redistributive effect. The most progressive tax-benefit system is in Ireland, although it is relatively low in terms of burden over disposable income. At the other extreme there is Denmark, where a very low progressivity and high level of taxation result in a redistributive effect very similar to Ireland.

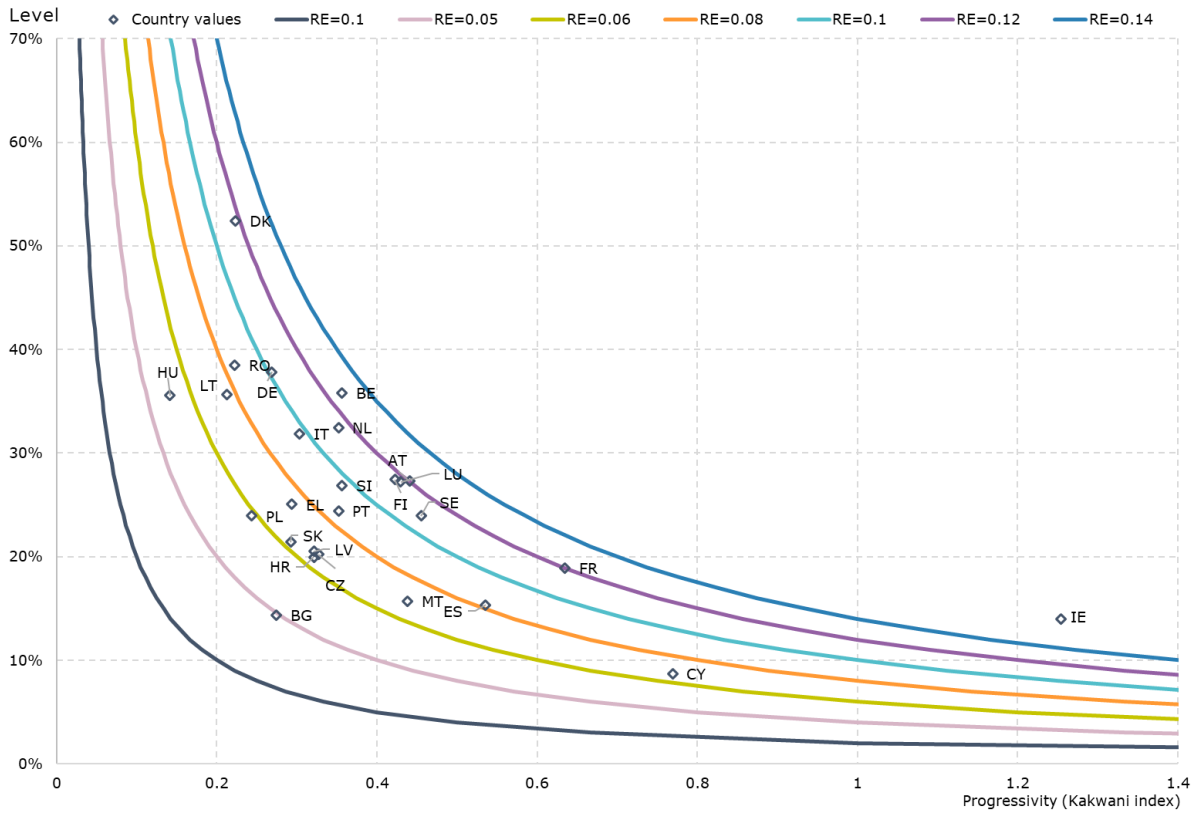
[44] In EUROMOD, taxes paid, and benefits received are modelled on declared market income, imputed conditional on their eligibility conditions. EU-SILC data is different as it is based on survey responses. As such, inequalities as measured by EU-SILC data are larger than those calculated by EUROMOD, as many households do not take up benefits to which they are entitled (i.e. gap in effective coverage). For a more detailed description of EUROMOD see: (De Poli, et al., 2023).

[45] The redistributive effect refers to the net effect of taxes and benefits modelled in EUROMOD baseline 2019, and it mainly consists of personal income taxes and cash benefits (pensions, consumption and wealth taxes, as well as in-kind benefits are excluded). The redistribution effect takes into account a re-ranking effect: the Gini coefficient of disposable income minus the concentration index of the same variable but sorted by initial income.

[46] The progressivity is measured through the Kakwani index, a common indicator for the progressivity of the social intervention, which is equal to the difference between the Gini index for the social intervention, and the Gini index for incomes before imposition of the policy intervention. The larger the index is, the more progressive is the system.

[47] Taxation includes direct taxes, social insurance contributions and cash benefits, and excluding consumption and wealth taxes as well as in-kind benefits, see: https://wid.world/document/why-is-europe-more-equal-than-the-united-states-world-inequality-lab-wp-2020-19/

FIGURE 21: PROGESSIVITY AND REDISTRIBUTION OF THE TAX-BENEFIT SYSTEM (2019)

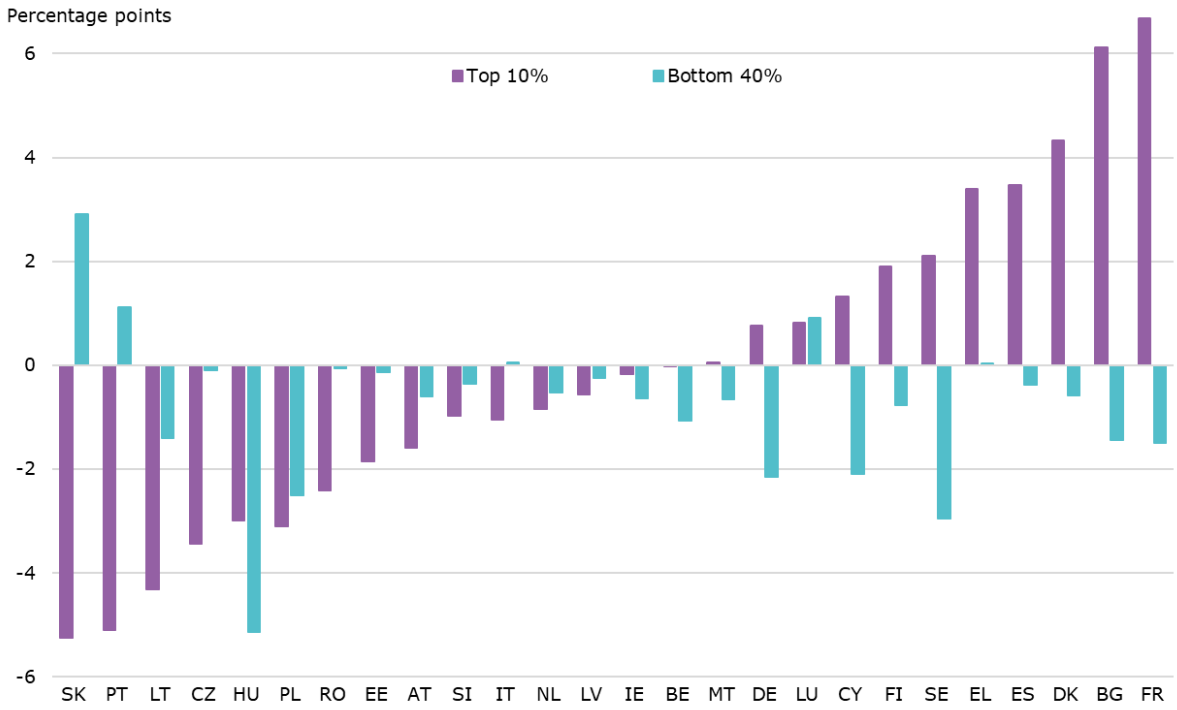


Source: European Commission Joint Research Centre, calculations based on EUROMOD I5.0+.
Notes: The level is the relative size of the policies in relation to disposable income (vertical axis) and relative progressivity is measured by the Kakwani index (horizontal axis). Croatia is excluded due to data limitations.

Medium-term progress in reducing income inequality remains limited. EU-SILC survey data show that, in 2021, the EU income quintile ratio (S80/S20) inequality (4.97) was similar to 10 years ago (4.98 in 2012). The World Inequality lab (Blanchet, Chancel, & Gethin, 2019). found while inequalities in Europe remain much lower than in the US, the income share of the top of the income distribution has been rising in the EU, with the top 1 % having captured 17 % of the overall growth in income, while the bottom 50 % of the income distribution sharing just only 15 % (Blanchet, Chancel & Gethin, 2019). Research shows that in periods of high economic growth, the income shares of the top 1 % and the top 10 % of the income distribution tend to rise disproportionally while other parts grow less than proportionally (Roine, Vlachos, & Waldenström, 2009). Figure 22 below shows that the market income shares between 2007 to 2021 of the bottom 40 % increased in only few Member States whereas the top 10 % market income shares increased in eleven Member States. In 2021, the top 10 % of income earners received on average 29 % income earned in the EU [48]. This emphasises PIT's crucial role as a redistributive tool in redressing disposable income inequality.

[48] It should be noted that these figures are likely to be lower-end estimates because survey-based data is likely to underestimate the income of the top of the income distribution.

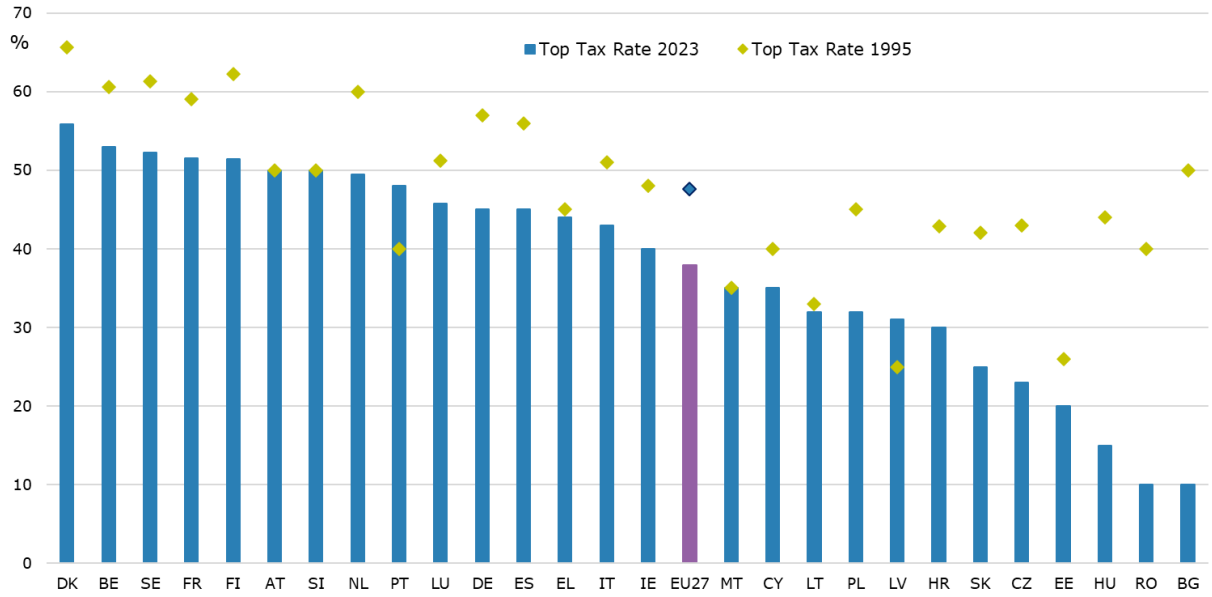
FIGURE 22: INCOME SHARE CHANGE IN PP, TOP 10 % AND BOTTOM 40 %, OF THE INCOME DISTRIBUTION BEFORE TAXES (2007-2021)



Source: European Commission Joint Research Centre, calculations based on EUROMOD I5.0+.
Notes: Croatia is not included in the analysis.

In recent years the statutory tax rate of top earners in the EU has generally decreased, hence reducing the scope for redistribution. Whilst at EU-27 level personal income tax (PIT) reduces after-tax income inequality, Figure 23 below, depicts the extent of top statutory tax rates between 1995 and 2022. In most EU Member States and at EU level there is a decrease in the top tax rates. The top tax rate increased for Greece, Portugal, and Latvia, though for Latvia it remains at a low rate. Research confirms that while tax cuts for top earners increases their income share, they do not appear to promote overall economic growth (Piketty, Saez, & Stantcheva, 2014). In this context, it could be explored whether additional income tax brackets can be added to the PIT system to make it more progressive. One additional factor to consider when looking at the progressivity of the PIT system is the taxation of income generated from capital. Due to the high mobility of the tax base, personal capital income is taxed at lower rates in several Member States compared to other forms of income. This can make the system less progressive. This will be further explored in Section 2.5 below.

FIGURE 23: TOP PERSONAL INCOME STATUTORY TAX RATES %, 1995 AND 2023

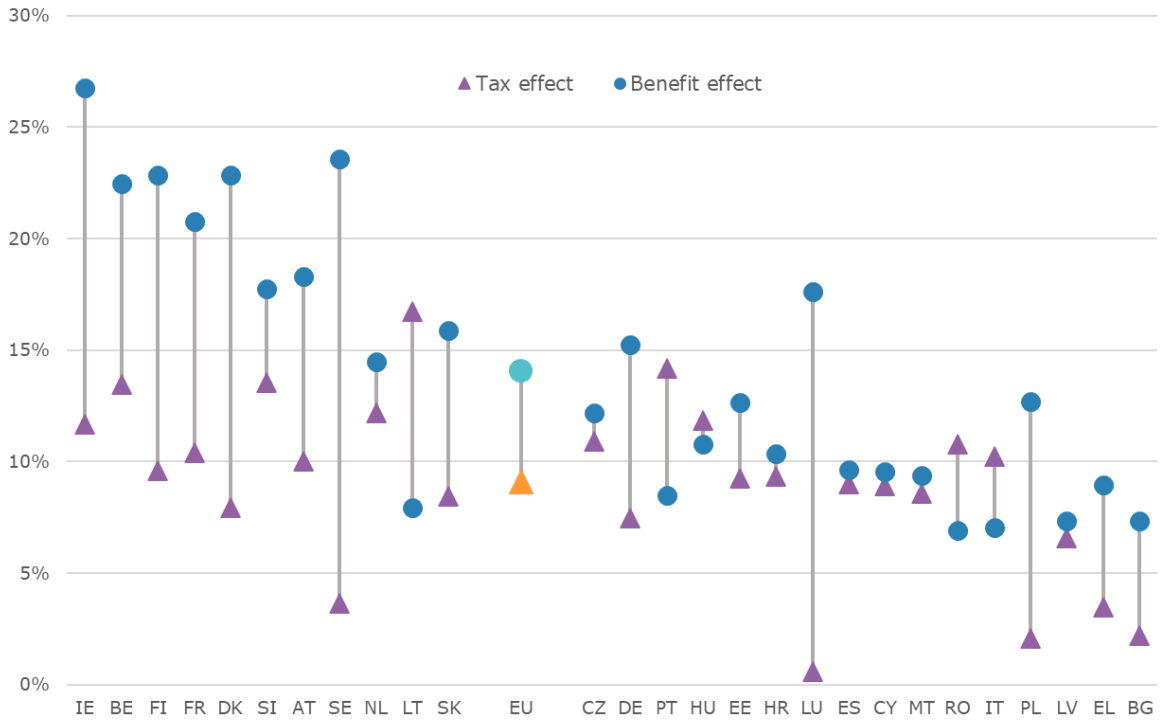


Source: European Commission, DG Taxation and Customs Union, Taxes in Europe Database and Data on Taxation Trends.

Social transfers (benefits) reduced inequality by 16 % in the EU, in 2021. Figure 24 shows the effect of taxes and benefit transfers (tax benefit system) on reducing income inequality in EU Member States, measuring total disposable income as a proportion of market income before social transfers. Taxes reduce income inequality by 6 % in the EU in 2021 with varying degrees (2 % to 17 %) across Member States. In most EU Member States, benefits contribute more to redistributing income than taxes. Lithuania, Portugal, Romania and Italy are among the few countries where the effect of taxation is stronger than that of benefits. Note that benefits are mainly financed by taxes and social security contributions so that taxes have an indirect role in reducing inequality [(49)].

[(49)] It is important to note that not all taxes that fund welfare systems are as progressive as labour taxation. VAT, for example, also represents an important share of total tax revenues and may in some cases not be progressive (Ganghof, 2006) and (Kato, 2009).

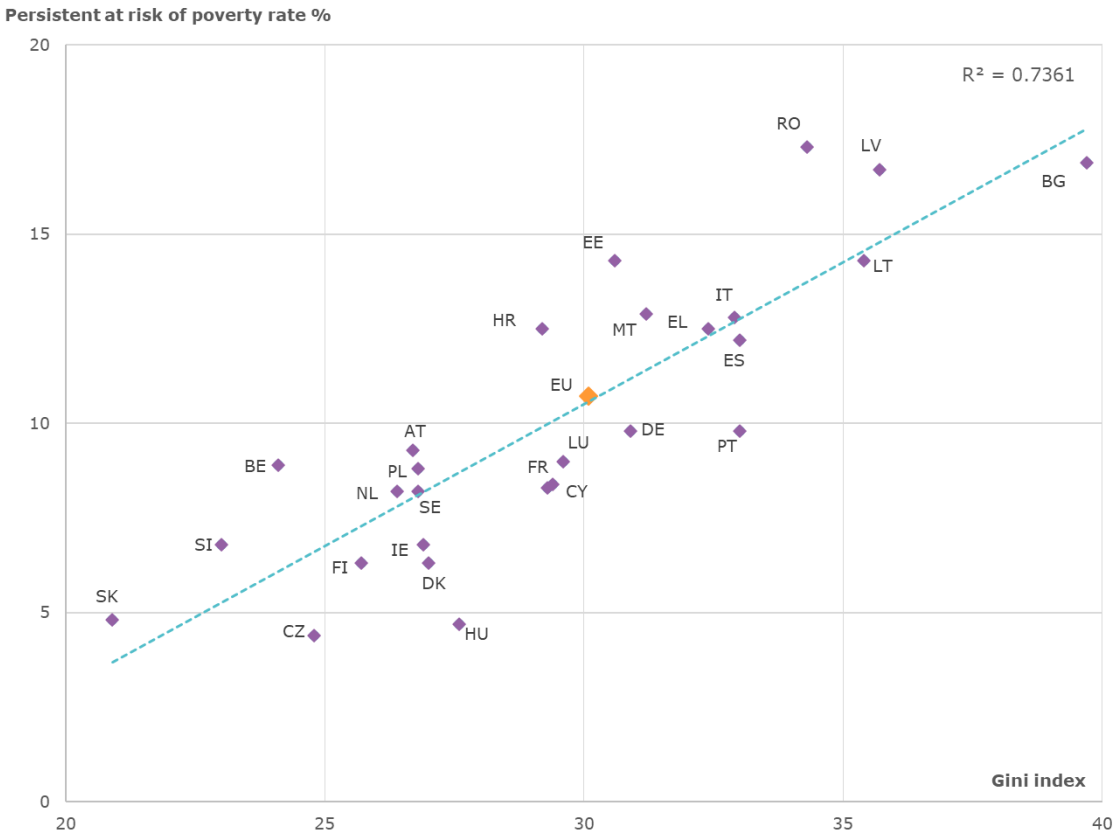
FIGURE 24: INEQUALITY REDUCING EFFECTS OF TAX AND BENEFITS, 2021 (IN ORDER OF TOTAL EFFECTS*)



Source: Eurostat, based on EU-Statistic on Income and Living Conditions survey data.
Notes: Data missing PL and SK. * Total effects = Market income before social transfers (except private pensions, old-age and survivor benefits) – total disposable income as a proportion of market income before social transfers (except private pensions, old-age and survivor benefits).

Data suggest that the higher the levels of inequality are linked to persistent poverty which in turn may lead to reduced social mobility. Figure 25 illustrates the relationship between the persistent risk at poverty rate and the Gini coefficient. The Figure shows a strong positive correlation between the persistent at risk of poverty rate and the Gini coefficient. This is also corroborated by research-analysis of cross-country differences in the level of poverty and inequality using distributional statistics from the EU-SILC database suggests that there is very strong positive cross-country correlation between levels of poverty and inequality (Karagiannaki, 2017). This indicates that high inequality is linked to persistent poverty, which in turn suggests that social mobility is low. This could indicate that labour taxation, through its role in reducing inequality, may also help to support equality of opportunity.

FIGURE 25: INEQUALITY AND PERSISTENT POVERTY, 2021



Source: European Commission, DG Taxation and Customs Union, based on Eurostat EU-Statistic on Income and Living Conditions survey data.
Notes: EU-27 average is calculated as the population-weighted average of individual national figures.
(1) The scale of Gini coefficients ranges from 0 to 100. A value of 0 corresponds to perfect equality, while 100 corresponds to maximum inequality.
(2) The persistent at risk of poverty rate is defined as the percentage of the population living in households where the equivalised disposable income was below the 'at risk of poverty' threshold for the current year and at least 2 of the preceding 3 years.
(3) Data for EU-27 from 2020, DE, PT and FI are 2020.

2.3 The effect of inflation on progressivity and tax fairness

Inflation can cause distortions in tax systems. One source of distortions arises from nominally defined thresholds, think for example nominally defined tax brackets, tax credits, deductions or exemptions [(50)]. While inflation has economy-wide ramification, the following discussion focuses on the situation where wages increase nominally with inflation so as to keep real wages constant (e.g. as a consequence from wages being indexed to inflation) while other impacts are abstracted from [(51)].

With fixed, nominal tax brackets, inflation will generally cause bracket creep in progressive tax systems. Bracket creep describes a situation where the tax burden of households increases because nominal wages (or nominal income in general) increase due to inflation (for example because of the indexation of wages

[(50)] A general discussion of potential non-neutralities of tax systems is provided in Chapter 1, Box 1. See especially (Beer, Griffiths, & Klemm, 2023).

[(51)] Inflation might change relative prices and thus impact labour supply and demand; the wage share in the economy might decrease etc. These changes are abstracted from.

or other incomes). Higher nominal incomes can push taxpayers in higher income tax brackets resulting in higher marginal and average tax rates, albeit wages (incomes) in real terms remain constant.

Bracket creep can modify the progressivity of the tax schedule. Progressivity means that the tax burden increases more than proportionally with income. Bracket creep causes a larger share of taxpayers ending up in higher tax brackets. This can reduce overall progressivity [(52)]. It is, however, also possible, that the overall increase in the tax burden increases progressivity and thus results in more equally distributed after tax incomes [(53)]. At the lower end of the income distribution, inflation reduces the real value of the basic allowance. A higher tax burden coupled with an erosion of tax credits and benefits has the potential to increase poverty. However, policy interventions which updated the parameters of the tax and benefit system have de-facto lead to a decrease of poverty in some EU countries in previous years (Paulus, Sutherland, & Tasseva, 2020).

Adjustment of nominal tax brackets can mitigate bracket creep. When tax brackets (and other fixed parameters of the tax system) are adapted to inflation (in a discretionary way or automatically, i.e. indexed), bracket creep (and other distortions caused by inflation) can be mitigated. The relative effectiveness of approaches depends on timing and frequency of adjustments as well as on the use of the benchmark indicator in case of indexation. More frequent and quick updates of thresholds will further reduce the distortive impact of inflation and will reduce tax revenues. Some authors (Beer, Griffiths, & Klemm, 2023) argue for the consumer price index (CPI) as a benchmark for indexation to ensure consistency across different tax types.

Most PIT systems in the EU are adjusted for inflation on a discretionary base. In contrast, adjustments of social security contributions and cash benefits are often automatic. Table 3 provides an overview. Belgium, Lithuania, the Netherlands, Slovakia, Slovenia and Sweden adjust PIT, SSC and cash benefits automatically. In contrast, adjustments are discretionary for PIT, SSC and cash benefits in Austria, Finland, Germany, Ireland, Latvia and Spain. Other Member States have mixed approaches.

[(52)] A reduction in overall progressivity due to bracket creep has been estimated for Germany, The Netherlands and the UK (Immervoll, 2005).

[(53)] Some authors (Heer & Süssmuth, 2013) analyse the effect of bracket creep in the US with a DSGE model and find that bracket creep decreases inequality.

TABLE 3: APPROACH TO INDEXATION

	Personal income taxes	Social Security contributions	Cash benefits	Timing
Austria	Discretionary	Discretionary	Discretionary	Discretionary
Belgium	Automatic	Automatic	Automatic	Mix
Bulgaria	n.a.	n.a.	n.a.	n.a.
Croatia	n.a.	n.a.	n.a.	n.a.
Cyprus	n.a.	n.a.	n.a.	n.a.
Czech Republic	Discretionary	Automatic	Discretionary	Annual for SSCs
Denmark	Automatic	Not applicable	Automatic	Annual
Estonia	Discretionary	Automatic	Discretionary	Annual for SSCs
Finland	Discretionary	Discretionary	Automatic	Annual
France	Discretionary	Automatic	Automatic	Annual
Germany	Discretionary	Discretionary	Discretionary	Discretionary
Greece	Discretionary	Automatic	Discretionary	Annual for SSCs
Hungary	Discretionary	Discretionary	Discretionary	Discretionary
Ireland	Discretionary	Discretionary	Discretionary	Annual
Italy	Discretionary	Automatic	Discretionary	Annual
Latvia	Discretionary	Discretionary	Discretionary	Annual
Lithuania	Automatic	Automatic	Automatic	Annual
Luxembourg	Discretionary	Automatic	Automatic	Biannual if > 2.5%
Malta	n.a.	n.a.	n.a.	n.a.
Netherlands	Automatic	Automatic	Automatic	Annual
Poland	Discretionary	Automatic	Discretionary	Annual for SSCs; every three years for family benefit
Portugal	Discretionary	Discretionary	Automatic	Annual
Romania	n.a.	n.a.	n.a.	n.a.
Slovak Republic	Automatic	Automatic	Automatic	Annual
Slovenia	Automatic	Automatic	Automatic	Annual
Spain	Discretionary	Discretionary	Discretionary	Discretionary
Sweden	Automatic	Automatic	Automatic	Annual

Source**:** (OECD, 2023b).
Notes: As the information in this table is from the OECD report, referenced, recent tax reforms likely introduced due to the high levels of inflation (e.g. Austria) were not included but will considered in future publications.

2.4 Tax competition in Personal Income Taxation

Globalisation and digitalisation can make the labour tax base more mobile, as confirmed by a rise in the mobility workers during the recent pandemic. In response, governments have introduced attractive tax regimes for high-net-worth individuals and skilled workers (e.g., digital nomads) to incentivise them to move to their countries. These regimes often involve lowering tax rates statutory and de facto rates (personal income and wealth taxes), particularly for top income earners whose higher skills and less manual tasks allow them more flexibility to move to countries with the most beneficial tax regime. This creates a substantial advantage compared to taxpayers with fewer resources. EU average personal income tax rates have not seen significant drops since 2008-2009, except for Eastern European countries and when compared to CIT (Gstrein, Herold, & Neumeier, 2022) [(54)]. However, top PIT rates have decreased in 21 Member States and capital taxation has also dropped across the board (see section 2.5 below). These changes may also be associated to migration behaviour motivated by tax reasons [(55)].

Tax competition was previously discussed mostly in the context of corporate taxes, but the increasing mobility of people has prompted the introduction of new regimes to attract high-net-worth and high-skilled individuals. As demonstrated above, personal income tax is a very important source of tax revenue. As this tax base becomes more mobile, competition between countries for attracting it has also become more important. A study published by the European Parliament (Gstrein, Herold, & Neumeier, 2022) has shown that high-net-worth individuals are highly sensitive to tax incentives making changes in income and wealth taxation more likely to prompt migration responses. This emphasises the potential impacts of such regimes and highlights the importance of further regulating them within the EU-27 Member States. Government exemptions and special rates for foreign high-skilled and high-net-worth individuals have resulted in the number of preferential tax regimes countries rising from 5 in 1998 to 28 in 2021 across the globe [(56)].

These regimes usually target specific groups and do not necessarily require the existence of economic activity or skills though they may. Indeed, some of these schemes target individuals based on their income level and are designed to attract high-net-worth individuals. They are not progressive as flat rates and lump sums are usually offered. This allows these new taxpayers to be taxed more favourably than other tax residents. Some other schemes relate to income earned while performing a specific economic activity i.e. these schemes provide new residents with tax benefits depending on their profession or qualifications and it is given under specific conditions and may apply for a limited period of time. The benefits include special rates or deductions that substantially reduce the effective tax rate paid by new individuals compared to the rest of tax residents. There are also Regimes targeting pensioners to attract individuals with a higher-than-average purchasing power and again have a different tax treatment between these individuals and other tax residents.

Special PIT regimes can therefore create economic distortions within the Member States. This occurs as different tax rates are applied to taxpayers with the same income, the horizontal equity principle. It also risk marking it more difficult for the tax systems to contribute to redistribution. Studies (e.g. Godar, Flamant, & Gaspard, 2021) suggest that less mobile EU citizens may face PIT increases to compensate for the revenue loss caused by these regimes that benefit high-income earners and companies (see section 2.2).

In addition, tax regimes that attribute benefits based solely on specific individuals' wealth levels create more distortions. Although there are some advantages to these regimes such as, for example, providing

[(54)] In all 27 Member States there were 10 observed reductions including: declines were: FI 1 pp; NL 1.5 pps; FR 1.5 pps; RO 2 pps; CZ: 2 pps; BE 3pps; EE: 3 pps; HR: 4 pps; LV: 4 pps and HU 10 pps.

[(55)] The authors, in p.21, refer to a study that shows that changing tax rates had a direct effect on the mobility of high-income earners within Switzerland (Gstrein, Herold, & Neumeier, 2022). Although the effects are measured for Switzerland, and the EU is not a not a single country, freedom of establishment allows EU citizens to freely move and establish themselves in any Member State.

[(56)] A recent report from the EU tax observatory discusses such schemes (see: (Godar, Flamant, & Gaspard, 2021)).

more skilled workers or more capital, there are also some difficulties. The incoming individuals can increase demand for public services and infrastructures unfair labour market competition for residents, difficulties in finding affordable housing and other commodities creating resentment among locals as they face higher taxes or lower access to quality services.

While some Member States may benefit from introducing these preferential regimes, they may result in a cost to other Member States. These schemes can in the short term increase a Member State's revenue as their tax base increases (i.e., more income to be taxed) whilst reducing taxes for these taxpayers. Tax revenues could also increase indirectly through their contribution to the economy (labour and capital input) and spillover effects resulting from their relatively high consumption. Different Member States have now adopted preferential regimes, and it is likely that others will adopt similar regimes as there is a global increase in mobility of both companies and individuals. The Covid-19 pandemic and the IT developments it spurred may have been partly responsible for an increase in workers' mobility and in the number of those 'working from abroad', most notably high-skilled workers. This makes it more attractive and lucrative for jurisdictions to adopt such regimes (Godar, Flamant, & Gaspard, 2021). Moreover, the range of responses or types of schemes could also be widened by countries introducing regimes to neutralise tax incentive effects of other PIT preferential regimes.

If such uncoordinated developments turn into a race to the bottom, they may considerably erode the tax base in all EU Member States, curtailing funds EU social welfare states invest in public expenditure programmes. This could have consequences for programmes such as education and upskilling that made their workers attractive or healthcare systems for example. It could also widen inequalities linked to the lower progressivity of the PIT systems and governments' inability to maintain their level of services. Differences in access to services across income groups could reduce the trust in the tax-benefit system and in institutions more generally. The lower bound estimation by the EU Tax Observatory sets the fiscal costs of preferential regimes for the EU at EUR 4.5 billion per year with at least 200,000 individuals benefitting from these regimes in the EU and UK (Godar, Flamant, & Gaspard, 2021).

Further investigation and action may need to be taken to identify and regulate harmful tax regimes. This includes preferential schemes that undermine the progressivity of tax systems and create favourable regimes for already extremely high-income individuals. By benefitting these individual countries, revenue losses are inflicted on other EU Member States who would have remained in the absence of such regimes. The EU is uniquely placed and can support tax coordination among Member States. The need for EU action on personal income tax has already been recognised by both the Commission and the Parliament [57].

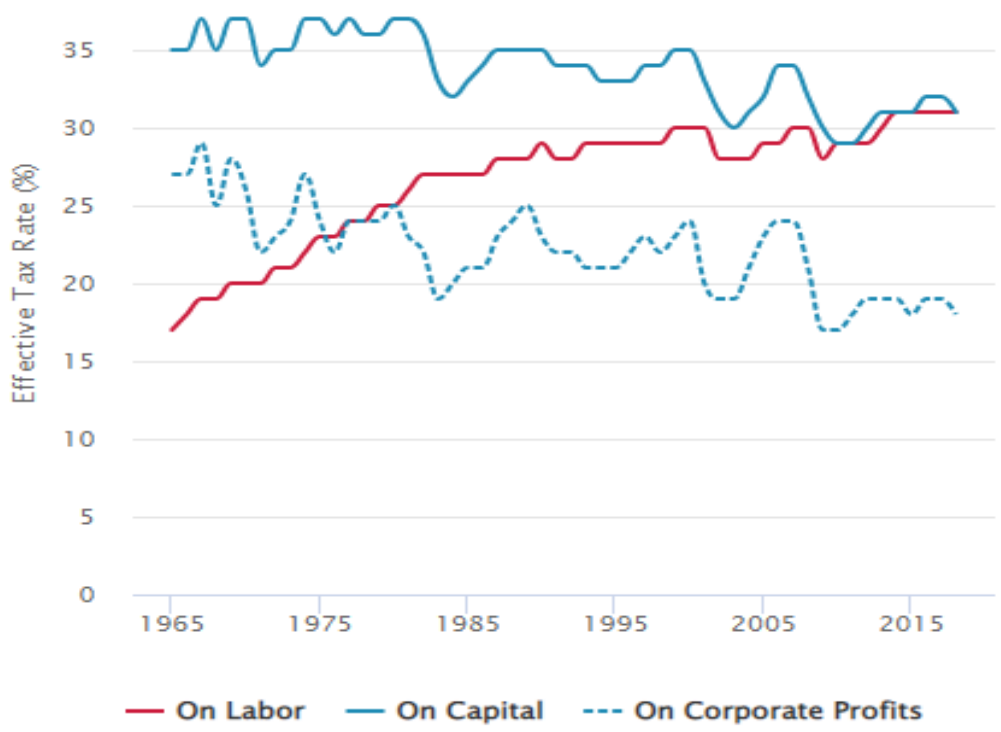
2.5 Fairness and the taxation of capital income and capital assets

Over the last five decades, effective tax rates on privately owned capital have declined, while those on labour have on average increased. Macroeconomic effective tax rates for labour, capital and corporate profits for developed rich countries are depicted for the period 1965 to 2018 in Figure 26 [58]. The average effective tax rate on capital has declined while the average effective rate on labour has almost doubled since the 1960s and slightly increased further since 2008. The trend line for corporate profits resembles that of capital taxes. In this context, it is useful to remember that capital taxation comprises the taxation of income from capital as well as any taxation of capital assets, i.e., stocks of capital. The taxation of capital incomes falls under PIT if the income recipient is a natural person and CIT if the income is received by a legal person, i.e., an incorporated entity.

[57] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021IP0416

[58] Globalisation and factor income taxation, (Bachas, Fischer-Post, Jensen, & Zucman, 2022), based on national account data since 1965. Capital taxation comprises taxation of capital incomes for individuals and companies (interest received, dividends, capital gains, profits etc.). The taxation of corporate profits is a form of capital taxation at the source, the tax base are profits. Dividends are not included in this category.

FIGURE 26: EFFECTIVE TAX RATES ON CAPITAL AND LABOUR



Source: Globalisation and factor income taxation, (Bachas, Fischer-Post, Jensen, & Zucman, 2022), page 43**,** based on national account data since 1965.
Notes: Data up to 1993 excludes communist regimes but accounts for 85-90 % World GDP. From 1994-2018 with former communist countries included it accounts for 98 % of World GDP. The data is weighted, country-year observations by their share in that year's total national domestic product, in constant 2019 USD (N=156).

While capital income and capital assets are closely related, fairness implications of capital income taxation and capital asset taxation should be considered separately. Capital incomes derive from capital assets. Both are strongly concentrated at the top of the income distribution. Wealth, assets, capital assets and capital holdings all refer to an individual's accumulated economic resources and are used interchangeably. The sum of a person's holdings of capital assets is considered their wealth. In general, the distribution of wealth is more concentrated than incomes. As a result, capital income as share of total income increases with income levels. Capital income taxation takes the flow of economic resources as tax-base, capital asset taxation is based on accumulated economic resources. The reminder of the section focuses on the taxation of personal capital incomes and assets and disregards CIT, which will be discussed in more detail in Chapter 3.

2.5.1 Taxation of capital income

Personal capital income is the second important income category in personal income taxation, next to labour income. Different types of capital income such as income from financial assets, private pension funds or rental income are commonly taxed as personal income [(59)]. Realised capital gains are also generally considered relevant capital income. Many tax systems treat capital income differently from labour income. A preferential treatment of capital income is often justified by the theoretical argument that capital is more mobile than labour

[(59)] There is considerable heterogeneity in the taxation of household capital across Member States. An overview is provided in (Princen, et al., 2020).

and can thus more readily avoid taxation (Sorensen, 1994). Since the distortion of taxation (dead weight loss) is inversely related to the strength of the reaction to taxation (captured by the income elasticity of taxation) less reactive tax bases should face higher taxes [60].

A fairness perspective should consider and compare the taxation of capital incomes and labour incomes. Given that the concentration of capital income increases with total personal income, the move away from comprehensive income taxation towards dual income tax systems that could be observed in many Member States since the mid-1980s implies a preferential treatment of capital income, which is regressive. Capital income might also become more important in the future with developments in robotisation, automation and the use of artificial intelligence. A comprehensive and universal taxation of all forms of capital income on an equal footing with labour income taxation would assure revenue neutrality when factor income shares change and would not distort the specific uses of capital. In addition, preferential treatment of capital income can induce labour substitution (Jacobs & Bovenberg, 2010). While this section focuses on personal income taxation, it should be noted that dividends are paid out of after-tax profits, CIT can thus be seen as some form of capital taxation at the source. In addition, there are gender differences in capital ownership tilted toward men (Meriküll, Kukk, & Rõõm, 2020). More equal treatment of different forms of income would thus increase the gender neutrality of taxation (Gerber, Klemm, Liu, & Mylonas, 2020).

Comprehensive taxation of realised capital gains for all asset classes minimises distortionary effects of taxation. There is little economic justification for treating realised capital gains from financial assets, housing, collectibles, crypto assets, or any other asset differently. The exclusion of specific assets from capital gains taxation distorts investment decisions. Some countries allow a tax-free realisation of capital gains after a specific holding period. Richer households with less liquidity and resource constraints can more readily use such holding periods than poorer households.

A universal allowance on a minimum level of capital income can encourage low-income households to save. Distortions are minimised when different types of income are treated equally. An allowance on a minimum and fixed level of capital income could however be granted to all households. Since the level of capital income increases with household income, returns on saving for low- and middle-income households could thus be excluded from capital income taxes while the largest shares of capital incomes, accruing to richer households, would still be taxed.

Automatic exchange of information between countries can mitigate tax evasion and avoidance and allow more stringent taxation of personal capital income. Income taxation is generally based on the residency principle [61]. Traditionally labour was strongly connected to physical presence, the place of work was generally also the place of taxation. This was mostly not true for capital income, which could be accrued anywhere in the world. Digitalisation has made both capital and labour more mobile. At the same time countries have established automatic exchange of information on income received abroad, implemented in the EU by the Directive on Administrative Cooperation, while the OECD's common reporting standards (CRS) assure some level of information exchange globally.

2.5.2 Taxation of capital assets

A comprehensive evaluation of fairness of taxation should also consider capital asset taxation. Assets, or accumulated economic resources, can be taxed directly on a regular basis (net-wealth taxes, property taxes) and when wealth is transferred (inheritance, estate, and gift taxes). While it can be argued that net-wealth

[60] Note that capital income from dividends has in most cases already been taxed when a CIT is levied on profits. A reduced rate on capital income from dividends could thus be justified to avoid excessive taxation of this type of income.

[61] This is true as a general principle. There are however exceptions: tax treaties sometimes allocate taxing rights for employed income to source states (e.g. in the case of cross-border workers). Rental income from real estate is often taxed where the real estate is located.

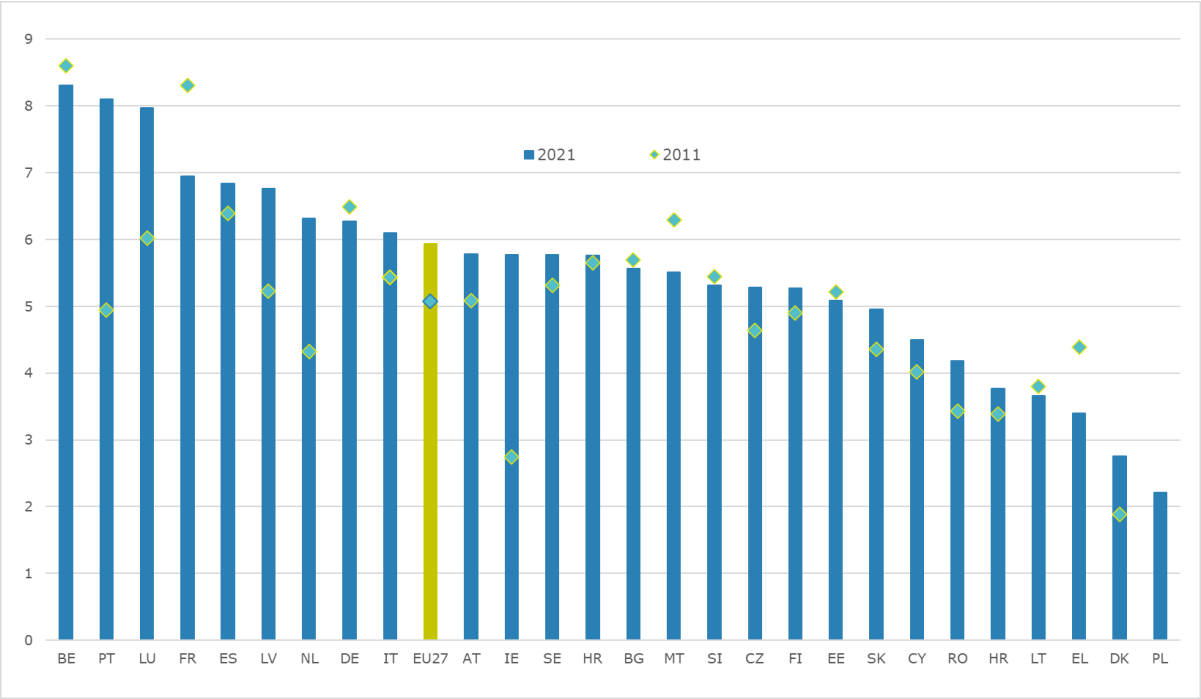
taxation is a taxation of substance [62], proponents of a wealth tax name at least three arguments for a taxation of net wealth: wealth taxation can be motivated by income tax avoidance opportunities only available to wealthy individuals, the high and increasing levels of wealth inequality, and high levels of carbon emissions, which are closely related to wealth levels and are similarly strong concentrated [63]. Finally, compared to the taxation of capital income, the taxation of wealth does not to distort investment decisions: investments with higher returns face a higher tax burden while wealth taxation is independent of wealth-holders productivity (Guvenen, Kambourov, Kuruscu, Ocampo, & Chen, 2023).

Very high wealth holdings allow strategies for income tax avoidance that are not available to other taxpayers. Increasing asset prices are a major source of wealth creation for asset holders. In most tax-systems, incomes from capital gains are only taxed upon realisation, i.e., when assets are sold, and value increases are realised. Wealth holders can thus postpone taxation while their wealth increases. Wealth is not only increasing in nominal terms but also in relative terms, i.e., the share of all economic resource flows each year, which can be commanded by wealth holders, increases (see Figure 27). In addition, high wealth holdings permit for a strategy sometimes called 'buy, borrow, die' (McCaffery, 2002): individuals borrow against their wealth assets as collateral. These loans, which can in principle be rolled over indefinitely, are not considered income but can be used to finance consumption needs.

[62] Wealth is a stock of economic resources, while income describes an inflow of economic resources. Most wealth is held as some form of capital assets and earns an income or wealth increases due to asset price increases. Assuming however constant wealth which does not earn an income, the taxation of such wealth would eventually diminish the wealth. Taxation of substance thus refers to the taxation of stock of economic resources as opposed to taxation of flows of resources (income taxation).

[63] On emission and wealth inequality see for example (Chancel, 2022) and (Knight, Schor, & Jorgenson, 2017). (Boadway & Pestieau, 2021) and (OECD, 2018) provide general arguments for net wealth taxation.

FIGURE 27: NET WEALTH TO NATIONAL INCOME RATIO (2011 AND 2021)

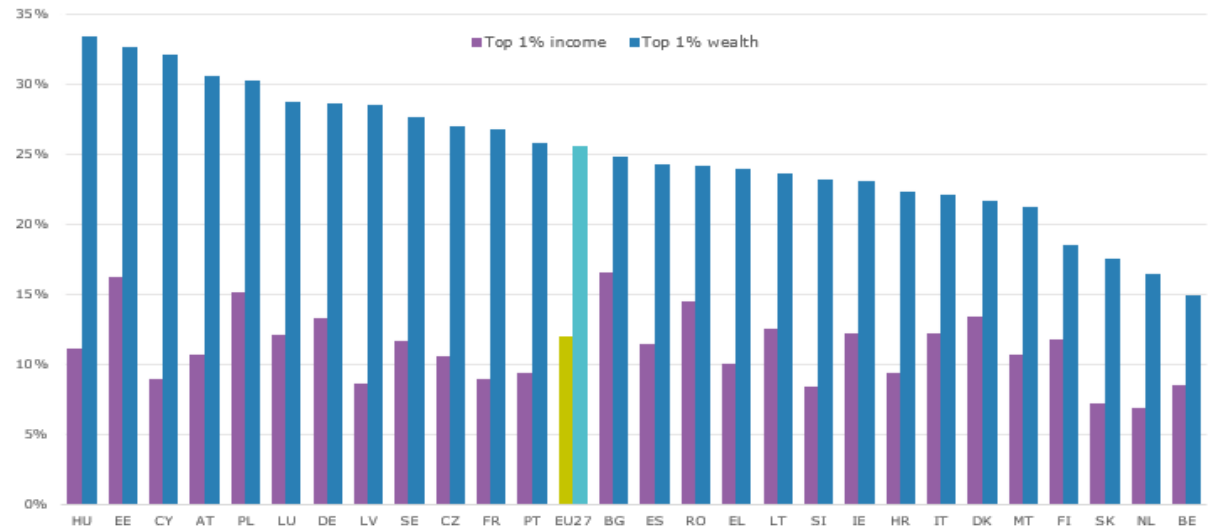


Source: European Commission, DG Taxation and Customs Union, based on World Inequality Database, (accessed on 09/02/2023).
Notes: Net national wealth over net national income for 2011 and 2021 sorted in declining order on 2021 wealth-income ratios.

Wealth income ratios are increasing, i.e., accumulated wealth is getting larger compared to annual income. As depicted in Figure 27, net wealth in the EU is almost six times larger than annual net national income in 2021. In many Member States and the EU as a whole, the importance of wealth to income compared to 2011 has increased (from about 540 % to about 590 %). Increases are more dramatic if compared over a longer time period, according to some authors (Piketty & Zucman, 2014), the ratio of private wealth to national income on average almost doubled between 1970 and 2010 (from 210 % to 400 % in 2010 in DE; 240 % to 680 % in IT and 300 % to 580 % in FR).

Wealth is more heavily concentrated than income and the concentration of wealth is increasing in most Member States. Figure 28 depicts the share of income and wealth held by the top-1 % of individuals of the respective distribution, in 2021. Top wealth shares are throughout higher than top income shares. In the EU, the wealthiest 1 % of the population hold 25.6 % of all wealth. This compares to 12 % of all income accruing to the top-1 % income earners.

FIGURE 28: TOP 1 % INCOME AND WEALTH SHARES (2021)



Source: European Commission, DG Taxation and Customs Union, based on World Inequality Database, (accessed on 09/02/2023).
Notes: Countries sorted by share of wealth owned by top 1% of wealth holders.

Most countries in the EU have abandoned wealth taxes in the past due to low tax revenues, high collection effort and problems of valuation. Low revenues were the result of wide-ranging exemptions, tax avoidance and evasion as well as limited enforcement. Instead of granting exemptions on certain forms of wealth, which had often been justified by liquidity concerns, wealth taxes should cover a comprehensive wealth definition [64]. A focus on the top of the wealth distribution overcomes liquidity concerns [65]. Tax avoidance could be tackled with a modification to the residence principle, taxing individual wealth for some time also when people change their residency. And tax evasion can and is mitigated with increased cooperation, information exchange and possibly a register of ultimate owners for assets (Saez & Zucman, 2022); (Perret, 2021); (OECD, 2018)[66].

There are further problems related to the taxation of wealth. Wealth can be stored in many different assets, which often might be difficult to value. It might thus be difficult to properly establish the tax base. Non-productive wealth holdings do not generate income, so the taxation of such wealth holdings might result in liquidity constraints. A focus on very high wealth holders, however, might mitigate liquidity considerations. In addition, wealth taxation is often accused of economic double taxation since wealth can be accumulated through saving taxed income. Wealth taxation also faces the challenge that potential taxpayers have numerous ways to mitigate and avoid taxation (Advani & Tarrant, 2021).

Due to the high concentration of wealth, a net-wealth tax focused on the very top of the wealth distribution would capture a considerable share of the tax base. Given that the richest 1 % own about 25 % of all wealth in the EU and that wealth is 4-6 times larger than GDP, a tax rate of only 1 % on the top-1 % wealth holders could produce tax revenues of 1-1.5 % of GDP. For the EU GDP of EUR 14.5 trillion, this would result in tax revenues of EUR 145 billion. These back-of-the-envelope calculations however do not account for

[64] Taxes on specific asset types like housing or land can have desirable characteristics, which will be discussed below. In the present context of a net-wealth tax, a limited scope of the tax base threatens to undermine legitimacy of the wealth tax since holders of different asset classes are treated differently.

[65] Larger wealth holdings are generally based on broader portfolios including asset classes with different degrees of fungibility. (Loutzenhiser & Mann, 2021) show that liquidity constraints are limited and can be solved through proper design.

[66] Tackling the evasion of wealth taxes would be desirable also from a fairness perspective, as empirical evidence shows that the top of the wealth distribution is particularly engaged in tax evasion (Leenders, Lejour, Rabaté, & Van't Riet, 2023).

behavioural responses of taxpayers. A recent study evaluating a harmonised wealth tax in the EU takes a more detailed look (Krenek & Schratzenstaller, 2022). Assuming a tax rate of 1 % for wealth holdings between EUR 1-5 million and 1.5 % for larger wealth holdings, and accounting for tax base elasticity, they find revenues between EUR 165 and 177 billion for the EU. A wealth tax including wealth holdings of EUR 1 million and more would however cover 4.37 % of the population, i.e., about four times more than a focus on the top 1 % of wealth holders only.

A number of taxes focus on specific types of assets. Member States apply several wealth-related taxes which focus on specific asset classes separately, like housing taxes, land taxes, other natural resource taxes (e.g. forestry yield taxes, landing taxes on fish, mineral severance taxes), and excise taxes on luxury goods, for example [(67)].

Properly designed housing taxation can provide an efficient source of tax revenue since immovable property is an inelastic tax base. While taxation is generally linked to the residence of the taxpayer, many countries tax immovable property within their jurisdiction, often independent of the residence of the ultimate owner. Property constitutes a physically immobile and therefore relatively inelastic tax-base. Recurrent taxation of property is thus relatively efficient due to limited dead-weight loss. A recent OECD report (OECD, 2022b),however, finds that the actual design of housing taxes often limits their efficiency, equity, and revenue potential [(68)].

Recurrent property taxes are generally preferable to transaction taxes (e.g. stamp duties, real estate transfer taxes). Transaction taxes are comparatively easy to administer since the available purchase price can be used as tax base so that further valuation efforts on valuation are not necessary. They might however negatively impact on the housing market and distort decisions on residency, labour supply and mobility (OECD, 2022b). Recurrent property taxes have been shown to be less distortive than transaction taxes [(69)]. They can be levied on the value of the land, the whole property, or imputed rents. Given their limited use in the EU, there is scope for them to play a more important role in the tax mix of the future. Challenges for recurrent property taxes include inefficient, regressive, and distortive tax exemptions (e.g. for main residences), liquidity constraints and the issue of valuation [(70)].

The relevance of property taxes and especially recurrent property taxes varies considerably across countries. Figure 29 below depicts Member States' tax revenues from recurrent property taxes and other property taxes as a share of GDP. Property taxes are most important in France, Belgium, Greece and Spain and least important in the Czech Republic and Estonia. Recurrent property taxes only are important in Greece, France, Denmark and Italy. Recurrent taxes on property are absent in Malta and have very limited importance in Luxembourg.

Focusing taxation on non-produced wealth (e.g., land, natural resources) could alleviate some of the problems related to wealth taxation. Besides the problem that wealth holders might avoid taxation by migration or hiding assets abroad, some critics argue that the indiscriminate taxation of all forms of wealth can result in disincentives for the accumulation of productive capital. Natural resources are available in fixed supply

[(67)] Excise taxes on specific luxury goods have been prominent historically and can still be found in some third countries. They are however quantitatively not relevant within the EU.

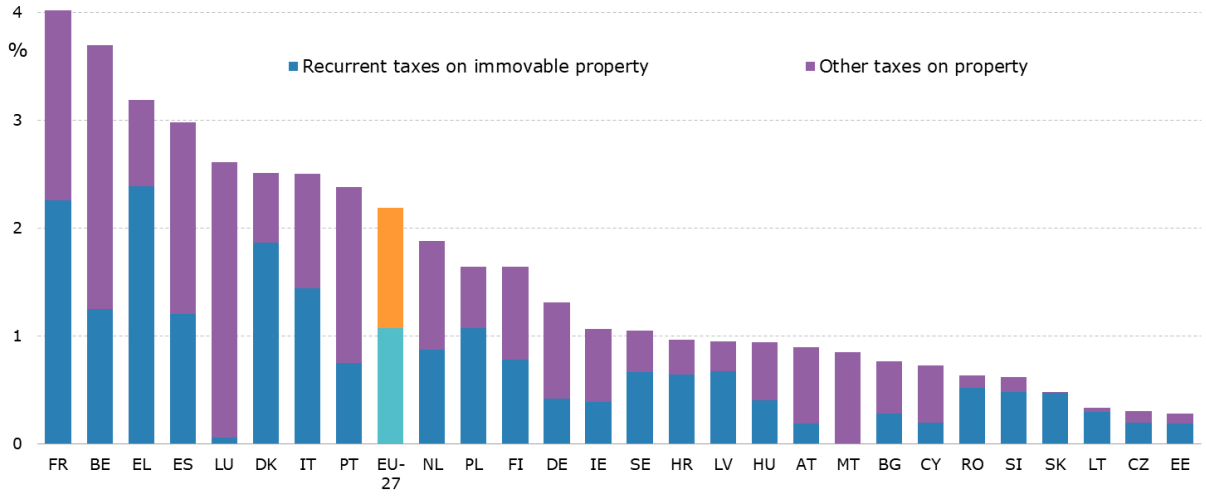
[(68)] Since housing wealth is the main form of wealth held by the middle-class, recurrent property taxes are considerably less progressive than a net wealth tax. A progressive tax schedule for example could increase progressivity.

[(69)] Sometimes it is argued that transaction taxes on property would reduce speculation and mitigate the risk of housing market bubbles. This effect however remains empirically ambiguous and macro-prudential policies such as capital requirements or loan-to-value limits seem more suitable (Crowe, Dell'Ariccia, Igan, & Rabanal, 2011). Also see (Leodolter, Princen, & Rutkowski, 2022).

[(70)] In addition to the broad discussion on housing taxation by (OECD, 2022b); (Leodolter, Princen, & Rutkowski, 2022) focus their analysis on immovable property taxation. The distributional impact of mortgage tax relief is discussed in (Leodolter & Rutkowski, 2022).

and taxation would fall on economic rents with no impact on supply. Some authors estimate that land makes up 40 %-60 % of non-financial wealth in the US (Goodhart, Hudson, Kumhof, & Tideman, 2021). They analyse a tax shift from labour to land, taking the value of land as a tax base. Importantly, the value of buildings, equipment and other human made capital assets on the land is excluded from the tax base. The study indicates that such a tax shift would reduce land prices but could considerably increase economic output and employment.

FIGURE 29: COMPOSITION OF PROPERTY TAXES BY MEMBER STATE, 2021 (% OF GDP)



Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.
Notes: 'Other property taxes' include taxes on capital and taxes on transfers (including inheritance and gift taxes) and transactions.

2.5.3 Inheritance and gift taxation

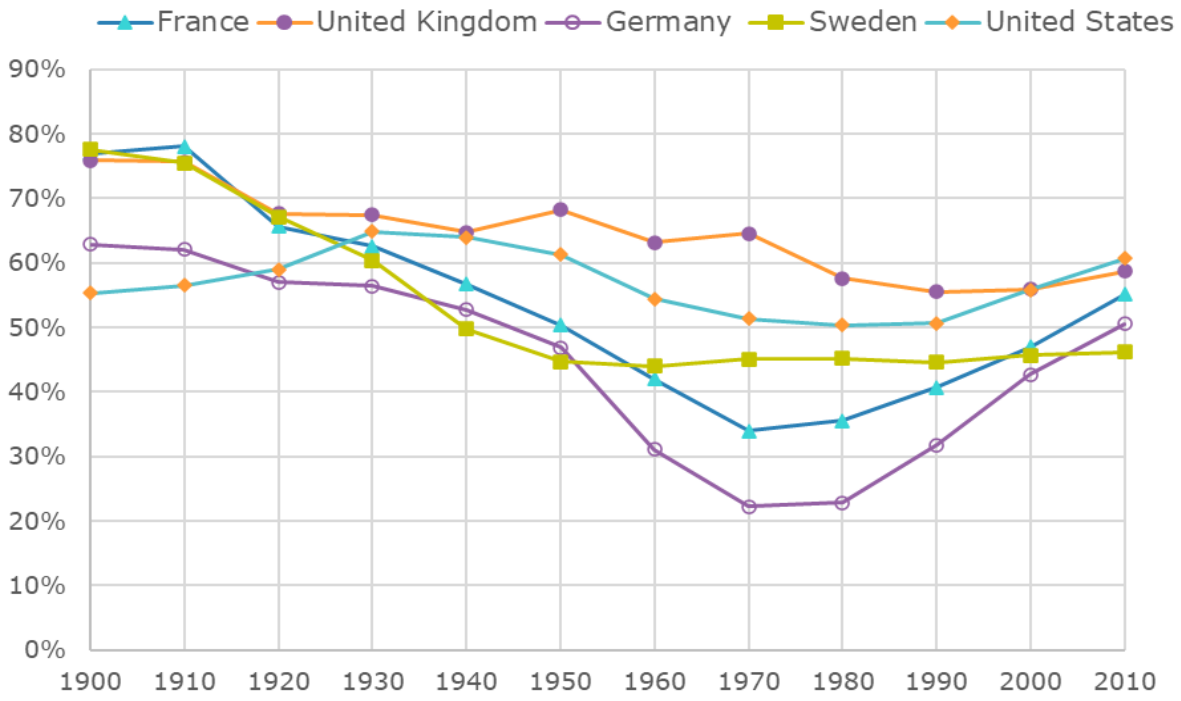
A large share of capital assets held in the EU have been acquired through inheritance (see Figure 30 depicting France, Germany and Sweden). Given the highly unequal distribution of wealth holdings and the increasing importance of inheritances in ageing societies, taxation of inheritances is of particular importance for the tax mix of the future (Krenek, Schratzenstaller, Grünberger, & Thiemann, 2022). The taxation of gifts is in many Member States similar to the taxation of inheritances. In fact, gifts are often used to minimise inheritance taxation by a stepwise transfer of wealth, using exemption levels.

Inheritance, estate, and gift taxes [71] can be further useful instruments to reduce wealth inequalities (Elinder, Erixson, & and Waldenström, 2018). Estate, inheritance, and gift taxes are easier to administer than other asset taxes. They are not due periodically and they require more limited administrative effort compared to other wealth taxes since the value of relevant assets is established for the process of an ownership transfer (OECD, 2021a). Given that inheritance and gift beneficiaries have an incentive to report assets to ensure their ownership, tax liabilities can be readily established [72].

[71] Inheritance taxes are levied on the inheritance received by an heir. Estate taxes differ from inheritance taxes, in as much as the tax liability being based on net wealth of the deceased and not inheritance received. The discussion on inheritance taxation also extends to gift taxation as gifts also transfer wealth free of charge.

[72] Another advantage of these taxes is their limited incentive effect. There is even some indication that they might increase saving by donors of inheritances and labour supply by recipients. See for example (Erixson & Escobar, 2018) and (Garbinti & Georges-Kot, 2017). For a general discussion see (Princen, et al., 2020).

FIGURE 30: SHARE OF INHERITANCE IN AGGREGAGE WEALTH: EUROPE AND THE USA, 1900–2010



Source: European Commission, DG Taxation and Customs Union, based on (OECD, 2021a).

However, inheritance, estate and gift taxes are generally a minor source of revenue. Many countries grant exemptions or preferential rates for certain assets or heirs, for example because they may otherwise have to sell main residences or family businesses. While such exemptions can be justified, design flaws and the favourable tax treatment of gifts can also create tax planning opportunities. This results in lower tax revenues and might add an element of regressivity. Progressive tax rates in combination with relatively high basic allowances and the ready availability of tax deferrals could alleviate liquidity problems for heirs and increase public support for these taxes (OECD, 2021a).

More exchange of information on owned assets could help prevent tax evasion and avoidance. A European or ideally global registry of ultimate owners of assets could facilitate capital taxation, although the public interest for comprehensive and fair taxation needs to be gauged against and balanced with individual privacy rights. There may also be scope through better partnerships between tax and other authorities to improve enforcement. The G20 is exploring the feasibility of exchange of information on a voluntary basis in respect of immovable property transactions undertaken by residents of a jurisdiction in foreign jurisdictions [73]

[73] https://www.g20.org/content/dam/gtwenty/gtwenty_new/document/1st%20FMCBG%20Chair%20Summary.pdf

3 TAX SYSTEMS SECURING REVENUES WHILE PROMOTING INNOVATION: THE CASE OF CORPORATE INCOME TAXATION

This chapter looks at the role of corporate taxation in raising revenues while analysing the trade-off between generating revenues and imposing a cost to investment. It also analyses how corporate tax policies are used by Member States to attract and compete for investment or employment, which may lead to unfair tax competition. Furthermore, it provides an overview of the role the Code of Conduct on Business Taxation plays in preventing harmful tax competition within the EU. Finally, it addresses the introduction of new policies to improve the business taxation framework across the Union, providing an overview on the Pillar 1, Pillar 2, BEFIT and withholding tax initiatives. The chapter also provides an overview of work under the European Semester and the Recovery and Resilience Facility (RRF) in relation to addressing aggressive tax planning (ATP) practices, complementing the analysis in Chapter 6.

The chapter shows that Corporate Income Taxation (CIT) revenue has increased in 2021 and is a non-negligeable source of overall tax revenues. Statutory tax rates and the tax cost for investment (a measure using the so-called forward-looking model-based effective tax rates) vary significantly across Member States, as a result of very different designs of their CIT systems. While we see that taxes as a measure of costs for investment have been declining and this can be in support of research and development (R&D), there is also evidence of tax competition that can in some cases be considered harmful, as the work of the Code of Conduct Group demonstrates, for example. Regarding ATP, some progress is being made under the European Semester and the RRF to address some of the existing challenges, but some work remains to be done. Moreover, tax complexity can represent barriers for businesses, notably across the border, and can limit the ability of companies to benefit from the internal market. In this context, the EU through a variety of initiatives is trying to ensure a fairer, simpler, and more certain tax environment that can support businesses.

3.1 Corporate income taxation: revenues and statutory and effective tax rates

Corporate income taxation is a non-negligible source of tax revenue and has increased in 2021 compared to 2020, in line with the economic recovery. Following the decline of 0.3 percentage points in 2020 compared to 2019, revenues from corporate income as a share of GDP increased from about 2.4 % in 2020 to about 3 % in 2021 (see Figure 31). In other words, after the observed drop in revenue from corporate income associated with the COVID-19 pandemic, CIT revenues appear to have resumed the growth pattern observed up to 2017. Netherlands, Denmark, Ireland, Slovakia, and Lithuania all show increases above 1.3 pps of GDP. By contrast, Latvia and Portugal saw a decline of about 0.6 pps and 0.7 pps [(74)].

[(74)] Note that changes to the corporate tax system as well as in the overall economic situation may also explain changes in overall collection compared to previous years.

FIGURE 31: CORPORATE INCOME TAX REVENUES (% OF GDP), EU-27 AND EA-19, 2008-2021

Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.

Statutory rates on corporate taxation have been on a declining path, though more slowly in recent years. The average top tax rate on corporate income in the EU-27 was 21.5 % at the beginning of 2023, having dropped by more than 2 pps since 2009 (see Figure 32). The top statutory tax rate on corporate income (see annex 1) varies substantially among Member States from 31.5 % in PT to 10 % in BG.

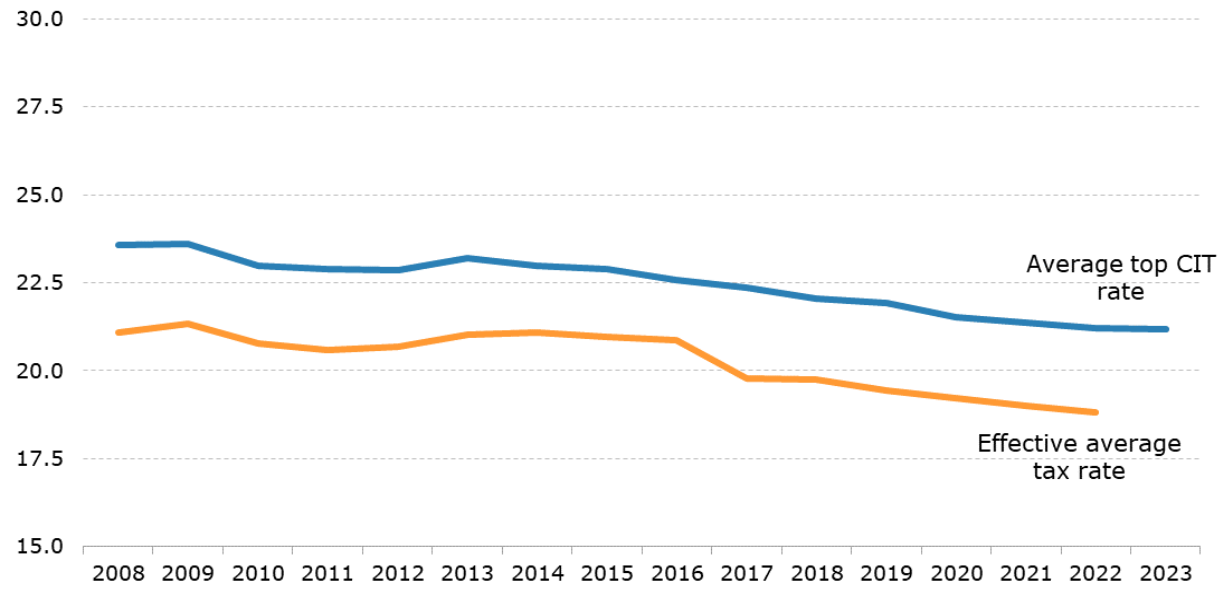
As taxes can represent a cost for businesses, **a number of indicators have been developed to measure the costs of taxes for investment decisions. These so-called model-based forward-looking effective tax rates** (ETRs) are synthetic tax policy indicators calculated on the basis of a prospective, hypothetical investment project based on modelling and estimations [(75)]. Such forward looking ETRs are not the de facto tax rate paid by companies on their income (these would be backward-looking ETRs). Unlike backward-looking ETRs, forward-looking rates do not incorporate any information about firms' actual tax payments and therefore do not necessarily account for ATP practices.

Two indicators are used: the (forward-looking) effective average tax rate (EATR) and the (forward-looking) effective marginal tax rate (EMTR). They have been declining over the last decade suggesting that the costs of taxes for investment decisions have been declining. The EATR reflects the average tax contribution a firm makes on an investment project earning above-zero economic profits [76]. In other words, it represents the average tax cost of investment for companies and can be below the statutory rate because it considers various tax support schemes put forward by governments, for example. The EATR can be an important variable for decisions regarding whether to invest and the location of the investment, notably for large investment projects. The EATR shows a continuous decline from about 21.1 % in 2008 to 15.8 % in 2022. The (forward-looking) effective average tax rate (see annex 2) also varies substantially among Member States from 29% in ES down to 9 % in BG.

[(75)] Forward-looking EMTRs are expected to determine firms' decisions as to where to invest and the intensity of such investment in a given location (Devereux, 2007); (Devereux & Griffith, 2003).

[(76)] It is defined as the difference in the net present value of pre-tax and post-tax economic profits relative to the net present value of pre-tax income net of real economic depreciation.

FIGURE 32: TOP CORPORATE INCOME TAX RATES AND (FORWARD-LOOKING) EFFECTIVE AVERAGE TAXATION RATES, 2009-2023



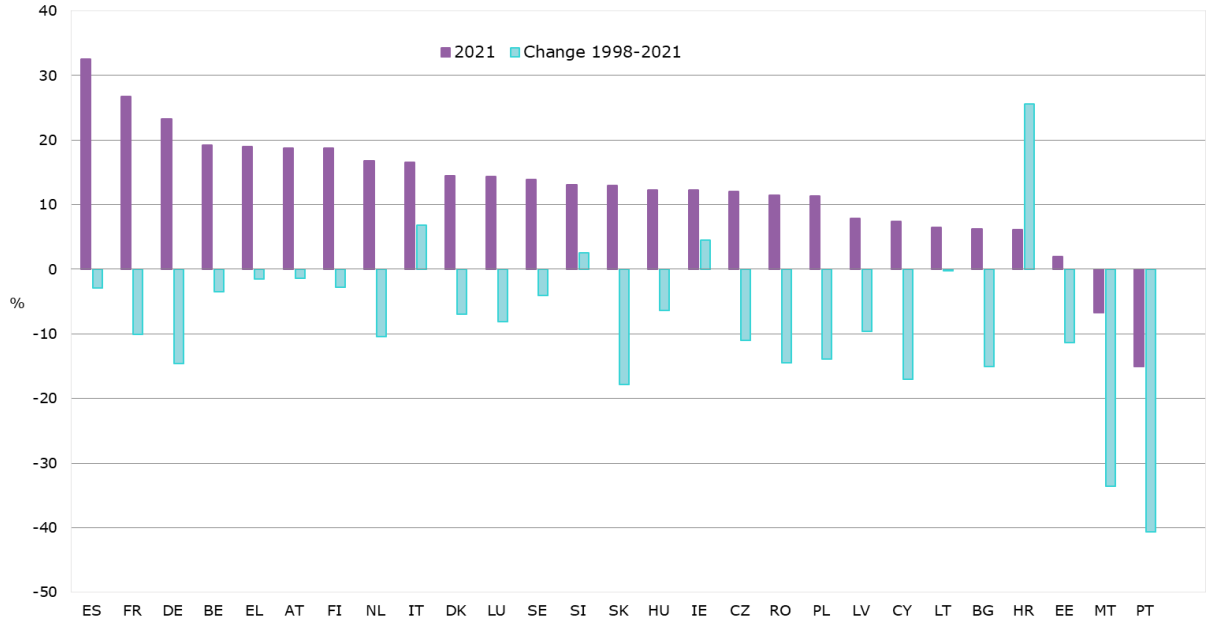
Source: European Commission, DG Taxation and Customs Union, based on (ZEW, 2023).

Corporate investment decisions on how much to invest in a given project are influenced by the effective marginal tax rate (EMTR) on corporate income. The (forward-looking) EMTR is a measure of the expected tax burden on the last euro invested in a hypothetical project that just breaks even (the 'marginal' investment) [77]. In other words, it measures the extent to which taxation increases the cost of capital at the margin and how taxation can distort financial decisions. On average, a lower EMTR may induce more units of investment. In other words, the EMTR is relevant for deciding how big an investment should be, once a firm has already decided to invest in a country/activity. Note though that tax sensitivity differs among firms with different profitability levels (particularly multinationals), with the least and the most profitable firms being less sensitive to EMTRs than firms with average profitability (Millot, Johansson, Sorbe, & Turban, 2020). The EMTR captures a wide range of factors in addition to statutory corporate tax rates, such as:

- the elements of the tax code affecting the determination of the CIT base;
- the source of financing for the investment (debt, retained earnings or new equity); and
- the type of asset to be invested in (machinery, buildings, intangibles, inventory or financial assets).

[77] The EMTR is calculated based on a series of assumptions about the pre-tax rate of return, the interest and inflation rates, and the asset and funding source composition. It does not in its primary nature (i.e., without extensions) reflect the impact of ATP or tax rulings/special tax regimes.

FIGURE 33: (FORWARD-LOOKING) EFFECTIVE MARGINAL TAX RATES (EMTRS) (%), 1998-2021



Source: European Commission, DG Taxation and Customs Union, based on (Spengel, Schmidt, Heckemeyer, & Nicolay, 2021).
Notes: The EMTR indicator is based on a version of the Devereux-Griffith model, which considers five types of asset and three sources of finance at corporate and shareholder level. This methodology uses a series of assumptions about the pre-tax rate of return, the interest and inflation rates, and the asset and funding source composition. It has been used to calculate (forward-looking) effective tax rates in the EU every year since 1998. The full dataset is available at:
https://ec.europa.eu/taxation_customs/publications/studies-made-commission_en

The theory of the tax cost for investment suggests several ways to influence the EMTR and design a tax system that may be more supportive of investment (Spengel, Schmidt, Heckemeyer, & Nicolay, 2021). These include, in addition to the reduction in the statutory tax rate (and which have declined over time): a) offering faster depreciation schedules; b) making equity costs deductible; and c) improving conditions for carrying losses forward to be offset against future profits. Corporate taxes also affect business location, profit-shifting and the choice of company structure. Lowering the EMTRs on equity and R&D expenditure can, in principle, increase investment, reduce the tax-induced corporate debt bias and increase R&D spending. Addressing the tax-induced corporate debt bias can lower the EMTRs for equity, and R&D tax incentives can do the same for R&D investment. For example, some reductions in the EMTRs for Belgium, Cyprus, Malta, Poland and Portugal [(78)] may partly stem from the introduction of notional interest deductions in those countries. Figure 33 shows the EMTRs for the EU Member States and how they changed in the last few years. EMTRs can vary significantly across Member States. A general decline can be observed which means that the tax cost of investment is estimated to have declined notably via some of the ways listed above. Note, though, that country-level EMTRs can mask substantial heterogeneity across sectors and companies as there are different tax incentives for different sectors and firms. To better understand how changes in ETRs have been reflected into higher investment remains an area for further research.

Note too that the decline in the EMTRs may also be the result of some level of tax competition among countries. While some level of tax competition may be seen as natural, in some cases it can be considered harmful and could distort trading and investments and distort the playing field in the context of the EU Single Market. In section 3.3.1 we will look at some of such examples.

[(78)] A negative EMTR for Portugal and Malta means that an additional unit of investment is de facto subsidised.

3.2 Research and development tax incentives

Research and development (R&D) is a key driver of innovation and long-term economic progress (European Commission, 2020b) and (Schoonackers, 2020). It enhances competitiveness of the EU market by positively impacting the various stages of product lifecycle, from production and distribution to final consumption. R&D investment can boost total productivity and innovation within a Member State (direct impact) or increase a country's ability to absorb worldwide available technology (indirect impact). While these impacts are applicable to all types of R&D investment, focusing on direct effects and digital technology could play an important role in strengthening the strategic autonomy of the EU in the ever-expanding digital market (Cornago & Springford, 2021).

To support this and be at the centre of the green and digital transition, the EU proposed to support a quick and widespread adoption of new technologies, disruptive innovations and new business models. Research and innovation are critical drivers and enablers for accelerating the green transformation of our societies, in line with the priorities of the European Green Deal. Half of the global reductions in CO2 emissions through 2050 will have to come from technologies that are currently at the demonstration or prototype phase (IEA, 2021). Regarding the digital transition, there are several digital R&I investment gaps of the EU relative to its main competitors. These correspond, for example, to: (1) EUR 20 billion in public and private investments per year to foster the development of artificial intelligence in the EU; (2) EUR 6 billion per year to support digital green technologies, and (3) EUR 5 billion per year for digital innovations/Data and Next-Generation Internet [(79)]. Leveraging EU R&D investment and manufacturing equipment excellence, including in nanotechnologies (European Commission, 2021b), is also particularly relevant for future policies such as the European Chips Act, as well as for the recently launched initiatives, namely European Alliance for Industrial Data, Edge and Cloud and the Alliance for Processors and Semiconductor technologies (European Commission, 2021c).

Existing literature shows that the overall R&D investment in the EU still appears to be sub-optimal and below the targeted 3% of EU GDP by 2030 [(80)] (Borunsky, Dumitrescu Goranov, Rakic, & Ravet, 2020); (Schoonackers, 2020). One of the main reasons for lagging behind in reaching the set threshold is due to innovative companies not being able to capture all the economic benefits from their inventions and disregarding positive spillovers that stem from knowledge creation (Hall, 2019); (Arrow, 1962). In other words, private returns fall behind social returns, which results in underinvestment at the company level compared to a socially optimal level, and this consequently limits the overall R&D investment at the economy level.

Special tax treatment has been used to reduce costs and uncertainty associated with R&D activities, which tend to be riskier than many other production activities (Schoonackers, 2020); (Arrow, 1962). In this context, governments are inclined to offer preferential tax treatments to address this issue. Yet, evidence on the effectiveness of such treatment remains somewhat mixed. For example, preferential treatment may hamper growth of the small and medium sized businesses (SMEs) since incentives usually come with thresholds on size (profit, number of employees, etc.) to differentiate between large and small companies (Spengel, et al., 2015); (Almunia & López-Rodríguez, 2014). To maintain the incentives, SMEs are henceforth discouraged to expand beyond the set thresholds, to avoid paying higher taxes [(81)]. Others argue that tax incentives for R&D could have positive effects on SMEs should these be accompanied with complementary measures aimed at raising human capital in those smaller firms (otherwise, compliance costs tend to get too high for SMEs to properly benefit from the incentive schemes) (Sterlacchini & Venturini, 2018).

[(79)] SWD(2020) 98 final.

[(80)] https://sciencebusiness.net/news/funding-synergies-nudge-eu-countries-closer-3-rd-spending-target-2030

[(81)] For example, companies intentionally split in two smaller entities to be under certain threshold and benefit from tax incentives.

TABLE 4: R&D TAX INCENTIVE FEATURES AS OF 2021

MS	Income-based	Expenditure-based				
	Patent box[1]	Tax credit	Tax allowance	Tax relief on payroll or SSC	Ceilings on eligible expenditure[2]	Accelerated depreciation
AT		●			●	
BE	●	●	●	●		●
BG						
CY	●					
CZ			●			
DE		●			●	
DK		●	●		●	●
EE						
EL	●		●			
ES	●	●		●	●	●
FI			●	●	●	
FR	●	●		●	●	●
HR			●		●	
HU	●	●	●	●	● ●	
IE	●	●			●	●
IT	●	●			●	
LT	●		●			●
LU	●					
LV			●			
MT	●	●			●	
NL	●			●		
PL	●		●			●
PT	●	●			●	
RO			●			●
SE				●		
SI			●			
SK	●		●		●	
EU-27	**14**	**11**	**13**	**7**	**10/4**	**8**

Source: OECD, 2022, Measuring R&D Tax Incentives (http://oe.cd/rdtax); OECD, 2022, Intellectual Property Regimes (https://qdd.oecd.org/data/IP_Regimes).
Notes: (1) Greece has a three-year exemption for profits from the sale of self-manufactured good based on internationally recognised patent Italy repealed its patent box in 2021 replaced it with a super-deduction for research and development spending (Daniel Bunn, Tax Foundation).
(2) Ceilings on eligible expenditure are considered further qualifications of tax credits (orange) or tax allowances (green).

Jurisdictions offer support to private R&D directly through grants and/or indirectly via tax incentives on both income and expenditure. Grants can be directed to projects with high social returns, but at the same

time involving higher administration costs (e.g., selection of projects by public offices). Tax incentives, on the contrary, may be considered market-based instruments as the choice of the R&D programme is left in the hands of the companies (Appelt, Bajgar, Criscuolo, & Galindo-Rueda, 2016). The indirect support can come in the form of income- and/or expenditure-based tax incentives. The former refers to patent boxes [82], while the latter comprises tax credits and tax allowances (both redeemable against CIT), tax relief redeemable against payroll withholding tax or social security contributions, and accelerated depreciation provisions. Table 4 above shows an overview of tax incentive instruments for R&D in the EU. Finland is one of the most recent countries to introduce some expenditure-based incentives.

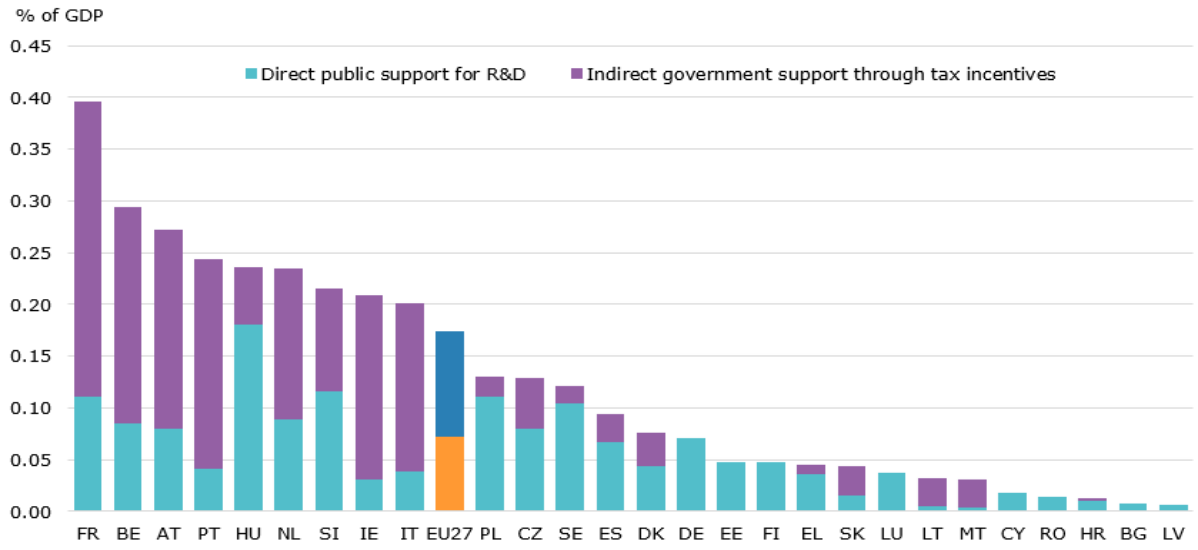
As shown in Figure 34, the combined support to business R&D (direct and indirect) is relatively high in France, Austria, Belgium, Portugal, Hungary, the Netherlands and Hungary, ranging between roughly 0.23 % and 0.40 % of GDP. On the other hand, Malta, Latvia, Cyprus and Romania offer less support to business R&D (around 0.01 % of GDP). While these low levels logically reflect the very low volumes of business R&D investment in these countries, it is important to note that in several Member States with very high business R&D investment, such as Germany, Finland, Denmark and Sweden, the amount of public support to business R&D is nevertheless also very low. This reflects major differences in the Research and Innovation (R&I) strategy and policy mix of those Member States, with notably an important policy focus on a strong public science base (universities and research institutes) able to provide businesses with the highly skilled human resources and opportunities for cooperation they need. For instance, a comparison of the evolution of the R&I policies of Germany and France (European Commission, 2019) [83] highlighted that, in the last decade, public support to R&D in Germany has been focused on strengthening the public science base, while France developed more strongly its fiscal support to business R&D.

The EU average support to business R&D stands at 0.1% and 0.08% of GDP for tax incentives and direct funding respectively. This is lower than the United States' support to business R&D (about 0.25 % of GDP), reflecting the similarly lower business R&D investment in % GDP in the EU than in the US. The intensity of public support (the ratio of public support to business R&D investment to total business R&D investment) are in fact equivalent in the EU and in the US.

[82] The evidence in the literature suggests that patent/IP boxes do not necessarily stimulate R&D and can be used as a profit-shifting instrument. For more details on the inefficiency of IP boxes see the previous edition of this report (European Commission, 2022b).

[83] "Cruising at Different Speeds: Similarities and Divergences between the German and the French Economies", European Economy Discussion Papers, European Commission's Directorate-General for Economic and Financial Affairs, page 127.

FIGURE 34: R&D DIRECT PUBLIC SUPPORT AND INDIRECT GOVERNMENT SUPPORT THROUGH TAX INCENTIVES, 2020

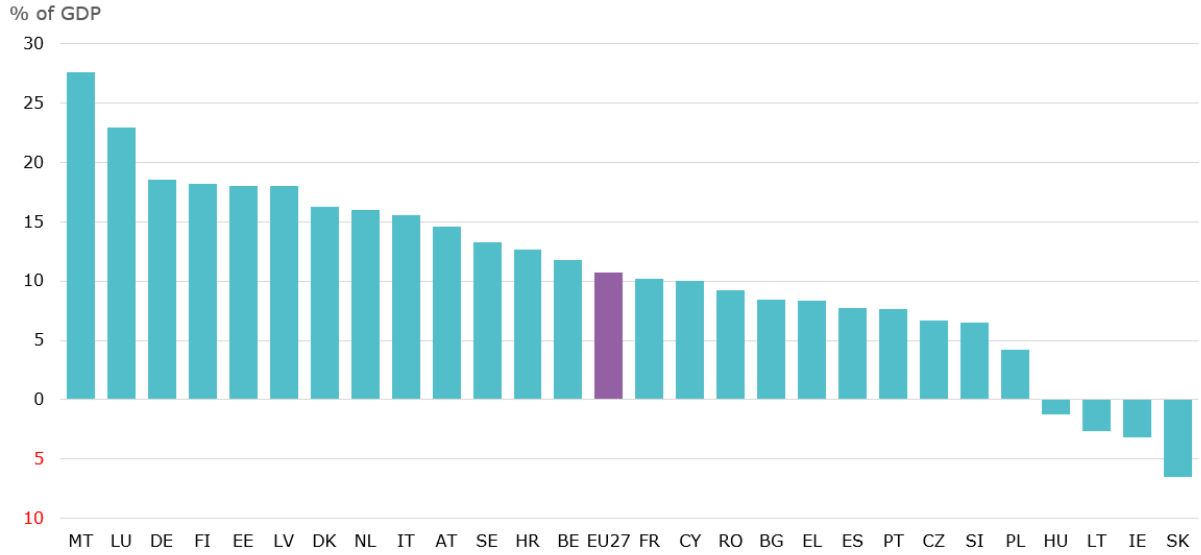


Source: European Commission, DG Taxation and Customs Union, based on OECD, 2022, R&D tax expenditure and direct government funding of BERD indicator.
Notes: (1) For direct public support, 2019 figure is used for Austria, Belgium, Bulgaria, Cyprus, Denmark, France, Ireland, Luxemburg, Malta and Sweden. For tax incentives, 2018 figure is used for Spain and 2019 figure for Germany.
(2) Estimated direct public support for R&D includes direct government funding, funding by higher education and public sector funding from abroad.

The EATR for R&D measures the average estimated cost of taxation on R&D investments that earn an economic profit (González Cabral, Appelt, & Hanappi, 2021). Figure 35 shows the EATRs for R&D investments across Member States. This gives an insight into the incentives included in the tax system for the location of R&D investments that are profitable. In principle, the higher the tax incentives that reduce effective cost of R&D investment, the lower the EATR [84]. The EU average EATR is close to 11 %, while Hungary, Ireland, Lithuania, and Slovakia all have negative rates ranging between -6.5 % and -1.5 %, meaning they are relatively very generous in granting tax subsidies to infra-marginal R&D investments.

[84] The level of decrease of EATR is defined by the generosity of a tax system, as well as by other elements of the CIT system. Inframarginal R&D investments look at, for example, the location of the R&D laboratories (for more details see González Cabral, Appelt & Hinappi, 2021).

FIGURE 35: R&D EFFECTIVE AVERAGE TAX RATES (IN %), 2021



Source: European Commission, DG Taxation and Customs Union, based on OECD, 2022, Effective tax rates for R&D.

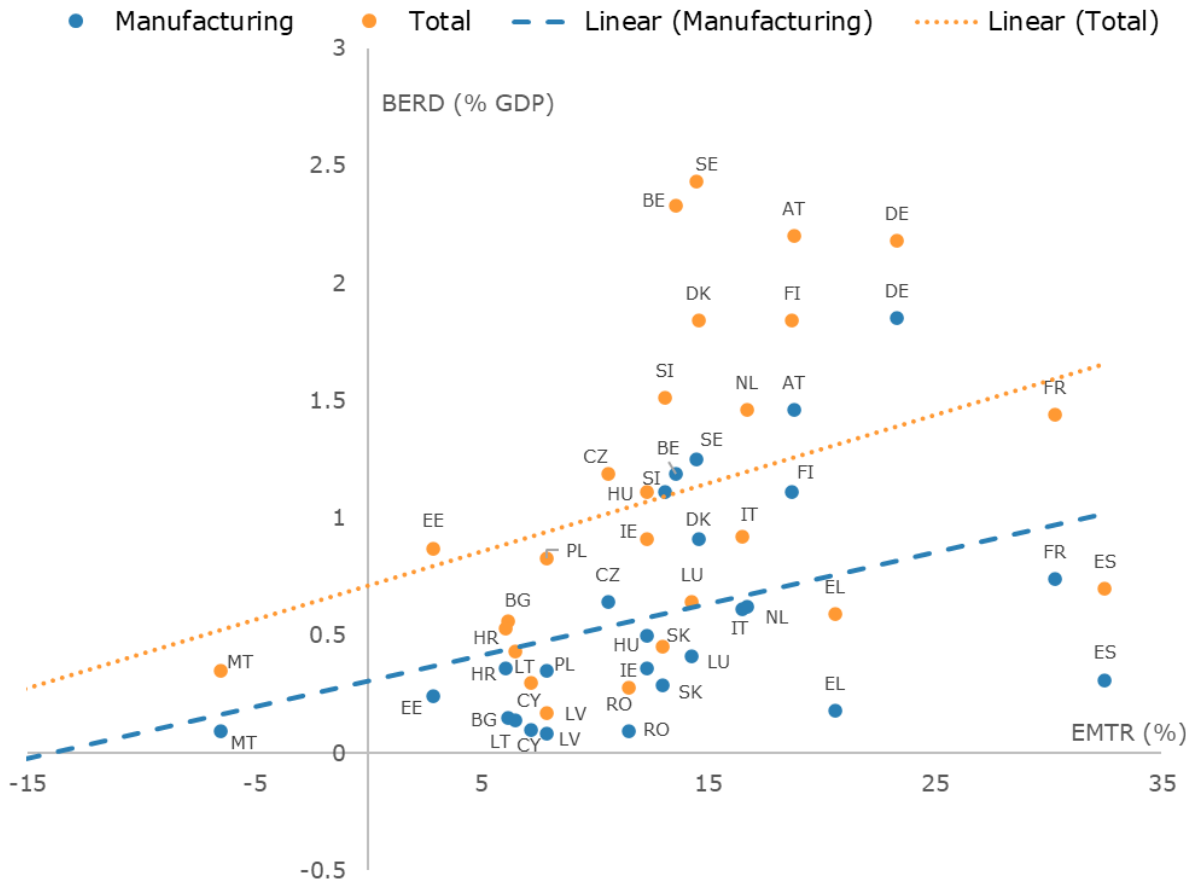
Contrary to expectations, a simple correlation analysis shows that higher levels of effective marginal taxation are associated with higher levels of expenditure in R&D. Figure 36 reports, at country level, for 2019 [85], a positive correlation between EMTR and R&D expenditure by firms (BERD) [86] for both the total economy and the manufacturing sector (blue dots) [87]. Note, though, that the correlation does not appear linear and, if one excludes the more extreme values, the correlation does not appear obvious. Of course, this is a simple correlation, and it does not account for many important factors other than taxation that determine the location and magnitude of R&D. Generally, when looking at R&D, while tax subsidies can play a role, a more holistic assessment is needed as there are other ways of providing incentives for investments and skills' availability, access to relevant opportunities for cooperation with the public science base, institutional capacity, trust in institutions, access to direct public support (grants schemes), institutional capacity, trust in institutions, access to credit, access to venture capital, amongst others, can play an important role on investment decisions for R&D. Nevertheless, it may also raise questions about the effectiveness of the tax policy support for R&D (see below).

[85] Year 2019 is chosen because the availability of data.

[86] BERD is intramural R&D expenditures within the Business enterprise sector as % of GDP.

[87] Note that using specific EATR for R&D instead of EMTR, produces similar correlations to those seen in Figure 36.

FIGURE 36: EFFECTIVE MARGINAL TAX RATE (EMTR) AND BUSINESS R&D EXPENDITURE (BERD)



Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.

An important question is therefore how effective tax policy-based support for R&D and the resulting research output is. The effectiveness of R&D tax incentive schemes exhibits substantial heterogeneity. While the literature shows that, on average, R&D tax incentives stimulate the level of R&D expenditure, the underlying features of tax incentive schemes are very important in determining the resulting effectiveness (Blandinières & Steinbrenner, 2021). For instance, schemes targeting SMEs are, on average, shown to be particularly effective. And caps on incentives or pre-approval processes for such incentives have not negatively impacted the effectiveness of various R&D tax incentive policies. Importantly, clear and stable tax incentive frameworks reduce the uncertainty and thus also increase the resulting effectiveness of the schemes. According to some authors (Evans & Joseph, 2022), there are as many options as there are considerations and best practice depends on each country's policy needs and stage of development. In general, more research is needed to investigate the relationship between tax incentives and R&D investment and their effectiveness in producing the desired outcomes.

3.3 Tax competition and the complexity of corporate taxation: the work of the Code of Conduct

3.3.1 Tax competition through tax incentives

Tax competition is a reality both at EU and international level. To stimulate growth, ensure job creation or stable employment, and answer national policy needs, Member States wish to provide an attractive business environment. In this context, they often design national tax policies to attract and/or maintain investment and production activities. Such tax competition can have positive effects and contribute to consolidating the competitiveness of the European Union and the Member States at international level. However, it can and has, to a certain extent, led to a race to the bottom, with large observed differences between the legal statutory corporate tax rate and the effective corporate tax rate (as showed previously), and indeed a general misperception regarding the level of taxation in the EU, i.e. that is generally very high. For example, it is often said when looking at statutory rates that corporate income taxation in the EU is higher than in the OECD including when compared to other developed economies (see various OECD reports and previous editions of the ART). This may not be the case when we look at the effective tax rates. Moreover, excessive tax competition constrains the policy choice of some Member States as they are forced to respond to their neighbour's policy.

While reducing effective taxation on firms may be part of Member States' policy mix to support investment (see Sections 3.1 and 3.2), **tax competition becomes problematic when it is excessive and/or its tools** (i.e., tax exemptions, reduced tax rates, investment incentives) **are designed in a harmful manner, exceeding certain boundaries**. Several EU instruments help address harmful tax competition. While direct tax measures are traditionally decided by Member States and EU acquis is still limited, the EU acquis does introduce some limitations regarding tax competition to ensure the functioning of the internal market. Tax competition is governed by State aid provisions in the Treaty on the Functioning of the European Union, and by a political commitment agreed amongst the Member States in 1997 and reflected in the Code of Conduct on Business Taxation.

Member States agreed on a Code of Conduct on Business Taxation in 1997, a legally non-binding instrument, to limit the effects of harmful tax competition and to coordinate the use of tax incentives [88]. The Code of Conduct establishes criteria under which tax measures are to be regarded as harmful. Its application was tasked to the Code of Conduct Group, composed of representatives of the Member States and the Commission. The Group is a peer-review forum. Under the rules of the Code, the Member States committed to refrain from introducing tax measures which are harmful within the meaning of the Code (standstill clause) and to roll back existing tax measures that constitute harmful tax competition (rollback clause).

Based on notifications from the Member States, the Code of Conduct Group scrutinises national preferential tax measures [89]. A measure may be assessed 'harmful' if any of the following criteria is met: the measure is ring-fenced (designed to grant benefits only to non-residents, or only for transactions with non-residents); it lacks substance requirements; it departs from internationally agreed principles in determining taxable profits; or it is not transparent. In addition, the Group has also approved Guidance on: (a) features for specific preferential regimes (e.g., holding company regimes, intra-group financing activities, tax privileges for business in special economic zones, patent box regimes, notional interest deduction regimes) and b) administrative practices (e.g., procedural aspects for the issuance of tax rulings).

[88] Preferential regimes or measures.

[89] i.e. tax measures that provide for a significantly lower level of taxation, including zero taxation, than those levels which generally apply in the Member State in question. The full list of the preferential tax measures dealt with by the Group, broken down by Member States and years, and the agreed guidance, are available on the dedicated webpage: https://www.consilium.europa.eu/en/council-eu/preparatory-bodies/code-conduct-group/

Since 1997, the Code of Conduct Group has examined more than 400 tax measures. Without being exhaustive, the figures and tables below give a structural overview of the work carried out by the Group. Figure 37 illustrates that the number of tax incentives used by Member States varies significantly. Figure 38 (in relation to Figure 37) illustrates the number of harmful regimes per Member State. Figure 39 is an example of the constraints of the decision-making process of the Group, which is based on consensus, and thus could not always agree on a common approach towards certain incentives. Figure 40, Figure 41 and Figure 42 illustrate that despite achieving consensus regarding common standards for specific tax incentives, like patent boxes, notional interest deduction regimes and special economic zones, the differences in the effective tax or interest rates are still considerable.

In a nutshell, over the last 25 years, around 210 of the 400 measures examined by the Code of Conduct Group were assessed *not harmful*, while 70 measures were *not assessed* for reasons like d*e minimis* or *out of scope*. These tax incentives, which are compliant with the Code of Conduct criteria, lead to significantly lower effective tax rates than the statutory rates operated in the Member States.

Although preferential regimes are designed in a more refined way in the last years, they are widespread among the Member States, being part of the tax environment and constitute strong investment incentives. This report is merely an inventory type of illustration of the work of the Code of Conduct Group and focuses on individual incentives. The combined effect of applying several tax incentives cumulatively by a taxpayer is not reflected.

Moreover, these effects can only contribute to an uneven tax treatment among taxpayers, contributing to the complexity of the tax systems and increase the burden of their administration. In addition, they lead to a reduction of national budgetary resources, and a relocation of activities which may not take place for obvious business motives.

FIGURE 37: NUMBER OF ANALYSED PREFERENTIAL REGIMES PER MEMBER STATE

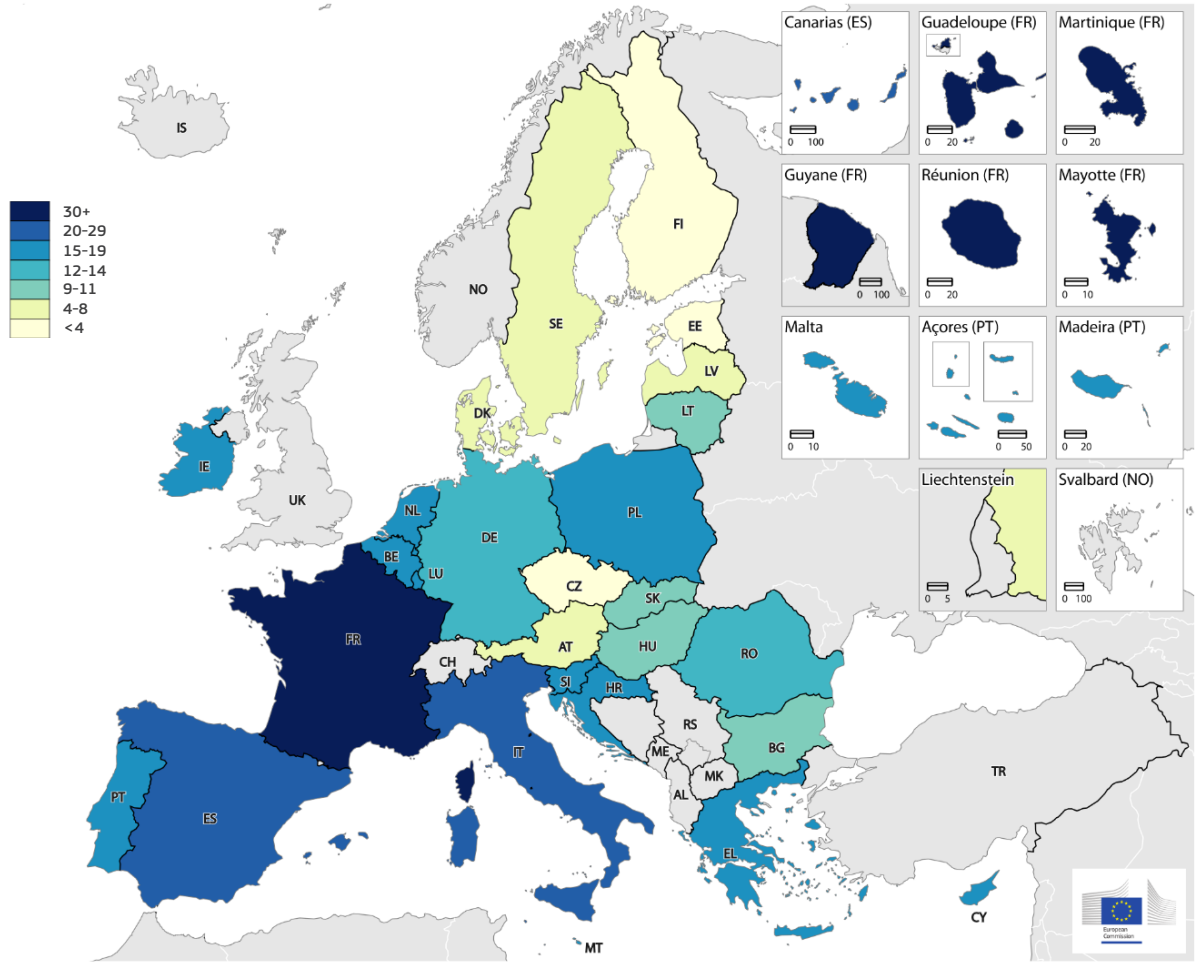


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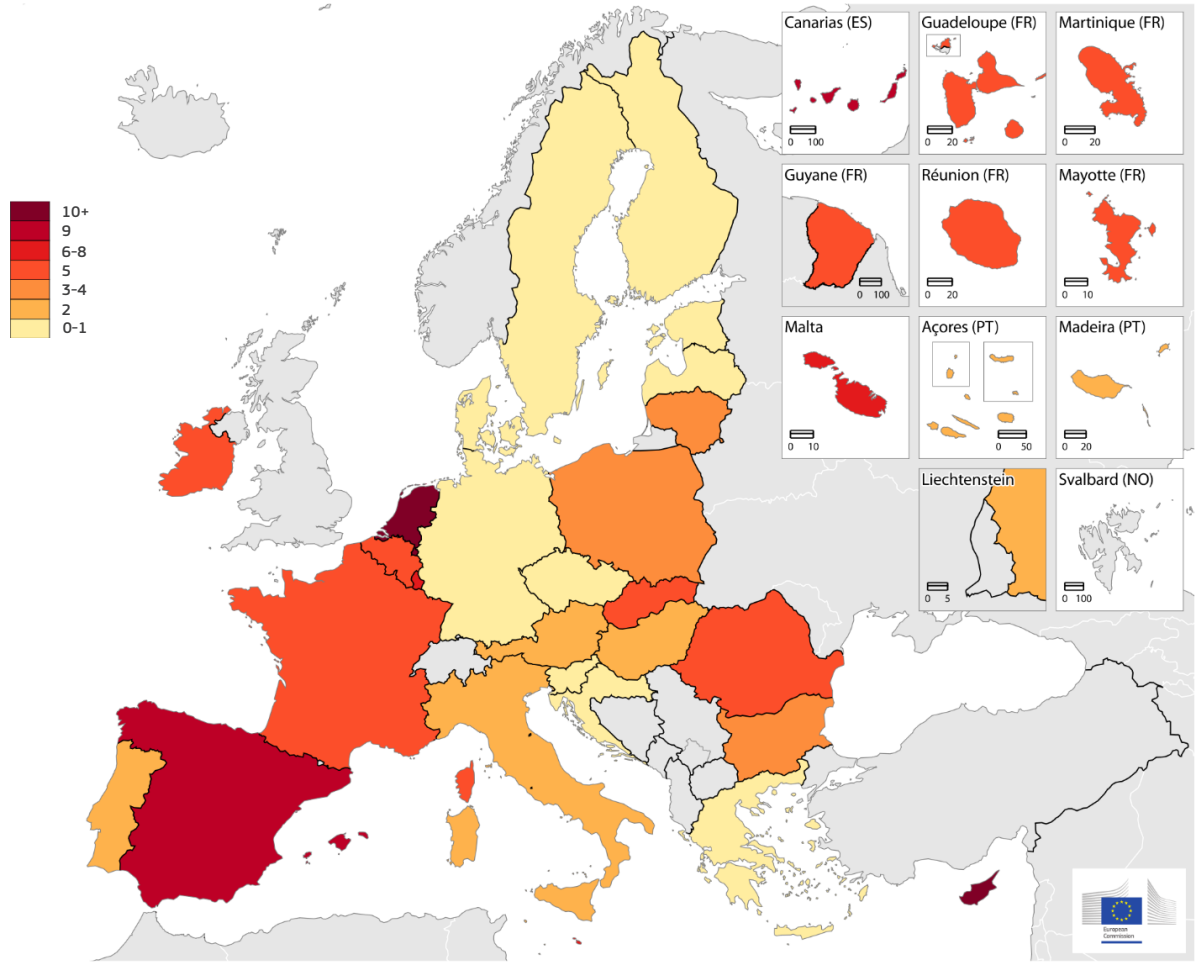
Figure 37 shows that France, Spain and Italy, Member States with relatively high statutory corporate tax rates, had the highest number of tax incentives examined by the Code of Conduct Group, whereas Finland, Sweden, Estonia, and Czechia had the lowest**.** However, the overall number of preferential regimes in a particular Member State does not necessarily reflect the "harmfulness" of that Member State's tax environment. Indeed, out of the three Member States with the most tax incentives examined, Italy belongs to the group of Member States with the least harmful regimes (2) and France (5) belongs to the countries with the lowest harmful ratio (i.e. those deemed harmful over all regimes examined). Figure 38 shows however that for certain EU Member States with a relatively high number of harmful regimes (e.g. >10 harmful regimes) the ratio between the harmful preferential regimes and their overall number of preferential regimes scrutinised is rather high. This may mean that some Member States may be more 'aggressive' than others when designing tax incentives aiming at attracting foreign investments.

Overall, out of the 400 regimes, ¼ have been assessed 'harmful' over the years. The remaining tax incentives have been designed either in line with the Code of Conduct criteria or were not assessed for reasons such as *de minimis,* or for being *out of scope*.

FIGURE 38: NUMBER OF HARMFUL REGIMES PER MEMBER STATE (ASSESSED BY THE GROUP SINCE IT WAS ESTABLISHED IN 1998)



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3.3.2 Types of preferential regimes scrutinised by the Code of Conduct Group

Tax competition in the EU has evolved over time. An attempt to categorise tax incentives on the basis of the work of the Code of Conduct Group shows that they have changed over time. In the first few years of the CoC and around the turn of the century, examples of special business tax incentives leading to no or very low effective level of taxation were most notably tax incentives for highly mobile activities, without requiring adequate substance (such as for offshore activities [90], financial activities; for passive income, such as royalties [91] and interest; for any other intra-group service activities [92]). The vast majority of these regimes were assessed as "harmful" by the Code of Conduct Group and were rolled back. By contrast, tax incentives notified in the last 5 to 10 years covered, in particular, investment incentives linked to R&D costs and fixed tangible assets

[90] E.g., full tax exemptions for companies that undertake transactions exclusively with non-residents.

[91] Patent box regimes: full tax exemption or reduced tax rate for income from royalties (intra-group payments or else).

[92] E.g., coordination centres type of regimes.

for specific industries, such as manufacturing, or limited to certain regions, such as special economic zones. As a result of the Group's work, substance requirements (such as adequate assets, premises, and employment) and anti-abuse measures for mobile activities were introduced. This was the so-called 'modified nexus approach' for patent boxes [93] and an anti-cascading provision for the notional interest deductions regimes [94].

Since 2018, 54 tax measures have been analysed by the Group and only two have been found harmful. This indicates that Member States are likely to design their tax incentives in line with the Code criteria. However, the structure of the individual incentives is heterogenous, as the following examples show. Figure 39 and Figure 40 present a thematic overview of the preferential regimes, and their design, currently applicable in the Member States and dealt with by the Code of Conduct Group over the time. In the last decade, prompted by pressure and workstreams at international level, the Group undertook several horizontal/ thematic evaluations, with the aim to assess similar preferential regimes present across the Member States.

For certain preferential regimes, such as shipping regimes (e.g. taxpayers subject to taxation by way of tonnage tax), **the Code of Conduct Group could not agree on their assessment** [95] [96], given the strong divided opinions expressed by the Member States. So far 16 shipping regimes in the Member States [97] have been brought to the attention of the Code of Conduct Group [98]. Given the taxation on a *forfetary base (tonnage)* instead of real profits, the effective tax rate is significantly below the standard corporate tax rate and the impact on national resources may be significant, depending on the number of beneficiaries and the corresponding real profits.

In 2016, all existing patent boxes in the EU – which lead to low, or no taxation of income derived from royalties - **were assessed 'harmful' because of the lack of a substance requirement,** in particular no adequate link between the creation of the asset and the taxpayer benefiting from the preferential taxation. The intellectual property (IP) regimes (preferential tax treatment to income from eligible intangible assets) introduced afterwards were assessed against the newly developed substance requirements by the Group, the so-called *modified nexus approach*. In light of the latter, they were assessed 'not-harmful'. Such IP regimes (17) are now widespread [99] in the EU.

One can note that despite many elements being approximated through the *modified nexus-approach*, such as eligible assets (patents, patents alike and software), eligible expenditure and eligible income**, the degree of tax advantage varies considerably among the Member States** (see Table 5). It goes from a full tax exemption or a 0 % effective tax rate (BE, CY, EL, MT) to 10 %-12 % effective tax rate (ES, FR, PT, SK). Therefore, while such IP regimes grant tax advantages only for income meeting the substance requirement, it remains nonetheless true that the effective tax rate is significantly below the statutory tax rate in the specific Member States.

[93] The taxpayers are entitled to the tax benefit only insofar and to the extent that they contributed to the creation of the relevant IP assets. See also Guidance agreed on nexus.

[94] See also Guidance agreed on NID regimes: https://www.consilium.europa.eu/en/documents-publications/public-register/ccg-ag/

[95] 1999 Primarolo report, paragraph 60-62, SN 4901/99.

[96] IBFD website.

[97] Spain, 2 regional regimes.

[98] Covers only the shipping regimes notified to the Code of Conduct Group.

[99] 15 Member States (Spain counts for 3 IP regimes, national and regional level. Such IP regimes are not entirely identical). Same remains true for shipping regimes, as Spain applies two of such regionally.

FIGURE 39: SHIPPING REGIMES IN THE EU ASSESSED BY THE CODE OF CONDUCT

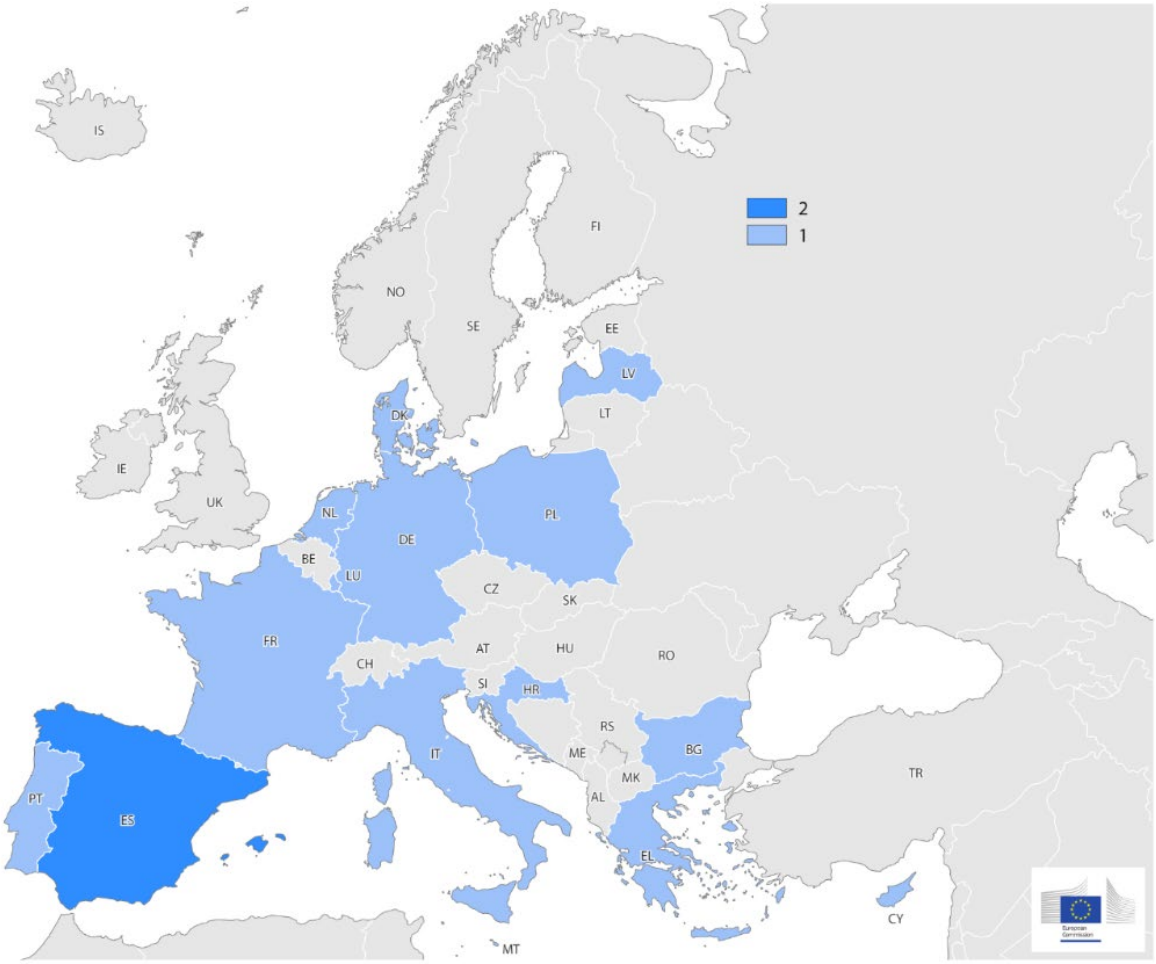

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FIGURE 40: INTELLECTUAL PROPERTY REGIMES IN THE MEMBER STATES ASSESSED BY THE CODE OF CONDUCT

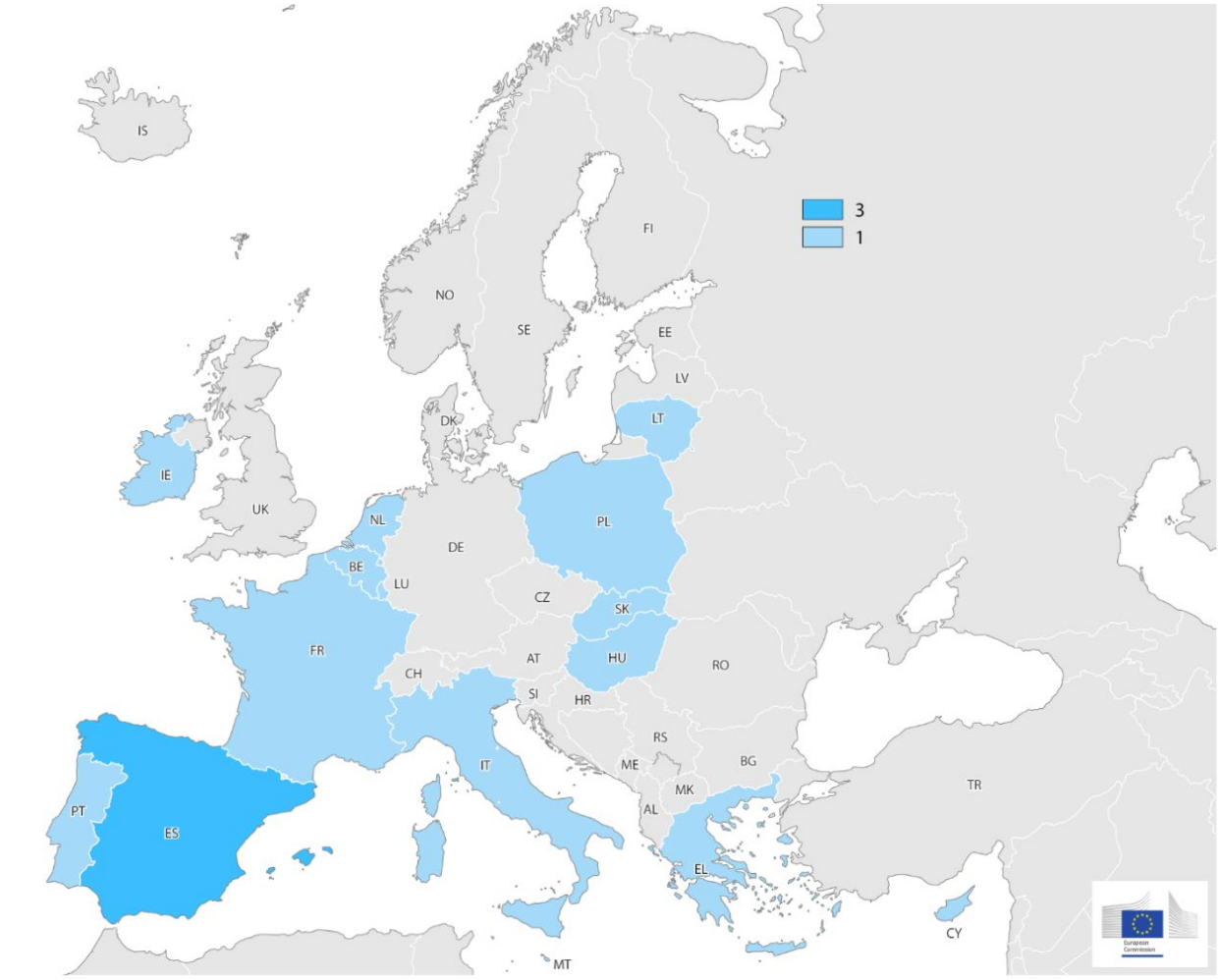

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TABLE 5: INTELLECTUAL PROPERTY REGIMES IN THE MEMBER STATES – MAIN FEATURES

MS	Short description	Effective tax rate per eligible items of IP income
BE	Reduction tax base by 85%	4.44 %
CY	Reduction tax base by 80%	2.50 %
EL	Deferred tax (tax exemption 3y)	0 % for 3 years [100]
ES (national level)	Reduction tax base by 60 %	10 %
ES (regional) [101]	Reduction tax base by 70 %	8.40 %
FR (metropole)	Reduced tax rate	10 %
HU	Reduction tax base by 50 % or by 100 %	0 %; 4.5 %
IE	Reduction tax base by 50 %	6.25 %
IT	Reduction tax base by 50 %; Capital gains: 100 % exemption,	12 % [102]
LT	Reduced tax rate	5 %
LU	Reduction tax base by 80 %	5.20 %
MT	Reduction tax base by 95 %	1.75 %
NL	Reduction tax base = only “20/25 part” is taxed	7 %
PL	Reduced tax rate	5 %
PT	Reduction tax base by 50 %	10.50 %
SK	Reduction tax base by 50 %	10.50 %

Most corporate tax systems present companies with incentives to acquire debt by making interest payments deductible, which can make it more attractive than equity financing. The extension of preferential tax treatment to equity may help reduce the debt bias in corporate taxation. In this respect, notional interest deduction (“NID”) regimes in the EU operate mainly through a tax base reduction [103], based on the annual increase in equity multiplied by an interest rate. The actual impact of a NID is less obvious as it is dependent on the amount of the equity increase [104], which is what a business decides to inject in their companies. The Group has approved soft-law Guidance on how such regimes should be designed to be in line with the Code of Conduct. Important aspects concerned the limitations in scope and the anti-abuse provisions (seen as substance requirement), given the previously established risks of cascading the tax benefits through

[100] Deferred taxation by 3 years, afterwards subject to standard CIT rate.

[101] Regional IP regimes: in Navarra and Basque Country; cannot apply cumulatively.

[102] +1.95% IRAP.

[103] Only the Romanian NID regime offers a temporary tax credit.

[104] Except for the Maltese NID regime which is stock based.

multiple subsidiaries and the generous tax benefit entailed when the regimes rely only on existing equity/stock, rather than on its actual increase.

However, the level of the interest rate applied to the increase in equity was left at the discretion of the individual Member State. Therefore, the effect of the incentive varies significantly amongst Member States' NID regimes (e.g., the applicable interest rate ranged in 2022 from 0 % in Belgium to 9.06 % in Malta, and an exceptional interest rate of 15 % in 2021 in Italy) as shown in Table 6.

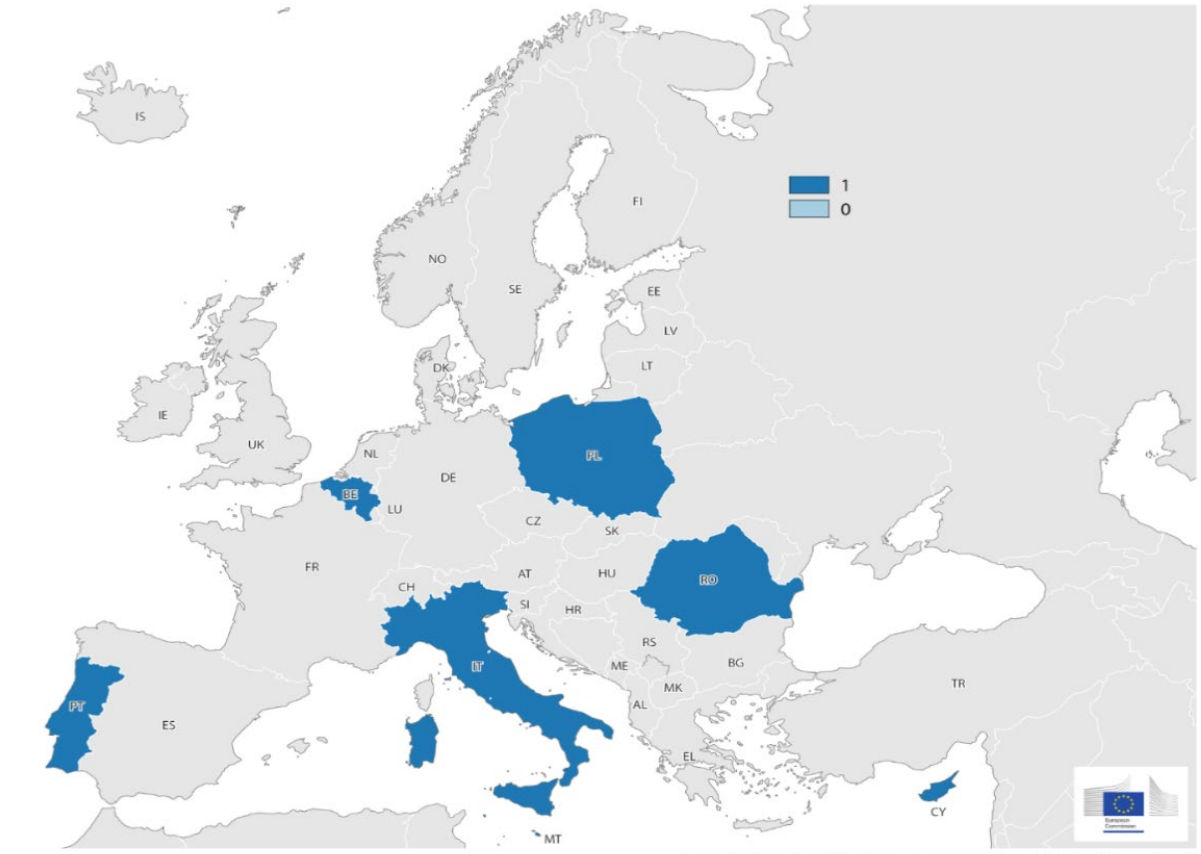
TABLE 6: INTEREST RATE APPLICABLE TO EQUITY INCREASES

Member States with NID provisions	Interest rate in 2022
Belgium	0 % [105]
Cyprus	Target rate [106] + 5 %
Italy	1.25 %
Malta	9.06 %
Portugal	7 %
Poland	2.75 %
Romania	Up to 15 % reduction of the income tax due

[105] 0.443% for SMEs; Belgium has recently adopted provisions to repeal its NID. This applies for taxable periods ending on or after 31 December 2023, although excess NID accumulated in the past may continue to be carried forward and deducted.

[106] Interest rate of the jurisdiction in which the equity is invested.

FIGURE 41: NID (NOTIONAL INTEREST DEDUCTION) REGIMES



In addition to preferential regimes which can be applied by all taxpayers pursuing the relevant activity or making the eligible investments, sometimes Member States introduce corporate tax advantages to attract investments in specific geographic areas. From a Code perspective, a geographically delineated area is a special economic zone ("SEZ") only if corporate tax advantages apply. The design, eligibility requirements and level of tax advantages granted in SEZ is far from homogeneous. As Table 7 shows, it goes from 10 year tax holidays (0 %) in Lithuania to a 12.5 % effective tax rate in Ceuta y Melilla (Spain).

Although a geographical delineation would imply that only a part of a Member State's territory qualifies as a SEZ, some Member States use criteria like the unemployment rate to make such a geographical delineation. This can lead to a fragmentation of the entire territory of a Member State into as many special economic zones as there are regions that meet the criteria. Therefore, the 'distortion' from the normal corporate tax rate is even widespread, in terms of territorial application: on the entire territory of certain Member States (e.g., in Bulgaria or Poland), the relevant SEZ tax benefits could apply if the relevant requirements of the regime are fulfilled.

FIGURE 42: SPECIAL ECONOMIC ZONES REGIMES IN THE EU ASSESSED BY THE CODE OF CONDUCT

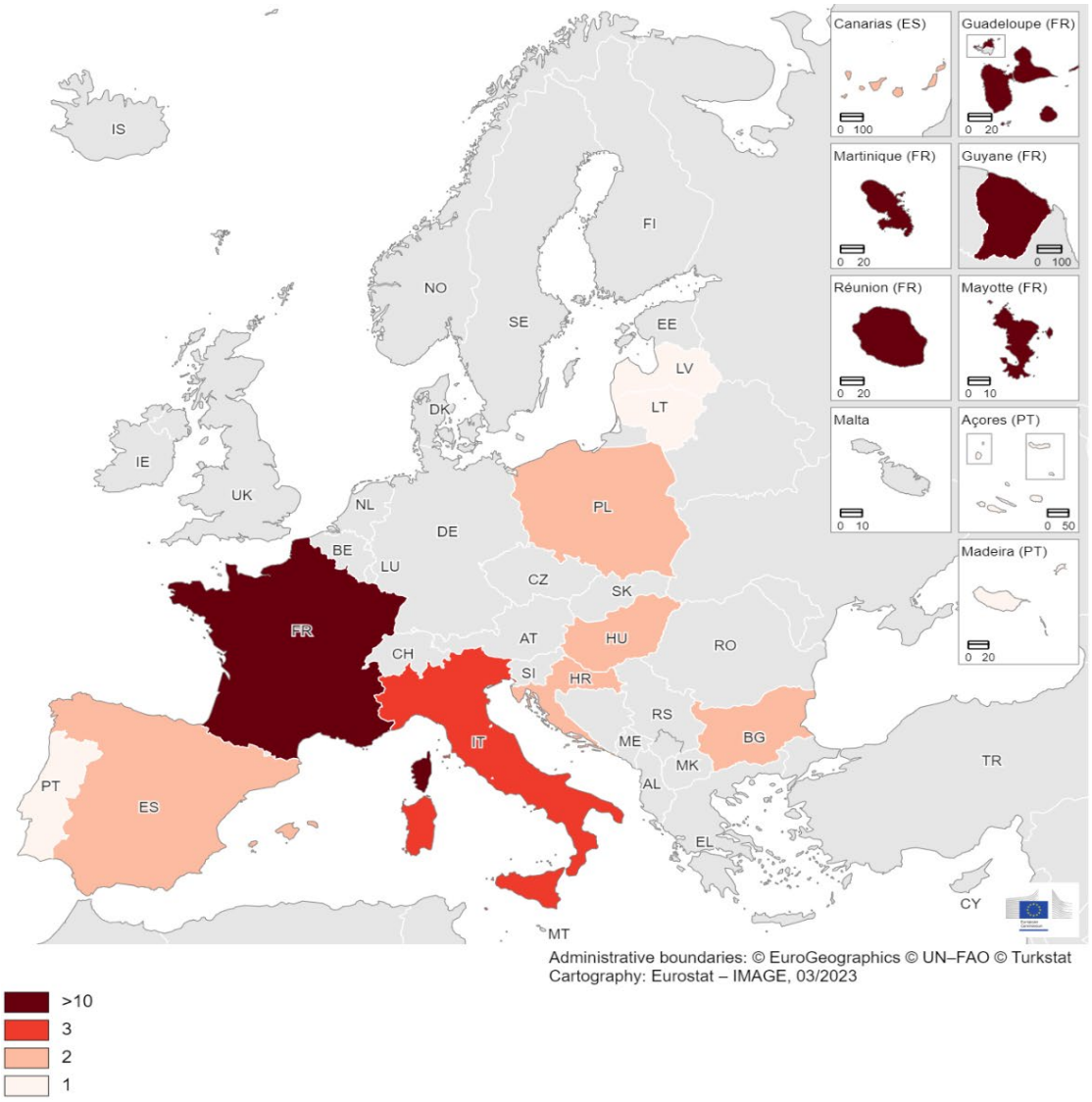


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TABLE 7: SPECIAL ECONOMIC ZONE REGIMES - MAIN FEATURES

MS	Short description of tax advantage(s):	Reduced effective tax rate
BG	Retention of up to 100 % of the corporation tax due for that previous year - the amount should be re-invested. (if not, CIT is due).	10 % - 0 %
ES (Canaries)	REF: 1) reductions in the taxable income (tax exempt reinvestment reserve); limitations for Intra group services); 2) incremented rates for deductions linked to the acquisition of fixed assets located, used and necessary there. Zona Especial Canaria: CIT rate of 4 %.	4 %; 25 %-0 %
ES (Ceuta y Melilla)	50 % profit exemption (reduction tax base) on that part of the income derived there (activities which cover a full production cycle)	12,50 %
FR (metropole and territories)[107]	- full tax exemption; - tax credits variables; - reduction tax base.	25%-0%
HR	- Full exemption from CIT (city of Vukovar) - 50 % reduction of the CIT rate (for other selected areas).	0 %; 9 %
HU	- Tax Credit (varies by firm size and region of investment); - Accelerated CIT depreciation for SMEs that put into operation certain types of new tangible asset in a SEZ (State aid under government business enterprises)	9 %-0 %
IT	- Tax credit in SEZs (rates to maximum State aid regional map for Italy); - Tax credit in SEZs (SMEs); - Tax credit in SEZs,	0 %-24 %
LT	Tax holiday first 10 years; then 50 % tax exemption following 6 years.	0 %; 7,5 %
LV	80% allowance on CIT on dividends (distributed profit); limited to 35% to 55% of the amount invested	Min. 4% nominal CIT rate
PL	Tax exemption: the amount exempted depends on the investment location, expenditure and size of company.	19%-0%
PT	Reduced CIT rate of 5 % until the end of 2027 for companies incorporated within the Madeira free trade zone until 31.12.2020.	5 %

[107] 12 SEZ regimes overall: 8 SEZ regimes in the metropole, 4 SEZ regimes in overseas territories and Corsica.

3.3.3 Reformed mandate: tools to overcome the limitations of the monitoring under the Code of Conduct on Business Taxation

The vast majority (75 %) of the 400 measures dealt with by the Group was brought to its attention through so-called evaluation "packages" [108] and not through self-notifications of the Member States. Despite the constant increase and international pressure in the tax competition area, the number of self-notifications of preferential tax measures by Member States has remained at a very low level (i.e., between four and nine measures notified each year between 2020 and 2023). As a matter of comparison, for the period 2020-2022, a higher number of tax schemes for the business sector were approved by the Commission under State aid rules [109] (12, 17 and 18, respectively).

The work of the Group, based on a voluntary self-notification by the Member States, has limitations. The reasons for the low self-notification – especially in comparison to the notification under State aid rules – can only be assumed. It might primarily be due to the different consequences a non-notification might trigger (risk of recovery under state aid rules vs absence of consequences under the Code of Conduct), or a narrow interpretation of the notification criteria set in paragraph E of the Code of Conduct [110].

On 8 November 2022, the Economic and Financial Affairs Council (ECOFIN) approved a revised Code of Conduct [111], broadening its scope to cover not just preferential tax measures, but also 'tax features of general application'. This reform of the Code of Conduct has also streamlined the notification process [112]. The Group has thus a stronger mandate as of 2024 [113] and can also scrutinize measures of general application which affect in a significant way the location of business activity in the Union. And such future scrutiny – given its effect-based approach - will rely even more on notifications from the other Member States or the Commission, and not a self-notification from the Member State concerned.

In a nutshell, the Code of Conduct Group and its work bring undoubtedly a positive contribution, but it has also shown its limits over time, both in terms of process (lack or insufficient notifications) **and of governance** (inability to reach a consensus on certain preferential regimes, e.g. Shipping regimes)**.**

3.4 Aggressive tax planning, the European Semester and the Recovery and Resilience Facility

[108] The 1999 Primarolo report (200 measures collected by the European Commission), the Enlargements packages (80 measures detected by the European Commission) or through horizontal/ thematic assessments initiated by the Group (e.g. patent boxes, notional interest deductions – around 40 measures).

[109] Despite certain similarities arising from their selective, preferential nature, the tax measures covered by State Aid rules and the tax measures covered by the Code do not, necessarily, overlap. The scope of State aid tax measures notified under the State aid rules is broader as these tax incentives measures can cover various type of taxes (including areas related to employees and social security contributions) and various objectives (e.g., social housing, fishing, agricultural, etc.), whereas the scope of the tax incentives under the Code of Conduct is strictly limited to "business taxation" (and concerns those measures which affect, or may affect, in a significant way the location of business activity in the EU). Therefore, the above numbers of tax measures approved under the given state aid rules are decisions have been limited to business taxation cases.

[110] Although there is detailed Guidance on the Notification of Tax Measures under Paragraph E of the Code (which was agreed by the Group in November 2016 (doc. 14750/16).

[111] It will apply from 1 January 2024, and it will cover tax features of general application introduced after 1 January 2023.

[112] For tax measures of a Member State that have not been notified, they may be brought to the attention of the Group at the request of another Member State or the Commission, with prior information of the Member State concerned.

[113] For measures enacted or modified on or after 1 January 2023.

The complexity of tax systems can lead to loopholes and mismatches between two or more tax systems which in turn can be used by companies to reduce their tax liability i.e. facilitate ATP. Through the Base Erosion and Profit Shifting (BEPS) project, established by the OECD in 2015, 141 countries forming the so-called Inclusive Framework, agreed to address not only tax evasion and fraud, but also tax avoidance and especially ATP practices. Progress has been made in recent years to develop global policy to tackle tax avoidance at a global level, but opportunities for ATP remain. Examples relate to the absence of a withholding tax or a similar defensive measure for outbound payments exiting the EU towards zero as well as low-tax jurisdictions, the exploitation of mismatches between the legislations of Member States and/or third countries, such as transfer pricing or residency rules, or the use of specific tax regimes of Member States.

In addition to the work of the CoC Group on non-cooperative jurisdictions, work has taken place under the remit of the European Semester and the recovery and resilience facility (RRF). As mentioned in the Annual Sustainable Growth Survey 2023 and in the Spring package chapeau communication 2023, ATP strategies by firms or individuals in one Member State can have negative spillover effects on the rest of the EU and, therefore, effective tools are needed to fight them and ensure the fair treatment of taxpayers and the efficient funding of public services.

Under the RRF, several Member States have committed to address aspects of their tax systems that facilitate ATP, with key milestones (including the establishment of withholding taxes on outbound payments or a similar defensive measure) expected to be completed by the end of 2023 (e.g. HU) and in 2024 (e.g. CY, IE). Such milestones and targets are yet to be implemented and formally assessed. Regarding country-specific recommendations (CSRs) on ATP, the Commission proposal for Council Recommendations to address features of their tax system that can lead to ATP through effective taxation of outbound payments were given to LU and MT in 2023. Conversely, CSRs have been put on hold for NL, HU, CY and IE, to take into account the progress made in the adoption of relevant legislation (NL) or the inclusion of substantial measures in the RRPs.

3.5 Improving the business taxation environment

Taxes play a role on investment decisions, while Member States may use tax competition to attract businesses in a variety of ways. This may lead to tax complexity, excessive/ harmful tax competition (via tax exemptions, reduced tax rates, or investment incentives designed in a harmful manner), as well as incompatible State aid in the EU.

In a globalised and increasingly digitalised world, tax competition has become more intense as countries 'fight' to either attract or retain highly mobile assets (e.g., intangible assets in global value chains. In particular, tax competition is problematic if it leads to a distortion in investment decisions that results in suboptimal outcomes for the EU as a whole, or if it undermines the ability to raise taxes. In this context, for example, the low effective tax rate paid by certain multinationals (MNEs) in many jurisdictions across the globe – well below the country's statutory corporate tax rate and sometimes close to zero, and certainly when compared with domestic and smaller companies – has raised the attention of policymakers globally. This situation has pushed the international community to work cooperatively in this area, leading to the global agreement on international corporate taxation to set a floor limiting excessive tax competition for MNEs with a combined turnover above EUR 750 million. EU instruments can help reduce complexity and help establish a level playing fields with more tax certainty offered to businesses. This section reviews several recent and ongoing proposals.

3.5.1 Global cooperation on international corporate taxation: Pillar 1 and Pillar 2

The globalisation and digitalisation of our economies are challenging the international corporate tax framework. Designed more than a century ago, the current global tax rules are ill-equipped to deal with increasingly integrated markets, mobile companies, remote activities, and the use of intangible assets in global value chains. Weakness in the current tax rules have also created new opportunities for base erosion and profit shifting.

Mandated by the G20, the global community has been working, towards updating global corporate tax rules within an Inclusive Framework comprising over 140 jurisdictions and led by the OECD. The OECD and G20 countries along with developing countries are participating in the implementation of the so-called Base Erosion and Profit Shifting (BEPS) action package [114] to develop anti-BEPS international standards. One workstream aims at establishing a modern international tax framework to ensure profits are taxed where economic activity and value creation occur. According to the OECD, the aim is to: 'reduce the use of tax planning strategies that exploit gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations where there is little or no economic activity or to erode tax bases through deductible payments such as interest or royalties. This undermines the fairness and integrity of tax systems because businesses that operate across borders can have a competitive advantage over enterprises that operate at a domestic level. Moreover, when taxpayers see multinational corporations legally avoiding income tax, it undermines voluntary compliance by all taxpayers.'

While initially aimed at 'addressing the tax challenges arising from the digitalisation of the economy', the scope generally targets all the largest and most profitable corporations, regardless of their area of activity. The work gradually focussed around two pillars: the reallocation of a share of taxing rights arising from large and profitable MNEs towards market jurisdictions (Pillar 1), and the establishment of a minimum effective corporate tax rate (of 15 %) on certain MNEs' profits (Pillar 2). One of the underlying aims of Pillar 1 is to create some stability in the international tax framework and to prevent double taxation for international operating enterprises and to bring down the proliferation of national measures, such as digital services taxes that create this double taxation either directly or indirectly.

With the two pillars, part of the taxing rights will be shifted to the country where customers are located, and a floor will be put on the excessive tax competition between jurisdictions. The aim of Pillar 1 is ensuring a fairer distribution of profits and taxing rights among countries with respect to the largest MNEs, deemed to be the winners of globalisation. Pillar 2 sets a multilaterally agreed limitation to tax competition by taxing MNE's up to the agreed global minimum effective tax rate of 15 %. In this way, jurisdictions will be allowed to protect their tax base and limit any significant profit shifting.

The work on Pillar 2 is more advanced and the EU has been leading in its implementation worldwide. On 22 December 2021, the Commission proposed a Directive for the implementation of the Model Rules [115] on ensuring a global minimum level of 15 % of effective taxation for large multinational groups in the European Union ('the Pillar 2 Directive'), ensuring a consistent application of the rules in the single market and their compatibility with the existing EU legal framework. After lengthy discussions, Member States formally adopted the Directive on 14 December 2022 at the ECOFIN Council [116]. This adoption makes the European Union a leader in implementing the international agreement on Pillar 2.

The Pillar 2 Directive lays down rules that ensure a minimum level of taxation at 15% for large multinational enterprises and large-scale domestic companies. It applies to groups of MNEs and large-scale domestic groups that have a combined annual group turnover of at least EUR 750 million based on consolidated financial statements. In essence, the Directive includes a mechanism for countries to enforce the minimum tax rate: the Income Inclusion Rule (IIR) and its backstop, the Undertaxed Profit Rule (UTPR), together known as the Global anti-Base Erosion (GloBE) rules. If a company operates in a country with a lower tax rate than the minimum rate set in the Directive, the Member States where the company is headquartered will be able to apply a top-up tax on a portion of the profits made in the low-tax country. The UTPR acts as a backstop to the IIR and applies in situations where there is no qualifying IIR. The UTPR allows the other constituent entities of the

[114] https://www.oecd.org/tax/beps/beps-actions/

[115] Furthermore, in March 2022, the OECD released a Commentary to the Model Rules, which is meant to provide a source of interpretation of the Directive.

[116] Council Directive (EU) 2022/2523.

group to deny deduction or require an equivalent adjustment to the extent the low tax income of a constituent entity is not subject to tax under a qualifying IIR. In addition, the Pillar 2 Directive also allows Member States to introduce a qualified domestic top-up tax (QDTT), which enables Member States to collect the additional tax revenues due by the MNE Group with respect to the low-taxed constituent entities located in their territory.

Work on the implementation framework continues at the OECD, with the active participation of the Commission. In 2022, the OECD commenced work on the development of an Implementation Framework focused on safe harbours, the GloBE information return and exchange of information, dispute resolution and administrative guidance. A first Implementation Framework Package on Pillar 2 was published by the OECD/G20 Inclusive Framework on 20 December 2022. This Package consists of guidance on safe harbours and penalty relief and public consultation documents on the GloBE information return and tax certainty. On 2 February 2023, the OECD/G20 Inclusive Framework released the Administrative Guidance for implementation of the global minimum tax. The discussions on the Implementation Framework will be continued in the coming months and the Commission will continue to participate actively in this work.

The Pillar 1 rules will, in principle [117], apply to MNEs with a revenue greater than EUR 20 billion and a pre-tax profit margin of more than 10 % unless they are covered by the exclusions for extractives or regulated financial services. Of the profits in excess of this 10 %, 25 % (Amount A) will be allocated to eligible market jurisdictions on the basis of revenue sourcing rules and subject to adjustments arising from the Marketing and Distribution Profits Safe Harbour and withholding taxes. Furthermore, to eliminate any double taxation that might arise from applying Amount A, a set of rules will be created to identify the jurisdictions that will need to provide the relief.

The implementation of the two pillars will have a significant impact on Member States' CIT tax revenues. According to the OECD [118], taxing rights on more than USD 200 billion (EUR 189 billion) of profit are expected to be reallocated to market jurisdictions each year and between USD 7 billion (EUR 6,6 billion) and USD 25 billion (EUR 23,6 billion) of additional tax revenue are expected to be generated under Pillar 1, and around USD 220 billion (EUR 208 billion) - or 9 % of global corporate tax revenues - in new tax revenues globally are estimated to be generated each year under Pillar 2.

Take Pillar 2 and its long-term effect. Assuming a simple, preliminary, and hypothetical exercise that Pillar 2 will be implemented globally, with a minimum effective tax rate of 15 % applied also in zero- or low-tax jurisdictions across the globe. This would have an immediate impact of increasing effective tax rates, but also second-round effects such as firms' reactions to the increase, for example a reallocation of production factors and adjustments to their investment behaviours. EU-wide, Pillar 2 is expected to lead to an increase in CIT related tax revenues.

3.5.2 Business in Europe: Framework for Income Taxation ("BEFIT")

The CIT environment in the EU can be complex and difficult to navigate for companies with activities [119] **in more than one Member State** [120]. The EU has a closely integrated Single Market, but businesses still face 27 different national CIT systems and numerous bilateral tax treaties. This creates unnecessary complexity,

[117] An averaging mechanism will be introduced.

[118] (OECD, 2023a).

[119] The Subject to Tax Rule (STTR) is a treaty-based rule that allows source jurisdictions to impose limited source taxation on certain related party payments that are subject to tax below a minimum rate. However, since this will be for jurisdictions to implement individually, there will be no EU action in relation to the STTR.

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uncertainty and high compliance costs for EU businesses as soon as they want to operate in more than one Member State. Especially for SMEs, who have relatively higher compliance costs, it is a barrier when they want to expand their operations across borders. In general, this multitude of different tax rules affects the business environment in the EU, because it means the tax treatment varies a lot from one business to another and as such it distorts the level playing field, potentially leading to production inefficiencies which reduce the competitiveness of the EU.

In this context, the Commission is working on a new proposal, known as 'Business in Europe: Framework for Income Taxation' (BEFIT). First announced in the Communication on Business Taxation for the 21st Century, the Commission will propose a common set of rules to determine the tax base of businesses in the EU [(121)]. The initiative was also confirmed in Commission President Von der Leyen's State of the Union Address in 2022.

The proposal will aim to simplify tax rules and enhance tax certainty for both large groups operating across the EU and smaller businesses that are active in more than one Member State. For SMEs, this could be about calculating their tax base with a single set of national tax rules, while for large businesses, there could be a common set of rules for determining their tax base compared to the 27 different tax systems that currently apply. Drawing inspiration from the principles that underpin the Two-Pillar Solution agreed at the OECD/G20 Inclusive Framework (see section 3.5.1), a common set of rules could envisage a number of tax adjustments to financial accounts for determining the taxable base of companies in the EU that are part of large groups. The individual tax bases of the companies could be aggregated into a pool and allocated to Member States through a formula, while also improving legal certainty for transfer pricing.

As such, the proposal should reduce compliance costs, including for SMEs, and stimulate growth and investment in the EU, while also ensuring fair and sustainable tax revenues for Member States and reducing administration and litigation burdens on tax authorities.

3.5.3 Addressing tax barriers to cross-border investment: the Directive on Faster and Safer Relief of Excess Withholding Taxes (FASTER)

Improving the business environment and reinforcing the Capital Market Union are priorities of the Commission, which announced further action to address tax barriers to cross border investment. In addition to the actions undertaken during the period 2016-2019, the Commission indicated in its Action plan for fair and simple taxation supporting the recovery strategy adopted in July 2020, and in its Action plan on a capital markets union for people and businesses adopted in September 2020, that it would propose a legislative initiative to improve withholding tax relief procedures. On 19 June 2023, the Commission published a legislative proposal for a Directive setting forth rules that aim to make withholding tax (WHT) procedures in the EU more efficient and secure for investors, financial intermediaries and Member States – the Directive on Faster and Safer Relief of Excess Withholding Taxes (FASTER) [(122)].

The objective is to both significantly lower tax compliance costs for cross-border investors and prevent tax abuse. One element of FASTER is the creation of a common digital tax residence certificate (eTRC) to be issued by the investor's residence state within one working day after a request is submitted and which would enable both taxpayers and tax administration to go from a predominantly paper-based process to a digital process which should save both time and money. Another element is creating a common standardised reporting obligation to enable tax administrations to receive -using one set format- the necessary data to assess whether the taxpayer is entitled to a lower rate of withholding tax. Financial intermediaries are to play an important role in collecting and sharing this information with the tax authorities. The final element of the envisaged proposal is

[(121)] COM(2021) 251 final.

[(122)] https://taxation-customs.ec.europa.eu/system/files/2023-06/COM_2023_324_1_EN_ACT_part1_v3.pdf

to require Member States to create a process that would enable the application of a relief at source system or/and a quick refund procedure which will take place within a short set-timeframe.

3.5.4 The future of EU list of non-cooperative jurisdictions for tax purposes

Initiated in 2016, the EU list of non-cooperative jurisdictions for tax purposes [123] has been the key instrument of the EU external strategy in tax matters. By promoting the highest standards in tax transparency and fair taxation across the world, the listing process has led to significant achievements in strengthening tax good governance in third countries, thereby tackling tax evasion and avoidance.

Yet, the persistence of problems, as revealed by several media revelations (most recently, the so-called "Pandora Papers") suggests that there is scope to do more to strengthen the EU listing process, making it more effective to increase tax transparency and prevent unfair tax competition. This is also in line with several calls made by civil society, external stakeholders and other institutions, such as the European Parliament, in this respect.

Against this background, the Commission Services have elaborated ideas to enhance the EU listing process to support the Code of Conduct Group's discussions and eventual actions. Five main recommendations to Member States to revise some of the EU listing criteria, notably by: (i) expanding the geographical scope of the EU listing process, by selecting the most relevant jurisdictions based on objective criteria and indicators from available data sources, which refer to the financial, economic, governance and taxation dimensions, (ii) designing the elements of a future listing criterion on beneficial ownership information, (iii) ensuring that zero-tax jurisdictions effectively enforce their legislation on economic substance, (iv) taking stock, at a later stage, of how effectively third country jurisdictions which are in scope of the EU listing process and members of the OECD/Inclusive Framework implement the political statement on "Pillar 2", (v) strengthening defensive measures against non-cooperative jurisdictions for tax purposes by introducing a withholding tax on outbound payments of royalties, dividends, and interests to these jurisdictions.

[123] https://www.consilium.europa.eu/en/policies/eu-list-of-non-cooperative-jurisdictions/

4 ENVIRONMENTAL AND HEALTH TAXATION

This chapter focuses on environmental and health taxes and their potential as corrective taxes towards a more environmentally and health friendly behaviour. First, it provides an overview of the role environmental taxes can play in efforts to address environmental challenges and goals including: i) an economic analysis and literature review of environmental taxation; ii) a review of how well national environmental tax systems of Member States are performing; iii) an analysis of the distributional effects of environmental taxation. Second, it describes how taxation contributes to REPowerEU and how it can address the energy crisis following Russia's war of aggression against Ukraine. Third, it presents the taxation and regulatory measures in support of the European Green Deal that includes the energy taxation directive (ETD), the carbon border adjustment mechanism (CBAM) and the EU emissions trading system (ETS). Fourth, it provides a brief overview of challenges to our health and related economic analysis of health taxation.

Environmental taxation is one of the instruments that can be used to achieve environmental policy goals. Environmental taxes (i.e. energy, transport, pollution and resource taxes) contributed only around 5.5 % of total tax revenues in the EU in 2021. The distributional impacts need to be considered when designing environmental policies so that low-income households do not face greater financial impacts than high-income households. In that context, shifting away from labour taxation to environmental taxes that are fit for purpose, taking due account of the possible distributional effects, has the potential to stimulate employment and change behaviour in favour of more sustainable consumption and production. Likewise, health taxation can also play a role in delivering healthier behaviour but its use is even patchier than environmental taxation and varies substantially across Member States.

4.1 Tackling climate change, biodiversity loss and pollution

Europe faces environmental and climate change challenges of unparalleled scale and urgency. Climate change, overuse of natural resources and biodiversity loss represent important challenges and pose risks to our health, to supply chains and production ability and, in turn, our well-being. Further to this, on-going megatrends such as ageing population, changing migration patterns, increasing inequalities, global competition for resources, digitalisation and other technological changes are influencing Europe's long-term environmental outlook (European Environment Agency, 2019).

The 2030 UN Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) demonstrate the need for a global effort to reach sustainable development of which the EU has an important role. The EU has committed to deliver on the 2030 Agenda adopted by the UN General Assembly in 2015 and its implementation. The provision of regular monitoring of progress towards the implementation of SDGs is crucial. This regular monitoring is based on a set of EU SDG indicators, developed in cooperation with a large number of partners and stakeholders (Eurostat, 2022).

Table 8 provides an overview of the progress of selected environmental SDGs and sub-indicators as an example to show the progress that has been made in the EU. As can be seen, the assessment is mixed for the various SDGs on the table. There has been some progress on sanitation but trends for water quality have been mixed. The EU needs to speed up progress in the areas of energy consumption reduction while it has made some progress in the area of energy supply. The trend in the areas of sustainable cities and communities appears

favourable, while the picture is more varied when it comes to sustainable consumption and production and climate action, suggesting that more progress must be made to achieve the goals set in the European Green Deal.

TABLE 8: EXAMPLES OF THE PROGRESS OF SDGS AND SELECTED SUB-INDICATORS RELATED TO THE ENVIRONMENT

SDG	Sub indicators	
Sustainable management of water and sanitation	**Sanitation**	**Water quality**
	Population connected to at least secondary waste water treatment (2015 – 2020) ↗	Biochemical oxygen demand in rivers (2015 - 2020) ↑
		Nitrate in groundwater (2015 – 2020) ↗
		Phosphate in rivers (2015– 2020) ↓
		Inland water bathing sites with excellent water quality (2016 – 2021) ↓
Affordable, reliable, sustainable and modern energy	**Energy consumption**	**Energy supply**
	Primary energy consumption (2016 – 2021) ↘	Share of renewable energy in gross final energy consumption (2016 – 2021) ↗
	Final energy consumption (2016 – 2021) ↘	Energy import dependency (2016 – 2021) ↗
	Final energy consumption in households per capita (2016 – 2021) ↘	
	Energy productivity (2016 – 2021) ↑	
Sustainable cities and communities	**Quality of life in cities and communities**	**Sustainable mobility and Environmental impacts**
	Population living in households suffering from noise (2015 – 2020) ↗	Share of buses and trains in inland passenger transport (2015 – 2020) ↓
	Years of life lost due to PM2.5 exposure (2015 -2020) ↑	Recycling rate of municipal waste (2016 – 2020) ↗
		Population connected to at least secondary wastewater treatment (2015 – 2020) ↗
Sustainable consumption and production	**Decoupling environmental impacts from economic growth**	**Green economy and Waste generation and management**
	Consumption of hazardous chemicals (2016 – 2021) ↓	Gross value added in environmental goods and services sector (2015 – 2020) ↑
	Material footprint (2015 -2020) ↗	Circular material use (2016 – 2021) ↘
	Energy productivity (2016 – 2021) ↑	Generation of waste (2016 – 2020) ↑
Climate action	**Climate mitigation**	**Climate impacts and adaptations**
	Net greenhouse gas emissions (2016 – 2021) ↘	Climate-related economic losses (2016 – 2021) ↓
	Net greenhouse gas emissions from land use, land use change and forestry (2016 – 2021) ↓	Population covered by the Covenant of Mayors for Climate and Energy signatories (2017 – 2022) ↑
	Share of renewable energy in gross final energy consumption (2016 – 2021) ↗	

Source: (Eurostat, 2023b).

Legend: ↑ Significant progress towards EU target/ Significant progress towards SD objectives; ↗ Moderate progress towards EU target/ Moderate progress towards SD objectives; ↘ Insufficient progress towards EU target/Moderate movement away from SD objectives; ↓ Movement away from EU target/ Significant movement away from SD objectives

In view of the climate challenges, the EU has committed to deliver on the targets agreed in the European Climate Law (i.e., the framework for achieving climate neutrality by 2050). The European Climate Law provides a legal basis for the goal set out in the European Green Deal [124] i.e., for Europe's economy and society to become climate-neutral by 2050 by generating net-zero greenhouse gas emissions. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55 % by 2030, compared to 1990 levels [125]. More recently, in the context of the COP27 summit, the Commission has agreed to take all necessary measures to cut emissions in a way that would limit global warming by 1.5 degrees Celsius. In addition, the 8th Environment Action Programme that will guide European environmental policy until 2030 aims to speed up the transition to a climate-neutral, resource-efficient economy, recognising that human wellbeing and prosperity depend on healthy ecosystems [126]. In this context, the Kunming-Montréal Global Biodiversity Framework (GBF) at the UN Biodiversity Conference (COP15) signed in 2022 is committed to halting biodiversity loss by 2030.

The European Green Deal consists of an ambitious package of measures ranging from cutting greenhouse gas emissions and investing in cutting-edge research and innovation, to preserving Europe's natural environment. Taxation plays an important role. The European Green Deal seeks to leverage taxation policy to strengthen price incentives and to "create the context for broad-based tax reforms, removing subsidies for fossil fuels, shifting the tax burden from labour to pollution, and taking into account social considerations" [127]. This includes the intention to "redirect public investment, consumption and taxation to green priorities and away from harmful subsidies". The European Green Deal also commits the EU to living up to a green oath to "do no harm", a principle that has been also enshrined in the recovery and resilience facility [128]. Moreover, the 8th Environmental Action Plan also commits to phase out of the environmentally harmful subsidies.

The EU has already made progress to achieve its climate targets and tackle environment-related challenges but more remains to be done. Between 1990 and 2020, greenhouse gas emissions have been reduced by 32 %, exceeding the EU's targets by 12 percentage points (see Figure 43). Due to the COVID-19 pandemic, emissions declined more strongly in 2020 and rebounded in 2021 according to preliminary data but they remained below pre-pandemic levels [129].

[124] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[125] https://climate.ec.europa.eu/eu-action/european-green-deal/european-climate-law_en

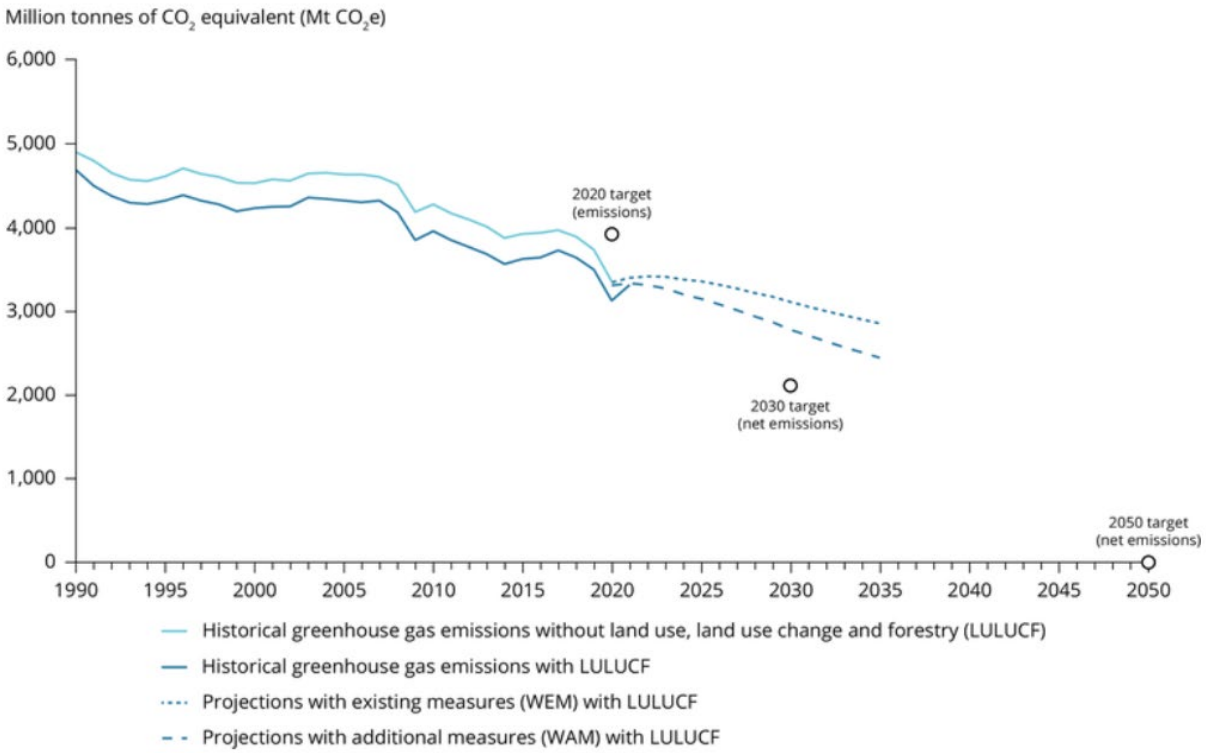
[126] https://environment.ec.europa.eu/strategy/environment-action-programme-2030_en

[127] COM (2019) 640.

[128] COM (2020) 456.

[129] https://www.eea.europa.eu/ims/total-greenhouse-gas-emission-trends

FIGURE 43: HISTORICAL TRENDS AND FUTURE PROJECTIONS OF GREENHOUSE GAS EMISSIONS IN THE EU



Source: (European Environment Agency, 2022a), https://www.eea.europa.eu/data-and-maps/figures/figure-1-historical-trends-and-1.

Achievements in the reduction of emissions since 2005 differ across sectors. Energy supply, industry, transport and buildings sectors together account for 84 % of all greenhouse gas emissions in the EU (see Figure 44). Energy supply emissions have achieved the largest reductions between 2005-2020 with 43 % (following the rising uptake of renewable energy sources and decline of the use of fossil fuels), while industrial activities emissions have been reduced by 27 %, transport emissions by 15 % and building emissions by 23 % in the same period. Despite the progress made, energy supply still represents the sector with the largest share of greenhouse gas emissions. However, between 2005 and 2020, the share of renewable energy sources in electricity consumption has increased from 16 % to 37 % (European Environment Agency, 2022b).

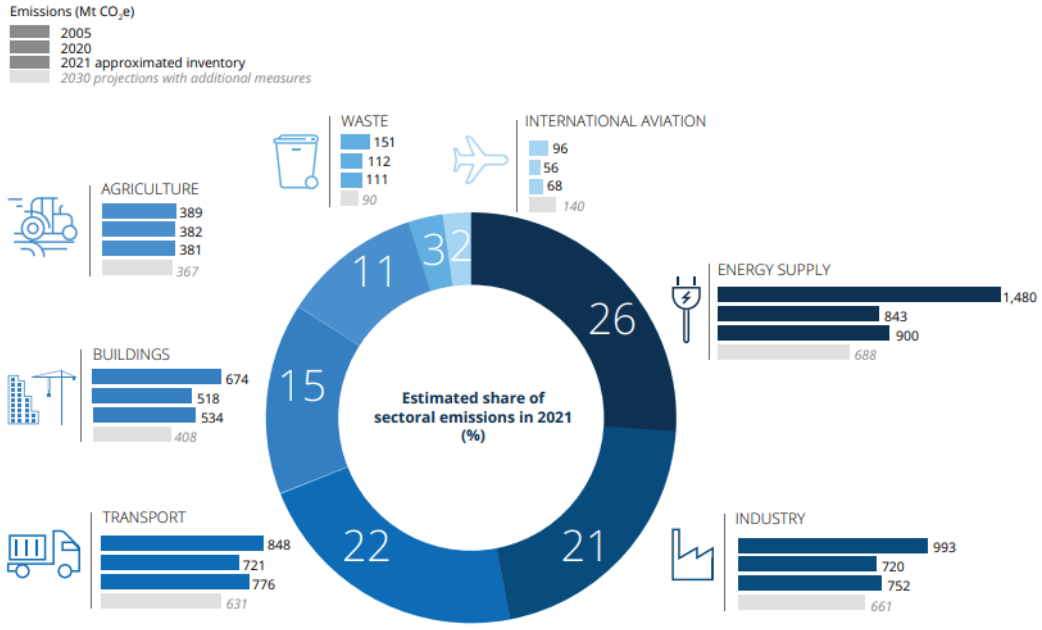
The COVID-19 pandemic had profound impacts on energy consumption and greenhouse gas emissions. The COVID-19 pandemic has led to a strong decline in emissions in 2020 due to suppressed economic activity and mobility. While emissions rebounded in 2021, ensuing long-term trends, such as an increased use of digital tools (e.g., for teleworking or business meetings), may have a lasting impact on emission patterns, for example through reduced use of vehicles (notably those running on fossil fuels) for traveling to work or fewer business trips. In addition, Russia's war of aggression against Ukraine has led to skyrocketing gas prices, it has accelerated the EU efforts to move to more renewable sources of energy.

Steep energy price increases following Russia's war of aggression against Ukraine have forced households and companies to adjust their consumption patterns. The pace of the price increases has overburdened all households but especially the less well-off. This has induced a significant reduction in energy consumption and highlighted the need to consider resulting distributional consequences. While these price increases had an impact on the tax base of energy taxes, Member States have enacted temporary tax and income measures to partly compensate for these price increases (see section 4.1.2.).

As regards other environmental challenges, policy measures for nature protection have yielded benefits in some areas but more remains to be done. For instance, reduced pollution has enhanced water quality, however, only 40 % of the EU's surface waters had good ecological status by 2015. Land management has ameliorated, but landscape fragmentation is augmenting, harming habitats and biodiversity. Moreover, 75 % of Europe's ecosystem area is exposed to high nitrogen levels, causing eutrophication. The impacts of climate change on biodiversity and ecosystems are expected to increase, while activities such as agriculture, fisheries, transport, industry and energy production continue to cause biodiversity loss, depletion of resources and harmful emissions. Even though progress has been made towards minimising air pollution more than 10 % of annual premature human deaths in the EU are related to environmental pollution. Evidence shows that the health of citizens is being highly affected by hazardous chemicals (European Environment Agency, 2023a).

The EU will need to face the challenges arising from these crises while keeping on track to reach the 2030 climate targets and taxation will play an important role. Additional policy efforts may be required to reach the 2030 energy consumption objectives. At the same time there is the need to protect consumers and businesses in view of the current energy crisis. To achieve the EU's ambitious target to become climate-neutral by 2050 much remains to be done. Looking at the wide set of challenges above, it may be important to look at areas where a greater use of environmental taxation can be relevant, complemented with compensatory measures for those more vulnerable.

FIGURE 44: SECTORAL TRENDS AND PROGRESS TOWARDS ACHIEVING THE 2020 AND 2030 TARGETS IN THE EU-27



Notes: The energy supply sector covers GHG inventory categories 1.A.1 and 1.B; industry covers categories 1.A.2 and 2; transport covers category 1.A.3; buildings covers categories 1.A.4.and 1.A.5; agriculture covers category 3; waste covers category 5; 'international transport' is reported under memo items.

MS, Member State; $MtCO_2e$, megatonnes of carbon dioxide equivalent; WAM, with additional measures; WEM, with existing measures.

Sources: EEA (2021d, 2022b, forthcoming c); authors' own calculation.

Source: (European Environment Agency, 2022b).

4.1.1 The role and economic rationale for environmental taxation

Many policy instruments can help address environmental challenges and achieve the stepped up 2030 and 2050 climate and environmental objectives. Environmental policy interventions make use of a

combination of the following policy instruments: i) traditional regulatory approaches, named "command-and-control measures", that include, for example, emission standards or bans of toxic substances; ii) market based instruments, such as environmental taxes, greenhouse gas emission trading, cost recovery and ensuring there is a marginal price; and iii) awareness raising actions that include for instance communication campaigns (European Environment Agency, 2022c).

Environmental taxation can contribute to achieving environmental policy goals. Article 2 of the Regulation on European environmental economic accounts [130] defines environmental taxation as "a tax whose tax base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment, and which is identified in European system of national and regional accounts (ESA 95) (i.e. the conceptual reference framework, which aims to aid its application for calculation the government deficit and debt) as a tax" (Eurostat, 2002).

Environmental taxation is a powerful tool in steering the behaviour of producers and consumers by increasing the cost of activities that cause pollution or harm the environment. In other words, taxation makes consumers and producers consider and bear the social costs of their activities, known as "negative externalities", in accordance with the 'polluter pays' principle (i.e. polluters bear the costs of their pollution including the cost of measures taken to prevent, control and remedy pollution and the costs it imposes on society). At EU-level, the 'polluter pays' principle is enshrined in the 2007 Treaty on the Functioning of the EU (TFEU). Article 191(2) of the TFEU [131] states that: "*Union policy on the environment (…) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay*" [132]. More specifically, charges are levied on activities harmful to environment (negative externality). These charges are known as "Pigouvian taxes" [133]. They affect the behavioural incentives of economic agents who face a tax that reflecting the cost of environmental damage that they can either pay or avoid by minimising the harmful environmental impact of their activities (European Parliament, 2020).

Environmental taxes are effective if they correct the price so that this reflects the marginal costs of an activity to society (European Environment Agency, 1996). Taxation theory provides some general principles for the design of environmental taxes: set tax rates based on the best estimate of marginal damage, and, when it is impractical to tax emissions directly, choose a proxy that is close to what matters for marginal damage (Parry, Norregaard, & Heine, 2012). The key to achieving the potential gains from environmental taxes does not lie in the indiscriminate introduction of taxes, rather, it lies in the effective targeting of incentives to the pollution or other environmental problems that policy seeks to influence.

Environmental taxes can be less distortive than other more commonly used types of taxation (e.g., labour or capital taxation) that were designed primarily with the objective to raise revenues (Ligthart, 1998). From a societal point of view and if well designed, environmental taxes reduce distortions by internalising negative externalities (e.g., the costs of pollution and other environmental costs) while at the same time providing some additional public revenue. These benefits have to be balanced against distributional consequences. Indeed, some, though not all, environmental taxes can be regressive and thus have undesirable distributional effects. To

[130] Regulation (EU) no 691/2011 of the European Parliament and of the Council of 6 July 2011 on European environmental economic accounts.

[131] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12012E/TXT:en:PDF

[132] In 2021, the European Court of Auditors published a report that assessed whether the polluter pays principle was well applied in four EU environmental policy areas: industrial pollution, waste, water, and soil. It examined whether the Commission's actions related to the Environmental Liability Directive for regulating environmental damage from economic activity brought results. Finally, it assessed whether the Commission and Member States protected the EU budget from being used to bear expenses that polluters should have paid (European Court of Auditors, 2021).

[133] Pigouvian taxes, named after the British economist Arthur Pigou who developed this concept, are corrective taxes aiming at the internalisation of negative externalities.

protect vulnerable households, they should be carefully calibrated, and distributional implications duly considered, and possibly, compensated by targeted transfers. Not least, the distribution of the burden of environmental taxation needs to be compared with the distribution of the resulting environmental benefits and the costs of inaction, respectively. There is some evidence that the poor may benefit disproportionately from climate action as they are particularly affected by environmental damage (Drupp, Meya, Baumgärtner, & Quaas, 2018); (Hsiang, Oliva, & Walker, 2019).

Environmental taxes that make environmentally harmful behaviour more costly can be complemented by environmental tax incentives that reduce the cost of greener solutions (Köppl & Schratzenstaller, 2021). Environmental tax incentives aim at steering the economy in favour of certain preferable environmental solutions over others by reducing the tax that individuals and businesses need to pay (OECD, 2011). There are several features that governments need to take into consideration in the design and use of tax incentives [134]. Tax incentives are considered as a complementary instrument to environmental taxes addressing specific environmental problems. The combination of environmental taxes and tax incentives may accomplish a policy objective at lower costs than an environmental tax alone. However, the choice of a policy instrument or instrument mix needs to be carefully considered based on a thorough analysis (Köppl & Schratzenstaller, 2021), with understanding that sometimes a regulation setting targets and limits might rather be the way to go. In this context, it is important to note that climate change and environmental degradation can also affect tax revenue generated through income taxation due to its impact on health, biodiversity, infrastructure, and economic activity [135].

In this context, the EU has a long-standing commitment to phasing out environmentally harmful subsidies. For instance, in 2019, from the EUR 68 billion of tax expenditures in the EU, EUR 40 billion were revenue waivers from excise taxes (including carbon taxes and energy taxes) mostly on petroleum products, and EUR 9.5 billion from tax on electricity (European Commission, 2021d). The removal of certain subsidies could provide the opportunity to reduce expenditure and increase revenues while achieving environmental and climate policy goals. [136] A recent EU study showed that certain subsidies, such as, tax exemption/reduction for specific products or investment, direct subsidy for production, direct subsidy for consumption, and tax exemptions/reductions for specific groups, are likely to constitute environmentally harmful support. They are concentrated mainly in the policy areas of energy, agriculture, transport and competitiveness and often out of sync with the ambitious environmental objectives describe above (Valdani Vicari & Associati, 2022).

4.1.2 How well are EU Member States' national environmental tax systems performing

Revenues from environmental taxes constitute only a small and declining share of the overall tax revenue. In 2021, they accounted for only 2.2 % of GDP and about 5.5 % of total tax revenues in the EU. This may indicate a potential to strengthen their use notably in areas beyond energy taxation (e.g. natural resources) and where significant challenges can be observed as described above. Indeed, energy taxes contributed the most with 4.3 % of total tax revenues, transport taxes accounted for 1.0 %, and pollution and resource taxes for 0.2 %. In GDP terms (see Figure 45), this translates into the energy component of overall revenues from environmental taxes representing 1.8 % of GDP, followed by transport (0.4 % of GDP) and pollution/resources taxes (0.1 % of GDP). Since 2002, there has been a slightly declining trend of their share in total taxes and social contributions, which was relatively more pronounced in the years leading up to the financial crisis and in the years of the

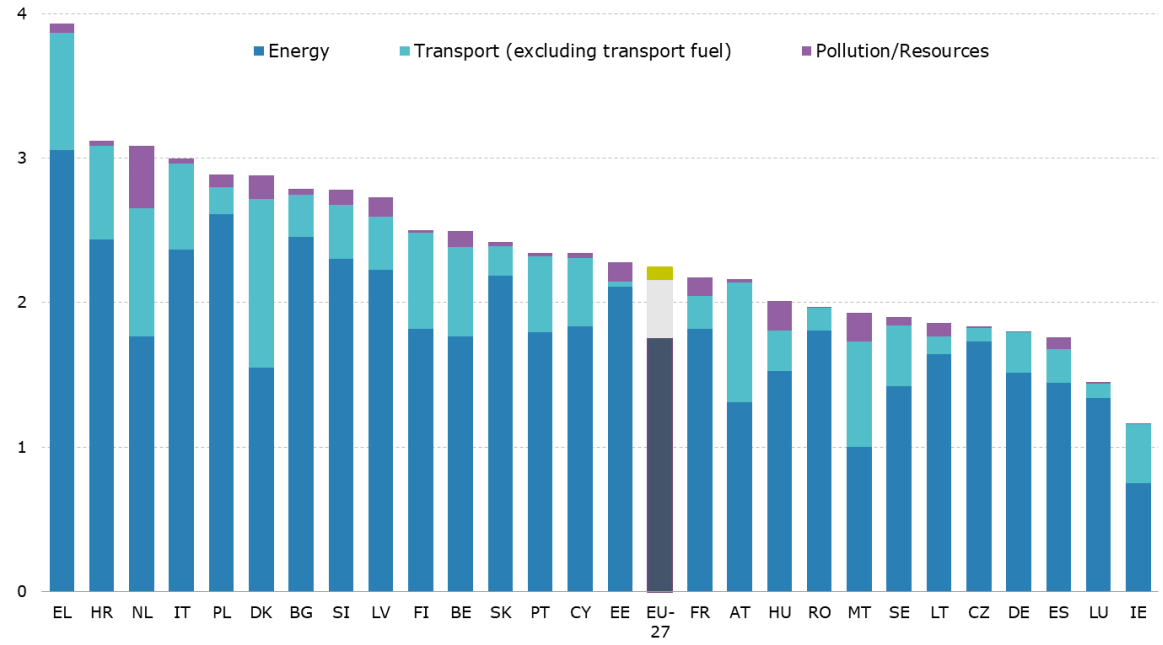
[134] When designing environmental taxes as well as tax incentives, Member States also need to ensure compliance with the State aid rules. These include the Guidelines on State aid for Climate, Environment Protection and Energy 2022 (OJ C 80, 18.2.2022, pp. 1-89) as well as the Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, as lastly amended by Commission Regulation (EU) No 2021/1237 of 23 July 2011.

[135] https://environment.ec.europa.eu/economy-and-finance/ensuring-polluters-pay_en

[136] https://environment.ec.europa.eu/economy-and-finance/phasing-out-environmentally-harmful-subsidies_en

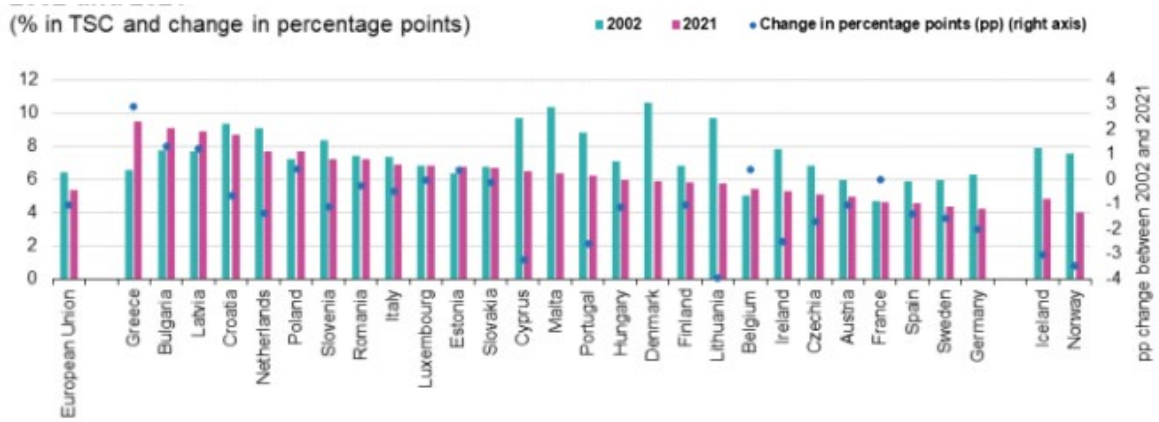
pandemic (Figure 46). This is seemingly at odds with their relative efficiency and efforts to better reflect environmental costs in taxation, in line with the ambitious targets the EU has set. However, the reasons are complex and depend on country-specific tax designs as well as various developments impacting the tax base. They include tax rates not linked to inflation, a lower tax base due to energy efficiency improvements or a cleaner energy mix, and lower energy consumption during the pandemic plus milder winters.

FIGURE 45: STRUCTURE OF ENVIRONMENTAL TAXES, 2021 (IN % OF GDP)



Source: European Commission, DG Taxation and Customs Union, Data on Taxation, based on Eurostat data.

FIGURE 46: ENVIRONMENTAL TAXES AS A SHARE OF TOTAL TAXES AND SOCIAL CONTRIBUTIONS, 2002 AND 2021



Source: Eurostat (online data code: env_ac_tax).

The commitment of different Member States to environmental objectives should not be measured solely in terms of the revenues they raise via environment taxation. This is partly because taxes affect behaviour and reduce their own tax base. Environmental taxation often aims at changing behaviours, which in turn can lead to uncertainty as regards revenue generation. Indeed, if taxes are successful in changing behaviour, revenue will gradually decrease in the medium-long term, assuming that neither the tax base nor the tax rate are

adjusted (depending on price elasticity). Also, substantial environmental tax revenues can be equally generated by countries with low tax rates and a large tax base (i.e. high polluting countries) and by countries with high tax rates and a small tax base (i.e. less polluting countries). Therefore, an assessment of the extent to which the potential of environmental taxes is used can benefit from looking at effective tax rates that also take the tax base into account.

Energy taxes represented the lion's share of environmental tax revenues, accounting for 78 % of total environmental tax revenues. This is the case despite the decrease in energy tax revenues observed during the pandemic. Energy taxes include taxes on energy products (e.g., coal, oil products, natural gas and electricity) used for both stationary purposes and transport purposes. While energy taxes increase the price of energy products, they have not necessarily been designed to achieve environmental objectives though they can lead to lower energy consumption which then contributes to some environmental objectives. By contrast, carbon taxes are levied on the carbon content of fossil fuels and therefore provide an incentive to decrease the use of fossils fuels or to switch to fuels with lower or no carbon content. Carbon taxes and revenues from EU ETS emission allowances are also counted towards energy taxes. Carbon taxes are regarded as a borderline case between energy and pollution taxes. However, they are recorded as energy taxes in EU statistics given that they are levied on energy products and have usually been introduced as a substitute for other energy taxes.

Transport taxes accounted for 18 % of environmental tax revenues in 2021, but revenues and design choices differ across Member States. Transport taxes are levied mainly on vehicles when they are sold and registered (e.g., registration taxes) and then for each year they are licensed for use on the road (e.g., circulation tax). Transport taxes paid by households accounted for 67 % of transport tax revenues in 2019. Many Member States grant tax incentives to zero emission vehicles (Ecorys and WIFO, 2020). Revenues from taxes linked to vehicle sales and registration show some fluctuation as there is a high degree of dependence on the business cycle, and revenues drop in years with lower vehicle sales, as was the case in 2020. Moreover, registration and circulation taxes often do not sufficiently reflect environmental performance. By basing them on emissions, vehicle registration and circulation taxes can be better tailored to contribute to environmental objectives. Distance-based pricing mechanisms (e.g. motorway taxes for road use) could also be considered in this regard. Due consideration should also be paid to the fact that the differences in environmental taxation across the Member States have implications for level playing field.

Resource and pollution taxes make up only a small share of environmental tax revenues, accounting for 3.5 % of environmental tax revenues in 2021. Pollution and resource taxes cover different types of taxes: taxes on the extraction of raw materials; on measured or estimated emissions to air (e.g., NOx, SO_2) and water; on noise and on the management of waste. Resource and pollution taxes include those on household waste or sewage, landfill and incineration taxes, pesticide taxes, wastewater, plastic, and others. On average, households paid 56.8 % of pollution and resource taxes in 2020 (corporations 42 % and non-residents 1.2 %), but there are large differences between Member States. Estimates of external environmental costs regarding air pollution, water pollution, waste treatment, water scarcity and biodiversity show that there is considerable potential to strengthen the application of the polluter pays principle. For example, it is estimated that taxes or economic instruments internalise only 3.8 % of water pollution costs and 0.8 % of waste management costs in the EU (Institute for European Environmental Policy, 2021).

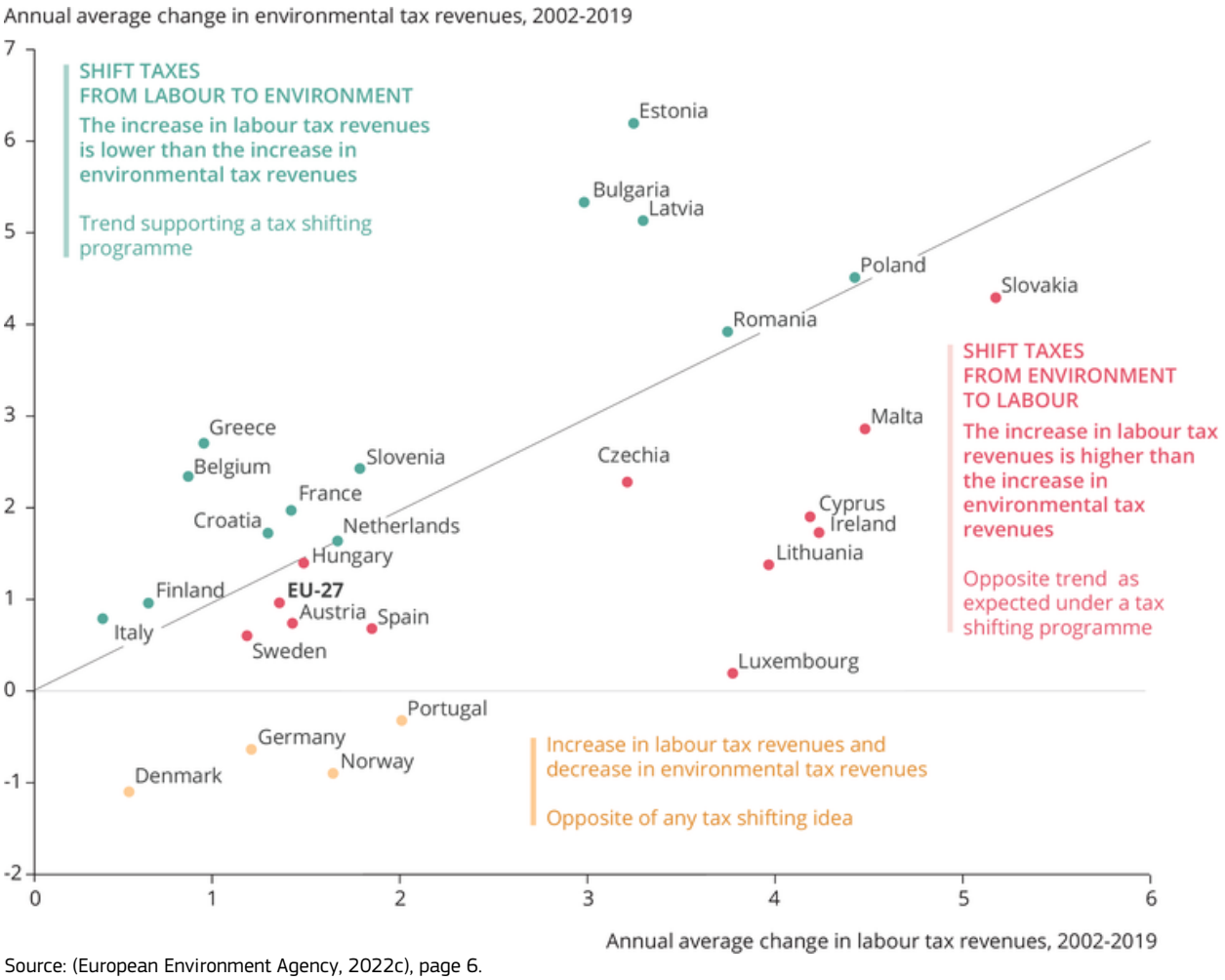
While shifting taxation from labour towards environmental taxes could reduce economic distortions, progress in EU countries is mixed [137]. Figure 47 shows that between 2002 and 2019, 12 Member States have – in relative terms – experienced some shift of the tax burden from labour to environmental taxation. However, in 15 Member States environmental tax revenues are not increasing as much as labour tax revenues, indicating that labour tax revenues have become relatively more important (European Environment Agency, 2022d) – see also section 2.1. While this could be due to a shrinking tax base for environmental taxes on the back of desirable behavioural change, it likely indicates untapped potential to improve the tax mix by

[137] For a discussion of the tax mix, please see chapter 1.2.2.

strengthening environmental taxation. Estimates of insufficient internalisation of external environmental costs (see above) provide evidence in support of such untapped potential. In addition, the design of many environmental taxes, particularly in energy and transport, also limit the behavioural changes they incentivise. Empirical evidence suggests that shifting the tax burden from labour taxes to environmental taxes may create a double dividend in the form of achieving a specific environmental goal and of positive macroeconomic effects (economic or employment growth) (Freire-Gonzalez, 2018); (Maxim, Zander, & Patuelli, 2019).

A tax shift from labour taxation to environmental taxation should include energy and transport taxation in order to have some relevance. The tiny proportion of other environmental taxes (pollution and resources) makes them less relevant for tax shifting purposes. This is mostly because these taxes have, by definition, very small tax bases when compared to the other taxes composing the tax system. Nevertheless, these taxes, if properly designed, have a genuine environmental objective and therefore could be incremented in order to fulfil this objective.

FIGURE 47: CHANGE IN TAX REVENUES FROM ENVIRONMENTAL AND LABOUR TAXATION (ANNUAL AVERAGE PERCENTAGE CHANGE BETWEEN 2002-2019)

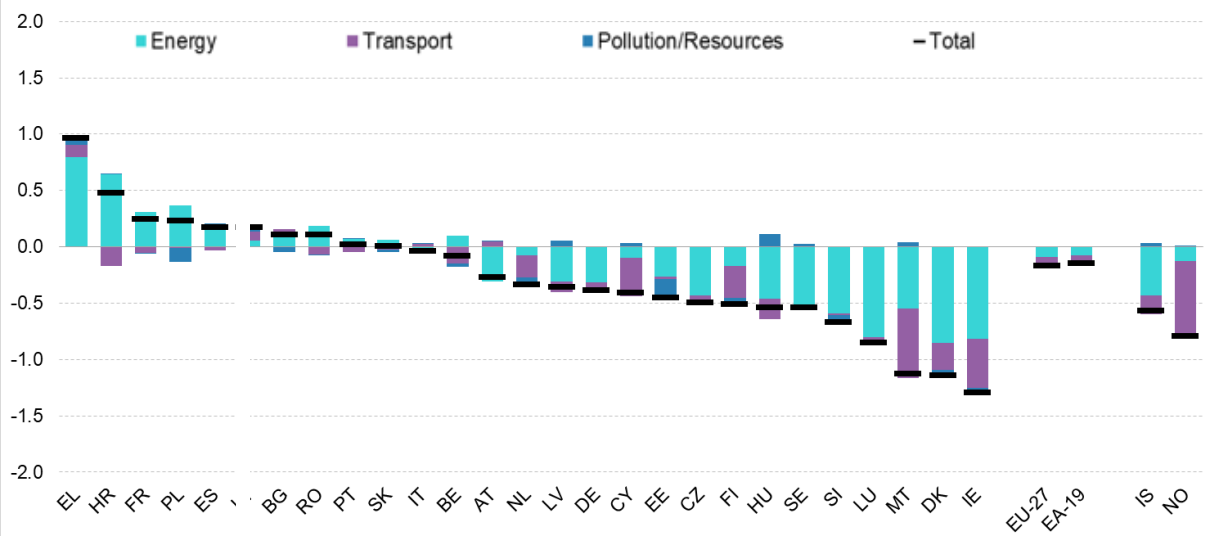


Source: (European Environment Agency, 2022c), page 6.

Between 2010 and 2021, there have been changes in the structure of environmental tax revenue without any particular trend. At the aggregate EU level, changes are almost non-existent, but there are significant changes in individual Member States (see Figure 48). Greece showed the largest increase in overall environmental tax revenue as a share of GDP. Drops in revenue from energy taxes were seen in approximately half of the countries. Although changes in revenue from environmental taxes across the EU are driven primarily

by energy taxes, significant decreases in transport taxes are observed in several countries (Malta, Ireland, Cyprus).

FIGURE 48: CHANGE IN THE REVENUE STRUCTURE OF ENVIRONMENTAL TAXES, 2010-2021 (DIFFERENCE IN PPS OF GDP)

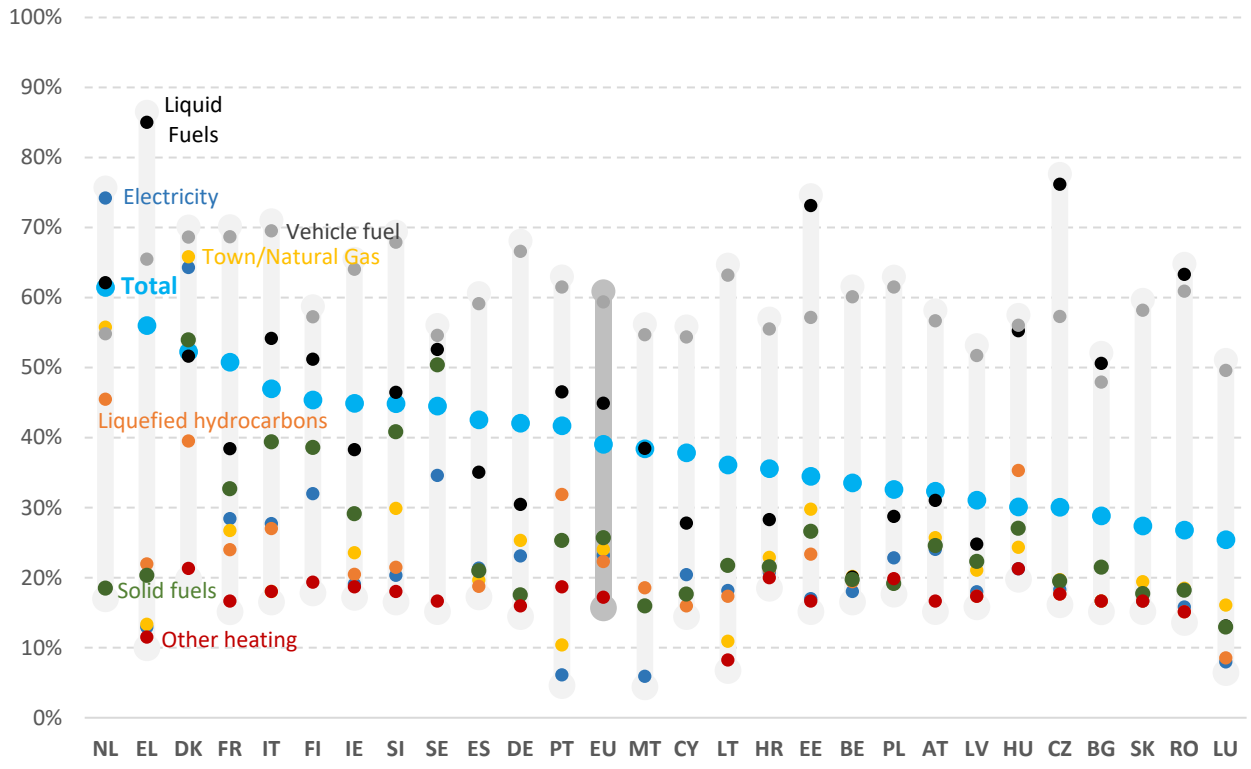


Source: European Commiss on, DG Taxation and Customs Union, based on Eurostat data.

There are sizeable differences in the taxation of energy consumption, both between countries and between energy products. Taxation spans from nearly 85 % of liquid fuels in Greece to 6 % of electricity in Portugal and Malta (Ramores, Maier, & Ricci, 2022) [138]. Other energy products, including electricity, natural gas, solid fuels (such as coal) and other energy products used for heating, tend to have lower rates of taxation (see Figure 49). Fairness considerations can also justify relatively higher vehicle fuel taxes, as vehicle fuels taxes are considered not to be regressive when they are examined on an expenditure basis (see subsequent section).

[138] These figures include VAT on energy products. While VAT is not an environmental tax, it is part of the tax burden of households when consuming energy.

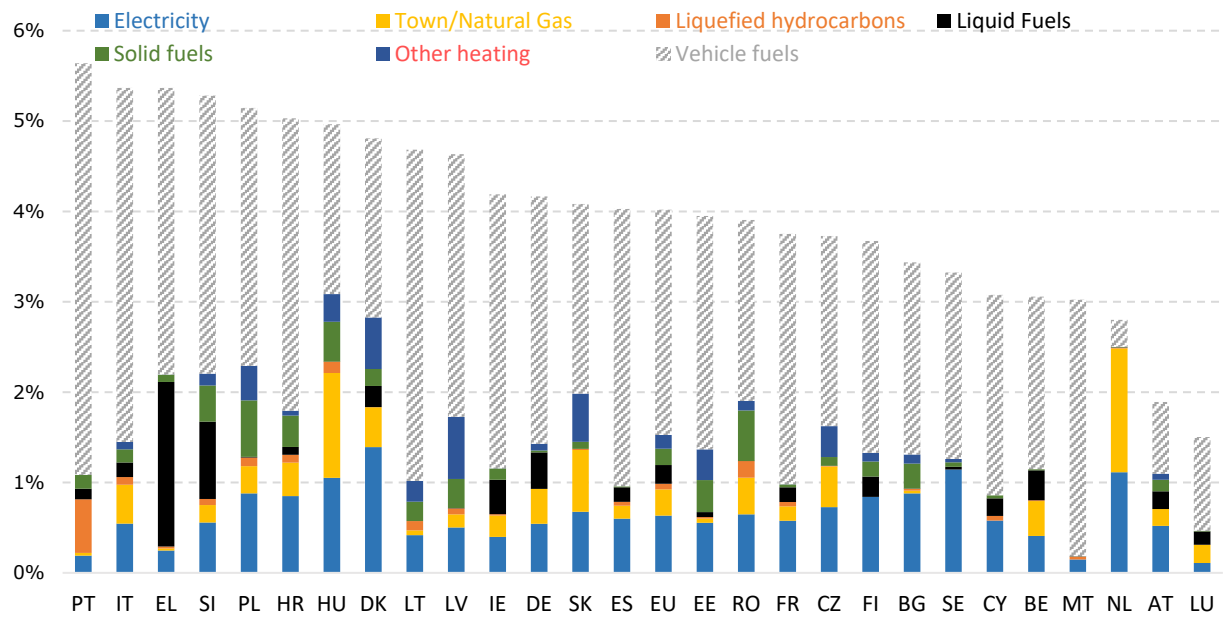
FIGURE 49: IMPLICIT TAX RATE ON ENERGY PRODUCTS IN THE EU IN 2019



Source: (Amores, Maier, & Ricci, 2022), page 11.
Note: Implicit tax rates are the share of total household consumption expenditure on energy products that go to taxes. "EU" is the (unweighted) mean.

In cross-country comparison, higher energy tax rates do not necessarily relate to a higher tax burden as a share of household income. Figure 50 shows the average share of simulated total tax liabilities (VAT + excises) by energy product in household disposable income per EU Member State (Amores, Maier, & Ricci, 2022). In total, the share ranges from 1.5 % of household disposable income in Luxembourg to 5.6 % in Portugal. The way tax rates translate into the tax burden is not straight forward, as this depends on various factors, including the use of a specific energy product and average household disposable income. Empirically, higher tax rates are often found in countries where household disposable income is higher, which mitigates the implied tax burden.

FIGURE 50: TAX BURDEN OF ENERGY PRODUCTS BY COUNTRY (% OF HOUSEHOLD DISPOSABLE INCOME) IN 2019



Source: (Amores, Maier, & Ricci, 2022), page 12.
Note: Tax burden is the average share of simulated total tax liabilities (VAT + excises) on household disposable income by Member State. "EU" is the (unweighted) mean.

4.1.3 Distributional effects of environmental taxation

The distributional impacts of environmental policies need to be considered so that the burden incurred by polluters is equally distributed across sectors and individuals and does not increase inequalities (European Commission, 2019b). In climate policy, there may be trade-offs among equity, efficiency and cost-effectiveness in emission reductions (Vona, 2021). The distributional impacts should therefore be a significant factor in the design of climate policies (Zachmann, Fredriksson, & Claeys, 2018).

The introduction of environmental policies, including tax policies, is often a delicate political issue and public acceptability considerations influence their adoption. The motivation of policy makers to introduce new environmental tax policies may be influenced by the acceptability of those measures amongst citizens and political cycle. Introducing new environmental taxes without making the shift away from labour tax is yet another problem of their acceptability. This in turn means that adopting such measures becomes more difficult when they are not considered fair.

Environmental policies (or a mix of policies) aim to tackle environmental problems with potentially regressive effects at the lowest cost (Vona, 2021). Lower income households may suffer more from the effects of pollution and other environmental harms (e.g., they tend to live in less green areas with higher concentration of air and noise pollution, and often live in houses that are less energy efficient) with significant consequences to their health. Also, higher income households tend to consume more goods and services that negatively affect the environment than lower income households. Hence, from a polluter pay point of view, they should pay more in taxes in absolute terms. However, some environmental taxes tend to represent a higher proportion of the income of lower income households and are thus generally considered to be regressive (European Commission, 2023b). Note though that not all environmental taxes are regressive and means-target

measures (monetary or in-kind measures) using the revenues from such taxes can compensate for the negative impact on lower-income households [139].

Understanding the link between public acceptability and distributional effects, requires further in-depth research on the interplay between environmental taxes and distributional effects to have a broader shift towards green taxation. The paragraphs below provide an overview of the existing knowledge on the distributional effects of environmental taxes per type of tax (i.e., energy taxation, transport taxation and resources/pollution taxation).

Energy taxation

Energy taxes are often perceived to be regressive in the sense that lower income households spend a higher share of their income on energy taxes than higher income households (see e.g. (Zhang & Baranzini, 2004); (Williams III, Gordon, Burtraw, Carbone, & Morgenstern, 2015)). However, distributional effects vary across types of taxes. For instance, the OECD (Flues & Thomas, 2015) found that the distributional effects of energy taxes are different between taxes on transport fuels, heating fuels and electricity:

- **Taxes on transport fuels are considered not to be regressive when they are examined on an expenditure basis.** This is because lower-income households tend to use transport fuels less.

- **Taxes on heating fuels are to some extent regressive based on expenditure.** Different explanations have been put forward. On the one hand, lower-income households could be impacted more by taxes on heating fuels as they might be living in more poorly insulated dwellings. On the other hand, lower-income households could be impacted less as they most probably live in smaller dwellings with a smaller surface area to heat and they may preserve heating fuels by heating to lower temperatures. However, when examining demographic factors there are differences as households in rural areas tend to spend more on total taxes on energy (transport and heating fuels) than households in urban areas.

- **Taxes on electricity are found to be regressive most probably because lower-income households might find it difficult to reduce electricity consumption.** In this context, to protect vulnerable households from taxation on the supply of heating fuels and electricity, the European Commission proposal for the recasting of the Energy Taxation Directive explained in detail in section 4.3.1. below, includes the possibility for Member States to exempt vulnerable and energy poor households. This targeted_exemption will help support and protect vulnerable households during the transition to cleaner energy sources (European Commission, 2021e).

Another study examined the redistributive impact of energy consumption taxation based on household budget surveys and found that this can be driven by different factors (Amores, Maier, & Ricci, 2022). For instance, in some countries, the regressivity of energy taxation seems to be the main driver of its redistributive effect while in other countries it is a combination of high mean incidence (explained by a higher income share of consumption or by higher rates of taxation) with an about-average level of regressivity. Therefore, the study highlights that it is important not only to consider the regressivity of energy consumption taxation but also its relative share over household income. Indeed, it found that some of the most regressive systems are comparatively not inequality enhancing, while other less regressive systems are increasing inequality because of the high incidence of energy consumption taxation over household income.

Undesired distributional effects can be addressed by coupling energy taxes with compensatory measures targeted to vulnerable households. A further study that examined the distributional effects of carbon taxation (i.e., tax levied on one or several greenhouse gas emissions) found that a pure carbon tax without

[139] SWD(2021)641.

revenue recycling in developed economies has the tendency to be regressive. It also found that different designs for carbon tax mechanisms play an important role in the distributional impacts showing the trade-offs between efficiency and equity exist when creating a carbon tax (Wang, Hubacek, Feng, Wei, & Liang, 2016). To mitigate the regressive effects of energy taxation and to improve the progressivity of the tax system, governments could consider re-investing the revenue from energy taxation by shifting it back to low-income households through schemes such as renovation and/or renewable energy subsidies. Microsimulations for four Member States show that imposing energy taxes and reusing their revenue to households could minimise inequality and poverty (European Commission, 2020c) [(140)].

Transport taxation

Transport taxation (such as vehicle registration, vehicle purchase, circulation taxes) can be a relevant fiscal and policy instrument. A study of the distributional effects of environmental taxes using Norwegian data on transportation found that higher taxes on air flights, taxis, automobiles together with lower taxes on bus, bicycles, and mopeds have positive environmental effects and can reduce inequality. However, depending on the geographical area, higher taxes on gasoline, while having a favourable environmental impact might somewhat increase inequality if the use of gasoline may represent the only solution to transportation (e.g. transportation of children, grocery shopping, etc.) by low-income households who spend more on gasoline but little on car quality (Aasness & Røed Larsen, 2003). Another study that examined car taxes in Sweden states that car ownership, license holding, and car use is greater in rural areas and smaller in large cities. However, distance per car is alike in all the areas. As income is lower in rural areas and higher in large cities, cars in rural areas are older but have better fuel economy, while the opposite is true for large cities. The differentiation in the fuel economy could be due to the fact that rural areas may have more diesel cars which are cheaper to use as the fuel cost per kilometre is lower but the vehicle tax is higher (Eliasson, Pyddoke, & Swärdh, 2016). In addition, exempting electric vehicles from taxation can be effective to encourage the purchasing and use of electric vehicles but needs to be properly designed to benefit a wide range of households and not be regressive. It may also need to be complemented by adequate infrastructure to be successful. The analysis seems to suggest that higher taxation on transport is effective but may need to be accompanied by other support measures including support for alternative modes of transportation, and that all measures need to be properly designed in a fair manner to ensure that both taxes and subsidies are not regressive. Rebound effect also needs to be taken into consideration, in particular as desirable climate and environmental behavioural change should be triggered by the environmental taxation.

Resources/pollution taxation

Pollution exposure is usually linked to social inequalities and income levels, with poorer households more likely to be exposed to pollution and suffer from its health effects (European Environment Agency, 2023b)**.** The distributional effects of externalities corrected by pollution taxes, such as negative health impacts, also need to be considered. The reduction of pollution and the spending of government on health, with revenues collected from pollution taxes, can lead to improvements in health especially for the population leaving in poor health and sanitary conditions (United Nations, 2019).

Analysis of distributional effects of environmental taxation suggests that the impact of environmental taxes with respect to income and expenditure depends on the general context, available compensation measures and tax design. The distributional impacts of energy taxes have been the subject of empirical studies for three decades now. More research is nevertheless needed on the examination on distributional effects especially in the sectors of transport and pollution to increase the knowledge of the various measures that could be adopted to mitigate negative effects or reinforce the positive ones, their effectiveness

[(140)] For more information: SWD(2021)641.

and how they affect different groups. Analysis suggests that the context and design of the policy is important and the latter can be crucial or not to whether there is an impact. More detailed research could ultimately help Member States to adjust the design of their policies and implement adequate tax reforms with an enhanced used of environmental taxes.

4.2 Taxation to contribute to REPowerEU and to address the energy crisis following Russia's invasion of Ukraine

REPowerEU is the EU's response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine[141]. There is a double urgency to transform Europe's energy system by: (i) ending the EU's dependence on Russian fossil fuels, which can be used as an economic and political weapon and cost European taxpayers nearly EUR 100 billion per year [142]; and (ii) tackling the climate crisis. By acting as a Union, Europe can phase out its dependency on Russian fossil fuels faster. Key measures to achieve this include energy savings, diversification of energy supplies, and accelerated roll-out of renewable energy to replace fossil fuels in homes, industry and power generation.

Taxation can be a useful tool to accelerate the green transition as part of REPowerEU. As the REPowerEU Communication points out, EU countries can consider taxation measures to support REPowerEU objectives to incentivise energy savings and reduce fossil fuels consumption. While the design needs to carefully balance distributional and other considerations, EU countries are encouraged to consider additional tax measures such as reductions and exemptions from vehicle taxation for both the purchase and use of electric and hydrogen vehicles, tax deductions linked to energy savings and the phase-out of environmentally harmful subsidies [143]. Moreover, the Commission strongly encourages Member States to include in their REPowerEU chapters simple and effective measures to provide support to strategic net-zero industries and boost their competitiveness in the context of the net-zero transition, which could include tax breaks for businesses undertaking clean-tech manufacturing investments [144].

Drastic energy price increases weighed heavily on living costs, and many EU countries have taken mitigating measures. Figure 51 shows estimates of the respective living cost increases by Member States [145]. Housing-related energy costs have increased by up to 10-15 pps for low- and middle-income households, as is the case for the Baltic countries and Italy [146]. Measures taken in responses include direct price interventions, changes in VAT and excise duties, cash and in-kind benefits, and other measures (see subsequent subsection).

[141] COM(2022) 230 final.

[142] Value of EU energy imports from Russia in 2021, see https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/ddn-20220307-1

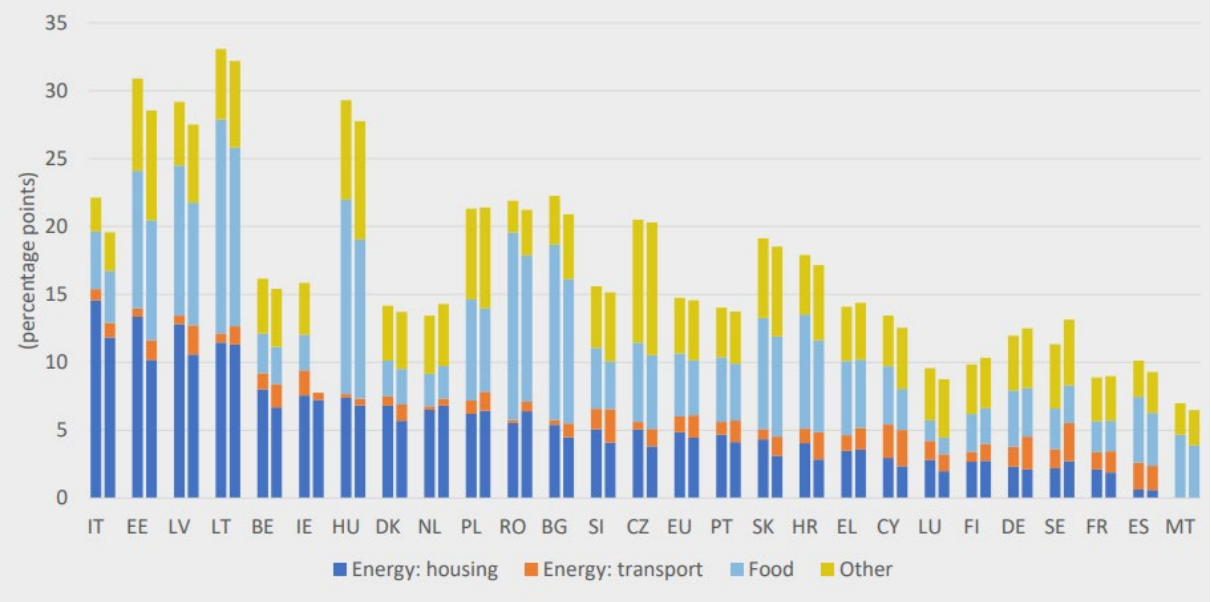
[143] COM(2022) 230 final.

[144] COM(2023) 99 final and Communication from the Commission Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia (OJ C 101, 17.3.2023, p. 3-46).

[145] These estimates do not account for behavioural changes and as such are not a final representation of household expenditure.

[146] (European Commission, 2022c).

FIGURE 51: ESTIMATED CONTRIBUTION TO LIVING COSTS INCREASES FOR THE FIRST AND THIRD QUINTILE BY INCOME (FIRST AND SECOND BAR) BY EXPENDITURE TYPES



Source: European Commission, Joint Employment Report 2023, page 16, based on JRC calculations based on HICP inflation data (prc_hicp_manr) as of November 2022 and microdata from the 2015 wave of the EU-HBS.

The EU introduced common emergency measures to reduce electricity demand and to collect and redistribute the energy sector's surplus revenues to final customers [147]**.** A mandatory temporary solidarity contribution applies to the extraordinary and unexpected profits of businesses active in the extraction of crude petroleum, natural gas, coal, and refinery sectors. As energy prices increased significantly, such companies have seen an extraordinary and unexpected increase in their profits while at the same time other companies and households have seen their energy/electricity bills escalate. The solidarity contribution aims at ensuring that part of those extraordinary profits is used to compensate those more seriously touched by the energy crisis. It is calculated on the taxable profits, as determined under national tax rules in the fiscal year starting in 2022 and/or in 2023, which are more than 20 % above the average yearly taxable profits since 2018. This solidarity contribution applies in addition to regular taxes and levies, and EU countries are to use the proceeds from the solidarity contribution to provide financial support to households and companies to mitigate the effects of high retail electricity prices. Member States can keep national measures that are equivalent to the solidarity levy provided they are compatible with the objectives of the Regulation and generate at least comparable proceeds. Moreover, market revenues for electricity generators using inframarginal technologies were capped at EUR 180/MWh, with the surplus revenues at the disposal of EU countries to support and protect electricity consumers.

EU countries have taken temporary relief measures to mitigate the impact of high energy prices on households and heavily exposed firms. These included direct price interventions, changes in VAT and excise duties, cash and in-kind benefits and other measures. As part of these, VAT-reduction measures on electricity or fuels for domestic heating were introduced in Belgium, Bulgaria, Croatia, Czechia, Cyprus, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Hungary, the Netherlands, Poland, Romania, and Slovenia [148].

[147] Council Regulation 2022/1854.

[148] Taxes in Europe database (TEDB): https://ec.europa.eu/taxation_customs/tedb/taxSearch.html

National energy excise tax rates were more frequently lowered than raised in the past three years. A comparison of excise tax rates for seven energy products shows that on 1 January 2023, 65 rates were reduced and only 39 increased, while 85 were unchanged, compared to 1 January 2020. Table 9 shows, rate decreases were particularly frequent among gas oil used as propellant (diesel), petrol, and electricity (both business and non-business use). Increases were more frequent for gas than for other energy products. The timeframe captures rate changes due to both the energy crisis and the pandemic unless they already expired, but changes also occurred for other reasons, as for instance, to adjust non-indexed rates. This trend supports the need to recast the Energy Taxation Directive, along the lines proposed by the Commission as part of the Fit for 55 Package.

TABLE 9: NUMBER OF DECREASED, UNCHANGED AND INCREASED ENERGY EXCISE TAX RATES IN THE EU AND AVERAGE UNWEIGHTED CHANGE IN %, 1 JANUARY 2023 RELATIVE TO 1 JANUARY 2020.

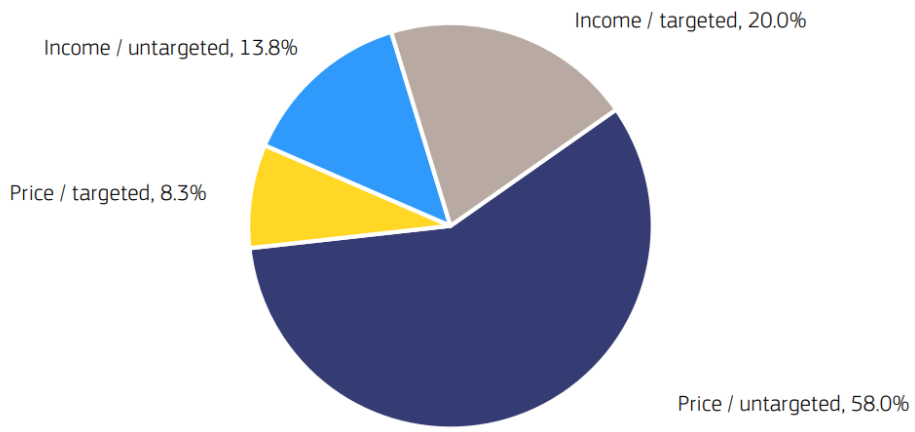
	Decrease	Unchanged	Increase
Gas Oil Propellant (EUR/l)	16	9	2
Gas Oil Heating Business (EUR/l)	9	10	8
Petrol (Unleaded) (EUR/l)	11	12	4
Electricity Business (EUR/MWh)	9	14	4
Electricity Non- Business (EUR/MWh)	10	13	4
Gas Business (EUR/MWh)	5	14	8
Gas Non-Business (EUR/MWh)	5	13	9

Source: European Commission, DG Taxation and Customs Union, based on Taxes in Europe Database.
Notes: Tiered Systems not included.

Temporary relief measures differ with regard to their quality and cost-effectiveness. Price measures that reduce the marginal cost of energy consumption can increase demand for energy, including polluting sources of energy. This is the case for temporary reductions of VAT or excise duties. In principle, income support to households or compensation measures for firms are better suited to leave demand patterns unchanged as they preserve market price signals. For any of these measures, targeting vulnerable households (e.g. by increasing existing welfare support) and firms is the most cost-effective design. However, in practice and partly due to the need to act fast, many of the fiscal measures that have been adopted to protect households from the high energy prices ultimately increase demand for energy. Figure 52 shows that about two thirds of the measures concern prices, while only a third provides income support. In addition, only 28 % of measures are considered targeted (European Commission, 2022a)[149]. In the longer term, taking structural measures, as identified under REPowerEU, such as support for renewables and energy efficiency measures, is the only structural solution to deal with energy shocks by reducing our dependence on imported fossil fuels.

[149] See e.g. SWD(2023) 620 final for an analysis and simulation of the distributional and budgetary impact of Austria's electricity 'price brake'.

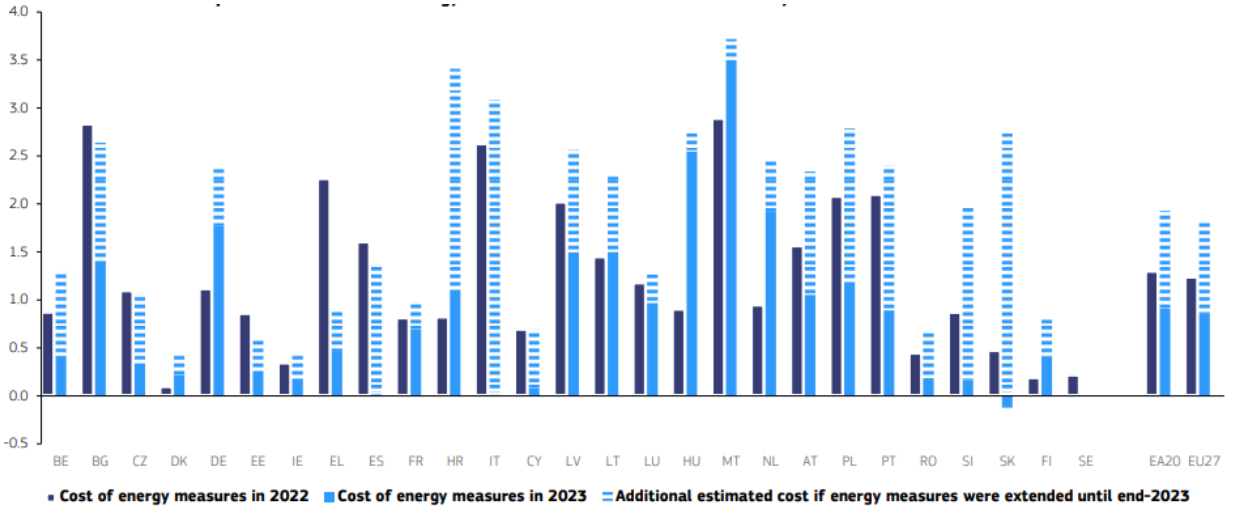
FIGURE 52: ENERGY MEASURES IN 2022 BY CATEGORY, SHARE IN %



Source: (European Commission, 2022a).

The temporary relief measures have a sizable budgetary impact (see Figure 53). For 2022, EU countries have adopted measures with an estimated net budgetary cost of close to EUR 200 billion (1.2 % of GDP) (European Commission, 2022a) [150]. The net budgetary cost of energy measures for 2023 is forecast to be around EUR 144 billion (0.9 % of GDP) but could be higher if energy measures that are set to expire are in fact kept in place for the full year 2023 (European Commission, 2022a). A key factor in this regard is the evolution of energy prices, which have decelerated sharply in the first quarter of 2023 (European Commission, 2023a).

FIGURE 53: ESTIMATED COST OF ENERGY MEASURES ACROSS MEMBER STATES AND STYLISED ADDITIONAL COSTS FOR 2023



Source: (European Commission, 2022a).

In addition, the recent Communication of the European Commission on a new Industrial Strategy for Europe proposes support measures for a globally competitive, climate-neutral and digitalised industry. It will support the industry to lead on the green and digital transitions and stay competitive at a time of geopolitical uncertainty. The Green Deal Industrial Plan is based on the following pillars: i) A simplified

[150] Only measures with a direct budgetary impact on the general government accounts are taken into account, including revenues.

regulatory environment, which assists the fast development of net-zero manufacturing capabilities; ii) Faster access to funding, by enhancing investments while avoiding the fragmentation of the Single Market; iii) Skills, by making sure that the European workforce has the necessary skills in the technologies needed by the green transition; and iv) Open trade for resilient supply chains, based on collaboration with the EU's partners to make sure diversified and reliable supplies and fair international competition (European Commission, 2023c).

4.3 Taxation and regulatory measures in support of the European Green Deal

The Fit for 55 package puts forward legislative tools to deliver on the European Climate Law targets. Measures are ambitious and span from reforms in emissions trading, to land use and taxation, with each proposal consistent and complementary to the others. The Fit for 55 package includes the reinforcement and extension of the EU ETS, which is expected to achieve substantial emission reductions (see Section 4.3.1.). In addition, the package includes the Effort Sharing Regulation [(151)], which aims at assigning stricter emissions reduction targets to each Member State in certain sectors. In also includes the Regulation on Land Use, Forestry and Agriculture [(152)], which sets an overall EU target for carbon removals by natural sinks and the Renewable Energy Directive [(153)], which sets a target of 42.5 % of renewable energy production in the EU's energy mix, by 2030, with an additional indicative 2.5 %. With these measures, the EU is taking on the role of frontrunner for the decarbonisation of the global economy**.** In this context, it is important that the EU's domestic efforts are not undermined by the risk of carbon leakage. This is why, as a complement to the domestic measures and to improve effectiveness globally, the Fit for 55 package includes a Carbon Border Adjustment Mechanism (see 4.3.3.).

In line with the principle of leaving nobody behind, the EU supports the people and regions facing the greatest challenges of the green transition, for instance through the Just Transition Fund and the European Social Fund+ (ESF+). In addition, the Social Climate Fund, which was adopted as part of the Fit for 55 package, will finance temporary direct support for vulnerable households and measures reducing emissions in road transport and building sectors by using part of ETS revenues. As outlined in the Council Recommendation on ensuring a fair transition towards climate neutrality [(154)], Member States are encouraged to use revenues from environmental taxation to address social and labour aspects, for instance through a shifting the tax burden from labour and providing targeted income support, while also mobilising public and private investments for energy efficiency improvements and the switch to renewables in order to lower energy bills, in particular of people and households in vulnerable situations.

4.3.1 Energy Taxation Directive [(155)]

The envisaged recasting of the Energy Taxation Directive aims at reviewing the way energy products and electricity are taxed in the EU to encourage a green transition for all. As part of the Fit for 55 package, the Commission made a proposal in July 2021 for new rules regarding energy taxation to address possible distortions in the internal market and secure revenues for Member States. The proposal is the only one of the Fit for 55 package that has not yet been agreed.

[(151)] COM(2021) 555 final.

[(152)] COM(2021) 554 final.

[(153)] COM(2021) 557 final.

[(154)] COM (2021) 801 final.

[(155)] COM (2021) 563 final.

The ETD has remained unchanged since its adoption in 2003 while energy markets and technologies in the EU have experienced significant developments. Besides this, the EU's international commitments, including the Paris Agreement, as well as the EU's policy and regulatory framework have also evolved. The EU has already ambitious 2030 climate and energy targets and the opportunity to put Europe firmly on a new path of sustainable and inclusive growth.

As reported in the evaluation of the Directive [156], at the beginning the ETD made a positive contribution to the internal market by providing a harmonised framework for energy products. However, the ETD does not achieve anymore its primary objective in relation to the proper functioning of the internal market. Moreover, the existing ETD is not in line with other EU policy objectives. Also, there are some aspects of the ETD that lack clarity, relevance and coherence.

In the absence of an indexation mechanism, the real value of the minimum rates has eroded over time and the minimum rates no longer have a converging effect on national rates as the vast majority of Member States tax most energy products and, in some cases electricity, considerably above the ETD minima. Highly divergent national rates are applied in combination with a wide range of tax exemptions and reductions in order to safeguard the competitiveness of EU industries as well as to pursue other national policies. The wide range of exemptions and reductions are de facto, forms of fossil fuel subsidies. All this also increases the fragmentation of the internal market and in particular distorts the level playing field across the affected sectors of the economy.

Fiscal treatment of new energy carriers (such as hydrogen) is not clear. The lack of sustainability criteria and classification hampers the consistent tax treatment of biofuels. Fiscal treatment of the business sector, in particular energy intensive business and manufacturing sector, varies considerably.

In addition, the wide range of national exemptions and reductions de facto favour the use of fossil fuels. In other words, the design and structure of the rules laid down in the current ETD no longer effectively promote energy efficiency, cleaner and sustainable alternative fuels, or investment and innovation in clean technologies and sustainable energy. In that context, the proposal removes several possibilities for exemptions and reductions allowed under the current rules.

Overall, the ETD does not currently contribute to EU climate and energy policy objectives. There is a lack of alignment between the ETD and, among others, the EU Emission Trading System, Renewables Directive recast and the revised Energy Efficiency Directive. Furthermore, the existing ETD does not contribute to the reduction of greenhouse gases (GHG) emissions (be it current or possibly higher level of ambition as announced in the Green Deal), nor to improvements in energy efficiency, nor to the sustainability of the EU energy mix (currently discriminating against renewable fuels, including renewable bio-fuels). Finally, it does not provide sufficient incentives for investments in clean technologies in the energy and transport sectors, including civil aviation, maritime transport and freight.

The update of the ETD [157] centres on a new structure for minimum rates and on broadening the base to maximise their impact in driving forward our common green goals. First, the proposal includes a new structure for minimum tax rates, to regularly index based on Eurostat data, based on the energy content and environmental performance of fuels and electricity, rather than on volume as currently it is mostly the case. To that end, minimum rates are expressed in euro per gigajoules of each product. This would provide clearer price signals towards cleaner, more energy efficient and climate-friendly choices of businesses and consumers alike. For example, under the current rules, a lower minimum rate per volume is applied to diesel used as motor fuel than petrol used for the same purpose. Under the new proposal, this would change. Second, it broadens the

[156] SWD(2019) 329 final.

[157] COM(2021) 563 final, and the supporting impact assessment, SWD(2021) 641 final.

taxable base by including more products in the scope and by removing some of the current exemptions and reductions.

The proposal groups energy products and electricity in general categories per type, which are ranked according to energy content and environmental performance. In this way, the new system will ensure that the most polluting fuels are taxed at the highest rates. Member States must ensure this ranking is replicated domestically. The existing minimum rates were never updated since 2003. Conversely, in the proposal, a regular indexation mechanism of the minima, based on Eurostat consumer price figures, is envisaged. As regards the taxable base laid out in the Directive, its scope would be enlarged to include energy products or uses that had previously been left out of the EU's energy taxation framework. At the same time, several exemptions and rate reductions would be removed, with much less margin for Member States to set rates below the minima for specific sectors. That said, certain reduced rates would remain possible, such as those for electricity produced from renewables and for primary sector industries such as farming.

Kerosene used as fuel in the aviation industry and, among others, heavy oil used in the maritime industry would no longer be fully exempt from energy taxation but rather taxed for intra-EU voyages. This is a crucial measure given the role of these sectors in energy consumption and pollution. For the aviation sector, the minimum tax rates would start from zero and increase over a transitional period while for both sectors sustainable and advanced products and electricity would benefit from a minimum rate of zero during a ten-year period.

The distributional effects are duly taken into account in the proposal for revision [158]. In fact, the minimum tax rates applicable to households for heating fuels and electricity would start from zero and gradually increase over a period of ten years. Moreover, the ETD proposal includes the possibility for Member States to exempt from taxation the supply to vulnerable households of heating fuels and electricity over the same period of ten years.

4.3.2 EU Emissions Trading System

The EU Emissions Trading System (ETS) is a key element of the EU's policy to fight climate change and its main tool for reducing greenhouse gas emissions cost-effectively. The EU ETS sets a cap on the total amount of some greenhouse gases that can be emitted by operators covered by the system. The cap is decreased over time so the total emissions drop. Within the cap, operators buy or receive emission allowances, which they can exchange with one another. There is a limit in the total number of available allowances. After each year, an operator needs to make sure it has enough allowances to cover its emissions, or else it will get a fine. If an installation drops its emissions, it can keep the rest of the allowances to cover future needs or sell them to other operators that are in need for allowances. Research shows that the introduction of the EU ETS contributed to the reduction of carbon emissions in the order of −10 % in the first two trading phases between 2005 and 2012 (Dechezleprêtre, Nachtigall, & Venmans, 2023)

The legislative framework of the EU ETS is laid down in the ETS Directive [159]. The system operates in trading phases, currently is the fourth trading phase (2021-2030). The ETS framework has undergone different revisions to ensure the system's alignment with the EU climate policy goals. The legislative framework for phase 4 was first reviewed in 2018. However, with the introduction of the Green Deal and the ambitious goals it encompasses, in July 2021, the European Commission proposed to broaden the EU ETS, proposing. For instance, a new target to reduce emissions from the EU ETS sectors, extending the emissions trading to new sectors such as the maritime sector and setting up a new separate emissions trading system to cover emissions from fuels used in road transport and buildings. To address the social impacts of the extension of emissions trading to road

[158] SWD(2021) 641 final.

[159] Council Directive (EU) 2003/87/EC.

transport and buildings, a Social Climate Fund is proposed to be established to deal with the impacts on vulnerable groups of extending carbon pricing to additional sectors. The European Parliament and the Council of the EU reached a provisional agreement on the revision in December 2022, which has subsequently been adopted by the European Parliament and the Council, together with the Carbon Border Adjustment Mechanism and the Social Climate Fund, in May 2023 [160].

The price of EU ETS emission allowances, has tripled from around EUR 30 at the end of 2020 to close to EUR 90 at the end of 2022, increasing revenues accordingly [161]. According to Eurostat, associated revenues totalled EUR 16.5 billion in 2021 [162]. Moreover, the revised EU ETS rules provide for an accelerated emission reduction path and phase out free allowances by 2034, raising the costs of prospective emission allowances [163] onwards.

4.3.3 Carbon border adjustment mechanism [164]

The EU's international leadership on climate goes hand in hand with complementary domestic action through environmental policy. To deliver on its targets for greenhouse gas emissions reductions, the Commission announced, as part of the European Green Deal, the introduction of a carbon border adjustment mechanism (CBAM) [165]. The CBAM was adopted by the Commission as part of the Fit for 55 package and will serve as an essential element of the EU toolbox to meet the objective of a climate-neutral EU by 2050 by addressing the risks of carbon leakage as a result of the increased climate ambition of the EU.

The CBAM is compatible with World Trade Organization's rules (WTO) and will progressively replace the measures addressing the risk of carbon leakage in the EU ETS. As long as significant EU's international partners have policy approaches that do not uphold the same level of climate ambition as the EU, and differences in the price applied to GHG emissions persist, there is a risk of carbon leakage. The objective of the mechanism is to avoid that the EU's emissions reduction efforts are offset by increasing emissions outside the EU through the relocation of production to third countries with laxer environmental standards or by increased quantity of imports of less carbon-intensive products. Without such a mechanism, carbon leakage could result in an overall increase in global emissions.

In practice, the proposed CBAM will apply to imports, and mirrors the EU ETS which applies to domestic production. Importers or their representatives from 2026 onwards will need to surrender certificates ('CBAM certificates'), based on the actual embedded emissions of the products they import into the Union. The price of these certificates will correspond to the weekly average auction price of EU ETS allowances. The CBAM is designed to take account of the actual emissions embedded in the imported goods. This will reward companies' commitments to decarbonisation and their investments in green technologies, as they would need to buy less CBAM certificates. Less emissions will directly translate into lesser financial adjustment. Furthermore, the CBAM will deduct the carbon price already paid in third countries before the product reaches the EU - whether through

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[160] Council Directive (EU) 2023/959.

[161] European Energy Exchange (EEX), EUA Emission Spot Primary Market Auction Report – History, available at: https://www.eex.com/en/market-data/environmental-markets/eua-primary-auction-spot-download

[162] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics_-_detailed_analysis#Evolution_of_environmental_tax_revenue_in_Europe_between_2010_and_2021

[163] 2028 if energy prices are exceptionally high.

[164] Parliament and Council Regulation (EU) 2023/956.

[165] COM(2019) 640 final, "Should differences in levels of ambition worldwide persist, as the EU increases its climate ambition, the Commission will propose a carbon border adjustment mechanism (CBAM), for selected sectors, to reduce the risk of carbon leakage. This would ensure that the price of imports reflect more accurately their carbon content. This measure will be designed to comply with World Trade Organization rules and other international obligations of the EU", https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX%3A52019DC0640

market-based instruments like the ETS, or through carbon taxation, which in turn, encourages third countries to establish their own carbon pricing systems.

During a transitional phase, importers will report emissions embedded in their goods without paying a financial adjustment. The transitional phase which lasts from 2023 until 2025, will be followed by a gradual phasing in of CBAM, which will allow for a careful, predictable and proportionate transition for EU and non-EU businesses as well as authorities. Once the definitive system becomes fully operational in 2026, EU importers will have to declare, annually, the amount of embedded emissions in the total goods they imported into the EU in the preceding year, and surrender the corresponding amount of CBAM certificates. They will also need to report the effective carbon price paid in the country of origin.

CBAM will initially apply to imports of cement, iron and steel, aluminium, fertilisers, hydrogen and electricity due to their high risk of carbon leakage and high carbon intensity. The administrative feasibility of covering these sectors in the CBAM from the start was also taken into account. The CBAM will apply to direct emissions emitted during the production process of the products covered. Indirect emissions, namely emissions from electricity consumed during the production process of goods, are also included in the scope of the adopted legislation but for a subset of products defined in the annexes of the legislation.

4.4 Taxation to tackle EU health challenges [166]

4.4.1 Health challenges in the EU

Health has a central place in the UN Sustainable Development Goals and taxation can play a role in achieving these goals by 2030. Specifically, taxation can help to achieve the objective of SDG 3.4, which is to reduce premature mortality from non-communicable diseases by one third. Europe's Beating Cancer Plan [167], a key element of a stronger European Health Union, reflects the EU's commitment to support EU Member States to achieve this voluntary target.

In the EU and globally non-communicable diseases [168] such as cancers, heart disease, chronic respiratory diseases and diabetes, remain the leading cause of mortality. These conditions are collectively responsible for 71 % (41 million) of all deaths globally [169] and the human and financial costs for EU economies is expected to grow as the EU's populations age [170]. The most important risk factors for these diseases are: tobacco use, alcohol use, unhealthy diets and a lack of physical activity.

Smoking remains the leading factor of premature mortality, accounting for about 700 000 deaths in the EU per year. Despite progress in reducing smoking rates over the last decades, still one-fifth of adults smoke every day and tobacco consumption remains the largest behavioural risk factor to health. In addition, around EUR 10 billion are lost to the national and EU budgets each year due to the smuggling of both genuine and counterfeit cigarettes. A great number of cancers diagnosed in Europe may have a link to tobacco smoking. There is major tobacco-induced mortality and morbidity also from other causes, notably cardiovascular diseases and chronic obstructive pulmonary disorder. They in turn generate mortality- and morbidity-related social cost,

[166] (World Health Organization, 2017).

[167] SWD (2021) 13 final.

[168] Non-communicable diseases are those, which are not caused by acute infection.

[169] https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

[170] In 2013, premature deaths due to major NCDs cost EU economies 0.8 % of GDP. See: https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/cost-non-communicable-diseases-eu_en

defined as the burden of 'value of lives lost', smoking-attributable healthcare costs and productivity losses. According to Eurostat, smoking prevalence in EU-27 (% of total population) decreased from 31 % in 2006 to 25 % in 2020 [171].

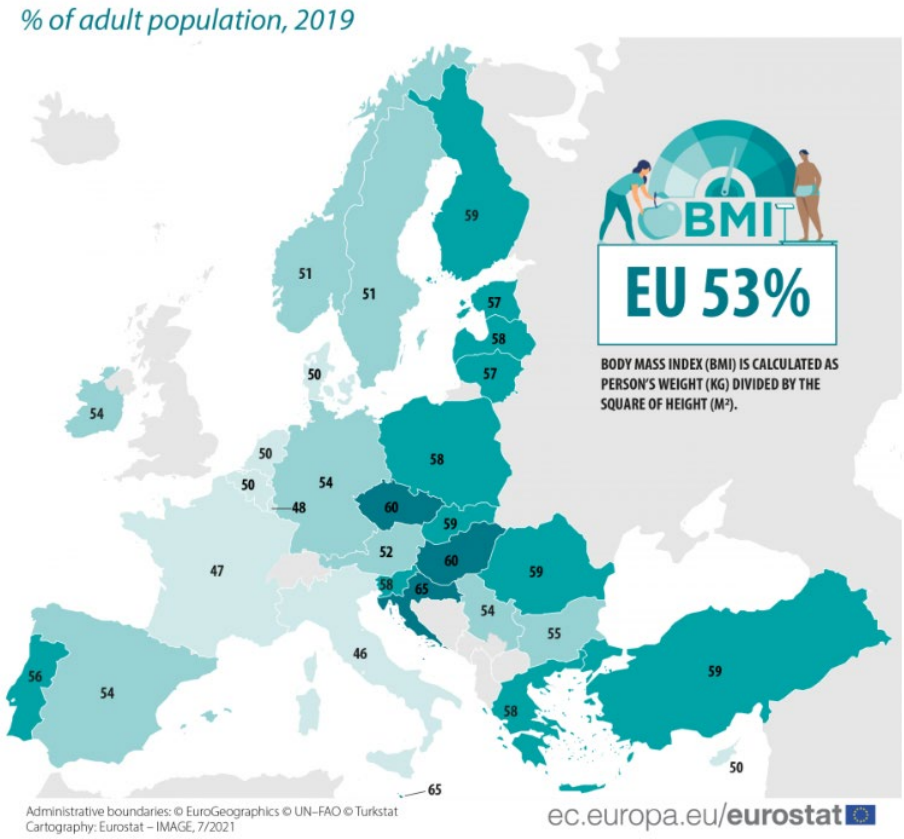
Harmful alcohol consumption is responsible for another 255 000 to 290 000 deaths per year across EU countries (World Health Organization, 2019). While alcohol control policies have achieved progress in reducing overall alcohol consumption, heavy alcohol consumption remains an issue (OECD, European Union, 2020). Harmful alcohol consumption is a leading risk factor for premature mortality, injuries and many non-communicable diseases such as cancer, liver cirrhosis and injuries. These diseases and injuries cause medical costs equal to about 2.4 % of total health expenditure each year; they also damage children's school performance and labour force productivity. As a result, the OECD estimates that GDP will be "1.6 % lower on average in OECD countries annually over the next 30 years" than what it would otherwise be in the absence of harmful consumption of alcohol (OECD, 2021b).

Obesity is the only health determinant among the indicators measuring progress towards SDG3 for which the EU is significantly moving away from sustainable developments objectives (Eurostat, 2023) The figure below presents the proportion of the overweight or obese population in the EU as well as in Norway, Serbia and Turkey. Weight problems and obesity are growing at a rapid rate in the majority of the EU Member States, with estimates of 52.7 % of the adult (aged 18 and over) EU's population being overweight in 2019. Obesity represents a serious public health problem as it raises the risk of chronic non-communicable diseases such as cardiovascular disease, type-2 diabetes, hypertension, coronary heart diseases and certain cancers. According to Eurostat, overweight population by body mass index (BMI) in EU-27 in 2019 (% of the total population) increased from 51.1 % in 2014 to 52.7 % in 2019 [172].

[171] https://ec.europa.eu/eurostat/databrowser/view/sdg_03_30/default/table

[172] https://ec.europa.eu/eurostat/databrowser/view/sdg_02_10/default/table?lang=en

FIGURE 54: OVERWEIGHT POPULATION (BMI≥25)



Source: (Eurostat, 2019) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Overweight_and_obesity_-_BMI_statistics.

The World Health Organization (WHO) encourages the increased use of taxation to curb smoking, harmful use of alcohol and excessive consumption of sugar sweetened beverages (SSB), with a view to limit major risk factors for many non-communicable diseases. They are dubbed by the WHO as 'best buys' as highly cost-effective policy interventions. A substantial body of research, which has accumulated over several decades and from many countries, shows that significantly increasing the excise tax and price of tobacco products is the single most consistently effective tool for reducing tobacco use (U.S. National Cancer Institute and World Health Organization, 2016).

Member States can use taxes to improve and promote healthy choices. This section examines how Member States use health taxes and discusses how taxation can contribute to improving public health.

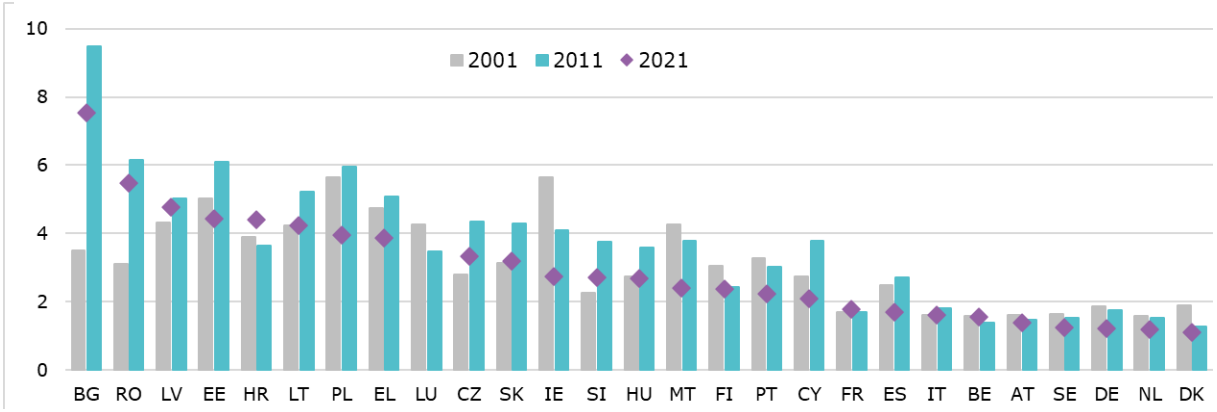
4.4.2 The role and economic rationale for health taxes

Health taxes can address the negative externalities of consuming certain products by inducing behavioural changes and generate revenue. Historically such taxes have applied to alcohol and tobacco. More recently, a number of Member States have implemented measures targeting high fat, sugar and salt food and beverages. These externalities appear in the form of healthcare expenditure, reduced life expectancy and effects on employment and productivity. In addition, health taxes address internalities, i.e. long-term costs affecting individuals consuming alcohol, tobacco or unhealthy food.

The share of tax revenue stemming from health taxes is declining. The share of taxes on tobacco and alcohol has fallen from 2.1 % in 2011 to 1.8 % of total tax revenue in the EU-27 in 2021 which also has to do

with inflation. The share at Member State level ranges from 1.1 % in Denmark to 7.5 % in Bulgaria. While tobacco taxes represent a substantial part of tobacco prices in most Member States, tax levels on alcohol vary widely across the EU and across types of alcoholic beverages. Taxes on high fat, sugar and salt products are much studied and implemented across the world, from Mexico to South Africa, but remain little developed in Europe. Only 11 EU Member States currently tax SSBs, up, however, from 5 Member States in 2010 [173] (ICF, 2022).

FIGURE 55: THE SHARE OF TAXES ON TOBACCO AND ALCOHOL AS A & OF TOTAL TAX REVENUE BETWEEN 2001, 2011 & 2021



Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.
Notes: No data for Luxembourg in 2021

Careful design is needed for the implementation of efficient and effective health-related fiscal measures. It must consider cost-pass through patterns and consumer behavioural changes, product substitution, revenue generation effects and direct/indirect impacts including on public health. Also, health tax benefits must be balanced out with related costs and administrative burden incurred to both administrations and economic operators. While they have often been presented as having possible short-term regressive effects, more recent economic research in the past years have emphasised the many economic and health benefits of reducing the consumption of these products. In the long-run, further progressive redistributive effects can be expected. For example, lower consumption of cigarettes will benefit the health of low-income households and decrease their expenditures for tobacco related illnesses (Tobacconomics, 2019).

In 2021, the WHO updated its technical manual on tobacco tax policy and administration to address the finding that cigarettes have become more affordable in recent years (World Health Organization, 2021). It also serves as an update to the 2010 manual, incorporating the latest developments in science, technology and policy, including on new and emerging nicotine and tobacco products. The manual provides guidance on best practices such as the optional level of taxation and the frequency of tax increases and the design of tax structures. It also highlights the limitations of arguments against the use of higher taxes.

In December 2022, the WHO also published its first global tax manual on sugar sweetened beverages (World Health Organization, 2022) **which highlights the win-win-win strategy of such taxes: a win for public health (and averted health-care costs), a win for government revenue, and a win for health equity.** According to this publication, increase in the product's price of at least 20-30 % appear to have an impact, which is passed on to the consumer at approximately 82 %. Price elasticity tend to be high, meaning that a price increase of 20 % easily amounts to a reduction in consumption of 30 %, although many factors influence consumers' response. Ultimately, taxes on SSBs have proven to be more impactful when embedded in a broader policy package including provisions on labelling, marketing and advertisement and educational campaigns.

[173] World Bank Global SSB Tax Database

A recent study provides a mapping of measures focused on High in Fat, Sugar and Salt (HFSS) foods and drinks that were implemented or amended between 2009 and 2009 in the EU Member States. There are many countries (e.g. Austria, Bulgaria, Czechia, Estonia, Germany, Greece, Italy, Lithuania, Luxembourg, Malta, Romania, Slovakia, Slovenia, Sweden) where no fiscal measures were introduced between 2009 and 2019 on HFSS products. In some countries this might be explained by the focus on approaches other than fiscal measures to address obesity and diet-related non-communicable diseases (mentioned, for example, in relation to Lithuania and Sweden), while in some other countries, future measures were under discussion, for instance in Luxembourg and Romania, or due to be implemented, as in Italy (ICF, 2022). Poland introduced such a tax in 2021.

TABLE 10: HFSS MEASURES INTRODUCED OR AMENDED BETWEEN 2009 AND 2019 BY COUNTRY

Country	Taxes on HFSS
Austria	
Belgium	✓
Bulgaria	
Croatia	✓
Czechia	
Denmark	✓✓✓✓
Estonia	
Finland	✓✓
France	✓
Germany	
Greece	
Hungary	✓
Ireland	✓
Italy	
Latvia	✓
Lithuania	
Luxembourg	
Malta	
Netherlands	✓
Poland*	
Portugal	✓
Romania	
Slovakia	
Slovenia	
Spain	✓
Sweden	

Source: (ICF, 2022).
Notes: (1) Multiple ticks indicate multiple measures of the same type;
(2) Data for Cyprus are not available.
(3)* Poland introduced such task in 2021

Almost all the above taxes in place in EU countries apply to sugar sweetened (and in several countries also artificially sweetened) beverages, which are particularly consumed among young people. In 2019, 9 % of people aged 15 and over in the EU drank sugar-sweetened soft drinks daily (highest share recorded among those aged 15 to 24 -14 %), while 6 % drank such beverages 4-6 times a week and 19 % drank these 1-3 times a week (Eurostat, 2021).

Most HFSS taxes focus on SSBs because it is a narrow and easily defined product category, which present low to no nutritional value and there is clear evidence of health risks linked to SSB consumption (World Bank Group, 2020). However, there is a lack of observational evidence on the effects of SSB taxes on health (World Health Organization , 2022). This is mostly due to the relatively long timespan from behavioural effects on the intake of added sugars, to effects on intermediary risk factors such as obesity, and from there to health end point such as disease incidence. Evidence on the health effects of SSB taxes therefore comes mainly from simulation studies, which indicates "that SSB taxes have the potential to improve population health" (World Health Organization, 2022).

The experiences of Member States such as Denmark, Finland and Hungary with HFSS (solid) food taxes demonstrate the challenges involved in expanding the scope of taxation of HFSS products. The key challenge to be addressed relates to the classification of products based on their potential impact on health. In addition, where taxes on HFSS (solid) foods have been applied and maintained, these have tended to focus on relatively narrow ranges of products whose purchase represent a small share of households' food expenditure. A narrow tax base also means that the potential for unwarranted substitutions by consumers is relatively high, as consumers have access to many potential substitute (untaxed) products whose consumption may offset the benefits of taxation (ICF, 2022). Generally, much of the existing literature on HFSS taxes emphasises their complementarity to other measures aimed at improving diet, and their need to be part of a broader public health strategy, including measures such as front-of-pack nutrition labelling, food advertising regulation, behavioural nudges and health education campaigns (ICF, 2022).

5 VAT: TRENDS IN RATES AND REVENUE AND THE IMPACT OF DIGITALISATION

Value Added Tax (VAT) is one of the most important sources of tax revenue in the EU. In 2021, it raised 18.2 % of revenue, being the second most important source of tax revenue on average and even the first in some Member States. Thus, the ability of Member States to finance their public sector activities is closely linked to an effective and robust VAT system. VAT also constitutes a source of revenue for the EU budget, as a small percentage of its revenue is an EU own resource. The introduction of digital reporting of VAT should contribute to improving tax collection, reducing compliance costs for businesses and combatting tax fraud and tax evasion. However, digitalisation also brings some policy challenges, which a recent European Commission legislative proposal is meant to tackle.

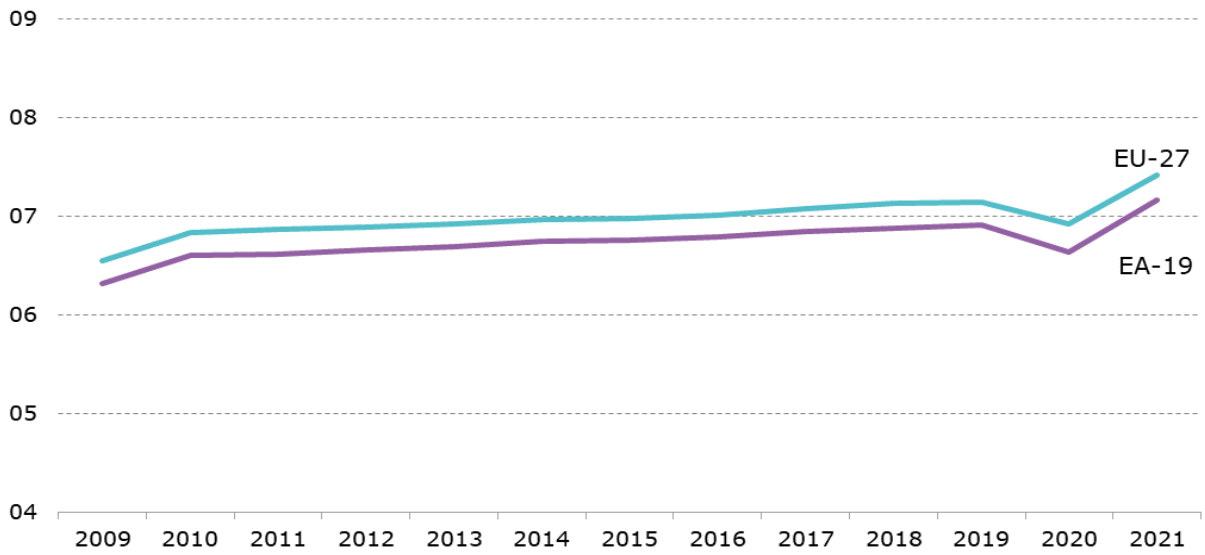
This chapter provides an overview of the role of VAT in generating revenue and how it has evolved in recent years. It then analyses the effects of digitalisation on compliance costs and discusses both opportunities and risks offered by the increasing digitalisation of the EU economy.

5.1 The role of consumption taxes and VAT in particular in generating revenue

In 2021, EU-27 revenue from consumption taxes increased by 0.5 pp to 11.2 % of GDP (see Table 11), representing an increase of 12.6 % in absolute terms between 2020-2021. As a percent of GDP this is very similar to the values observed before the pandemic. A major factor in this rise was the increase in final consumption that was observed in 2021, i.e., 6.5% in nominal terms.

VAT is a significant and growing source of revenue: VAT accounts for about 18 % of the revenue from all taxes and social contributions raised in EU-27 (2021 data). VAT revenue represents a major share of the revenue from consumption taxes and of total revenues from taxes and social contributions. In the EU, VAT revenue has grown slowly but steadily, increasing up from 6.5 % in 2009 to 7.1 % of GDP in 2019 and dipped in 2020 to 6.9 % of GDP, in a year where consumption was heavily affected by the COVID-19 pandemic. This, combined with (temporary) rate cuts on certain products resulted in a decline in VAT revenues. In 2021, VAT revenues increased again both in absolute nominal terms and as a share of GDP (to 7.4 % of GDP in EU-27), given the increase in consumption that followed the end of pandemic-related restrictions. The same trend is visible for all consumption taxes, which increased from 10.5 % of GDP in 2009 to 11.1 % of GDP in 2019, then dropped to 10.7 % of GDP in 2020 and increased to 11.2 % of GDP in 2021.

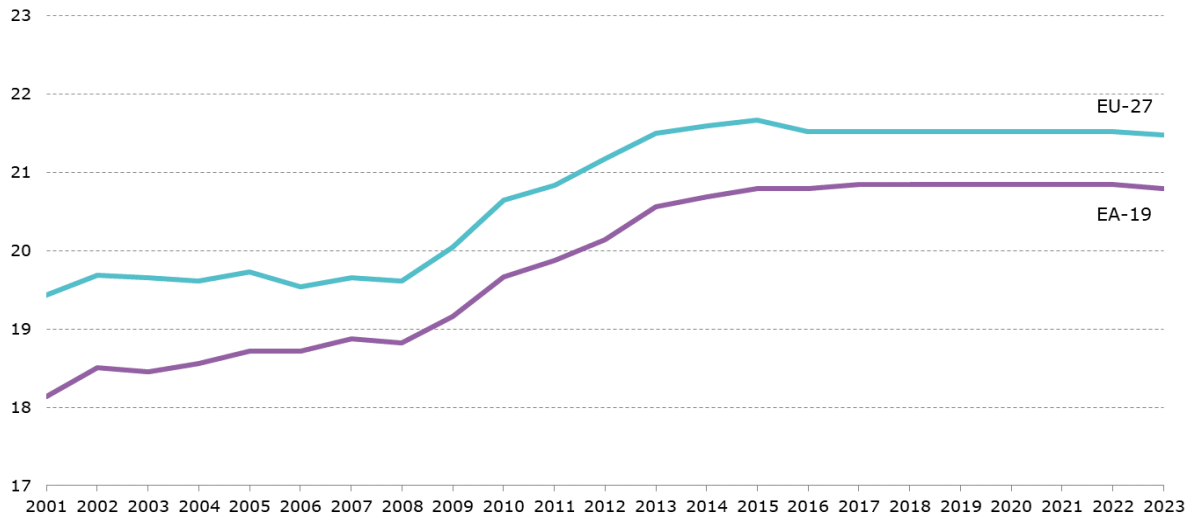
FIGURE 56: VAT AS % OF GDP



Source: Eurostat (online data code: gov_10a_taxag).

The VAT standard rate remained mostly unchanged at the start of 2023. Following a period of hikes (2009–2015), the EU-27 average standard VAT rate stabilised and then remained almost unchanged from 2017 to 2022 at 21.5 % (see Figure 57). The lowest standard rates are registered in Luxembourg (16 %) and Malta (18 %). On the other hand, the highest VAT rate is found in Hungary (27 %), followed by Sweden and Croatia (all at 25 %).[174] Given the impact of the war in Ukraine on the EU economy, it is possible that some countries may reduce their VAT rates or place specific products under reduced rates, for example energy products in 2023, as has already been the case in recent years.

FIGURE 57: DEVELOPMENT OF AVERAGE STANDARD VAT RATE, EU-27, 2001-2023



Source: European Commission, DG Taxation and Customs Union, based on Taxes in Europe database.

[174] Please see Annex 3 for standard and reduced VAT rates in EU Member States for the last decade.

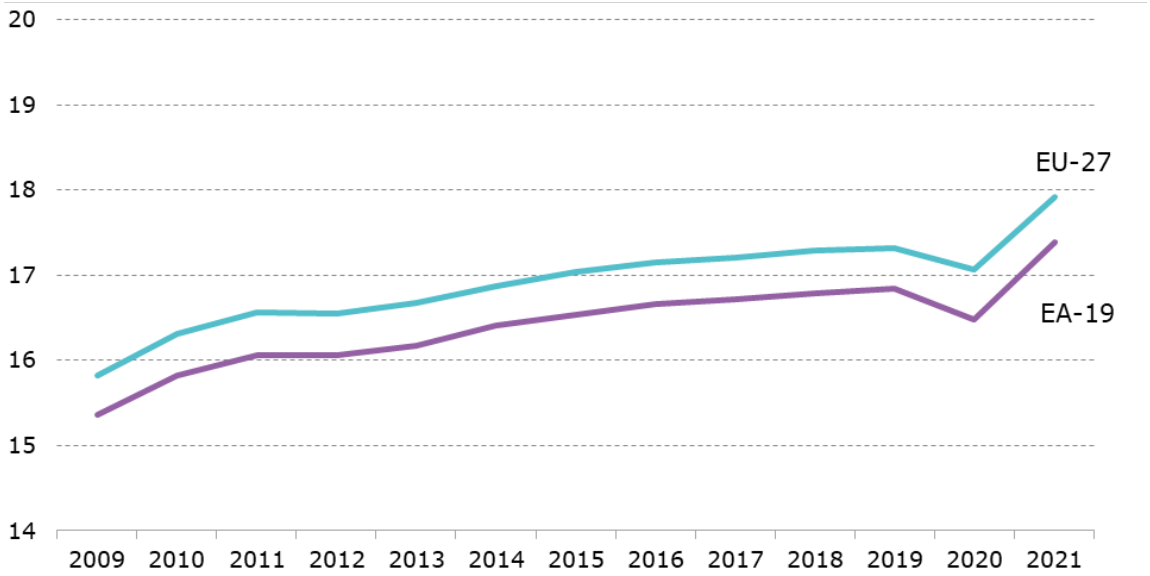
TABLE 11: REVENUE FROM TAXES ON CONSUMPTION INCLUDING VAT AS % OF GDP – TOTAL

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Difference 2011-2021 (pp)	Ranking 2021	Revenue 2021 (million EUR)
EU-27	10.5	10.8	10.9	11.0	11.1	11.1	11.1	11.1	11.1	11.1	11.1	10.7	11.2	0.3		1 626 095
EA-19	10.3	10.5	10.6	10.7	10.8	10.9	10.8	10.9	10.9	10.9	10.8	10.4	10.9	0.3		1 345 625
Belgium	10.6	10.9	10.8	10.9	10.9	10.8	10.6	10.9	10.9	11.0	10.8	10.4	10.9	0.1	21	54 514
Bulgaria	13.8	13.4	13.5	13.7	14.6	14.2	14.6	14.7	14.7	14.1	14.3	14.0	14.1	0.6	3	10 010
Czechia	10.5	10.7	11.5	11.9	12.2	11.4	11.8	11.8	11.9	11.6	11.5	11.3	11.4	-0.1	18	27 184
Denmark	14.8	14.6	14.7	14.7	14.4	14.1	14.1	14.2	14.0	14.1	13.6	13.9	13.4	-1.3	7	45 114
Germany	11.2	10.7	10.8	10.7	10.6	10.5	10.4	10.3	10.2	10.2	10.2	9.6	10.3	-0.5	23	372 520
Estonia	14.1	13.2	13.0	13.3	12.9	13.3	13.8	14.2	13.7	13.5	13.9	13.0	13.0	0.0	8	4 103
Ireland	9.8	9.9	9.5	9.5	9.8	9.8	7.7	7.9	7.5	6.9	6.8	5.7	6.0	-3.5	27	25 774
Greece	10.4	12.0	12.8	12.9	13.2	13.5	13.5	14.7	14.7	15.0	14.9	14.1	14.5	1.7	2	26 376
Spain	6.3	8.1	8.0	8.2	9.0	9.3	9.6	9.5	9.5	9.6	9.4	9.2	9.8	1.8	25	118 481
France	10.6	10.7	10.9	11.0	11.1	11.2	11.3	11.4	11.6	11.7	11.6	11.4	11.7	0.8	17	292 685
Croatia	16.3	16.8	16.3	17.3	17.7	17.8	18.3	18.5	18.7	19.0	19.1	18.1	18.6	2.3	1	10 809
Italy	10.1	10.6	10.7	11.1	10.8	11.1	11.1	11.2	11.2	11.2	11.2	10.6	11.3	0.6	19	201 837
Cyprus	12.4	12.2	11.7	12.0	11.8	13.1	12.8	12.9	12.7	13.0	12.6	11.5	12.4	0.7	12	2 973
Latvia	10.3	11.2	11.6	11.6	12.0	12.3	12.6	13.1	13.1	13.5	13.2	13.1	12.7	1.1	10	4 274
Lithuania	11.0	11.2	11.1	10.6	10.6	10.8	11.3	11.3	11.4	11.3	11.3	11.5	11.9	0.8	14	6 663
Luxembourg	10.2	9.9	10.3	10.5	10.4	10.6	8.4	8.4	8.6	8.8	8.9	8.3	8.8	-1.5	26	6 397
Hungary	12.5	12.4	12.4	13.5	14.2	14.2	14.4	13.9	13.8	14.1	13.9	14.0	13.8	1.4	4	21 278
Malta	12.5	11.9	12.8	12.3	11.9	12.1	11.2	11.2	11.0	11.3	10.7	10.3	10.1	-2.7	24	1 514
Netherlands	11.1	11.0	10.9	10.7	10.9	11.0	11.1	11.4	11.3	11.4	11.8	11.9	11.9	1.0	13	102 119
Austria	11.7	11.6	11.6	11.7	11.6	11.6	11.5	11.5	11.6	11.4	11.4	11.0	11.2	-0.4	20	45 521
Poland	11.6	12.5	12.5	11.8	11.6	11.6	11.4	11.8	12.3	12.5	12.3	12.4	13.5	1.0	6	77 486
Portugal	10.6	11.4	11.9	12.0	11.7	12.2	12.4	12.5	12.7	12.8	12.8	12.1	12.6	0.7	11	27 046
Romania	9.7	11.1	11.9	12.1	12.3	12.0	12.6	10.9	10.0	10.0	10.1	9.9	10.4	-1.5	22	24 927
Slovenia	13.3	13.7	13.6	14.0	14.5	14.4	14.4	14.2	13.8	13.6	13.4	12.3	12.8	-0.8	9	6 690
Slovakia	10.1	9.8	10.7	9.9	10.5	10.8	10.9	10.8	11.3	11.2	11.5	11.4	11.7	1.0	16	11 549
Finland	12.9	12.9	13.8	14.0	14.3	14.2	14.1	14.3	14.0	14.2	14.0	13.9	13.8	0.0	5	34 590
Sweden	12.7	12.6	12.3	12.1	12.1	12.0	12.0	12.3	12.2	12.2	11.9	12.0	11.9	-0.4	15	63 664
Iceland	10.9	11.2	11.3	11.7	11.3	11.4	11.2	11.4	12.1	11.7	10.9	10.9	11.2	-0.1		2 424
Norway	11.3	11.3	10.9	10.7	10.8	10.9	11.3	11.9	11.7	11.3	11.5	11.9	10.4	-0.5		43 046

Source: European Commission, DG Taxation and Customs Union, based on Eurostat data, extracted December 2022

The implicit tax rate (ITR) on consumption in the EU increased in 2021. The ITR [175] is the ratio between the revenue from consumption taxes and the estimated base. Following the decline observed in 2020, in 2021 the ITR on consumption in the EU-27 [176] increased to 17.9 % (0.8 pp more than in 2020), the highest value registered since 2009. The euro area followed a similar trend, (0.9 pp) up to 17.4 % (see Figure 58). The ITR on consumption increased in all Member States except Latvia, Croatia, Denmark, Finland, Bulgaria and Sweden.

FIGURE 58: IMPLICIT TAX RATE ON CONSUMPTION, 2009-2021 (% OF GDP)



Source: European Commission, DG Taxation and Customs Union, based on Eurostat data.

5.2 The digitalisation of VAT reporting offers opportunities to reduce compliance costs and fight evasion

Digitalisation can simplify compliance, reducing associated costs. Digitalisation impacts on VAT in many ways. The use of Information Technology (IT) in almost all business domains makes it easier for firms to calculate the amounts they have to pay and makes it easier to keep track of other related administrative tasks such as deadlines for submissions and the actual reporting. In this respect e-filing of tax returns (i.e. the process of submitting tax returns over the internet) [177] can reduce the costs to businesses and individuals of complying with tax regulations (Kochanova, Hasnain, & Larson, 2020) (see also chapter 6 for the scale of e-filing in the EU). As of 2021, 38 % of businesses – ranging from 33 % of small businesses to 81 % of large businesses – utilise

[175] Implicit tax rates as well as the vast majority of taxation indicators mentioned in this publication are calculated by DG TAXUD, based on the methodology developed for previous Taxation Trend Reports. Definitions and methodologies are available on-line (Data on Taxation Trends (europa.eu)) in *General methodological notes* of section *Additional information*.

[176] The EU-27 value is the aggregate ITR at EU level, all consumption revenues divided by the estimated tax base in the EU. It would be equivalent to a weighted (by tax base) average. Consumption taxes include: Value added type taxes; taxes and duties on imports excluding VAT; taxes on products except VAT and import duties; other taxes on production; other current taxes. For more information for the exact definition, please refer to the General methodological notes online.

[177] Electronic filing is the process of submitting tax returns via the internet, using a so-called guidance preparation software that has been preapproved by the relevant tax authority or free fillable forms on the tax authority site. E-filling is seen as convenient and efficient by both companies and tax authorities. Taxpayers can file taxes online at their convenience and the system can also speeds up refunds while reducing errors.

Enterprise Resource Planning e-business software [178]. This development has contributed to a gradual reduction of tax compliance costs for businesses, increasing general compliance.

E-filing of taxes reduces tax compliance times, especially when combined with e-payment functionalities. A recent study (Kochanova, Hasnain, & Larson, 2020) found that the adoption of e-filing systems with e-payment functionality significantly reduces the time to prepare taxes. The impacts are found to be almost immediate, sizeable and to become stronger in subsequent years. In particular, compared to one year prior to adoption of the e-filing systems, the average time to prepare and pay taxes is reduced by 3 % in the year of adoption (the effect is not significant), by 8 % in the first year after adoption (significant effect at 10 % confidence level), by 12 % in the second year (significant effect at 5 % confidence level), and by 16 %, 24 %, and 27 % in the third, fourth, and fifth or more years following the adoption (all significant at 1 % confidence level) [179]. However, the impacts were only statistically different from zero when the e-filing system include e-payment functionalities. This suggests that only the adoption of the more advanced e-filing system significantly reduces tax compliance costs borne by businesses.

Table 12 shows the "Time to Comply indicator" from the latest World Bank "Paying Taxes" report (World Bank Group and PWC, 2019). The EU traditionally performs well in comparison to world jurisdictions, even though it tends to lag slightly behind the OECD grouping; at 57 hours, the estimated time to comply with consumption taxes was, as of the latest data available, more one third less than the world average. Data show that the estimated time required by a model company to comply with consumption tax obligations (in Europe, VAT), after remaining practically constant from 2004 to 2007, started to decline in the period 2008-2015. For several years in a row, from 2008 to 2011, the time required to comply with VAT obligations fell at a rate exceeding 5 % per year, even though on average, compliance times in the EU were already rather low compared to the global average. This rate of change is comparable in size to the estimated effects of the introduction of e-filing (Kochanova, Hasnain, & Larson, 2020). Interestingly, the years from 2004 to 2014 coincided with the acceleration in worldwide adoption of e-filing, particularly of the more advanced type (with e-payment functionality.

The reduction of tax compliance costs allowed by IT may nevertheless face some limits. The latest available indicators show that, at least as far as VAT is concerned, the burden for EU enterprises, which had been falling quickly for many years, was rebounding in the latest estimates. Since 2015, the compliance cost indicator for the EU & EFTA region bounced back up by two hours. It is difficult to pinpoint the specific cause for the 2015-2018 increase as the methodology used in the "Paying Taxes" report does not attribute any changes in its value to specific factors and, in particular, to IT. This may be because a greater use of IT in VAT compliance can also lead to the introduction of new obligations (see also following subsection). Indeed, it makes it possible for tax administrations to tighten controls including by adding new administrative or reporting obligations, which would have been considered excessively burdensome before the advent of modern IT solutions. Nevertheless, in general one can say there is evidence that advances in the effectiveness and usability of IT business tax software have been accompanied by a significant reduction in compliance costs.

TABLE 12: TIME TO COMPLY WITH CONSUMPTION TAX OBLIGATIONS, IN HOURS

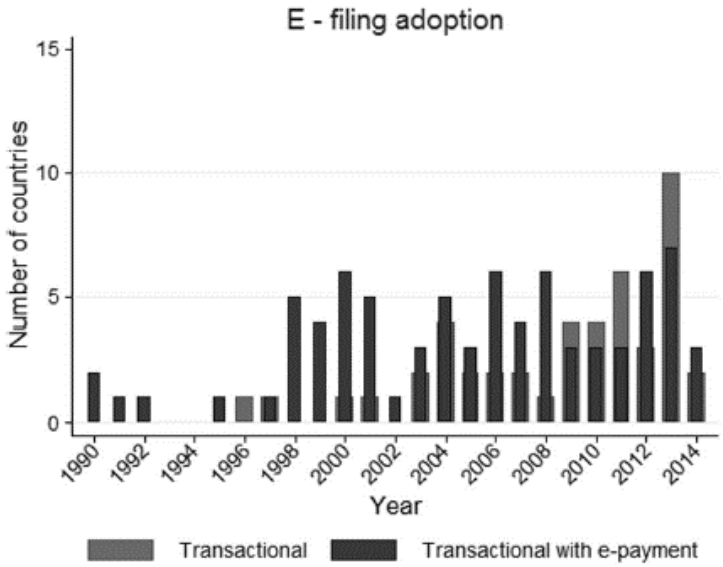
	2004	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EU & EFTA	81	80	73	69	65	60	59	58	56	55	55	57	57
% change	*n.a.*	*0,0*	*-8,8*	*-5,5*	*-5,8*	*-7,7*	*-1,7*	*-1,7*	*-3,4*	*-1,8*	*0,0*	*3,6*	*0,0*

[178] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_enterprises

[179] This is a basic term in statistics and econometrics. There are various levels of statistical significance. Typically, the literature reports statistical significance at the 1 %, 5 % and 10 % level.

Source: https://www.pwc.com/gx/en/services/tax/publications/paying-taxes-2020/explorer-tool.html.

FIGURE 59: NUMBER OF COUNTRIES WORLDWIDE ADOPTING TAX E-FILING, BY YEAR



Source: (Kochanova, Hasnain, & Larson, 2020), page 105.

5.3 The spreading of different reporting requirements and the risks of uncoordinated national solutions

Digitalisation can represent a valuable tool to tackle outright evasion and VAT fraud. Tax authorities are increasingly keen to expand the scope of electronic reporting as there is a widespread belief that it can help fight VAT evasion. A reflection of that is that firms that have adopted e-reporting appear to have a lower probability of being audited by the tax administration (Kochanova, Hasnain, & Larson, 2020). Digitalisation also allows for quicker counterpart checks (such as to ensure that the VAT number of the counterpart is legitimate).

Member States that have introduced Digital Reporting Requirements (DRRs) have experienced an increase in their VAT revenues. Introducing reporting obligations appears to lift VAT revenue by 1.9 %. Although it may be difficult to disentangle the effect of DRRs from other confounding factors, the result is statistically significant and robust across different specifications (Economisti Associati, Oxford Research, CASE, Wavestone, Hedeos, Mazars, Desmeytere Services, Università di Urbino, 2022). The experience in individual Member States broadly support the finding. For example, Hungary, who has made an extensive use of DRRs (see Box 5), has seen a steep drop in its VAT gap, a statistical proxy for VAT evasion and avoidance, since 2017. Between 2017 and 2020, the gap fell by over 3 pp per year on average. In 2020, the gap fell by 4.7 pp down to 5.1 %of the VAT Total Tax Liability (VTTL) despite unfavourable economic conditions and a 4.5 % decline of GDP (in real terms). Czechia witnessed a steep drop in the VAT gap in 2017, the year when its Electronic Record of Sales- the EET system- was introduced (-2.9 pp vs -0.5 pp for the EU average). Overall, it seems likely that the expansion of DRRs has contributed significantly to the downward trend in the average VAT gap, which has shrunk from 12.4 % in 2016 to 9.1 % in 2020, the last year for which data are available (see also subsection 6.2.3 for an overview of the latest developments in the VAT gap).

More and more tax administrations now impose DRRs. The fact that nowadays, virtually all firms have reliable and relatively cheap access to internet allows tax administrations to request businesses to report VAT-

relevant data, such as invoices, much more frequently or even in real time. Invoices, also thanks to EU action, are now increasingly issued in electronic form [180], and several Member States request that invoices are electronically submitted to the tax office at the same time, or even prior, to their sending to the customer. SMEs, too, are increasingly encouraged to adopt IT-based tax management solutions to prepare the correct computations and supply the relevant supporting documents based on the calculations. In this regard, as already mentioned in the previous section, the adoption of systems to reduce VAT compliance costs might paradoxically create the conditions for tax administrations to adopt new reporting requirements, particularly in jurisdictions which decide to tackle tax evasion more forcefully (see for example the box below which showcases some instances in which reporting requirements were extended in a noteworthy way).

There are several types of digital reporting, some of which require periodic submissions, while others come close to real-time reporting. For instance, systems require near real-time data submission (submitting invoice level detail to the tax authority either on the same day or within a few days), including full e-declaration regimes for retail sales (where mandated government software must be used, with point of sales solutions including cash registers to record sales and transmit data directly to the tax authority).

The first EU country that mandated e-invoicing for Business-to-Business transactions was Italy in 2019 and at present 12 Member States impose digital reporting requirements, with two more set to follow [181]**.** The majority of these are moving forward with implementing mandatory e-invoicing, either for Business to Government (B2G) or for Business-to-Business (B2B) supplies, with some launching pilot programmes and others aiming for new legislation on e-invoicing by 2024 (Baulf, 2022). Given that Member States have wide leeway in designing VAT control and enforcement, digital reporting requirements have not until now been subject to any harmonisation or any meaningful EU-level coordination. This results in a large variety of solutions having been chosen, as illustrated in Figure 60 below.

Two types of digital reporting requirements can be distinguished based on the time at which information is to be submitted:

- **Periodic Transaction Controls (PTCs), in which transactional data are reported to tax authorities at regular intervals.** Among Periodic Transaction Controls, the most common models are VAT listing and Standard Audit File for Tax (SAF-T) requirements [182]. The former requires the periodic transmission of transactional data to be compiled and transmitted according to a nationally defined format, while the latter relies on the national specification of an OECD standard, i.e., the SAF-T.
- **Continuous Transaction Controls (CTCs), in which transactional data are submitted electronically to tax authorities just before, during or shortly after the actual exchange of such data between the parties.** Among Continuous Transaction Controls, the two possibilities are real-time and e-invoicing systems. Under a real-time system, the taxpayer should submit certain data shortly after carrying out a transaction but does not need to mandatorily use and share e-invoices with the tax administration. Under an e-invoicing system, taxable persons are mandated to use for their transactions a structured e-invoice prepared in a pre-determined and machine-readable format, automatically sharing the whole invoice (or a subset of the data) with the tax administration.

Figure 60 maps the adoption of digital reporting requirements by Member States as of September 2021. Six Member States require VAT listing, while SAF-T has been adopted by Lithuania, Poland and Portugal

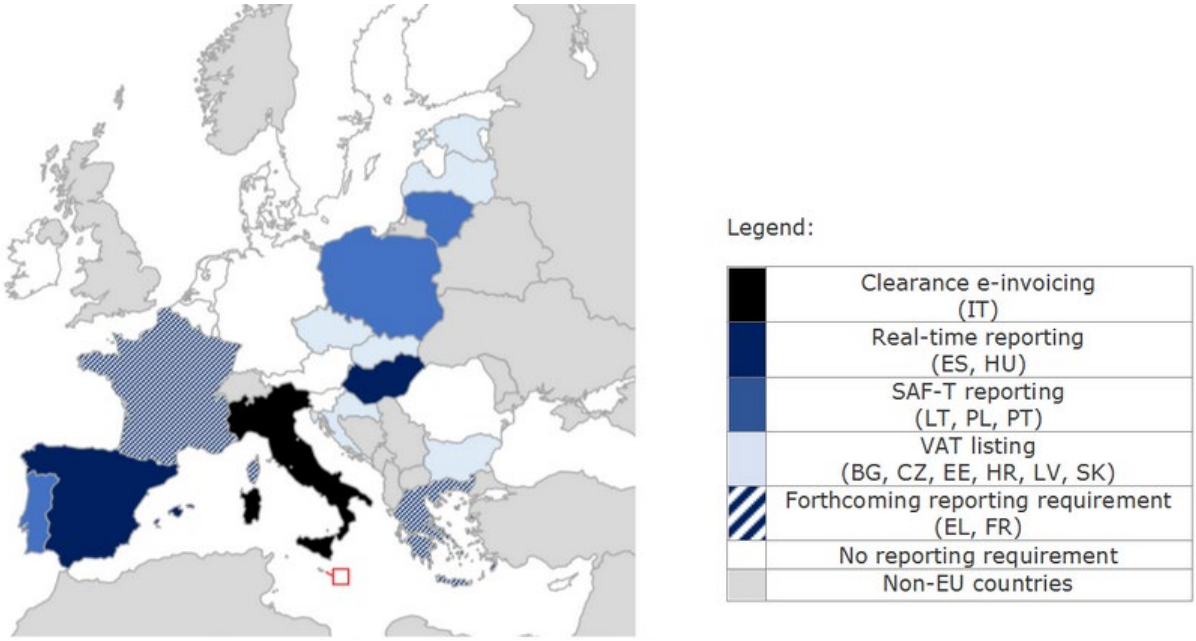
[180] The reform of the VAT Directive in 2006, introducing new common rules for e-invoicing, was one of the factors in supporting the growth in the use of e-invoicing among EU businesses since 2014. According to a study, this resulted in a reduction of administrative burdens for companies of about EUR 920 million over the period 2015-2017, of which about EUR 540 million in 2017 (CASE; Economisti Associati; Mazars Group, 2019).

[181] (Economisti Associati; Oxford Research; CASE; Wavestone; Hedeos; Mazars; Desmeytere Services; Università di Urbino, 2022).

[182] SAF-T is a digital tax audit file that needs to be submitted covering all transactional data (this can be monthly, quarterly or annual).

(Romania adopted it in 2022) [183]. SAF-T goes beyond VAT in that it is normally used to report all tax information. In addition, three Member States have introduced continuous transaction reporting: Italy uses the clearance system, which requires prior authorisation by the tax administration for the issuance of the invoice to the customer, while Spain and Hungary use real-time reporting.

FIGURE 60: VAT DIGITAL REPORTING REQUIREMENTS IN THE EU (AS AT 1.9.2021)



Source: (Economisti Associati, Oxford Research, CASE, Wavestone, Hedeos, Mazars, Desmeytere Services, Università di Urbino, 2022), page 18.

Box 5: Examples of introduction of Digital Reporting Requirements systems in EU Member States

Czechia

An example of DRR introduction was the Czech Electronic Records of Sales (EET), a mandatory system communicating in real time to the Ministry of Finance a recording of all cash payments for goods and services. The EET, introduced in 2016, was not directly linked to VAT, but its logic was similar to VAT e-reporting systems in the sense that it aimed at reducing tax evasion through real-time and automatic transmission of information to the tax office. Nevertheless, the information gathered would also be used to check VAT returns.

The range of taxpayers were obliged to register sales electronically was wide, eventually involving some 600,000 subjects (Marethova & Snopkova, 2018)**.** The introduction of the EET took place in phases, first covering catering and hospitality providers, then, from March 2017, wholesalers and retailers.

To register its revenues electronically, each organisation had to choose a device (e.g. a cash register, computer, tablet or even a mobile phone connected to a printer) technically capable of sending the required sales data to the tax portal via the Internet and issuing a receipt for the

[183] Following the publication of the table, Romania too has introduced SAF-T reporting for legal entities (https://www.pwc.ro/en/pwc-romania-digital/tax-technology/saf-t.html).

customer. Interestingly, in connection with the introduction of the system, the VAT for catering and accommodation services was reduced from the basic rate of 21 % to the first reduced rate of 15 % and subsequently to the second reduced rate of 10 %, as the government counted on higher revenues from a reduction in tax evasion. Indeed, cyclically-adjusted VAT revenues increased in the first years after the introduction of the system, even though this might have been due to the introduction of other measures in the same period (IMF, 2023). Nevertheless, the system was suspended with the COVID-19 crisis, and the new government abolished it on 1 January 2023.

Spain

At the beginning of the 2010's, Spain mandated that all documents and communications to and from the tax administration had to be submitted in electronic format, becoming a zero-paper administration.

Spain traditionally required an annual listing of the transactions carried out with other taxable persons. This listing required that taxable persons should report the total amount of their supplies or acquisitions, not only with taxable persons, but also with private individuals, when the amount of those supplies or acquisitions was above EUR 3,005.06. The data reported included the identification number and the name of the counterpart, as well as the aggregated annual amount of the supplies and/or acquisitions. Both supplies and acquisitions had to be reported separately and the threshold applied to each of them.

Next, all companies included in the monthly registry of exporters (REDEME) were obliged to submit, together with their monthly VAT return, an electronic listing of all transactions they carried out during the month. The information had to be listed transaction by transaction. The taxable persons included under the obligation were basically those with a turnover over EUR 6,010.12, those integrating a VAT group and those other taxable persons which voluntarily opted for the monthly refund.

This system was expanded on 1 July 2017, when taxable persons included under the previous obligation of the monthly listings were mandated to submit the information on each transaction in real-time to the tax administration. The initial system was transformed into the SII ("suministro inmediato de información", i.e., "immediate submission of information"). Taxable persons have a deadline of up to four days to submit the data for each transaction they carry out (supply or acquisition). This obligation implies that the VAT registers of the taxable person are kept by the tax administration. The taxable persons under the SII are exempt of the obligation to submit the model 347 and the VAT annual recapitulative statement.

Recently (29 September 2022) the Spanish Parliament has adopted the Law "Crea y crece". This law foresees the obligation for taxable persons to issue and receive electronic invoices on B2B transactions. However, the entry into force of this obligation is suspended until the necessary authorisation in accordance with Article 395 of the VAT Directive is obtained.

Hungary

The Real-Time Information Reporting (RTIR) system was introduced as of January 2016 and applies to all businesses registered in Hungary for VAT purposes. Initially, only invoice data of B2B and B2G domestic sales above HUF 100 000 (about EUR 300) had to be reported. Over time, however, the RTIR scope was widened: first, the threshold on domestic transactions was removed starting from July 2020; then, since January 2021 invoice data for intra-Community transactions, exports and B2C transactions must also be submitted.

Before the introduction of the RTIR, a periodic VAT reporting obligation applied to the submission of the domestic transaction statements jointly with the VAT return. This reporting requirement only covered high value transactions, with a value of the invoice of at least EUR 6 500. In 2015 the threshold was

lowered to EUR 3 250 and the requirement was then replaced by the RTIR. Information must be reported on a transaction-by-transaction basis, when the invoice is issued (or within 24 hours at the latest). Data must be submitted using the Extensible Markup Language (XML) format through the tax authority's portal. Submissions must be fully automated over the internet from accounting, ERP or billing systems, without manual intervention.

In Hungary, e-invoices have not been made mandatory, but since 2021 the XML file submitted to comply with the real-time reporting obligations can be delivered by the tax authority to the customer and used as an e-invoice. The real-time reporting system builds on a prior legal provision which stated that the invoicing software should have a data export function, enabling the tax authority to retrieve invoice data electronically in a pre-defined format for control purposes.

Hungary's National Tax and Customs Administration (NTCA) operates in a data-driven way, using the data available to it for risk analysis purposes to try to filter out which taxpayers are suspected of abuse and may need to be audited. One of the key elements of the analysis is the data from online cash registers and online invoicing systems under the online reporting obligations. In addition, data from EKAER (Electronic Public Road Trade Control System), vending machines, construction and tourism systems are utilised. These data are cross-checked by the IT systems with other sources, such as declarations, and data from other parties to the transactions are also compared, which can reveal discrepancies (Hajnal-Balázs, 2023). In addition, the Hungarian Tax Authority (National Tax and Custom Administration – NAV) has created, in April 2022, an Artificial Intelligence Working Group (MIMCS) to conduct research based on the data assets of the tax office. Its tasks include the development of a proposal for a semantic data asset methodology for machine learning. Work will also concern research on algorithms and the development of validation methodologies (Gyarmathy & Partners, 2023).

Finland [184]

Finland is currently developing a Real-Time Economy (RTE) ecosystem. The system goes beyond the reporting of tax data: it aims to build a national digital ecosystem for business actors that allow seamless, real-time and secure transmission of orders, e-invoices, digital receipts and business data between parties and be compatible with similar systems in other Nordic countries. The project was launched in 2021 and will be completed by 2024, with the aim of building by 2030 a new operating environment for businesses [185].

In the future, Finnish businesses will be able to transfer details of business transactions and official reports in digital format. Once a company's entire life cycle has been digitalised and the company uses a digital identity, all transactions and official reporting can be carried out on a reliable and secure basis. This will facilitate transactions, bookkeeping (by eliminating manual entry), real-time financial reporting, and will allow easy and fast checks of the reliability of firms' trading partners.

Furthermore, businesses will also be able to submit all statutory notifications and reports to government agencies in a single data transfer when the bookkeeping is in machine-readable format. Each government agency will only receive the information that must be submitted to it by law. In the tax domain, this will allow transitioning from digital filing as at present to a system where mandatory reporting will be automated and there will be no separate filing.

[184] Figure 18 above does not taken into consideration the developments of Finland that were launched in 2021.

[185] https://www.yrityksendigitalous.fi/en/

All in all, as discussed in the next section, the rush to adopt DRR is likely to help tax administrations in the fight against tax evasion, but it also presents some policy challenges. In particular, there is a risk of a proliferation of national solutions that are developed independently without regard for interoperability with systems in other EU Member States. This, in turn, could not only negatively affect cooperation between tax administrations in tackling cross-border fraud and tax evasion, potentially undermining future progress in combating carousel fraud, but also create extra costs for businesses operating in several Member States, and run against the Internal Market objective of creating a level playing field for all businesses.

To address these risks and best tap into the benefits of digitalisation for VAT, the Commission recently presented the initiative on VAT in the Digital Age (ViDA) [186]**.** The DRR that are part of the ViDA initiative will change the way intra-Community transactions are reported, while harmonising the main features of the reporting for domestic transactions.

For intra-Community transactions, the proposed new reporting system would replace the current recapitulative statements, which would consequently disappear. Under the proposed rules, the reporting will be done on a transaction-by-transaction basis and in near real time. Both the supplier and the acquirer will have to report the transactions. This will allow for a cross-check of the information, resulting in earlier detection of intra-Community fraud chains and so reducing the sizeable VAT losses due to the carrousel fraud.

For domestic transactions, the implementation of a reporting system will be optional for Member States. However, if they decide to implement such systems, they will have to follow the features of the EU DRR, that is to say, that data will need to be reported, by both the supplier and the acquirer, on a transaction-by-transaction basis and in real time. Existing reporting systems will have to converge to the EU DRR by 1 January 2028. Here the purpose is to align the different reporting systems for domestic transactions and with the reporting for intra-Community transactions, allowing businesses to report all transactions across Europe in the same way. This in turn is expected to reduce the costs of complying with different obligations for companies operating in more than one Member State.

All transactions that need to be reported, both at intra-Community and domestic level, will have to be documented with a structured electronic invoice. This will facilitate the automation of the reporting process and will provide a boost to the digitalisation of EU businesses. Member States will be able to allow different invoice formats but will need to allow users to employ the European standard, to enhance the interoperability of the systems.

[186] https://taxation-customs.ec.europa.eu/taxation-1/value-added-tax-vat/vat-digital-age_en

6 EFFICIENT TAX ADMINISTRATIONS, ESTIMATING TAX ABUSE AND OPTIMISING TAX COLLECTION

This chapter discusses tax administration's work and operations from a number of angles. While chapters 2 to 5 assess specific types of taxes, this chapter looks at a cross section of challenges related specifically to the work and functioning of tax administrations. It therefore re-iterates certain problems raised in previous chapters such as the one of tax evasion and avoidance that is already discussed in Chapter 3 and then assesses these issues from the lens of a tax administration. Specifically, the chapter starts by setting out the main responsibilities of tax administrations and indicators that illustrate how efficiently a tax administration functions, such as e-filing rates. It then discusses estimates of tax compliance, tax avoidance and tax evasion for direct and indirect taxes such as corporate income tax and value added tax. The chapter then discusses possible challenges to tax collection and tax policy including new challenges related to crypto-assets and notably stemming from the valuation of the assets. The chapter concludes with a discussion of a number of measures and processes that tax administrations have put in place to enhance tax collection and fight against tax evasion and tax avoidance. These are all based on cross-country cooperation and exchange of information across Member States.

The main take-aways from this chapter are the following:

First, while there is a lot of heterogeneity in the performance of Member States when looking at indicators of tax administration's efficiency, there is a clear trend that digitalisation enhances the efficiency of tax administrations in terms of tax compliance and tax collection. Second, tax avoidance and tax evasion both in the field of direct taxation and in indirect taxation are estimated to lead to billions of euro of losses in tax revenues on an annual basis. Tax cooperation across Member States and effective policies to tackle tax avoidance and tax evasion are thus a crucial instrument to fight tax abuse and to increase tax collection. The rise of crypto assets has challenged tax administration. In particular, it makes both traceability and valuation of income and wealth more challenging. In turn, this can hinder efficient tax collection across a number of different tax bases and give potential new ways for engaging in tax abuse and thus lower tax compliance.

Finally, in the EU there are multiple forms of administrative cooperation among Member States' tax administration both in the field of direct taxes, such as the Directive on Administrative Cooperation (DAC), and in the field of indirect taxation, such as Regulation 904 on VAT. These forms of cooperation enhance information exchange across EU tax administrations and thus tackle tax fraud, tax evasion and tax avoidance. Cooperation between Member States is also supported through the Tax Administration in the EU Summit (TADEUS), a strategic forum of tax administrations, which has worked as a hub for collaboration within the EU and has set up of projects group in specific areas such as voluntary tax compliance and the estimation of tax gaps.

6.1 Efficiency of tax administrations

6.1.1 The role of a tax administration

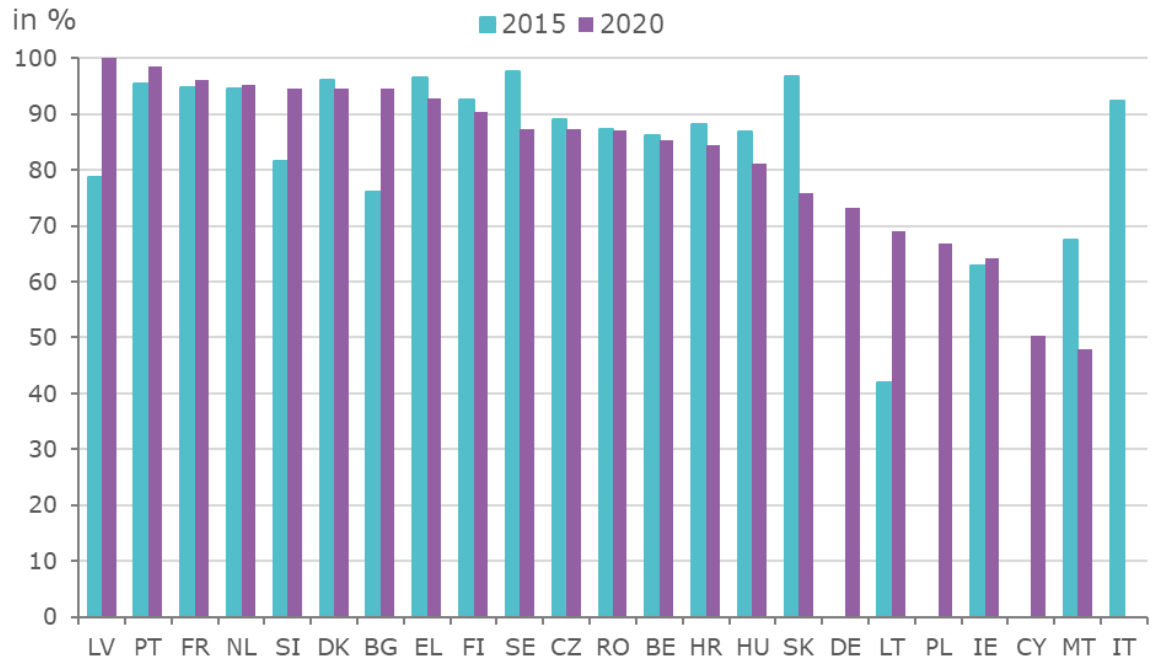
Tax administrations must ensure that taxpayers meet their tax responsibilities. An efficient administration achieves this core objective by promoting voluntary compliance with tax obligations, as well as by

identifying and addressing risks associated with non-compliance. There are two main reasons why it is of vital importance that tax administrations operate effectively. Firstly, they are a pivotal player in ensuring the proper funding of public policies and public services. Tax administrations collect, on average, 62 % of total government revenue across the EU (OECD, 2022c), and in some Member States, such as Sweden, up to 99 % of total government revenue. A percentage of Member States' value-added tax bases also contributes directly to the EU budget. Secondly, tax administrations play an important role in protecting honest taxpayers and upholding the principles that everyone pays their fair share. By fighting tax evasion and fraud, they can also help in preventing market distortions and ensuring a level playing field in the EU Single Market.

6.1.2 Indicators for measuring the efficiency of tax administrations

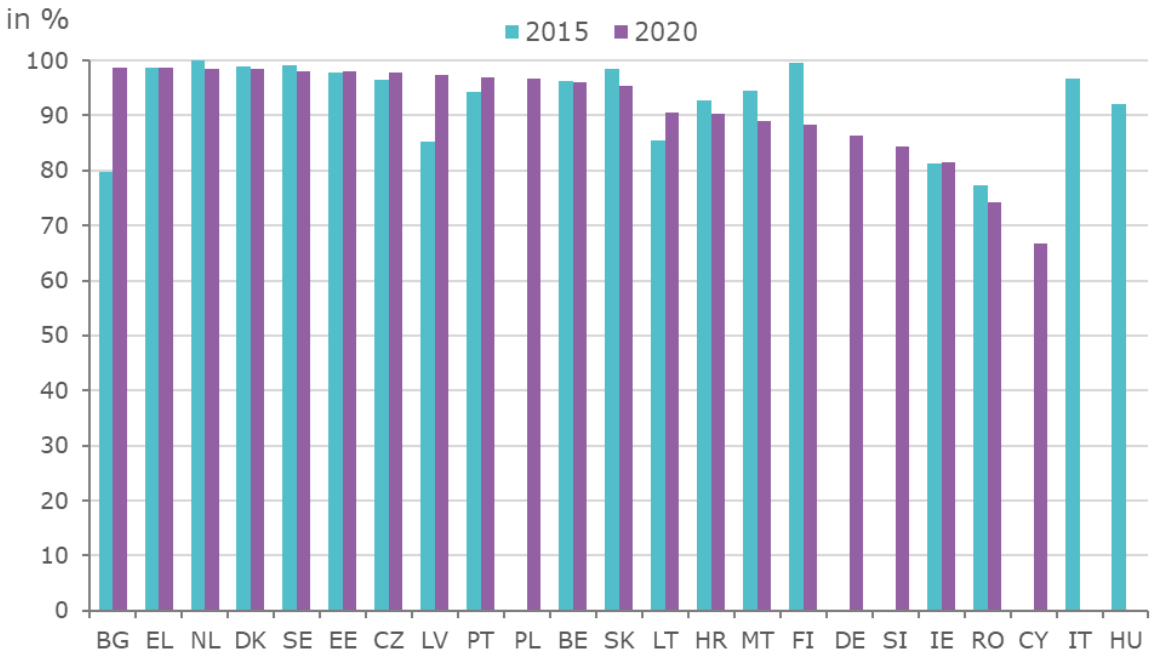
An efficient tax administration facilitates the timely calculation and payment of taxes. On-time filing rates can serve as a useful indicator of tax administrations' efficiency in this respect as they partly reflect the ease with which taxpayers are able to comply with their tax obligations in a timely manner. Figure 61 and Figure 62 visualise the on-time filing rates of corporate income tax (CIT) and personal income tax (PIT) returns respectively across Member States over time. Two conclusions can be drawn from these data. First, the level of CIT and PIT returns that have been filed on time have remained broadly unchanged in many Member States between 2015 and 2020. Second, there continue to be significant differences between Member States. For the on-time filing of CIT returns, Portugal, France, the Netherlands and Slovenia are among the best performing countries, while Malta, Cyprus, Ireland and Poland are among the worst performers in 2020. Looking at on-time filing rates of PIT, Spain, France, Bulgaria and Greece are the highest ranking while, Cyprus, Romania, Ireland and Slovenia perform worst with respect to this indicator.

FIGURE 61: ON-TIME FILING OF CORPORATE INCOME TAX RETURNS (IN%) ACROSS MEMBER STATES, 2015-2020



Sources: European Commission, DG Taxation and Customs Union, based on (OECD, 2017) and (OECD, 2022c).
Notes: (1) Latvia's on-time filing rate of above 100 % indicates that more tax returns were filed on-time than were expected overall, which may be a consequence of the support measures adopted in response to the COVID-19 pandemic.
(2) No 2015 data available for AT, CY, DE, DK, EE, ES, LU, PL and SE (2014 figures have been used for DK and SE).
(3) No 2020 data available for AT, EE, ES, IT and LU.

FIGURE 62: ON-TIME FILING OF PERSONAL INCOME TAX RETURNS (IN %) ACROSS MEMBER STATES, 2015-2020



Sources: European Commission, DG DG Taxation and Customs Union, based on (OECD, 2017) and (OECD, 2022c).
Notes: (1) No 2015 data available for AT, BG, CY, DE, ES, LU, PL, SE and SI (2014 figures have been used for BG and SE).
(2) No 2020 data available for AT, HU, IT and LU.

Tax administrations play an important role in setting the compliance costs faced by taxpayers. These capture the time spent to comply with tax responsibilities, e.g. filling out tax returns. While the size of the compliance costs a taxpayer incurs is partially determined by the rules and obligations of a tax system, it is also affected by authorities' capacity to simplify the tax compliance process. Table 13 shows whether tax administrations pre-fill PIT, CIT and VAT returns or assessments by using data from third parties (e.g. from employers), electronic invoicing systems and other data sources. This can serve as an indicator of compliance costs given that pre-filled tax returns can significantly reduce the burden on taxpayers in terms of time and effort spent on meeting tax responsibilities. The table shows that Denmark, Spain and Portugal are the only Member States which have developed pre-filled tax returns for all three tax types, whereas Croatia, Luxembourg, Romania and Slovakia have not yet introduced pre-filled PIT, CIT or VAT returns.

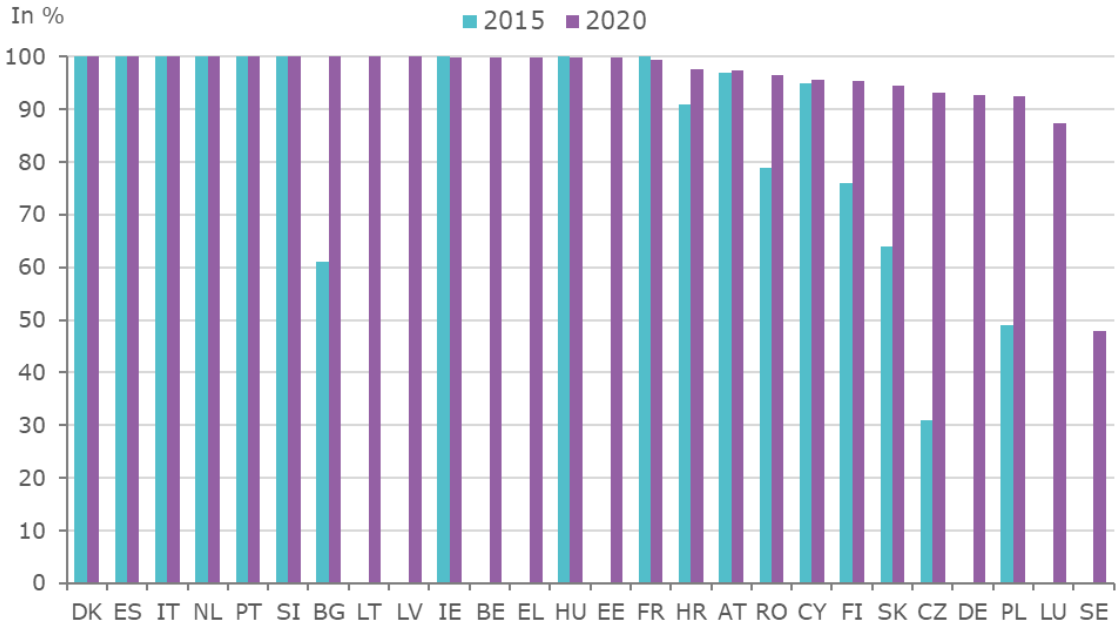
Electronic services play an important role in reducing compliance costs as well as tax authorities' own administrative burden. The latest data from 2020 indicate high levels of e-filings, i.e. online submission of tax returns, of both CIT and PIT returns across the EU and with significant improvements between 2015 and 2020. However, while the proportion of e-filled CIT returns is at 100 % for the majority of Member States, there is room for improvement as regards the share of online submissions of PIT. This is particularly true in Luxembourg, Slovenia and Czechia where e-filing rates are below 25 %.

TABLE 13: PRE-FILL OF PERSONAL INCOME, CORPORATE INCOME AND VALUE ADDED TAX RETURNS, 2020

	PIT	CIT	VAT
DK	✓	✓	✓
ES	✓	✓	✓
PT	✓	✓	✓
FR	✓	✓	✗
IE	✓	✓	✗
LT	✓	✓	✗
MT	✓	✓	✗
HU	✓	✗	✓
IT	✓	✗	✓
AT	✓	✗	✗
BE	✓	✗	✗
BG	✓	✗	✗
EE	✓	✗	✗
EL	✓	✗	✗
FI	✓	✗	✗
LV	✓	✗	✗
NL	✓	✗	✗
PL	✓	✗	✗
SE	✓	✗	✗
SI	✓	✗	✗
HR	✗	✗	✗
LU	✗	✗	✗
SK	✗	✗	✗
RO	NA	✗	✗
CY	NA	NA	NA
CZ	NA	NA	NA
DE	NA	NA	NA

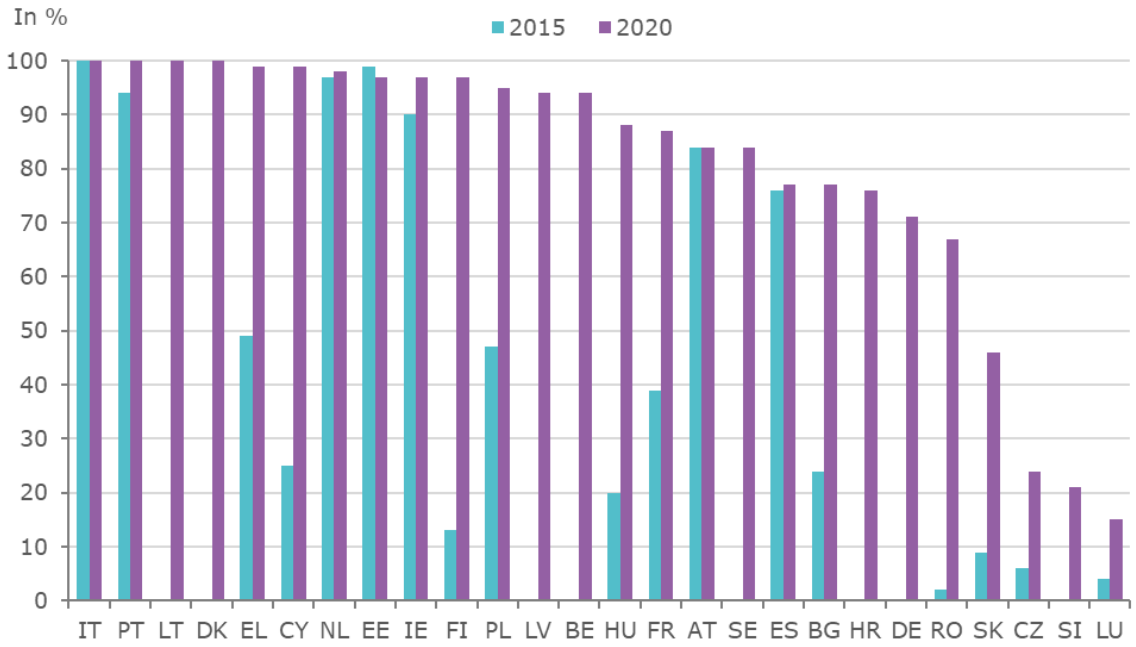
Source: OECD, 2022 (https://www.oecd.org/tax/forum-on-tax-administration/tax-technology-tools-and-digital-solutions/data-management.htm).
Notes: (1) No data available for CY, CZ and DE.
(2) No PIT data available for RO.

FIGURE 63: E-FILING OF CORPORATE INCOME TAX RETURNS (% OF TOTAL), 2015-2020



Sources: European Commission, DG Taxation and Customs Union, based on (OECD, 2017) and (OECD, 2022c).
Notes: (1) No 2015 data available for BE, DE, EE, EL, LT, LV, MT and SE.
(2) No 2020 data available for MT.

FIGURE 64: E-FILING OF PERSONAL INCOME TAX RETURNS (% OF TOTAL), 2015-2020



Sources: European Commission, DG Taxation and Customs Union, based on (OECD, 2022c).

Notes: (1) No 2011 data available for HR, RO and SI.
(2) No 2020 data available for DK and MT (2019 figures have been used for DK).

Making use of the digital opportunities requires comprehensive planning and investments. The degree to which tax administrations are embracing the move towards a digitised administration can be proxied by the existence of a digital transformation strategy. While the development of such a strategy is an important starting point, implementing it requires tax administrations to identify, map and develop the digital skills of its staff. It also requires administrations to build a digital culture within which staff members feel encouraged to deploy digital tools as the standard *modus operandi* for engaging with taxpayers and addressing non-compliance. Table 14 indicates whether or not Member States' tax administrations have developed a digital transformation strategy, a strategy for identifying skills required for a successful digital transformation, and a strategy for building a digital culture within the administration. These three pillars are mutually reinforcing and those Member States that have solidified all three are more likely to design and put into practice processes which allow taxpayers to meet their tax responsibilities in a seamless way.

TABLE 14: DEVELOPMENT OF A STRATEGY FOR DIGITAL TRANSFORMATION (DT), DIGITAL SKILLS IDENTIFICATION (DS), AND DIGITAL CULTURE BUILDING (DC), 2022

	DT	DS	DC
DK	✓	✓	✓
EE	✓	✓	✓
EL	✓	✓	✓
FR	✓	✓	✓
IT	✓	✓	✓
PL	✓	✓	✓
SE	✓	✓	✓
BE	✓	✓	✗
HR	✓	✓	✗
NL	✓	✓	✗
RO	✓	✓	NA
HU	✓	✗	✓
LT	✓	✗	✓
ES	✗	✓	✓
FI	✗	✓	✓
AT	✓	✗	✗
LU	✓	✗	✗
PT	✓	✗	✗
BG	✗	✓	✗
IE	✗	✓	✗
LV	✗	✗	✓
SI	✗	✗	✓
MT	✗	✗	✗
SK	✗	✗	✗
CY	NA	NA	NA
CZ	NA	NA	NA
DE	NA	NA	NA

Source: OECD, 2022 (https://www.oecd.org/tax/forum-on-tax-administration/tax-technology-tools-and-digital-solutions/strategy-governance-and-new-skills.htm).
Notes: (1) Data is self-reported by tax administrations and therefore not 100 % objective or comparable.
(2) No data available for CY, CZ and DE.
(3) No DC data available for RO.

6.2 Estimates of Tax Compliance and Tax Avoidance and Evasion

6.2.1 Estimates for Tax Avoidance and Evasion by wealthy individuals

Tax evasion is an illegal practice whereby taxpayers pay less than what the law prescribes, by hiding or understating the base on which the tax should normally be paid. Tax avoidance is a practice that consists in taking advantage of the technicalities of a tax system or of mismatches between two or more tax systems for reducing tax liability, not respecting the spirit of the law. By their nature, as the activities are meant

to be hidden, it is difficult to measure them comprehensively. Top-down [187] or bottom-up [188] methodologies can be used. It is not only MNEs that make use of third-country structures in order to avoid taxes in the EU (see section 6.2.2.), individuals also keep wealth such as financial assets in Offshore Financial Centres (OFCs). [189] Importantly, the OECD sees wealthy ('High Net Worth') individuals as 'the second principal market for aggressive tax planning', after big MNEs (OECD, 2008)

Data about the extent of tax avoidance or tax evasion by individuals is sparse. A study of a unique dataset of individuals' accounts in Switzerland showed that, at global level, wealth statistics are skewed because hidden wealth does not appear as assets in the wealth statistics of the investor's country while being registered as liability in the country of investment (Zucman, 2013). Taking stock of these skewed statistics, it is estimated that 8 % of the global financial wealth of households may be placed in tax havens, indicating a significant scope of tax avoidance and evasion. For 2013 estimates indicate that tax revenue losses amounted to USD 190 billion (EUR 173 billion) worldwide of which USD 75 billion (EUR 68 billion) in Europe (Zucman, 2014). A major driving force may be banks located in those countries as they 'provide individuals with investment advice and services' (Zucman, 2013). A later study using a similar method found that the global amount of household wealth in tax havens in 2015 could be more than USD 8.6 trillion (EUR 7.9 trillion), or almost 12 % of the world's GDP – more than 40 % of that amount being located in Switzerland and Hong Kong (Alstadsæter, Johannesen, & Zucman, 2018).

More recently, a study carried out for the European Commission found that, in 2018, individuals across the EU hold offshore wealth worth about 12 % of EU GDP, representing almost a quarter of global offshore wealth (Ecorys, 2021). Tax losses due to international tax evasion on PIT would amount to over EUR 100 billion (0.6 % of EU GDP). While focusing on tax evasion, the study found that tax structures that involve OFCs are often very complex, and that these structures are typically set up and maintained by tax advisors or trust companies. EU revenue lost due to international tax evasion was estimated at EUR 124 billion in 2018 compared to EUR 46 billion in 2016 (ECOPA, CASE, 2019). The significant rise in numbers between 2016 and 2018 may be attributed to the increase in equity security prices between 2016 and 2018. In 2018, on average, France, Germany, Spain, and Italy accounted for two thirds of EUR 124 billion.

6.2.2 Estimates of Tax avoidance and Evasion in the area of corporate taxation

Aggressive tax planning (ATP) and tax avoidance are complex concepts that differ from the outright fraudulent nature of tax evasion. They can take multiple forms and their consequences include double deductions (e.g., the same loss is deducted both in the state of source and the state of residence) and double non-taxation (e.g., income which is not taxed in the source state and is exempt in the state of residence). While tax planning is a process through which an individual or a company arranges its financial activities in a way that allows it to seek the maximum tax benefit possible under legal provisions in a way that respects both the letter and the spirit of the law (and thus is considered both legal and 'moral'), as discussed in Section 6.2.1, ATP and tax avoidance may respect the letter of the law but not the spirit of the law. They fall in a grey zone, where they are not outrightly illegal but not legal either. The Commission's 2012 recommendation describes ATP as "*taking advantage of the technicalities of a tax system or of mismatches between two or more tax systems for the purpose of reducing tax liability*".[190]

[187] Also referred to as the 'macro' or 'indirect' method, using macroeconomic data such as national accounts data.

[188] Also referred to as the 'micro' or 'direct' method, using more specific, individual-level data, e.g. from surveys and tax audits.

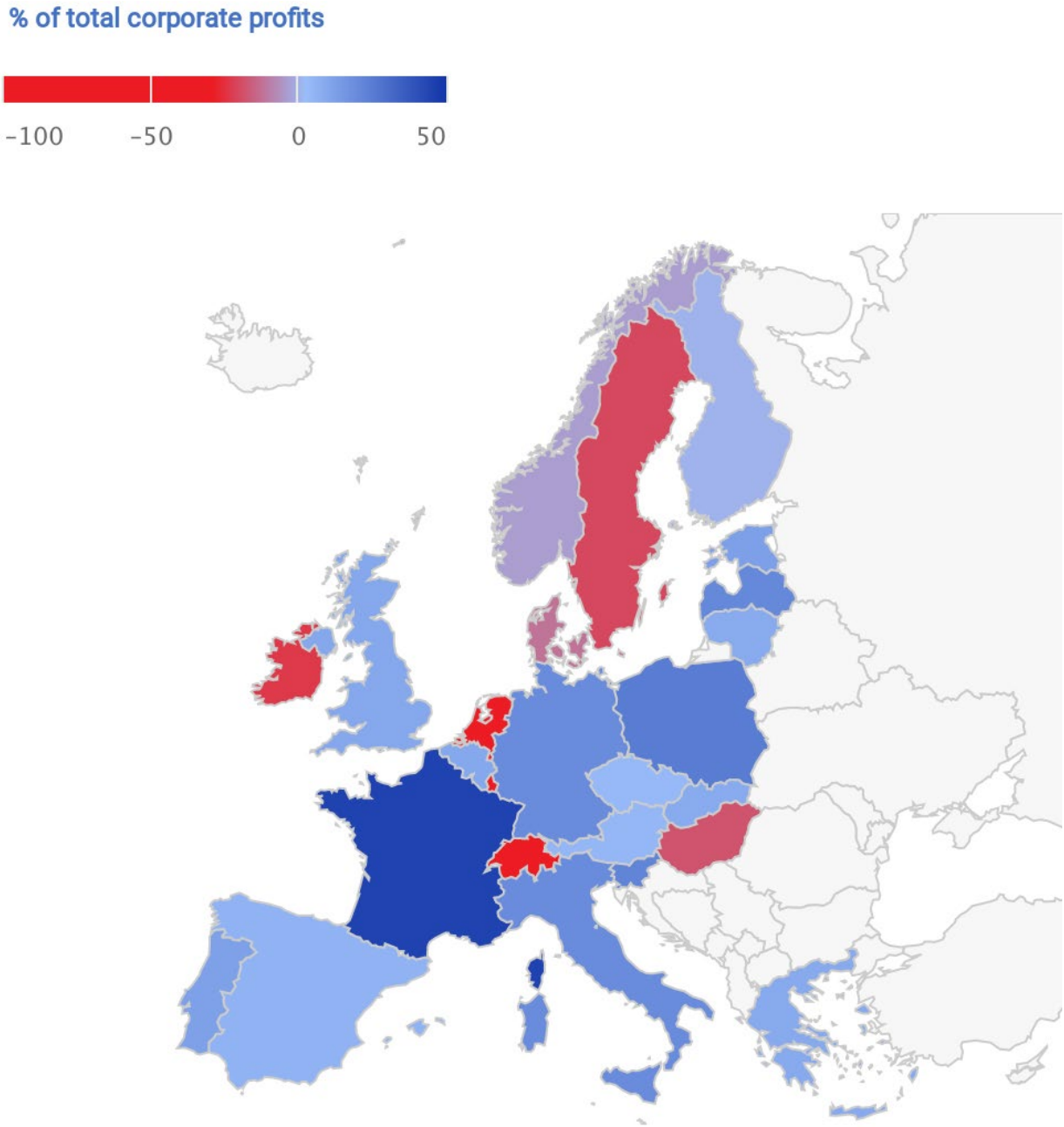
[189] Offshore financial centre (OFC) is defined as a jurisdiction that provides financial services to non-residents on a scale that is incommensurate with the size and the financing of its domestic economy. But it is particularly known as jurisdiction that attracts financial activities from abroad through low taxation and lenient regulation (thus offshore refers to the fact that the jurisdiction's largest users are non-resident).

[190] COM(2012)772.

Many studies point toward tens of billions of euros of corporate tax revenue losses due to ATP and tax avoidance annually in the EU and potentially hundreds of billions of euro on a global scale. While it is hard to quantify what is de facto a hidden phenomenon, several studies have tried to quantify revenue losses associated with tax avoidance practices. Using 2016 Country-by-Country Reporting (CbCR) data, García-Bernardo and Janský (Garcia-Bernardo & Janský, 2021) estimate the global scale profit shifting (with a total global tax revenue loss estimated in the range of USD 200 – 300 billion or EUR 183 - 274 billion) and distribution of profit shifting (see Figure 65 for a heatmap of estimations of net positive or negative shifted profits in EU Member States as percentage of their respective corporate tax receipts). In particular, they use the fact that the effect of tax on profit shifting is not linear, namely that incentive to shift profits from a country with a tax rate of 20 % to one with a tax rate of 0 % is more than double compared to incentive to shift profits from a country with a tax rate of 20 % to one with a tax rate of 10 %. The authors use a logarithmic model to take into account also that the tax avoidance costs do not increase much with each additional dollar of profit shifted. Other studies (Álvarez-Martínez at al., 2021), based on a general equilibrium model, which takes into account the dynamic effect on CIT revenues of the decrease of the cost of capital for firms due to tax avoidance and (Tørsløv, Wier, & Zucman, 2018) give an estimate of EUR 36 - 37 billion of CIT revenue losses per year for the EU as a whole. provides estimates of tax revenue losses in each Member State as percentage of their respective GDP provided by the research institute EU Tax Observatory, based on a study by (Álvarez-Martínez at al., 2021).

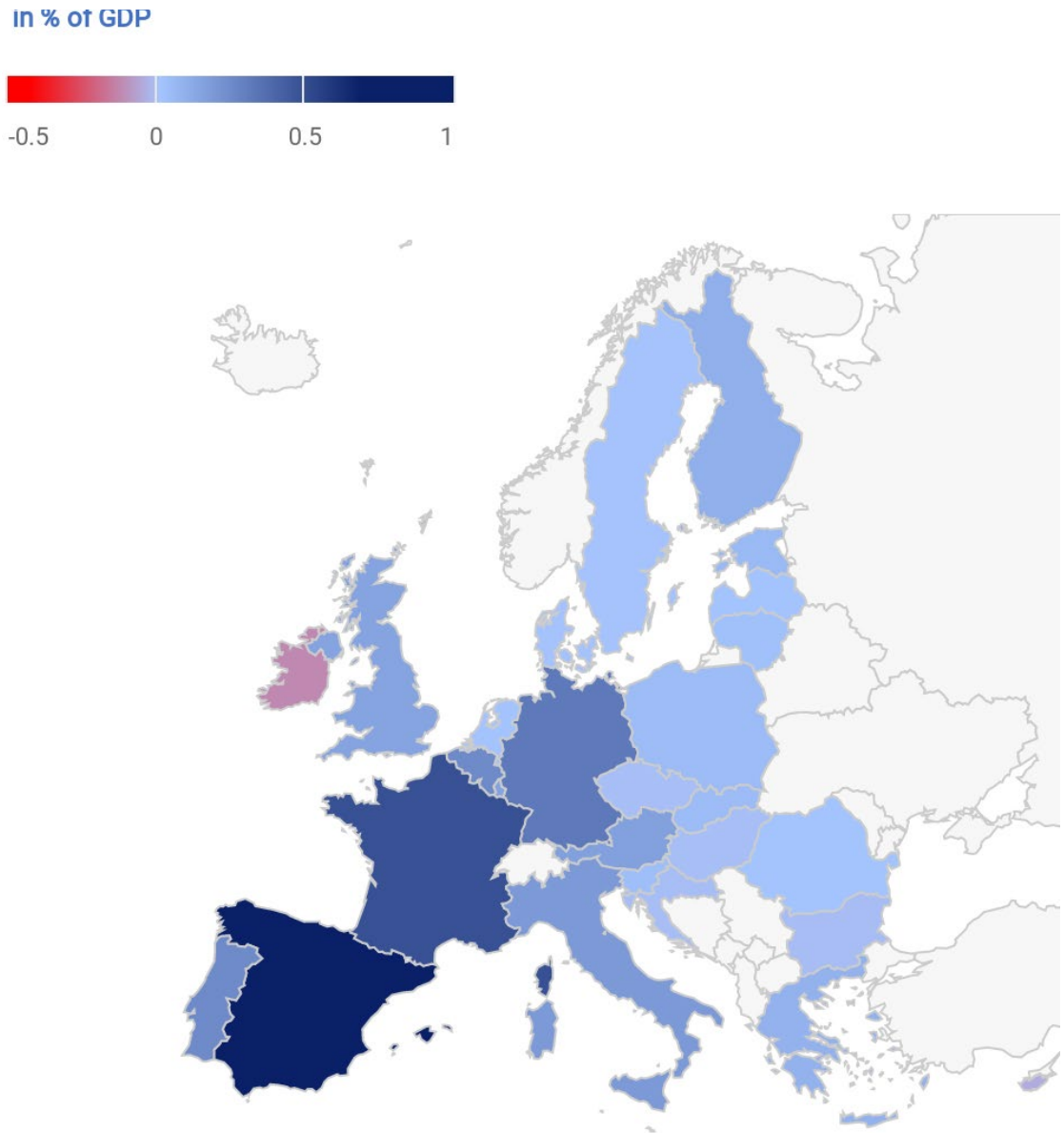
Some micro level studies also provide useful quantification of tax avoidance through certain channels. For instance, one study uses firm level data to quantify interest and royalty flows towards zero or low tax jurisdictions to assess the amount of financial flows potentially leaving the Netherlands untaxed and not being properly taxed elsewhere (Kertse, Baarsma, & Weda, 2019). It represented on average EUR 9.7 to EUR 11.9 billion of outgoing royalty and interest flows per year between 2009 and 2013 that remain untaxed.

FIGURE 65: ESTIMATED SHARE OF SHIFTED PROFITS



Source: EU Tax Observatory, based on (García-Bernardo & Janský, 2021).
Notes: A negative value means the country is a net receiver of shifted profits from the rest of the world, while a positive value means it is a net sender of shifted profits from the rest of the world.

FIGURE 66: TAX REVENUE LOSSES FROM PROFIT SHIFTING



Source: EU Tax Observatory, based on (Álvarez-Martínez et al., 2021).
Notes: A negative value means the country is a net winner of tax revenues, while a positive value means it is a net loser of tax revenues.

ATP and tax avoidance estimates are often not based on directly measurable behaviours but relies on a body of evidence that points towards those behaviours. The analysis of macroeconomic and financial activity data is notably useful to analyse important discrepancies with real economic activity, which may reflect ATP or tax avoidance behaviours. Taken with a number of other indicators, such as legal ones (e.g., the absence of withholding taxes), they form a body of evidence that suggests a country may be a conduit for tax avoidance practices. Indicators looked at in isolation are typically not conclusive but taken together they can provide stronger indications that a country is being used for tax avoidance purposes. In particular, they provide relevant circumstantial evidence and are useful in prompting further investigations into possible ATP practices in a given country. In the absence of more transparent data provided by tax administration or taxpayers, this body of evidence constitutes a crucial source of information in the fight against ATP and tax avoidance.

In this respect, it is useful to look at foreign direct investment (FDI) figures, as such indicators capture cross border investments between related companies. According to general international principle

of corporate taxation, taxing right should be allocated to countries based on where the value is created – thus the creation of the value giving rise to taxing right should be reflected in the country's GDP. However, comparing the FDI stocks to GDP of Member States may show important macroeconomic discrepancies relatively to its real economic activity. Differentials in effective corporate taxation plays a significant role in FDI location decisions – and ATP and tax avoidance opportunities considerably reduce effective corporate tax rates. Disproportionately high FDI stock located in certain jurisdictions may thus be driven by ATP and tax avoidance practices. Interestingly, a number of Member States have an extremely high FDI-to-GDP ratio. For instance, the stock of FDI in Luxembourg represents about 46 times its GDP, that of Malta 18 times its GDP and that of Cyprus 15 times its GDP (Figure 67). To a lesser extent, the Netherlands and Ireland also display a stock of inward foreign investment much larger than their respective domestic production. It should be noted that as investment is not perfectly proportional to the size of an economy, small economies are more likely to show a high FDI-to-GDP ratio. However, crossing those data with absolute values reinforces the sense of discrepancy: the Netherlands and Luxembourg host as much FDI as all 25 other Member States put together.

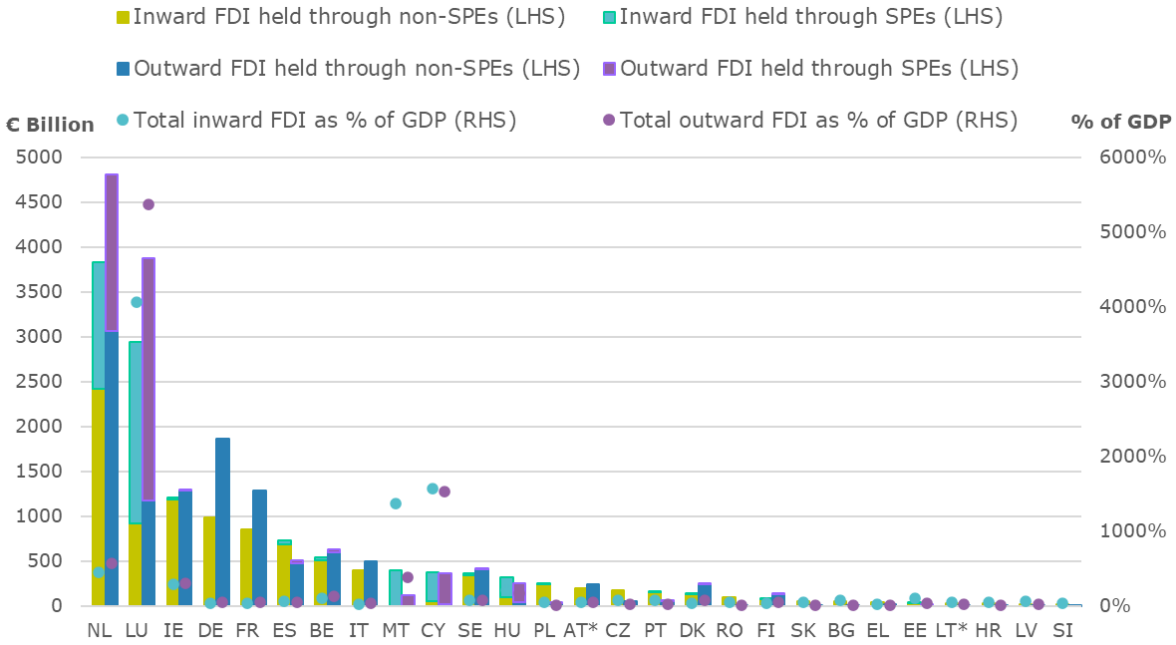
In some instances, direct investment via special purpose entities (SPEs) may be a vehicle for ATP. A SPE is a legal entity created to fulfil narrow, specific or temporary objectives. SPEs may have legitimate purposes, such as achieving a defined set of goals while isolating the firm from financial risks, and are used in common financial arrangements, such as leases and securitizations. However, SPEs may also be investment vehicles used solely for ATP, such as allowing firms to shift profits to low or no tax jurisdictions (Drucker, 2007); (Forbes & Sharma, 2008); (Dyreng, Lindsey, & Thornock, 2013), design and operate tax shelters (Graham & Tucker, 2006); (Wilson, 2009); (Lisowsky, 2010) or structure intercompany transactions (Joint Committee on Taxation, 2003); (Sheppard, 2017) (e.g., 'round trip transactions' [191]).

As such, certain SPEs may be used as shell entities with no or few other economic justifications other than artificially reducing a company's tax burden. Thus, a large proportion of direct investment stocks held through SPEs may be an indication of ATP. In certain Member States there is a significant use of SPEs for both inward and outward FDI: 95 % of Malta's inward FDI stock, 90 % of Cyprus inward FDI stock and 96 % of its outward stock, 85 % of Luxembourg's inward FDI stock and 79 % of its outward FDI stock, 71 % of Hungary's inward FDI stock and 87 % of its outward stock, as well as 43 % of the Netherlands inward FDI stock and 41% of its outward stock are held through SPEs (Figure 67). A recent study (Demeré, Donohoe, & Lisowsky, 2019) has shown that in the United States the use of SPEs by companies has enabled them to save around 330 billion USD in taxes between 1997 and 2016, which is equivalent to 6 % of the US federal corporate income tax collection during this period. A proposal of a directive to combat the use of shell companies for tax purposes within the EU has been tabled by the European Commission on 22 December 2021 [192] and is currently discussed at the Council of the European Union.

[191] Round tripping is a practice in which a company or individual artificially inflates the value of an asset by buying and then quickly selling it back to the original seller or a related party, creating the appearance of legitimate business activity. Round tripping is considered illegal in many jurisdictions and is often used as a tool for money laundering or tax evasion. It can also lead to financial instability and market distortions and can be a red flag for fraudulent activity.

[192] COM/2021/565 final.

FIGURE 67: NET INWARD AND OUTWARD FOREIGN DIRECT INVESTMENT STOCK IN THE EU-27, IN EUR BILLION (LEFT HAND SIDE) AND AS % OF GDP (RIGHT HAND SIDE), 2021



Sources: European Commission, DG Taxation and Customs Union, based on Eurostat data.
Notes: *Austria and Lithuania do not provide data for FDI stocks held via SPEs

ATP Practices based on Royalty Payments

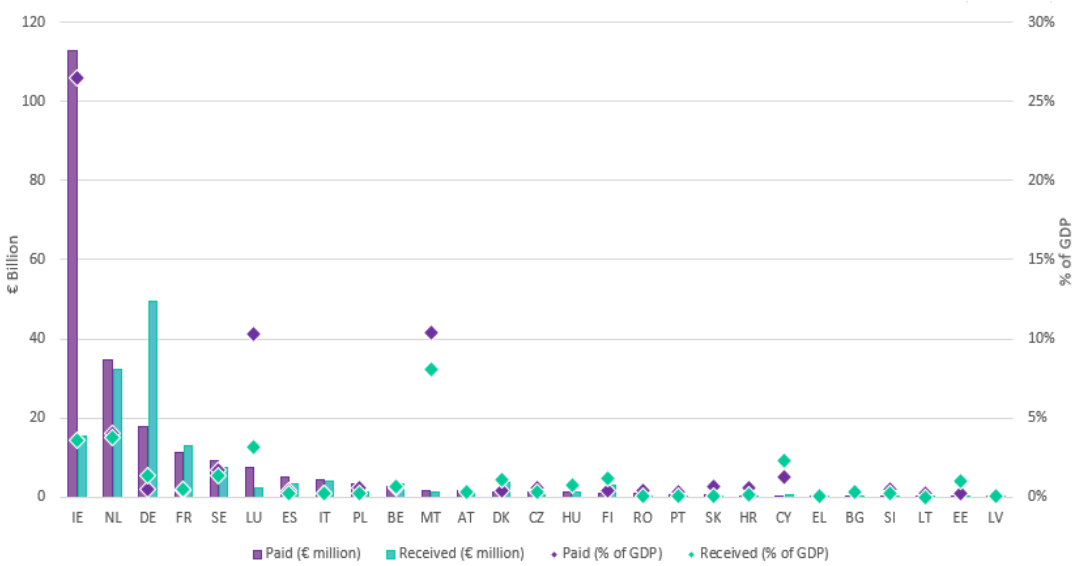
Moving intellectual property rights from high to low-tax countries can enable MNEs to reduce their tax liabilities. Research & Development can be conducted in one country, but the ownership of the patent located in another country, where the tax on patent revenues is low, for example thanks to patent box regimes or generous capital allowance on intangible assets. These regimes are very effective in attracting patents and other intellectual property assets because of their favourable tax treatment can reduce significantly the effective corporate tax rates of certain multinational corporations, notably in intangible-intensive sectors such as digital and pharmaceutical. The OECD BEPS' nexus rules and the EU's Code of Conduct Group on business taxation have taken steps to ensure there is substance associated to these regimes (see also section 3.3).

The risk of ATP through strategic location of intangibles may be identified through royalty payments. A country offering an attractive tax package for IP is likely to show relatively high incoming flows of royalty payments. If a Member State does not levy or ineffectively levies withholding taxes on royalty payments (in the case of zero or very low withholding taxes for example), its tax regime may also be used as a 'conduit'. In such cases, revenues are generated in other jurisdictions, are then routed to the Member State in various forms, and finally leave that Member State in the form of royalty payments. Indicators of such cases can be disproportionately high outgoing flows of royalty payments, notably when the outgoing royalty flow is disproportionately high compared to the size of the country's economy from which it originates. Such evidence could indicate that the Member State's tax regime is used to avoid taxation on royalties.

It is thus interesting to analyse figures related to the royalty flows paid by the Member State, both in value and in relation to the size of their national economy (see Figure 68). Ireland stands out as the Member State with the highest share of outgoing royalty payments, representing over 25 % of its GDP. This disproportionately high figure in Ireland is due to the presence of US MNEs in the country. However, a large part of these payments is now going to the US: since the changes to the US tax code introduced by the Tax Cuts and Jobs Act of 2017, payments royalty payments from Ireland to the US have multiplied by over 11, from less than EUR 8 billion in 2017 to over EUR 89 billion in 2021. In parallel, Irish royalty payments to OFCs have decreased by

50%, from EUR 28 billion in 2017 to around EUR 18 billion in 2020[193] but still representing 88 % of all EU-27 royalty payments to OFCs according to Eurostat data. The change of royalty payment patterns due to change of the US tax code shows in itself the elasticity of royalty payments to taxation and the effect of tax code changes on ATP schemes, including those using royalties, used by MNEs.

FIGURE 68: TOTAL ROYALTIES PAID AND RECEIVED BY EU MEMBER STATES, IN EUR BILLION (LEFT HAND SIDE) AND AS % OF RESPECTIVE GDP (RIGHT HAND SIDE), 2021



Sources: European Commission, DG Taxation and Customs Union, based on Eurostat data.

ATP Practices based on Interest Payments

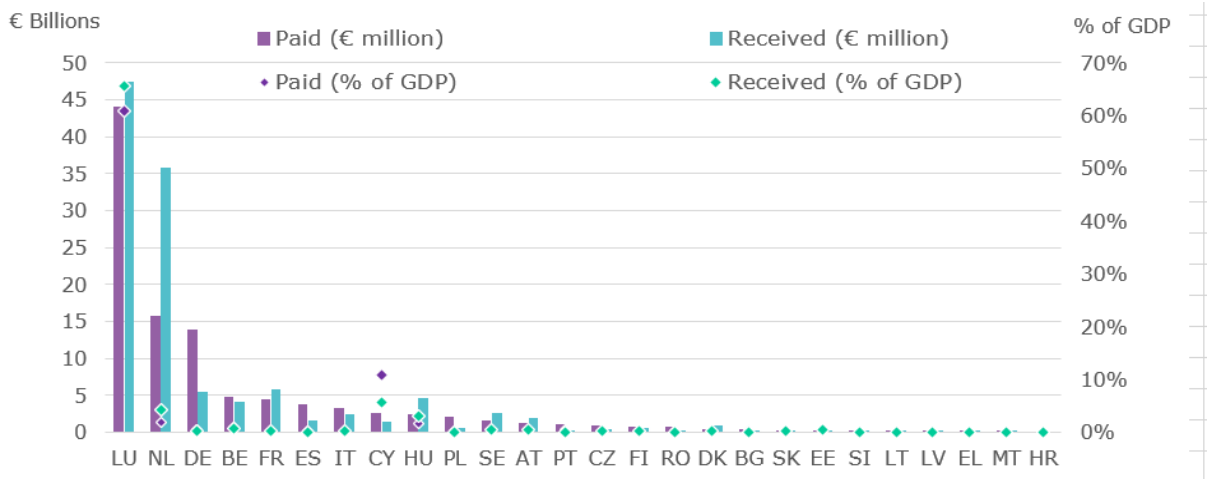
MNEs can decrease their tax liabilities through intra-company loans from low tax to high tax countries, without affecting the overall debt exposure of the group. Companies may benefit from tax deductibility of interest in one country (usually a high tax country) and low tax on interest income in another country, by setting intra-loans within a group for tax planning purposes. Similar strategies may involve countries (including Member States) with high statutory tax rates but low effective tax rates on interest income, e.g., as a result of their interpretation of the transfer pricing or profit allocation rules (see section on transfer pricing below).

Empirical studies show that corporate tax rate differential between countries are correlated with level of companies' internal debt, meaning the higher the corporate tax rate of a country, the higher the internal debt level of corporate group members in this country (Barion, Miniaci, Panteghini, & Parisi, 2010)**.** A study assessing German firms profit shifting strategies shows that profit shifting by means of internal debt occurs (Buettner & Wamser, 2013). A systematic analysis of the impact of corporate tax in companies' financial structure finds that a one percentage point higher tax rate increases the debt-asset ratio by between 0.17 % and 0.28 % (De Moojj, 2011). A study on the effect of the Anti-Tax Avoidance Directive (ATAD) interest limitation rule points to a high level of debt in firms for some EU high-tax countries (notably in Germany, Portugal and Spain), which could indicate tax avoidance practices (Petutshnig, Rechbauer, & Rünger, 2019).

[193] As 2021 data is confidential, it cannot be cited in this report.

The risk of ATP through debt shifting may be directly linked to the absence or weakness of withholding taxes [194] on interest payments. If a Member State does not apply a WHT on interest payment made toward certain uncooperative or low tax jurisdictions, its tax system may be used to shift profits untaxed by shifting interest payments into other jurisdictions. Figure 69 shows the inward and outward flows of interest payment in each Member States, in absolute terms and relative to the size of their respective GDP: Luxembourg appears to have a disproportionately high level of incoming and outgoing interest payments, both in absolute value and relative to its GDP, totalising around 30 %-35 % of all incoming and outgoing interest payments in the EU.

FIGURE 69: TOTAL INTEREST PAID AND RECEIVED BY EU MEMBER STATES, IN EUR BILLION (LEFT HAND SIDE) AND AS % OF RESPECTIVE GDP (RIGHT HAND SIDE), 2021



Sources: European Commission, DG Taxation and Customs Union, based on Eurostat data.
Notes: Ireland does not provide data on interest. Latest data available for Greece dates from 2018.

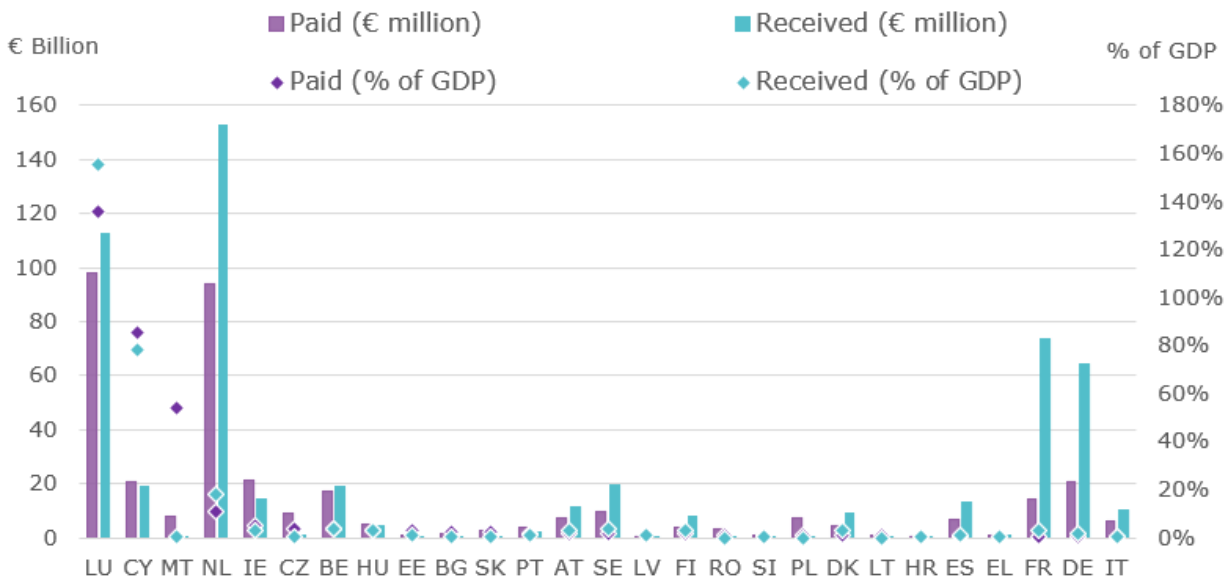
ATP Practices based on Dividend Payments

Some multinationals reroute their dividends to reduce taxation. In the absence of withholding taxes, such payments can escape taxation if they are not taxed in the recipient jurisdiction. MNEs can also use so-called 'tax treaty shopping', i.e., rather than investing directly in a host country, multinational companies may channel the investment through a third country to take advantage of treaty provisions not found between the host and the home country of the investment. By using conduit countries that have a favourable tax treaty network, MNEs avoid withholding taxes levied in host countries. A study by (van 't Riet & Lejour, 2017) has shown that using a combination of treaties may minimise the cost of repatriating dividends. This results in disproportionally high flows of incoming and outgoing dividend payments. As shown in Figure 70, Luxembourg, Malta, Cyprus and, to a lesser extent, the Netherlands have a significantly high outgoing dividend-to-GDP ratio and, with the exception of Malta, high incoming dividend-to-GDP ratio.

[194] For each analysis of WHT, potential indicators to assess weaknesses are:

- withholding taxes including rates per partner country,
- Indicators such as outbound payments as % of GDP, FDI stock held through SPE, % of total FDI stock etc
- flows in and out
- exemptions

FIGURE 70: TOTAL DIVIDENDS PAID AND RECEIVED BY EU MEMBER STATES, IN EUR BILLION (LEFT HAND SIDE) AND AS % OF RESPECTIVE GDP (RIGHT HAND SIDE), 2021



Sources: European Commission, DG Taxation and Customs Union, based on Eurostat data.

Profit can also be shifted from high-tax to low-tax country through the pricing of intra-group transactions (transfer pricing). In order to correctly price transactions (of tangible and intangible property or provision of services) between associated enterprises, firms should use the arm's length principle. According to the arm's length principle, cross-border intra-group transactions should be priced as if they were agreed by independent companies negotiating under comparable circumstances. The OECD (OECD, 2022d) and the UN (United Nations, 2013) have published guidelines on transfer pricing and the way to use the arm's length principle.

However, the difficulty to apply this principle, especially in the case of IP assets that are difficult to price, opens the door for overpricing exports from low-tax to high-tax countries' subsidiaries or under-pricing imports from high-tax to low-tax countries. That increases the profit of subsidiaries in low-tax countries, while profit of subsidiaries in high-tax countries may be decreased. The arm's length principle has proven vulnerable to manipulation by taxpayers. This has resulted in outcomes in which the allocation of profits is not aligned with the economic activity that produced the profits. Base Erosion and Profit Shifting actions 8-10 are dedicated to transfer pricing issues, but they are not part of the minimum standards and so revisions on transfer pricing have been so far left to the discretion of each country. Studies show that transfer prices are influenced by corporate tax differentials between countries and that misuse of transfer pricing increases with the R&D intensity of the company (Li, Schmidt-Eisenlohr, & Guo, 2017).

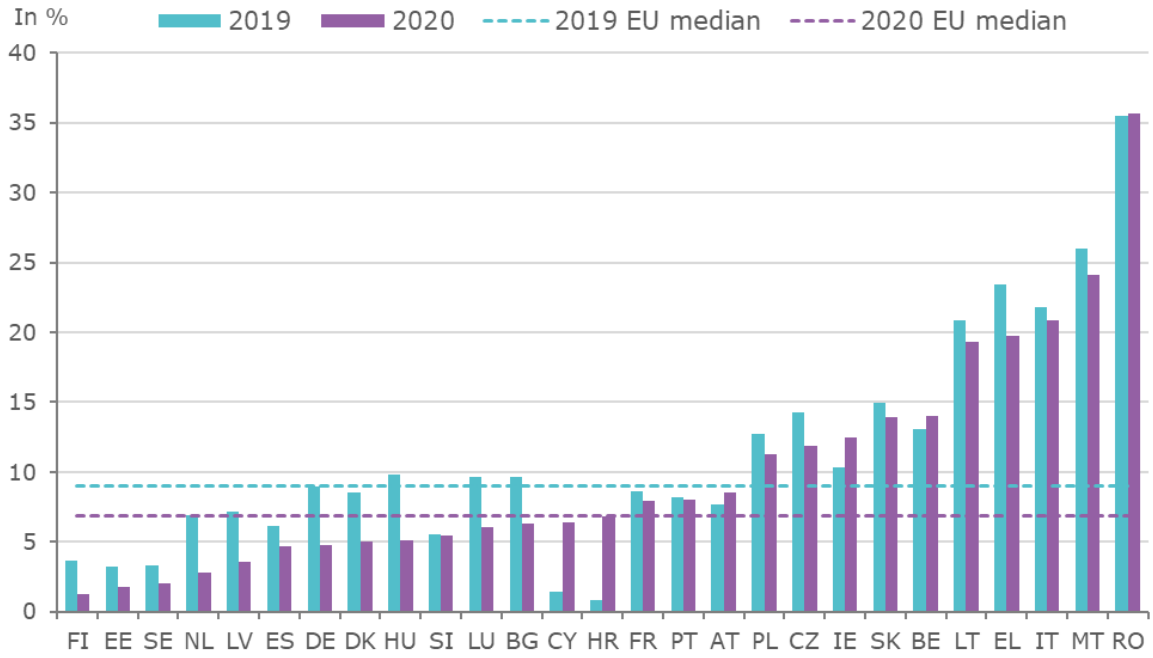
6.2.3 Estimates of Tax Compliance and Evasion for VAT

The VAT compliance gap is an indicator of taxpayer non-compliance with VAT payment obligations. It represents the difference between the estimated amount of VAT that is theoretically collectable in the case of full-compliance and the amount that is actually collected. A bigger compliance gap corresponds to a larger share of VAT revenues lost and may indicate that VAT compliance and enforcement measures ought to be reinforced. Non-compliance can take several forms, including tax avoidance, tax evasion and fraud, including organised large-scale fraud. However, non-intentional causes for non-compliance also exist, including administrative errors, omissions and non-fraudulent bankruptcies.

The VAT compliance gap in the EU was estimated at EUR 93 billion in 2020, which was EUR 31 billion lower than in the previous year. [195] The figure 71 below shows the compliance gap in EU Member States as a percentage of the theoretical tax liability. One noticeable observation is that the VAT gap dropped markedly in 2020 compared to the previous year across many Member States. The increase in compliance is a direct consequence of the financial support provided by Member States in response to the COVID-19 pandemic. These government support measures led to a reduction in the rate of bankruptcies and may have also induced some economic agents to emerge from the non-observed economy (NOE) given that benefitting from the financial assistance measures was often contigent on paying taxes. In addition, rate reductions and deferrals directly lowered the theoretical VAT liability, which in consequence reduced the VAT compliance gap.

Overall, in 2020 Romania continued to have the highest VAT compliance gap, followed by Malta, Italy and Greece. Finland, Estonia, Sweden and The Netherlands continued to have the lowest VAT compliance gap in 2020.

FIGURE 71: VAT COMPLIANCE GAP AS A SHARE OF THE THEORETICAL VAT LIABILITY, 2019-2020



Source: (CASE, Economisti Associati, 2022).

The VAT policy gap measures the revenue impact of the way in which tax rules are designed. It represents the additional VAT revenue that could theoretically (i.e., under the assumption of perfect tax compliance) be generated if a uniform VAT rate were applied to the final domestic use of all goods and services by households. The policy gap can be broken down into the rate gap and the exemption gap, which capture the loss in VAT liability due to the application of reduced rates and the implementation of exemptions respectively. The exemption gap is generally the larger of the two gaps since parts of households' final consumption cannot be taxed in principle, such as public services provided by the government. Accurate estimates of the policy gap are harder to obtain than of the compliance gap, in part, because the estimation relies on the specification of some normative policy framework against which theoretical revenue losses due to deliberate policy choices can be measured. This makes the estimation of the policy gap more conceptually controversial as there is no consensus, for example, on whether VAT should be levied on some services (e.g. financial transactions). However, the latest

[195] (CASE, Economisti Associati, 2022).

data clearly show a significant increase in the policy gap across the EU between 2019 and 2020, an unsurprising result given the high number of rate reductions and deferrals that year to mitigate the economic impact of the COVID-19 pandemic.

6.2.3.1 VAT: components (MTIC fraud + e-commerce)

VAT fraud and evasion negatively impact critical revenues that both Member States and the EU rely on. Tackling these illegal activities through well-targeted policy measures requires being able to estimate their magnitude and evolution. Two drivers of the VAT gap that warrant particular attention are missing trader intra-community (MTIC) fraud and VAT fraud due to e-commerce fraud. Both types of VAT fraud are described in more detail below.

MTIC fraud is a criminal practice applied by organised crime groups. It involves a series of contrived transactions within and beyond the EU, with the aim of creating large unpaid VAT liabilities and fraudulent VAT refund claims. MTIC fraud generally occurs within a 'business-to-business' context and is committed via a variety of sophisticated schemes through which criminals seek to abuse intra-EU VAT rules. One of those schemes relates to the abuse of customs procedure 42, which allows businesses to import goods and supply them to businesses in another Member State free of VAT, such that VAT is levied only once by the Member State of destination. While this procedure simplifies and facilitates cross-border trade, it has at times been exploited by organised crime groups. In the simplest case, an organisation imports a good which is VAT exempt, sells it to a customer inclusive of VAT and then disappears without having remitted the charged VAT to the tax authorities. Such an organisation is called the missing trader. More complex schemes, such as carousel frauds, also involve the export of goods and their subsequent re-import by a missing trader, allowing the exporting company to get reimbursed for a VAT payment that has never been made. Carousel fraud schemes often rely on intricate transaction chains, where the involvement of several intermediaries, referred to as 'buffer' companies, can make it difficult for tax authorities to identify the fraudulent actors in time. The challenge of combatting this type of VAT fraud is exacerbated by the fact that a missing trader typically operates merely for a few weeks or months before it ceases its activities and disappears. In 2015, the volume of MTIC fraud in the EU was estimated at around EUR 50 billion per year [(196)]. The European Commission is undertaking efforts to estimate the MTIC fraud gap on a more regular basis in order to facilitate the design of targeted measures aimed at exposing and eliminating MTIC fraud schemes.

Another component of the VAT gap revolves around non-compliance with VAT payment obligations in the context of e-commerce. E-commerce VAT fraud arises when tax authorities do not receive VAT due on purchases of goods and services conducted via the internet or other online communication networks. This type of fraud usually pertains to 'business to consumer' and 'consumer to consumer' transaction links and can take various forms. One example is when VAT is paid in a Member State with a lower VAT rate than the Member State of destination where the VAT payment is due. Alternatively, sellers may not even be VAT registered in the first place but still sell their goods or services indirectly via marketplaces or social networks. While there are no reliable estimates of the extent of e-commerce VAT fraud to date, it is a type of fraud that is becoming more prominent given the significant growth of the e-commerce sector in recent years. The European Commission is therefore in the process of exploring ways to estimate the level of e-commerce VAT fraud within the EU to support the development of strategies combatting the root causes of e-commerce fraud (see also section 6.4.2.1).

[(196)] https://www.europol.europa.eu/crime-areas-and-statistics/crime-areas/economic-crime/mtic-missing-trader-intra-community-fraud

6.3 Crypto-assets and taxation

The rise of crypto assets in recent years has brought a lot of new opportunities but also its challenges. On the one hand, it has enabled a new type of secure and fast transactions. On the other hand, it makes both traceability and valuation of income and wealth more challenging. Importantly, this can hinder efficient tax collection and give potential new ways for engaging in tax abuse and thus lower tax compliance. These challenges apply across various different types of taxes. The section below gives an overview of the main challenges for the tax system and to tax policy arising due to the rise of crypto-assets and briefly presents a number of EU policies developed in response.

A crypto-asset is a digital representation of value or rights, which may be transferred and stored electronically, using distributed ledger technology (DLT) or similar technology. Driven both by technological innovation and financial speculation, the crypto sector has developed exponentially in recent years. There are thousands of different crypto-assets, and new crypto-assets with new features appear almost daily. The total number of crypto-asset users increased from 5 million in 2016 to more than 300 million in the first half of 2022, including 38 million in Europe. Crypto-assets are just one aspect of the broader development of decentralised finance (DeFi), a system based on blockchain (or similar distributed ledger technologies) and virtual currencies, which relies on decentralised applications and smart contracts (e.g. platforms for borrowing and lending in virtual currencies, or for their exchange).

Crypto assets have several characteristics that pose challenges for tax administrations seeking to tax them fairly and effectively:

- the novel and fast-evolving nature of the technology underlying crypto-assets makes decisions on their classification and treatment for tax purposes complex and can in some cases lead to non-taxation;
- the varied existing (and potential) types of crypto-assets, and the unusual "hybrid" nature of many as both a means of payment and tradable asset, can create problems in the definition of taxable events;
- the volatility of prices can make the valuation of crypto-assets difficult; and
- the decentralised nature of crypto networks and the potential number and frequency of crypto transactions can make the related tax liabilities harder for tax administrations and taxpayers to assess and collect.

The EU has developed proposals to regulate the use of crypto-assets for financial services purposes through the Markets in Crypto-Assets (MiCA) Regulation. MiCA aims to provide legal certainty for innovators, appropriate levels of consumer protection and market integrity and to mitigate risks to financial stability while preserving monetary sovereignty. It should allow operators authorised in one Member State to provide their services across the EU ("passporting") under a single set of rules. Non-EU operators are also required to register if they wish to operate in the Internal Market. With this initiative, the EU has become a de facto global standard-setter.

The EU has also extended EU anti-money laundering rules to cover all Crypto-Assets Service Providers (CASPs) through the fifth amendment of the Anti-Money Laundering Directive (AML). The EU AML proposal will mandate all crypto-asset service providers to conduct due diligence on their customers. This initiative will ensure, through the recast of Regulation (EU) 2015/847 on transfer of funds, the traceability of crypto-asset transfers by requiring CASPs to identify the originators and beneficiaries of crypto-asset transfers and to make this information available to competent authorities.

The treatment of capital gains – and losses – is a key issue for the taxation of the crypto-assets sector. The crypto-asset market has been characterised by very high levels of price volatility, higher than stocks, bonds or commodities such as silver and gold. Trends in crypto prices have also become increasingly correlated with those in stocks and other risk assets, increasing the risk of financial spill-overs (Adrian, Iyer, & Qureshi, 2022). The market capitalisation of cryptocurrencies grew rapidly through 2020 and most of 2021 to reach a

peak of about EUR 2.8 trillion in September 2021, before falling back to below EUR 1 trillion in June 2022. Since then it has mostly fluctuated within the range EUR 0.75-1.05 trillion. In 2021, investors across the globe realised more than EUR 150 billion of capital gains from selling crypto-assets at (often much) higher prices than they had acquired them at, including over EUR 30 billion in the EU Member States.

A patchwork of rules applies across the EU when it comes to defining crypto-assets, determining the taxable events, calculating the tax base, and ultimately determining the tax liabilities deriving from crypto-assets. Most Member States have not designed dedicated tax rules for crypto transactions and activities. Instead, they have extended and clarified their existing tax system to include the income derived from crypto transactions and activities, often using administrative guidance. A few Member States have simplified their personal income tax regime applicable to crypto-assets and apply a single rate to transactions and activities involving crypto-assets. Most align the tax treatment of crypto-assets with the tax treatment of other assets considered comparable. Member States that have inserted crypto-assets within their existing general tax system differentiate the tax treatment between the following three types of income:

1. **Income from trading crypto-assets: crypto into fiat exchanges, crypto-to-crypto transactions and purchases of goods and services with crypto**. Most Member States treat revenues from crypto-asset exchanges as capital gains subject to i) normal income tax (at progressive rates) or to ii) specific capital gains tax (at a fixed rate or progressive rates).

   Some of these Member States provide in their general tax system for an exemption of such capital gains from tax in certain circumstances. Those exemptions are based on the holding duration of the asset (asset held more than 6 to 12 months); and/or the behaviour of the taxpayer (occasional trader v. regular trader); and/or the amount of the gain (gains below a certain threshold).

   Member States may provide for the deductibility of losses against gains or profits from crypto transactions and activities. However due to the high volatility of price, and for individuals a choice over when to realise gains or losses, there is the potential for large losses to be offset against profits and thus to significantly reduce the tax liability of taxpayers. As with other types of assets, there are different approaches to the extent to which crypto-related losses can be carried forward, or crypto gains or losses offset from gains and losses related to other types of assets.

   A few Member States consider crypto to crypto exchanges as a non-taxable event and therefore do not tax such exchanges. In this case, net gains are only taxed when the assets are converted into fiat currency.

2. **Income from activities based on the creation and use of crypto-assets: mining and forging of crypto-assets, staking or lending of crypto-assets, interest-earning from crypto-assets.** Member States that have clarified the tax treatment of mining income mostly treat revenues from mining as business income subject to business income tax (either at progressive rates or at a fixed rate). Some Member States look at the nature of the mining activity (commercial v. non-commercial) to determine the tax treatment of mining income. Income from mining activity for non-commercial purposes is treated not as business income but as personal income and taxed at different rates.

   Very few Member States have clarified the tax treatment of staking [197] crypto-assets and lending (often through pooling [198]) crypto-assets against rewards as well as other activities involving the use of crypto-assets. The tax treatment of such activities is therefore often unclear. Either

[197] Crypto staking is when you pledge your cryptocurrency toward helping validate transactions on the blockchain, for which you receive similar to the accumulation of interest.

[198] Pooled lending, also known as peer-to-pool, is a form of cryptocurrency lending. Like peer-to-peer lending, it enables users to borrow and lend digital assets via pooled lending platform, without the need for a trusted third party.

the income from such activities is left untaxed or it is taxed by treating it as if it were another type of income considered similar. This classification is made difficult by the complex, diverse and constantly evolving nature of activities involving crypto-assets.

3. **Remuneration, salary, and wages paid in crypto-assets**. Where Member States have clarified the tax treatment of payments for a job in crypto-assets, they all treat such remuneration as normal remuneration, salary, or wages subject to income tax. For those that have not provided guidance on the tax treatment of remuneration in crypto-assets for a job, the classification should not raise major issues as the general definition of a job would apply. The only difference is the form of the payment and potentially the impact of volatility in crypto prices, as tax may be due in fiat currency on salary paid in crypto.

All Member States tax the gains obtained by companies through operations with crypto-assets within the corporate income tax. Generally speaking, within Member States' CIT systems there are no major differences in the framework of taxation of crypto assets vis-a-vis the taxation of profits derived from other similar assets such as stock or other financial assets. Therefore, the prevailing tax policy for crypto assets under the CIT has been to guarantee tax neutrality concerning the tax treatment of other assets of a similar nature.

The VAT treatment of transactions involving crypto-assets depends on the type of transaction and varies across the EU Member States. Depending on their characteristics, these transactions can be considered out of scope of the VAT Directive or taxable and qualified as either taxed or exempt. The guidance in relation to the VAT treatment of crypto assets is currently very limited. The Court of Justice of the European Union (CJEU) ruled in the Hedqvist (Heqvist, 2015) case that the exchange of bitcoins for a traditional currency is a taxable service exempted from VAT pursuant to Article 135(1)(e) of the VAT Directive, therefore giving virtual currencies that are "bi-directional" the same VAT treatment as traditional currencies regarding exchange services. Moreover, it stems clearly from the judgement that when bitcoin is exchanged for goods and services, no VAT will be due on the value of the bitcoin itself. Discussions related to the VAT treatment of transactions involving crypto-assets have been taking place in the VAT Committee [(199)], and the Commission is in the process of finalising common guidelines. The Commission also presented a working paper on the VAT treatment of Non-Fungible Tokens (NFTs) at the last VAT Committee meeting in March 2023 (European Commission, 2023d). With the rise of innovative financial services (Fintech), a broad reform of VAT rules applicable to financial sector is also currently being considered [(200)].

6.4 Optimising Tax Collection and the Fight against Tax Avoidance and Evasion through cooperation among tax administrations

6.4.1 Cooperation between Tax Administrations to fight Tax Fraud, Evasion and Avoidance

Cooperation between EU tax administrations can contribute to improving their efficiency and to optimizing revenue collection, in all the areas examined throughout chapter 6. Such cooperation takes place both at strategic and expert level, subject to the given field and objectives. The section below highlights the main EU recent developments in administrative cooperation in both direct and indirect taxation, and concludes with an outline of the main EU financial tools offering support for tax administrations to improve tax collection, and for cooperation between Member State tax administrations.

[(199)] Advisory committee set up under Article 398 of the VAT Directive which can give guidance on the application of EU VAT provisions.

[(200)] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12671-VAT-rules-for-financial-and-insurance-services-review_en

6.4.1.1 Administrative Cooperation in the Field of Direct Taxation

The Directive on Administrative cooperation in direct taxation was adopted in 2011 [201] and has since been amended six times. A proposal for a seventh amendment was adopted by the Commission in December 2022. It harmonises reporting obligations for most relevant income categories and has been extended to adapt to developments in business and finance as well as in technology. Having access to the best possible information is fundamental for tax administrations in their fight against tax evasion. The directive adopted in 2011 contained provisions on exchange of information between Member States (in its various forms, spontaneous, on request and automatic), as well as provided the general framework for other forms of administrative cooperation. Over time the Directive has been extended to also include mutual exchange of cross-border rulings and advance pricing agreements (APAs) applicable to legal persons, and to oblige tax intermediaries to share with tax authorities certain types of arrangements that could be used contrary to the purposes of the tax legislations of Member States. Matching this information with the information received on actual income and assets based on other provisions of the directive enables tax administrations to detect arrangements that could amount to tax avoidance, tax evasion or tax fraud.

The most recent amendments aim to ensure that new business models combined with new technologies are subject to the same or similar reporting obligations as existing ones. Thus, following the 'DAC7' amendment internet platforms will be obliged to report business carried out using their services as of 2024 [202] and crypto-asset service providers will soon have an obligation to report transactions carried out on their platforms involving crypto-assets as a result of the proposed 'DAC8' amendment [203]. These amendments to the Directive create a level playing field as compared to other business models. Thus the reporting and exchange of information on income from crypto-assets will be similar to what is already in place for Financial Assets under the 2014 amendment [204]. At the same time, it removes the possibilities to use these platforms for tax evasion since transactions will be made known to the tax authorities in the Member State where the taxpayer in question has tax residence. Tax authorities will be able to combine all the information that they have in their possession and match the different sources of income of one taxpayer to each other. In that way, they will be able to get a more comprehensive picture of the situation of that taxpayer and possible risks of tax evasion.

To further improve the functioning of the DAC, initiatives have been launched by the Commission to improve the quality of the data exchanged based on DAC and to enhance the capacity of Member States to use the received information to its full potential. The FISCALIS program provides the framework and the financing for the initiatives launched for these purposes. An Expert Team "DATANA" aims at automatising and improving the analysis of data received under DAC, which in turn would enhance the use of data. Concretely, it is set to deliver by the end of 2023 a catalogue of best practices as well as an IT tool. The Expert Team "VISDAC" will carry out visits of the tax administrations of all Member States and draft country reports for each of them. The focus of the visits is on quality and use of data, although any other relevant aspect can be taken into account, if appropriate. The reports will focus on shortcomings and best practices identified during the visits. Based on the country reports, the Commission services will draft a general report highlighting common aspects as well as outliers with a view to improve the use of DAC throughout the EU. Member State could upon their request benefit from support through the Technical Support Instrument (TSI) where the DAC is a flagship technical support project.

[201] Directive 2011/16/EU. See also: Cooperation between national taxation authorities: Council puts the spotlight on crypto-assets and the wealthiest individuals - Consilium (europa.eu)

[202] Directive 2021/514/EU, DAC7.

[203] COM(2022) 707 final.

[204] Directive 2014/107/EU, DAC2.

6.4.1.2 Administrative cooperation and combating fraud in the field of value added tax (Regulation 904)

The dedicated VAT administrative cooperation was introduced together with the Internal Market in 1993 to allow the application of Value Added Tax [205] on supply of goods between Member States without border controls. The current legal framework for this cooperation is provided for in the Council Regulation (EU) Nr 904/2010 which is the third recast of the legislation.

Today, VAT administrative cooperation offers a range of tools to exchange of necessary information between tax administrations of the Member States:

- VAT Information Electronic System (VIES [206]) contains information on taxable persons performing cross-border supply of goods or services including their turnover. In 2021, this represented data on 2.5 million of suppliers and 7.2 million of their customers. VIES can also be consulted by taxable persons for the verification of the taxable status of their customers in other Member States as required before initiating a cross border supply. VIES is consulted on a daily basis 9 million times.
- VAT One Stop Shop (OSS [207]) is the electronic system that allows the exchange of information on special VAT schemes for e-commerce transactions.
- Additional information on taxable persons can be requested to assess suspicious transactions or sent spontaneously if that may be relevant to another country.
- Eurofisc is a network of anti-VAT fraud experts that are allowed to access information on cross-border transactions and signal suspicion of fraud in a more flexible way. In 2022, Eurofisc identified 2907 fraudsters and EUR 10.9 billion of fraudulent transactions. Eurofisc can request information from the European Anti-Fraud Office (OLAF) and Europol to confirm the involvement of criminal organisations in the VAT fraud.
- Joint audits and simultaneous controls allow officials from national tax authorities to form international audit teams to control multinational companies.

The most recent changes occurred on 18 February 2020 when the Council adopted a legislative package to request payment service providers to transmit information (i) on cross-border payments originating from Member States and on the beneficiary ("the payee") of these cross-border payments. The objective of this new measure is to give tax authorities of the Member States the right instruments to detect possible e-commerce VAT fraud carried out by sellers established in another Member State or in a non-EU country. This package obliges payment service providers offering payment services in the EU to monitor the payees of cross-border payments and transmit information on those who receive more than 25 cross-border payments per quarter to the administrations of the Member States. This information will then be centralised in a European database, the Central Electronic System of Payment information (CESOP), where it will be stored and cross-checked with other European databases. All information in CESOP will then be made available to anti-fraud experts of Member States via the network of Eurofisc. The transmission of data will start on 1 January 2024.

In addition, in December 2022, the Commission adopted the ViDA (European Commission, 2022d). **package that uses recent technological and digital advances to deliver on an updated VAT system that is more resilient against criminal VAT fraud.** It will comprehensively enhance and modernise VAT administrative cooperation by moving away from aggregated monthly reporting to real-time reporting at

[205] VAT is a harmonised tax based on Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax.

[206] https://ec.europa.eu/taxation_customs/vies/#/vat-validation

[207] https://vat-one-stop-shop.ec.europa.eu/index_en

transaction level. This will facilitate the identification of VAT fraud and it is estimated to allow Member States to recoup about EUR 11 billion more every year over the next ten years in currently uncollected VAT revenues. At the same time, the proposal will help EU companies, especially SMEs, as businesses are expected to save EUR 4.1 billion per year over the next ten years in compliance costs.

The European Commission is also finalising the evaluation of the functioning of the VAT administrative cooperation to assess its efficiency and effectiveness as well as the EU added value. The results of the evaluation will be presented to the Council and the Parliament in 2023. The evaluation will be also used for future legal proposals aiming to improve VAT administrative cooperation.

6.4.1.3 Administrative cooperation in the field of excise duties

Council Regulation (EU) 389/2012 [208] lays down the rules on administrative cooperation in the field of excise duties. This Regulation obliges Member States to designate Central excise liaison offices and liaison departments to cooperate and exchange certain information with counterparts in other Member States. The Regulation also lays down the legal basis for the creation of the central register of excise operators (SEED), where information about each company authorised to trade excise goods (alcoholic beverages, tobacco and energy products) can be found.

The exchange of information between Member States is performed in the framework of a computerised system, referred to as the Excise Movement Control System (EMCS). In EMCS information is shared via dedicated administrative cooperation electronic messages, which facilitates cooperation between competent authorities in Member States.

On 13 February 2023 Directive 2020/262 [209] became applicable. The new Directive expanded the scope of the computerised system so excise goods on which excise duty has already been paid in one Member State can be monitored and controlled through the EMCS when moved for commercial reasons to another Member State (i.e., intra-EU).

The extension of the scope brought by the abovementioned Directive led also to modifications in the field of administrative cooperation. To this end, Regulation 389/2012 and Implementing Regulation 2016/323 have been amended to allow for the exchange of administrative cooperation information concerning movements of excise goods within the computerised system. Next to this, companies performing duty-paid movements of excise goods are also registered in SEED, so that data on the authorisation is shared among tax authorities. These modifications further strengthen cooperation across EU Member States in their fight against tax fraud while facilitating traders' operations.

Fraud involving alcohol products is a significant issue, resulting in a loss of revenue for Member States. In November 2022, customs and police authorities seized nearly 14.8 million litres of illicit and counterfeit wine and beer, in a targeted action led by OLAF [210]. Because of the cross-border nature of excise fraud, a joint approach to tackling the problem proves to be most beneficial.

Several Member States participated in two workshops during 2017 and 2022 which concluded that a guide explaining the structure of fraud schemes identified by tax and customs authorities should be created and regularly updated. These workshops also formed the basis of an effective network of excise experts. The project was brought forward by a Fiscalis project group, created in 2022, where Member States' tax

[208] Council Regulation (EU) No 389/2012.4.

[209] Council Directive (EU) 2020/262.

[210] 14.8 million litres alcoholic drinks seized across Europe.

and customs administrations cooperate at expert level to update the guide on excise risks in the alcohol sector and set up networking tools. Enhanced cooperation between Member States promotes the dissemination of knowledge concerning risk management and facilitates the communication which underpins joint actions.

6.4.2 Cooperation of Tax Administrations through the Tax Administration EU Summit

Through the Tax Administration EU Summit [211], launched over 4 years ago, the EU facilitates strategic co-operation and exchange of good practices between the heads of Member States' tax administrations. It deploys a project-driven approach to allow Member States to develop common responses with EU added value to their shared challenges. Those range from enhancing administrative capacity to improving the implementation of EU legislation. TADEUS projects have dealt with strategic themes, such as digital economy, tax compliance, human resource management and performance measurement. Below two selected projects are presented and discussed that illustrate some of the work done through TADEUS.

6.4.2.1 Estimating tax gaps in direct and indirect taxation

A project launched under the auspices of TADEUS is the estimations of tax gaps (personal income tax/social security contributions, corporate income tax, missing- trader intra-community fraud and value added tax e-commerce) is ongoing.

The project's main aim is to further step up the EU-wide effort in the fight against tax fraud, tax evasion and tax avoidance and overall to enhance tax compliance. Specifically, the European Commission set up four groups composed of Member State experts, under the project leadership of Italy, in 2020. The first two subgroups work on direct tax gaps, focusing on the corporate income tax gap and the personal income tax and social security contributions (PIT/SSC) gap respectively. The third and fourth group deal with specific drivers of the VAT gap, namely VAT losses due to missing trader intra-community fraud and e-commerce fraud.

The four groups share the following overall objectives: (i) improve knowledge sharing and enhance knowledge base; (ii) share best practices on methods and their use; (iii) agree on common methods/strive for convergence of applied methods; (iv) increase the number of Member States that estimate tax gaps on a regular basis. The four groups also have the same workstreams: the first part of the work consists of a mapping of all tax gap methods used across the participating Member States and a mapping of tax gap techniques used by international organisations, such as the IMF, and third countries, such as the US**.** After that, the four groups will strive to find common approaches to allow for the consistent estimation of the tax gap across jurisdictions. Ideally, in this workstream the participating Member States would be able to identify a single tax gap estimation method that could be used across all or as many Member States as possible.

Alongside these four TADEUS subgroups, the Commission has also commissioned two external studies for the PIT/SSC gap and the VAT gap due to MTIC fraud to look into common methods in order to estimate the two tax gaps across Member States. The two studies are still ongoing and first results are expected in the second half of this year.

6.4.2.2 Promoting voluntary compliance

The TADEUS project on Trust and Compliance [212] has provided support to EU tax administrations' senior management on how to strengthen taxpayers' trust and thereby their compliant behaviour.

[211] For more information on TADEUS and its achievements: Tax Administration EU Summit - TADEUS (europa.eu)

[212] The project result, available also through the TADEUS Europa site, has been published in a dedicated external website, hosted by the Swedish Tax Agency.

This work is of relevance as the efficiency of tax administrations also depends on taxpayers' voluntary compliance, as solely focusing on enforcement has its limits. Therefore, to reduce the tax gap and secure the tax revenue, tax administrations need to take a proactive approach to enhance voluntary compliance. To this end, tax administrations can use a multi-layered, more customer-oriented service style approach to enhance voluntary compliance. To achieve voluntary compliance, administrations can 1) influence taxpayers' behaviour and 2) earn their trust in different ways.

As a global trend, an increasing number of tax administrations has been employing behavioural researchers and using behavioural insights to influence voluntary compliance. High levels of voluntary compliance imply that taxpayers trust the tax authorities, have confidence in the tax system and feel that their taxes are well used to provide adequate high quality public services. As taxpayers tend to have greater trust in tax administrations that are perceived to be efficient and effective, it is important for tax administrations to continue on the way of digitalisation. E-filling and pre-filling of tax returns (see also Section 6.1.1) can make tax administrations more efficient and will thus increase compliance levels. Encouraging taxpayers to use the tax administrations' online services and portals to ensure they pay the right tax at the right time are equally good approaches [213].

The project combined experiences from the EU Member States' tax authorities together with research. It confirmed that addressing the risk of non-compliance is not sufficient on its own, thus tax administrations need to better understand the drivers of both non-compliance and compliance. Trust has an essential role in increasing taxpayer's motivation to comply on their own accord, as from the start. That way taxpayers are also more willing to cooperate with the tax authorities. However, when levels of trust are low, the opposite applies, and compliance needs to be enforced. The project included useful country examples and resulted in comprehensive guidelines including among other things the enhancement of transparency or digitalisation. These guidelines can be implemented and integrated into EU tax administrations' national strategies on enforcement, voluntary compliance, and compliance monitoring. As investing in trust mechanisms can contribute to increase the tax revenue, Member States are encouraged to ensure the appropriate national uptake.

Moreover, outside of TADEUS, in September 2020, following the Commission's Action Plan for fair and simple taxation supporting the recovery strategy, the Commission launched two Cross-border EU compliance programmes [214]. Rather than harmonising national cooperative compliance programmes, the aim of the EU initiative is to facilitate a preventive dialogue and greater cooperation between taxpayers and EU tax administrations and to increase tax certainty. The initiative has two strands of work:

- "EU framework for a preventive resolution of certain cross-border tax issues" for SMEs. The Programme is under review as currently not enough Member States are committed to participate in a pilot; and
- "European Trust and Cooperation Approach – ETACA Pilot Project" for MNEs. The purpose of this project is to bring EU tax administrations together to perform a multilateral risk assessment of the transfer pricing policy of MNEs operating within the European internal market.

6.4.2.3 EU Financial Tools supporting Tax Administrations and Cooperation among Tax Administrations

The TADEUS projects are operationalised and finances through Fiscalis project groups, where Member States' tax administrations can cooperate at expert level, while the strategic steer is provided by the

[213] An addition to the efficiency angle is that taxpayers tend to have greater trust in tax administrations that are perceived to be efficient and effective, as described on p.69 in the previous edition of this report (European Commission, 2022b).

[214] https://taxation-customs.ec.europa.eu/eu-cooperative-compliance-programme_en

TADEUS Heads. The Fiscalis programme [215] is an EU cooperation programme, with its 2022 annual budget of about EUR 36 million, enables national tax administrations to create and exchange information and expertise in the fight against tax fraud, tax evasion and aggressive tax planning. It covers a wide range of activities, from developing and running major trans-European IT tax systems to supporting Member States' tax audits. Tax administrations' cooperation activities – specifically under TADEUS and more generally under Fiscalis – have served and will continue to serve EU tax administrations in enhancing their efficiency and optimising tax collection.

Another form of support to finance and operationalise reforms within tax administrations is the Recovery and Resilience Facility. This facility is the key instrument of NextGenerationEU that help to foster a strong recovery in the EU and ensure that Member States are ready for future challenges and opportunities. The Facility allows the Commission to raise funds to help Member States implement reforms and investments that are in line with the EU's priorities. To benefit, Member States submit their recovery and resilience plans (RRP) setting out the reforms and investments to be implemented by end-2026. Each plan should effectively address challenges identified in the European Semester, particularly the country-specific recommendations. The plans should also tackle common European challenges such as the green and digital transitions (including the modernisation and digitalisation of tax administrations) to strengthen economic and social resilience of the EU [216].

The Commission supports Member States in the implementation of their RRPs in the implementation of reforms in the context of economic governance process, the implementation of Union priorities and Union law, and in the implementation of Member States' own reform priorities via the TSI. The TSI provides tailor-made technical expertise to help Member States in designing and implementing reforms in many policy areas, including taxation. [217] Tax administrations can obtain support under the TSI for implementing reforms. Box 6 below illustrates one such reform supported by the TSI for the Greek Tax Authority.

Box 6: DG REFORM's technical support underpinning the set-up and operationalisation of the Greek Independent Authority for Public Revenue (IAPR)

The sovereign debt crisis in Greece in 2009 led to a severe economic downturn of the Greek economy and the need for substantial reforms was recognised. These were largely encompassed in three consecutive Economic Adjustment Programmes (EAPs). With the objective to improve the sustainability of public finances, Greece has undergone a large-scale transformation of its revenue administration since 2010.

At the onset of the financial crisis, the Greek revenue administration was integrated in the Ministry of Finance and was perceived as underperforming. This is demonstrated by a considerable tax gap of 2.56 % of GDP or 5.24 % including the shadow economy (Khwaja & Iyer, 2014) . Challenges faced by the revenue administration arose from a range of factors, including highly complex tax legislation, favouritism, lack of transparency, repeated tax amnesties, outdated working methods, and the very limited use of IT systems.

Within this context, the Directorate General for Structural Reform Support (DG REFORM) in the European Commission and its predecessors, namely the Structural Reform Support Service (SRSS) and the Task Force for Greece (TFGR), have provided extensive technical support to reform the Greek revenue administration over the past decade. This has supported the evolution of the Greek tax administration, first to the semi-autonomous General Secretariat for Public Revenue (GSPR) in 2012 and then to

[215] For further details: https://taxation-customs.ec.europa.eu/eu-funding-customs-and-tax/fiscalis-programme_en#:~:text=Fiscalis%20is%20an%20EU%20cooperation,of%20Member%20States%20and%20taxpayers

[216] https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en

[217] https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/technical-support-instrument/technical-support-instrument-tsi_en

the national Independent Authority for Public Revenue (IAPR) in 2017. DG REFORM technical support to the IAPR is ongoing.

DG REFORM's support was instrumental in establishing and gradually operationalising the IAPR by shielding the revenue administration from political interference, lowering resistance to needed reforms, and providing legislative, strategic and operational guidance on key design aspects of the IAPR. Today, the IAPR is regarded internationally as a model example of how to effectively modernise tax authorities. DG REFORM supported the IAPR through the concluded Structural Reform Support Programme as well as the current TSI, which is the EU programme that provides tailor-made technical expertise to EU Member States to design and implement reforms [(218)].

TSI provided a very comprehensive and overarching reform agenda, touching every cornerstone of the revenue administration, with the main objective to increase public revenue. The first phase (2010-2015) involved focussed but fundamental reforms – including on debt collection, treatment of high wealth individuals and dispute resolution – driven by mobilising individual experts from the European Commission embedded within the Greek Ministry of Finance, supported by experts from thirteen different Member States, and the IMF. The second phase (2016-2018) focused on building the long-term sustainable strategic and operational autonomy of the IAPR, which could also ensure the long-term effectiveness of the first phase reforms. The third phase (2019 onwards) built on enhanced institutional capacity of the IAPR. Through the TSI, 21 projects supported tax administration and tax policy reforms during these second and third phases of the institutional build-up of the IAPR. These projects contributed to key operational elements of the IAPR, including the improvement in tax collection via collection centres, and the replacement of the core tax system. Technical support includes among reform taxpayer services, tax audits, environmental taxes and digitalising customs processes.

The establishment of the IAPR as an independent revenue agency on 1 January 2017, was a significant milestone in the evolution of the Greek tax administration, made possible by technical support. The IAPR has improved its strategic and operational planning processes, strengthened a range of core business operations, and maintained a constant pace of revenue collection improvement.

The creation of the IAPR led the way for broader public administration reform in Greece, involving a comprehensive IT reform that fully embraced digitalisation. As a result, during the COVID-19 pandemic, remote support to taxpayers was quickly enabled and the IAPR became responsible for delivering overall government support to businesses and citizens.

Greece's revenues grew apace between 2010 and 2019, mostly driven by higher taxes, while revenue administration reforms started to bear fruit. Taxes as a share of GDP grew around seven percentage points over the decade (from 20.6 % in 2009 to 27.3 % in 2019) [(219)] - a noteworthy achievement given the context of a shrinking economy for much of that period. Indirect taxes contributed the most, through VAT and property taxes. Although recent estimates for the VAT gap show a significant improvement, efforts to improve general tax compliance remain a very high priority. With technical support for collection strategy and processes, significant gains were seen in collection of tax arrears. The IAPR has achieved a very substantial strategic and operational autonomy benefitting largely from substantial technical support, which contributed considerably to its success.

[(218)] For more information on the TSI: https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/technical-support-instrument/technical-support-instrument-tsi_en

[(219)] Source: Eurostat

7 POLICY DISCUSSION ON THE FUTURE PROOF TAX MIX, MAIN TAKEAWAYS AND OUTLOOK

The previous chapters of this year's edition of the Annual Report of Taxation provided a comprehensive overview of the status quo of tax systems and the challenges ahead. On the basis of the principles set out for our taxation systems – fairness, efficiency, simplicity and stability – the Report analysed specific taxes, and how the so-called megatrends such as population ageing, digitalisation, globalisation, climate change and environment degradation, and inequalities, may have an impact on our taxation systems. The Report looked at how such large-scale structural changes can affect the ability to generate revenue and thus ensure the financial stability of our welfare systems, how they can reduce the progressivity of the system and its ability to address inequality and poverty, and how such changes may be generating more complexity. At the same time, some of these changes (e.g. digitalisation) provide opportunities. The Report also shows how climate change is upon us, challenging our own existence, and how taxation can play a role in attaining our ambitious green objectives. The Report provides an overview of tax policies both at Member State level and across the European Union as a whole and assesses the performance of tax systems using a set of indicators.

This year's edition was organised around six topics: (i) main developments and key challenges to taxation systems, (ii) fair and effective personal income taxation, (iii) corporate income taxation that secures revenues while promoting innovation (iv) environmental and health taxation, (v) VAT rate trends and revenue and the impact of digitalisation and (vi) efficient tax administrations, optimising tax collection and the fight against tax abuse.

The analysis provided in the report suggests the following policy discussion points.

The COVID-19 pandemic combined with Russia's war of aggression against Ukraine have shaped and continue to shape the socio-economic situation in the EU and with it taxation policies across the EU-27. This is accompanied by megatrends that call for potential changes in the way tax policies need to be designed. In other words, the EU needs to develop a smarter and more resilient tax mix.

The COVID-19 pandemic has had lasting economic and social consequences. EU economies are still recovering from the severe recession induced by the necessary pandemic-related restrictions. Unprecedented fiscal support and EU coordinated action, including the NextGenerationEU programme worth EUR 800 billion to support reforms and investments, played an important role in limiting the impact of the pandemic and boosting the recovery. Just as the economic recovery was setting in and government support diminishing, Russia's war of aggression against Ukraine began, leading to supply constraints and high energy prices. Again, governments and the EU were called on to provide large-scale direct and indirect support in reaction to energy security concerns, high inflation and lower real incomes.

In parallel to the short-term tax policy actions to swiftly respond to the COVID-19 crisis and the economic and social consequences of the war at our borders, there are a number of persistent imbalances in the structure of EU tax systems that, if unaddressed in the face of the above megatrends, will pose challenges in the medium to the longer run. For example, the ageing of our societies, resulting in a decline in working age population alongside increasing age-related expenditure, and increasing automation of tasks, calls into question the strong reliance of the tax mix on labour taxation, including social security contributions, to generate the same revenue that sustains government policies. As the reliance on labour taxation may need to diminish, the tax mix will need to adjust so that it generates stable revenues and alleviates the perceived increase in inequalities in societies, while limiting

its impact on investment and labour market participation. As the effects of climate change become ever more visible, taxation can play in helping to transition societies to climate neutral behaviour.

Labour taxation is at the core of revenue generation and income redistribution in EU tax systems while, depending on its design, it can discourage labour market participation, in particular for low-income workers and second earners (often women). Given the high share of labour taxation in the overall tax mix and the anticipated knock-on effects of megatrends on labour tax revenues, new avenues should be explored to both raise revenues and contribute to addressing inequality of income and wealth.

The EU relies heavily on labour taxation which, including social security contributions (SSCs), accounts for more than half of all the EU-27 tax revenues in any given year. The design of labour taxation, including social security contributions, and of personal income tax more generally can have important implications for labour market participation and some groups may find themselves trapped into inactivity due to the system's design. While the tax burden for low- and second earners has declined in several Member States, important challenges remain in others, which are reinforced by joint taxation schemes. In addition to ageing, digitalisation combined with global markets is giving rise to new forms of work and increasing labour mobility. This questions the residence-based principle of personal income tax and may add further pressure on today's tax systems to generate revenues. All this suggests that the current heavy reliance on labour taxation is not future-proof and shifting some of the tax burden away from labour towards alternative, more sustainable sources of tax income should be considered. Those could include capital income taxes or wealth taxes such as property taxes. These currently play a small or no role in many taxation systems and their features are often outdated where they exist. Given that these kinds of taxes mainly target the wealthier strata of the population, shifting away from labour taxation towards these tax bases would simultaneously generate revenue and tackle income and wealth inequality in European societies. While labour taxation will likely continue to play a crucial role, environmental taxation could also play a more prominent role both in generating some additional revenue (at least in the short to medium-term) and influence behaviour towards more sustainable economies and societies.

Designing corporate income taxation (CIT) systems that favour investment, notably in research and development (R&D), is difficult and research results about the effectiveness of such schemes are mixed. The use of CIT systems to support companies may have led to complexity that businesses have to navigate even in a single market. It has also led to harmful tax regimes and tax competition with an impact on tax revenues. The Code of Conduct Group has had success in curbing many harmful tax regimes but has its limitations. Recent EU initiatives also aim to reduce complexity and ensure a more levelled playing field and in doing so support investment, competitiveness and growth.

Corporate income taxation systems supporting investment, in particular in R&D, are not obvious to design. Nominal and effective corporate tax rates have been decreasing, showing a move towards reducing the tax burden on companies to support investment, though potentially also a sign of tax competition in this area. Research results on the effectiveness of tax support schemes (which can lead to a lower tax burden than that which would result from the application of the statutory rate), are, however, not homogeneous. Overall, research leans towards showing that such schemes can be effective for small and medium-sized enterprises (SMEs) but more research is needed. The plethora of corporate tax system designs has also increased complexity that businesses with cross-border activities must navigate and has sometimes led to excessive tax competition. The work of the Code of Conduct Group to fight harmful tax competition in the area of corporate income taxation shows that such multilateral informal, i.e. not legally binding, cooperation can be effective in curbing harmful tax regimes and leading to more harmonised approaches across Member States, especially when measured on a longer-term basis.

Recent legal initiatives in the area of corporate income taxation have been successfully implemented in the EU such as the Pillar II Directive to create more tax certainty and a more levelled playing field. Moreover, important follow-up work in this area that complements the Pillar II directive is in progress in the form of the Business in Europe: Framework for Income Taxation (BEFIT). This directive, once implemented, will set in place a single rule

book for the computation of the corporate tax-base in the EU, replacing the 27 corporate tax systems for the groups of companies the directive will addresses. It will thus lead to a harmonisation of CIT tax systems. Moreover, BEFIT will reduce red tape for SMEs and introduce a common approach for the currently fragmented transfer pricing rules in the EU. The Commission tabled proposals, like FASTER (Faster and Safer Relief of Excess Withholding Taxes), following DEBRA (Debt-Equity Bias Reduction Allowance) and UNSHELL (to prevent the use of shell companies for tax abuse) that aim to simplify tax rules, cut red tape, and curb aggressive tax planning and tax avoidance practices. By reducing tax compliance costs and increasing certainty, such initiatives can contribute to boosting investment and growth.

EU Member States have made progress in achieving EU climate targets and tackling environment-related challenges, but the EU is still far from achieving its 2050 vision. **Tax policy is one of the instruments to help achieving environmental objectives.**

Looking at selected Sustainable Development Goals (SDGs), some progress has been made (e.g. on sanitation or on affordable and clean energy) but there is still insufficient progress in others (e.g. water quality energy consumption and production and climate action). According to the European Environment Agency, between 1990 and 2020, greenhouse gas emissions have been reduced by 32%, exceeding the EU's targets by 12 percentage points [(220)]. The reduction of emissions differs between sectors, as energy supply, industry, transport and buildings sectors together account for 84% of all greenhouse gas emissions in the EU [(221)]. The progress made in combatting other environmental challenges shows that there much to be done in ameliorating water quality, landscape fragmentation, climate change on biodiversity and ecosystems and air pollution.

Environmental taxation can set a price on the social costs of economic activities that are not resource efficient or cause harm to the environment and therefore can alter decision-making and incentivise behavioural changes by companies and citizens. With a careful design that takes into account their distributional impact so that low-income households do not face greater financial impacts than high-income households, environmental taxation can help achieve the ambitious environmental targets.

Environmental taxation is still underused in many Member States. Environmental taxes (i.e. energy, transport, pollution and resource taxes) contributed only around 5.5% of total tax revenue in the EU-27 in 2021. The share of environmental taxes in the overall tax mix has been decreasing in 2021. Within the category environmental taxation (which includes energy, transport and pollution/resource taxes), the lion's share is taken up by energy taxation, followed by transport taxes and pollution and resource taxes across the EU-27.

Value added tax (VAT) is an important source of much needed tax revenues and the biggest share of consumption taxes. The digitalisation of VAT brings benefits in reducing compliance costs and in fighting tax evasion, but it also brings policy challenges.

In 2021, VAT accounted for about 18% of the revenue from all taxes and social contributions raised in EU-27. The design of VAT is based on consumption and not on income levels. In that sense VAT can be seen as having regressive effects as it hits a greater share of poor households' income.

The use of Information Technology (IT) facilitates the calculation of VAT while e-filling of tax returns can significantly reduce tax compliance costs faced by businesses. The adoption of e-filling systems can reduce the time to prepare and pay taxes by 3% in the year of adoption and can reach up to 27% in the third, fourth, fifth and upcoming years following the adoption. The introduction of Digital Reporting Requirements (DRRs) could lift the VAT revenue by 1.9 percent of the theoretical liability. Nevertheless, the adoption of DDRs has the risk of a proliferation of national solutions that are developed independently without regard for interoperability with systems in other EU Member States. The VAT in the Digital Age (ViDA) initiative proposed by the European

[(220)] https://www.eea.europa.eu/ims/total-greenhouse-gas-emission-trends

[(221)] https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2022/technical-background-document-to-the/file

Commission will harmonise the main features of the reporting for domestic transactions and this will be done on a transaction-by-transaction basis and in real time.

Tax evasion and avoidance in the area of direct and indirect taxation has led to billions of losses of tax revenues annually. There is a clear trend to use digitalisation to help improve tax compliance and curb tax abuse.

While there is a lot of heterogeneity in the performance of Member States when looking at indicators of tax administration's efficiency, there is a clear trend that digitalisation enhances the efficiency of tax administrations in terms of tax compliance and tax collection. Tax avoidance and evasion both in the field of direct taxation and in indirect taxation are estimated to lead to billions of Euros of losses in tax revenues on an annual basis. Tax cooperation across Member States and effective policies to tackle tax avoidance and evasion are therefore crucial instruments to fight tax abuse and to increase tax collection. The rise of crypto assets has challenged tax administration. In particular, it makes both traceability and valuation of income and wealth more challenging. In turn, this can hinder efficient tax collection across a number of different tax bases and give potential new ways for engaging in tax abuse and thus lower tax compliance. In this context, crypto-asset service providers will soon have an obligation to report transactions carried out on their platforms involving crypto-assets as a result of the proposed 'DAC8' amendment [(222)].

Finally, in the EU there are multiple forms of administrative cooperation among Member States' tax administration both in the field of direct taxes such as the DAC and in the field of indirect taxation such as Regulation 904 on VAT. These forms of cooperation enhance information exchange across EU tax administrations and thus tackle tax fraud, evasion and avoidance. Cooperation between Member States is also supported through the Tax Administration in the EU Summit (TADEUS), a strategic forum of tax administrations, which has worked as a hub for collaboration within the EU and has set up of projects group in specific areas such as voluntary tax compliance or the estimation of tax gaps. These aim to generate further and better knowledge on tax compliance which will be useful in designing better tax policies for the years to come.

[(222)] COM(2022) 707 final.

Annex 1: Top statutory tax rate on corporate income (including surcharges) 1995 – 2023

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium	40.2	40.2	40.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	29.6	29.6	25.0	25.0	25.0	25.0
Bulgaria	32.5	28.0	23.5	23.5	19.5	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Czechia	31.0	31.0	31.0	31.0	28.0	26.0	24.0	24.0	21.0	20.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Denmark	32.0	30.0	30.0	30.0	30.0	28.0	28.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	24.5	23.5	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Germany	51.6	38.3	38.3	39.6	38.3	38.4	38.4	38.4	29.4	29.4	29.5	29.6	29.6	29.6	29.7	29.8	29.8	29.9	29.9	29.9	29.8	29.8	29.8	29.9
Estonia	26.0	26.0	26.0	26.0	26.0	24.0	23.0	22.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Ireland	24.0	20.0	16.0	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Greece	40.0	37.5	35.0	35.0	35.0	32.0	29.0	25.0	35.0	35.0	24.0	20.0	20.0	26.0	26.0	29.0	29.0	29.0	29.0	28.0	24.0	24.0	22.0	22.0
Spain	35.0	35.0	35.0	35.0	35.0	35.0	35.0	32.5	30.0	30.0	30.0	30.0	30.0	30.0	30.0	28.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
France	37.8	36.4	35.4	35.4	35.4	35.0	34.4	34.4	34.4	34.4	34.4	36.1	36.1	38.0	38.0	38.0	34.4	44.4	34.4	34.4	32.0	28.4	25.8	25.8
Croatia	35.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Italy	41.3	40.3	40.3	38.3	37.3	37.3	37.3	37.3	31.4	31.4	31.4	31.4	31.3	31.3	31.3	31.3	31.3	27.8	27.8	27.8	27.8	27.8	27.8	27.8
Cyprus	29.0	28.0	28.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Latvia	25.0	25.0	22.0	19.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	20.0	20.0
Lithuania	24.0	24.0	15.0	15.0	15.0	15.0	19.0	18.0	15.0	20.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Luxembourg	37.5	37.5	30.4	30.4	30.4	30.4	29.6	29.6	29.6	28.6	28.6	28.8	28.8	29.2	29.2	29.2	29.2	27.1	26.0	24.9	24.9	24.9	24.9	24.9
Hungary	19.6	19.6	19.6	19.6	17.6	17.5	17.5	21.3	21.3	21.3	20.6	20.6	20.6	20.6	20.6	20.6	20.6	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Malta	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Netherlands	35.0	35.0	34.5	34.5	34.5	31.5	29.6	25.5	25.5	25.5	25.5	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.8	25.8
Austria	34.0	34.0	34.0	34.0	34.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	24.0
Poland	30.0	28.0	28.0	27.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Portugal	35.2	35.2	33.0	33.0	27.5	27.5	27.5	26.5	26.5	26.5	29.0	29.0	31.5	31.5	31.5	29.5	29.5	29.5	31.5	31.5	31.5	31.5	31.5	31.5
Romania	25.0	25.0	25.0	25.0	25.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Slovenia	25.0	25.0	25.0	25.0	25.0	25.0	25.0	23.0	22.0	21.0	20.0	20.0	18.0	17.0	17.0	17.0	17.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Slovakia	29.0	29.0	25.0	25.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	23.0	22.0	22.0	22.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Finland	29.0	29.0	29.0	29.0	29.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	24.5	24.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Sweden	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	26.3	26.3	26.3	26.3	22.0	22.0	22.0	22.0	22.0	22.0	21.4	21.4	20.6	20.6	20.6
Iceland	30.0	30.0	18.0	18.0	18.0	18.0	18.0	18.0	15.0	15.0	18.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Norway	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	27.0	27.0	25.0	24.0	23.0	22.0	22.0	22.0	22.0	22.0
Simple averages																								
EU-27	32.1	30.4	29.0	27.8	26.5	25.1	24.9	24.1	23.6	23.6	23.0	22.9	22.9	23.2	23.0	22.9	22.6	22.4	22.0	21.9	21.5	21.4	21.2	21.2
EA-19	33.3	32.1	30.4	28.7	27.8	26.7	26.5	25.7	25.1	25.2	24.5	24.3	24.3	25.0	24.7	24.6	24.3	24.6	24.1	24.0	23.4	23.2	23.0	23.0

Notes:

1. The 'basic' (non-targeted) top rate is presented here; some countries apply small-profits rates or special rates, e.g. in cases where the investment is financed through issuing new equity, or alternative rates for different sectors. Such targeted tax rates can be substantially lower than the effective top rate.

2. Existing surcharges and local taxes are included. When they are targeted at large enterprises or when their level varies, the top rate is used in the table (see country notes below).

Country notes:

Belgium. 3 % surcharge from 1993 to 2017, reduced to 2 % in 2018-2019 and abolished from 2020 onwards. Notional interest deduction (allowance for corporate equity (ACE)) on the stock of equity from 2006 to 2017, reducing the effective tax rate by several percentage points, depending on the difference between the rate of return and the ACE rate. Notional interest deduction restricted to the increase of equity from 2018 onwards.

Cyprus. Public corporate bodies were subject to a higher rate of 25 % (2003–2008). The 5 % surcharge levied in 2003 and 2004 on all companies (including public bodies) with a taxable income exceeding EUR 1.7 million is not included. In 2013, under the macrofinancial adjustment programme and prior to the first disbursement of assistance, the CIT rate was increased to 12.5 % (with effect from 1 January 2013).

France. Including 3.3 % additional social surcharge for large companies; 36.1 % (2011–2012) and 38.0 % (2013–2015) including the temporary surcharge (contribution exceptionnelle) for very large companies (turnover of more than EUR 250 million). In 2017, there were two one-off surcharges for very large companies that amounted to 15 % of the CIT owed for companies with a turnover of between EUR 1 billion and EUR 3 billion and 30 % of the CIT owed for companies with a turnover of more than EUR 3 billion. In 2019, the top CIT rate started to decrease from 33.33 % to 31 %, which leads to a combined rate of 32.0 %, including the 3.3 % additional social surcharge for large companies. Since 2014, companies have been able to benefit from a tax credit equal to 6 % of the payroll for (most) employees. The local business tax (contribution économique territoriale) is not included (capped at 3 % of added value).

Germany. The rate includes the solidarity surcharge of 5.5 % and the regional trade tax (Gewerbesteuer) on weighted average. From 1995 to 2000, the rates for Germany referred only to retained profits. For distributed profits, lower rates applied. Until 2007, the trade tax was an allowable expense for the purpose of calculating the income on which corporation tax is payable.

Estonia. CIT is applied only on distributed profits, not earned profits.

Greece. The rate includes a special contribution introduced in 2009 (2008 income) on companies with a net income of more than EUR 5 million. The contribution is levied at progressive rates, with the marginal rate reaching 10 %. In 2010 (2009 income) the contribution applied to income above EUR 100 000, with the top rate being 10 % (for an income of more than EUR 5 million).

Croatia. From 1 January 2017, the basic tax rate was reduced from 20 % to 18 %, and to 12 % for taxpayers whose annual revenues are below HRK 3 million. From 1 January 2020, the basic tax rate of 18 % applies for taxpayers whose annual revenues are higher HRK 7,5 million and of 12 % for taxpayers whose annual revenues are below HRK 7.5 million. From 1 January 2021, tax rate for taxpayers whose annual revenues are below HRK 7,5 million was reduced from 12 % to 10 %.

Spain. During the whole period of the table, entities involved in the exploration, research, exploitation and underground storage of hydrocarbon deposits have been subject to an increased tax rate, which is 5 pp higher than the standard tax rate. Since 2015, a 30 % nominal tax rate has been applied to financial entities.

Hungary. Including the local business tax of a maximum of 2 % that applies on the adjusted gross operating profit (turnover minus certain costs) and is deductible from the CIT. In the typical case of a local tax of 2 %, the total tax paid is 2 + (9 × 0.98) = 10.82 % (for any additional unit of profit, as tax bases for CIT and local tax differ). For energy providers and other utilities, a CIT rate of aproximately 40 % applies. An innovation tax of 0.3 % is also due on the same tax base as the local business tax, while micro and small enterprises are exempted from paying (not included in the calculation).

Ireland. 25 % for non-trading income, gains and profits from mining petroleum and land-dealing activities. Until 2003, Ireland applied a 10 % CIT rate to qualifying manufacturing and services companies.

Italy. Since 1998, the rates for Italy have included imposta regionale sulle attività produttive (IRAP) (rate 3.90 %), a local tax levied on a broader tax base than corporate income. As of 2012, 10 % of IRAP is deductible from the CIT tax base (the figure in the table takes this deduction into account). The IRAP rate may vary by up to 0.92 pp depending on the location. Since 2012, an ACE has been in force, reducing the effective tax rate (see also the note above on Belgium). ACE has been temporarily strengthened in 2021

Latvia. Since 2018, CIT has been applied only on distributed profits, not earned profits.

Lithuania. A social tax (applied as a surcharge) was introduced in 2006 and 2007 (at 4 % and 3 % respectively). Since 2010, companies with up to 10 employees and a taxable income not exceeding LTL 500 000 (approximately EUR 144 810) have benefited from a reduced tax rate of 5 %. In 2012, the threshold was increased to LTL 1 000 000 (about EUR 289 603), and in 2015 to EUR 300 000.

Luxembourg. Basic local tax (municipal business tax) is 3 %, to be multiplied by a municipal factor ranging from 2 to 3.5 in 2021. The rate in the table is for Luxembourg City. In April 2019, after the approval of the budget, CIT was reduced from 18 % to 17 %, retroactive to 1 January, which is reflected in the table above.

Portugal. Since 2007, the rate for Portugal has included the maximum 1.5 % rate of a municipal surcharge. Since 1 January 2014, the state tax has been 3 % on taxable profits between EUR 1.5 million and EUR 7.5 million, 5 % on taxable profits between EUR 7.5 million and EUR 35 million, and 9 % on profits exceeding EUR 35 million.

Slovakia. CIT was reduced to 21 % in 2017, and minimum tax licences were abolished in 2018.

Norway. A corporate tax rate for the financial sector was established at 25 % for 2018, and this level was maintained for 2019 and 2020.

Annex 2: Effective average tax rates, large corporations in non-financial sector (computed at corporate level, for average asset composition and funding sources), %

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Difference 2012-2022	Ranking 2022
EU-27	21.3	20.8	20.6	20.7	21.0	21.1	21.0	20.9	19.8	19.8	19.4	19.2	19.0	18.8	-1.8	
EA-19	22.9	22.2	21.9	22.1	22.8	22.8	22.7	22.6	21.6	21.6	21.2	20.9	20.6	20.4	-1.7	
Belgium	24.7	25.3	25.9	26.3	26.5	26.7	27.8	28.3	29.3	24.9	25.0	23.2	23.2	23.1	-3.2	7
Bulgaria	8.8	8.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	0.0	27
Czechia	17.5	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	17.0	17.0	0.3	17
Denmark	22.6	22.6	22.6	22.0	22.0	22.2	21.3	20.0	20.1	19.8	19.8	19.8	19.8	19.8	-2.2	12
Germany	28.0	28.0	28.2	28.2	28.2	28.2	28.2	28.2	28.8	28.9	28.9	28.9	28.9	28.8	0.6	2
Estonia	16.5	16.5	16.5	16.5	16.5	16.5	15.7	15.7	15.7	15.7	13.9	12.1	10.2	10.2	-6.3	26
Ireland	14.4	14.4	14.4	14.4	14.4	14.4	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	-0.3	22
Greece	30.5	21.0	17.5	17.5	24.1	24.5	27.5	27.6	27.6	27.6	22.9	22.9	21.1	21.1	3.6	11
Spain	32.8	32.8	31.9	32.4	32.9	32.6	31.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	-3.4	1
France	34.7	32.8	32.8	34.2	34.7	38.3	38.3	38.4	33.4	33.4	33.5	31.5	28.1	26.0	-8.2	3
Croatia	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	14.8	14.8	14.8	14.8	14.8	14.8	-1.7	20
Italy	27.5	27.5	24.9	25.1	25.1	24.2	23.8	23.6	23.7	23.8	23.8	23.9	23.9	23.9	-1.2	4
Cyprus	10.6	11.6	11.6	11.9	15.2	15.2	12.7	13.1	12.5	13.0	13.4	13.3	13.4	13.3	1.4	23
Latvia	13.8	11.8	12.2	12.4	12.1	14.3	14.3	14.3	14.3	16.7	16.7	16.7	16.7	16.7	4.3	18
Lithuania	16.8	12.7	12.7	12.7	13.6	13.6	13.6	13.6	13.6	13.6	12.7	12.7	12.7	12.7	0.0	24
Luxembourg	25.0	25.0	24.9	24.9	25.5	25.5	25.5	25.5	23.7	22.8	21.8	21.8	21.8	21.8	-3.1	9
Hungary	19.5	19.1	19.3	19.3	19.3	19.3	19.3	19.3	11.1	11.1	11.1	11.1	11.1	11.1	-8.2	25
Malta	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	24.3	24.4	25.3	25.1	25.2	23.3	-8.9	5
Netherlands	22.2	22.2	21.8	22.6	21.6	22.6	22.5	22.5	22.5	22.5	22.5	22.5	22.5	23.2	0.6	6
Austria	22.7	22.7	23.0	23.0	23.0	23.0	23.0	23.1	23.1	23.1	23.1	23.1	23.1	23.1	0.1	8
Poland	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.0	16.0	16.8	15.9	-1.6	19
Portugal	23.7	26.2	26.2	28.4	28.4	28.4	26.6	26.6	20.0	21.4	21.4	21.4	21.4	21.4	-7.0	10
Romania	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.7	14.7	14.7	14.7	14.7	14.7	14.7	-0.1	21
Slovenia	19.1	18.2	18.2	16.4	15.5	15.5	15.5	15.5	17.3	17.3	17.3	17.3	17.3	17.3	0.9	16
Slovakia	16.8	16.8	16.8	16.8	20.3	19.4	19.6	19.6	18.7	18.7	18.7	18.7	18.7	18.7	1.9	14
Finland	23.6	23.9	24.7	23.3	22.6	18.6	18.9	19.1	19.5	19.6	19.6	19.6	19.6	19.6	-3.7	13
Sweden	23.2	23.2	23.2	23.2	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	18.7	18.7	-4.5	15

Source and methodology: The values presented are the Effective Average Tax Rates, for large corporations in non-financial sector, computed at corporate level, for average asset composition and funding sources, using the Devereux/Griffith methodology.

2023 data: ZEW Press Release 27.02.2023 "Germany risks losing its attractiveness in international tax competitions"

Note: EU-27 and EA-19 figures are simple averages.

Annex 3: Standard and reduced VAT rates in EU Member States

	VAT rate	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium	Standard	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Reduced	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
Bulgaria	Standard	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Reduced	-	-	-	-	-	7	7	7	7	9	9	9	9	9	9	9	9	9	9	9	9	9
Czechia	Standard	22	22	19	19	19	19	19	19	20	20	20	21	21	21	21	21	21	21	21	21	21	21
	Reduced	5	5	5	5	5	5	9	9	10	10	14	15	15	10/15	10/15	10/15	10/15	10/15	10/15	10/15	10/15	10/15
Denmark	Standard	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Reduced	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Standard	16	16	16	16	16	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	Reduced	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Estonia	Standard	18	18	18	18	18	18	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Reduced	5	5	5	5	5	5	5	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9/5
Ireland	Standard	21	21	21	21	21	21	21	22	21	21	23	23	23	23	23	23	23	23	23	23	23	23
	Reduced	12.5 (4.3)	13.5 (4.3)	13.5 (4.4)	13.5 (4.8)	13.5 (4.8)	13.5 (4.8)	13.5 (4.8)	13.5 (4.8)	13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5 (4.8)	9/13.5
Greece	Standard	18	18	18	19	19	19	19	19	23	23	23	23	23	23	23	24	24	24	24	24	24	24
	Reduced	8 (4)	8 (4)	8 (4)	9 (4.5)	9 (4.5)	9 (4.5)	9 (4.5)	9 (4.5)	5.5/11	6.5/13	6.5/13	6.5/13	6.5/13	6.5/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13
Spain	Standard	16	16	16	16	16	16	16	16	18	18	18	21	21	21	21	21	21	21	21	21	21	21
	Reduced	7 (4)	7 (4)	7 (4)	7 (4)	7 (4)	7 (4)	7 (4)	7 (4)	8 (4)	8 (4)	8 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)
France	Standard	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Reduced	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5 (2.1)	5.5/7 (2.1)	5.5/7 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)	5.5/10 (2.1)
Croatia	Standard	22	22	22	22	22	22	22	22	23	23	25	25	25	25	25	25	25	25	25	25	25	25
	Reduced	- (0)	- (0)	- (0)	- (0)	10 (0)	10 (0)	10 (0)	10 (0)	10 (0)	10 (0)	10 (0)	5/10	5/13	5/13	5/13	5/13	5/13	5/13	5/13	5/13	5/13	5/13 (0)
Italy	Standard	20	20	20	20	20	20	20	20	20	20	21	21	22	22	22	22	22	22	22	22	22	22
	Reduced	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	10 (4)	5/10 (4)	5/10 (4)	5/10 (4)	5/10 (4)	5/10 (4)	5/10 (4)	5/10 (4)	5/10 (4)
Cyprus	Standard	13	15	15	15	15	15	15	15	15	15	17	18	19	19	19	19	19	19	19	19	19	19
	Reduced	5	5	5	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9
Latvia	Standard	18	18	18	18	18	18	18	21	21	22	22	21	21	21	21	21	21	21	21	21	21	21
	Reduced	-	9	5	5	5	5	5	10	10	12	12	12	12	12	12	12	5/12	5/12	5/12	5/12	5/12	5/12
Lithuania	Standard	18	18	18	18	18	18	18	19	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Reduced	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9
Luxembourg	Standard	15	15	15	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17	17	17	16
	Reduced	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	6/12 (3)	8 (3)	8 (3)	8 (3)	8 (3)	8 (3)	8 (3)	8 (3)	8 (3)	3/7
Hungary	Standard	25	25	25	25	20	20	20	25	25	25	27	27	27	27	27	27	27	27	27	27	27	27
	Reduced	12 (0)	12 (0)	5/15	5/15	5/15	5	5	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18	5/18
Malta	Standard	15	15	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Reduced	5	5	5	5	5	5	5	5	5	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7	5/7
Netherlands	Standard	19	19	19	19	19	19	19	19	19	19	19	21	21	21	21	21	21	21	21	21	21	21
	Reduced	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	9	9	9	9	9
Austria	Standard	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Reduced	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10/13	10/13	10/13	10/13	10/13	10/13	10/13	10/13
Poland	Standard	22	22	22	22	22	22	22	22	22	23	23	23	23	23	23	23	23	23	23	23	23	23
	Reduced	7 (3)	7 (3)	7 (3)	7 (3)	7 (3)	7 (3)	7 (3)	7 (3)	7 (3)	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Portugal	Standard	19	19	19	21	21	21	20	20	21	23	23	23	23	23	23	23	23	23	23	23	23	23
	Reduced	5/12	5/12	5/12	5/12	5/12	5/12	5/12	5/12	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13	6/13
Romania	Standard	19	19	19	19	19	19	19	19	24	24	24	24	24	24	20	19	19	19	19	19	19	19
	Reduced	-	-	9	9	9	9	9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9
Slovenia	Standard	20	20	20	20	20	20	20	20	20	20	20	22	22	22	22	22	22	22	22	22	22	22
	Reduced	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	9.5	9.5	9.5	9.5	9.5	9.5	5/9.5	5/9.5	5/9.5	5/9.5	5/9.5
Slovakia	Standard	23	20	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20	20	20	20	20	20
	Reduced	10	14	-	-	-	10	10	10	6/10	10	10	10	10	10	10	10	10	10	10	10	10	10
Finland	Standard	22	22	22	22	22	22	22	22	23	23	23	24	24	24	24	24	24	24	24	24	24	24
	Reduced	8/17	8/17	8/17	8/17	8/17	8/17	8/17	8/17	9/13	9/13	9/13	10/14	10/14	10/14	10/14	10/14	10/14	10/14	10/14	10/14	10/14	10/14
Sweden	Standard	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Reduced	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
Simple averages																							
EU-27	Standard	19.7	19.7	19.6	19.7	19.5	19.7	19.6	20.0	20.7	20.8	21.2	21.5	21.6	21.7	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
EA-19	Standard	18.5	18.5	18.6	18.7	18.7	18.9	18.8	19.2	19.7	19.9	20.1	20.6	20.7	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8

Source: European Commission, DG Taxation and Customs Union, Taxes in Europe database and IBFD data.

Notes:

Rates given in the table are those applicable (for more than 6 month in the year considered, or) on the 1st July of that year. When change of rates occurred during the year (not on 1st January) the exact date is available in the notes.

Super-reduced rates (below 5 %) are shown in brackets. 'Parking rates' are not included in this table, as they are "historic rates" below 15 % negotiated by member states, and an exception to the EU directive (only 5 member states retain them).

Full information on VAT rates is available at

Bulgaria: Reduced rate increased to 9 % on 1.04.2011

Czechia: Standard rate decreased to 19 % on 1.05.2004

Germany: The standard VAT rate decreased from 19 % to 16 % from 1 July to 31 December 2020 and the reduced VAT rate from 7 % to 5 % 1 July to 31 December 2020

Estonia: Standard rate increased to 20 % on 1.07.2009. Reduced rate 5 % implemented in August 2022.

Ireland: Ireland: The (super-) reduced rate was 4 % on 01.03.1999. It increased to 4.2 % on 01.03.2000.The rate further increased to 4.3 % on 01.01.2001 and it increased to 4.4 % on 01.01.2004.The rate increased to 4.8 % on 01.01.2005 and remains at this rate at present.

Standard rate increased to 21 % on 01.03.2002. Standard rate increased further to 21.5 % on 01.12.2008. Standard rate decreased to 21% on 01.01.2010. Standard rate increased to 23 % on 01.01.2012 and remains at this rate. An additional reduced rate of 9 % was introduced on 01.07.2011. The standard rate of VAT is temporarily reduced from 23 % to 21 % from 1 September 2020 to 28 February 2021.

Greece: All rates were increased on 01.04.2005. A further general increase occurred on 15/03/2010 (to 5 % or 10 % and 21 %, followed the same year by the increase to 5.5 % or 11 %and 23 %, which occurred on July 1st. Reduced rate increased to 13 % and super reduced rate to 6.5 % on 1.1.2011. Super reduced rate is lowered to 6 % as of 20.07.2015. Standard VAT rate raised from 23 to 24 %, effective as of 1.6.2016.

Spain: The 2010 increase (reduced rate to 8 % and standard rate to 18 %) occurred on 1st July. Both rates were increased further on 01.09.2012 (to 10 % and 21 %).

France: Before 01.04.2000, standard rate was equal to 20.6 %.

Croatia: Standard rate increased to 23 % on 01.08.2009. A further increase - to 25 % - took place on 01.03.2012. The reduced VAT rate of 0 % was introduced from October 1, 2022 and applies on the supply and installation of solar panels.

Italy: Standard rate increased to 21 % on 17.09.2011. A further increase - to 22 % - took place on 01.10.2013. From 1.1.2016 introduction of 5 % reduced rate for medical, welfare and educational services given by social cooperatives. In 2022, a decrease in VAT rate from 22 % to 10 % applies for feminine hygiene products.

Cyprus: The reduced rate of 5 % was introduced on 01.07.2000 together with the increase of the standard rate from 8 % to 10 %. Standard rate increased to 13 % on 01.07.2002. The second reduced rate of 8 % was introduced on 01.08.2005.

Standard rate increased to 17 % on 01.03.2012, and further increased to 18 % on 14.01.2013. On 13.01.2014 the second reduced rate increased to 9 % and the standard rate increased to 19 %.

Latvia: Reduced rate decreased to 5 % on 01.05.2004. Standard rate decreased to 21 % on 01.07.2012.

Lithuania: Reduced rate (5 %) introduced on 01.05.2000. Standard rate increased to 19 % on 01.01.2009 and further increased to 21 % on 01.09.2009.

Hungary: The second reduced rate (15 %) was abolished on 01.09.2006. Reintroduced on 01.07.2009 at 18 % together with the increased of the standard rate to 25 %.

Netherlands: Standard rate increased to 21 % on 1.10.2012

Poland: The (super-)reduced rate of 3 % was introduced on 04.09.2000.

Portugal: Standard rate increased to 19 % on 05.06.2002. Standard rate increased further to 21 % on 01.07.2005 and then decreased to 20 % on 01.07.2008. All rates increased by 1 % on 01/07/2010.

Romania: The second reduced rate (5 %) introduced on 01.12.2008. Standard rate increased to 24 % on 01.07.2010. Standard rate decreased to 20 % on 01.01.2016. Standard rate decreased from 20 % to 19 % on 01.01.2017.

Slovenia: Reduced rate increased to 9.5 % and the standard rate increased to 22 % on 1.07.2013

Slovakia: The second reduced rate (6 %) introduced on 01.05.2010. Abolished on 01.01.2011 together with the standard rate increase to 20 %.

Finland: Second reduced rate decreased to 12 % on 1.10.2009. Second reduced rate subsequently increased to 13 % on 01.07.2010 together with the increase of the first reduced rate to 9 % and the increase of the standard rate to 23 %.

United Kingdom: Standard rate increased to 20 % on 04.01.2011

Glossary

Accelerated depreciation is the deprecation used for accounting or for income tax purposes that enables greater depreciation expenses in the first years of the life of a fixed asset.

Aggressive tax planning consists of taxpayers reducing their tax liability through arrangements that may be legal but are in contradiction with the intent of the law.

Base Erosion and Profit Shifting (BEPS) are tax avoidance strategies that exploit gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations.

Carbon Border Adjustment Mechanism (CBAM) is a climate measure to support climate mitigation by preventing carbon leakage (i.e. industries transferring polluting production to other countries with less stringent climate policies). It equalises the price of carbon between domestic products and imports, for a selected number of products.

Corporate debt bias refers to tax provisions favouring corporate debt over equity finance.

Direct taxes are defined as current taxes on income, wealth and capital (including taxes such as inheritance, property or gift taxes). In the subcategory of income taxes, you can further distinguish between personal income tax (PIT), corporate income tax (CIT), and tax on capital gains.

Effective average tax rate (EATR) is calculated based on the nominal tax rate and the definition of the tax base.

Effective marginal tax rate (EMTR) shows what part of a change in earnings is taxed away by the combined operation of taxes, social security contributions (SSCs), and any withdrawal of earnings related social transfers.

Environmental taxes include taxes on energy, transport, pollution and resources (excluding VAT, which is levied on all products). **Energy taxes** include taxes on energy products and electricity used for transport (e.g. petrol and diesel) and stationary purposes (e.g. fuel oils, natural gas, coal and electricity). **Transport taxes** include taxes on the ownership and use of motor vehicles, and taxes on other transport equipment such as planes and on related transport services, e.g. duties on charter or scheduled flights. **Pollution taxes** include taxes on measured or estimated emissions to air (except taxes on CO_2 emissions) and water, on the management of solid waste and on noise. **Resource taxes** include any tax linked to the extraction or use of a natural resource (e.g. taxes on licence fees paid for hunting and fishing rights)[223].

European Semester is the European Union's framework for the coordination and surveillance of EU Member States' economic and social policies. As part of the process, the European Commission proposes every year country-specific recommendations (CSRs) that aim to address the key challenges in EU Member States. The CSRs are then endorsed by the European Council and adopted by the Economic and Financial Affairs Council (ECOFIN). Member States should incorporate this policy guidance into their annual budgets, national legislation and policy plans.

Excise duties are indirect taxes on the sale or use of specific products, such as alcohol, tobacco and energy.

[223] This definition is based on (European Commission, 2013).

Fintech is technologically-enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services[224].

Forward-looking effective tax rates (ETRs) are synthetic tax policy indicators measuring the tax burden of a prospective, hypothetical investment project.

Gini coefficient (also known as the Gini index) measures the inequality among values of frequency distribution, such as levels of income. A Gini coefficient of 1 reflects maximal inequality while 0 reflects perfect equality.

Health taxes are levied on products that have a negative public health impact, for example tobacco, alcohol and sugar-sweetened beverages. These taxes are meant to save lives and prevent disease, while in parallel advancing health equity and mobilising revenue for the general budget[225].

Inactivity trap - or the implicit tax on retuning to work for inactive persons**-** measures the financial incentive for an inactive person not entitled to unemployment benefits (but potentially receiving other benefits, such as social assistance) to move from inactivity to paid employment. It is defined by the rate at which the additional gross income of this transition is taxed.

Indirect taxes are taxes levied on a material or legal event of an accidental or temporary nature and on a (legal or natural) person that can often be an intermediate and not the person responsible for the event (hence the indirect character of the tax), e.g. VAT, import levies, excise duties, other taxes on production.

Low-wage trap measures the financial incentive to increase a low level of earnings due to an increase in working hours or work productivity. It is defined as the rate at which the additional gross income of such a move is taxed.

Offshore financial centre (OFC) is defined as a jurisdiction that provides financial services to non-residents on a scale that is incommensurate with the size and the financing of its domestic economy. But it is particularly known as jurisdiction that attracts financial activities from abroad through low taxation and lenient regulation (thus offshore refers to the fact that the jurisdiction's largest users are non-resident).

Patent box is a term used to describe tax regimes that allow for lower tax rate on profits made from intellectual property assets. This is often used as an incentive for companies' research and development activities.

Pigouvian tax is a tax named after the British economist Arthur Pigou, that is intended to correct negative market externalities (i.e. indirect costs from consumption, production, and investment decisions that affect third parties not directly involved). Negative externalities can for example be related to the environmental consequences of production and consumption.

Recovery and Resilience Facility (RRF) is a temporary instrument that enables the European Commission to raise funds by borrowing on the capital markets (issuing bonds on behalf of the EU) and make them available to its Member States. Member States use the funds provided by the RRF to implement reforms and investment to make their economies and societies more sustainable, resilient and prepared for the green and digital transitions.

Second earner defines a person living in a household where the spouse/partner's earnings represent the household's main income. If the second earner is working, it is assumed to earn less than the primary earner.

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[224] This definition is based on: https://www.eba.europa.eu/financial-innovation-and-fintech/glossary-for-financial-innovation

[225] This definition is based on: https://www.who.int/health-topics/health-taxes#tab=tab_1

Shell entities are entities that do not perform any actual economic activity, even if they are presumably engaged with one, and that can be misused for tax avoidance or evasion purposes[226].

Social security contributions are compulsory payments made by employers and employees into social insurance schemes that cover pensions, healthcare as well as other welfare provisions.

Special Purpose Entities (SPEs) are legal entities that are formally registered with a national authority and subject to the legal and tax obligations of the country in which they are resident. They are ultimately controlled by a non-resident group and usually they have very few employees and little (or no) productive capacity or physical presence in the host country. Most of their assets and liabilities represent investments in or from other countries and their core business consists of holding/financing non-resident companies on behalf of their enterprise group, as well as channelling funds between affiliates[227].

Subsidies are financial assistance provided by the government to organisations or companies as part of an incentive to further economic and social policy.

Tax allowance is the amount of money that can be deducted from taxpayer's income or a company's profit before tax owned is calculated.

Tax avoidance is the arrangement of a taxpayer's affairs in a way that is intended to reduce his/her tax liability and that (although the arrangement may be strictly legal) is usually in contradiction with the intent of the law.

Tax credit is a sum of money that taxpayers can deduct from the taxes they owe.

Tax evasion generally involves illegal arrangements whereby liability to tax is hidden or ignored, i.e. the taxpayer pays less tax than they are legally obliged to pay by hiding income or information from the tax authorities.

Tax fraud is a form of deliberate evasion of tax that is generally punishable under criminal law. It includes situations in which deliberately false statements are submitted or fake documents are produced.

Tax incentives are measures employed by the government to encourage activities in certain domains of the economy, by offering deductions, exclusions or exemptions from tax liability. Tax incentives are selective in nature in the sense that they give preferential treatment to economic activities which are in line with the objectives of the government.

Tax relief refers to any program or policy designed by the government to help individuals and businesses lower their tax burdens or settle their tax-related debt.

Tax treaty shopping is a method for companies to set up artificial structures to gain access to the most beneficial tax treatment under various tax agreements between countries.

Tax wedge on labour is the difference between wage costs to the employer of a worker and the amount of net income that the worker receives, expressed as a proportion of the overall wage costs. The difference arises as a result of taxes, including PIT and compulsory SSC.

Transfer pricing concerns the prices charged between associated enterprises established in different countries for their inter-company transactions, i.e. transfer of goods and services. Since the prices are set by non

[226] This definition is based on COM(2021) 565 final.

[227] This definition is based on: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Foreign_direct_investment_-_intensity_ratios&oldid=542738

independent associates within a multi-national enterprise, it may be that the prices do not reflect an independent market price.

VAT gap is the difference between VAT revenue actually collected by the tax administration and the theoretical net VAT liability for the economy as a whole, under the country's current VAT system. The theoretical VAT liability is estimated by identifying the expenditure categories that give rise to irrecoverable VAT and then applying the appropriate VAT rate to these to estimate the expenditure in each category.

Venture capital is a subset of private equity taking the form of investment in unquoted companies by firms who, acting as principals, manage individual, institutional or in-house money. In the EU, the main financing stages are early-stage (covering seed and start-up financing) and expansion.

Withholding tax is a tax on income imposed at source. A third party is charged with deducting the tax from certain kinds of payment and remitting that amount to the tax administration. Withholding taxes are widely used for dividends, interest, royalties and similar tax payments.

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