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Tax Expenditures in the EU: Recent Trends and New Policy Challenges[1]

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Abstract

Tax expenditures are tax relief measures targeted at some socially desirable activities or specific groups of taxpayers. This paper reviews issues related to tax expenditures in the EU and presents some stylised facts related to tax expenditures in personal income taxation (PIT), value-added taxation (VAT), and corporate taxation. Like

[1] The results presented here are based on EUROMOD model, software version I6.2. Having been originally maintained, developed and managed by the Institute for Social and Economic Research (ISER), since 2021 EUROMOD is maintained, developed and managed by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and national teams from the EU countries. We are indebted to the many people who have contributed to the development of EUROMOD. We make use of microdata from the EU Statistics on Incomes and Living Conditions (EU-SILC) made available by Eurostat. Depending on the country, these are drawn either from the 2020 or the 2021 EU-SILC. The results and their interpretation are the authors' responsibility.

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spending programmes, tax expenditures can be used for allocative or redistributive purposes. At the same time, tax expenditures can make the tax system more complex, less transparent, may have adverse distributional impacts, and they can result in substantial revenue loss. They may also, in some cases, result in harmful tax competition among Member States. The tax-benefit microsimulation model EUROMOD is employed to simulate the fiscal and distributional impacts of two specific sets of tax expenditures. Tax expenditures in PIT that are covered by this study are estimated to represent about 16% of tax revenues from PIT in the EU27 (corresponding to about 1.2% of GDP on average). Reduced VAT rates represent a similar magnitude at about 16% of VAT paid by households in the EU27 (corresponding to about 1.1% of GDP on average). Regular reporting, monitoring and assessment of tax expenditures is crucial as it allows Member States to review and revise their tax policies. Eliminating or reducing (ineffective or cost-ineffective) tax expenditures can, in some cases, create crucial fiscal space that allows for stronger fiscal consolidation, a revenue-neutral reduction in statutory tax rates, or growth-friendly tax shifts.

JEL codes: H23, H24, H25

Keywords: tax expenditure, tax policy, personal income tax, VAT, corporate income tax, microsimulation

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1. INTRODUCTION

Tax expenditures are tax relief measures targeted at some socially desirable activities or specific groups of taxpayers. They are used to boost the take-home pay of employees to improve work incentives, support firms' and households' investments into research and innovation, clean energy, clean mobility, and other areas important for sustainable growth. In the context of the need to boost long-term productivity, the European Commission's (2023a) Annual Sustainable Growth Survey (ASGS) called for decisive policy action to support private funding for research and innovation through properly designed tax incentives. While they can contribute to achieving long-term policy goals, tax expenditures make the tax system more complex, less transparent, may have adverse distributional impacts, and can result in substantial revenue loss (Kalyva et al., 2014). As a consequence, tax expenditures need to be regularly reviewed and assessed and may need to be adjusted or cut if ineffective or cost-ineffective, in order to create fiscal space and improve the overall efficiency of the tax system.[2]

Reforms related to tax expenditures can play a role both in addressing long-term economic challenges and in accomplishing fiscal consolidation goals. The tax system affects the incentives of companies and workers and can affect the allocation of economic resources in directions that are beneficial from a social point of view. Well-designed tax expenditures can play an active role in supporting households and firms to meet the challenges related to the green and digital transitions and demographic trends. Boosting private growth-enhancing investment is key for EU economic policy since, as working-age population is projected to shrink in the coming decades, future economic growth needs to be driven by productivity and capital deepening.

Tax expenditures may clash with the objective of reducing government deficits when implying a loss of revenues. Fiscal policy has played an important role in weathering economic turbulences in recent years. During the pandemic, unprecedented support measures were deployed by Member States in 2020 and 2021. As a result, government debt increased, peaking in 2020, at 90% of GDP in the EU (97% in the euro area). In 2022, facing an energy crisis driven by Russia's war of aggression on Ukraine, national governments relied on support measures to cushion the impact of the high energy prices for households and firms (European Commission, 2023b; Amores et al., 2023). As the general escape clause under the Stability and Growth Pact expired at the end of 2023, the ASGS called, in November 2023, for coordinated and prudent fiscal policies to "keep debt at prudent levels or put debt ratios on a plausibly downward path", while providing sufficient space for investments and supporting long-term growth (European Commission, 2023a).

Tax expenditures have received attention in EU legislation and surveillance. Besides their effect on the budget balance and hence the role they play in fiscal policy and fiscal surveillance, tax expenditures are referred to in EU legislation on budgetary frameworks, and in multilateral surveillance of economic policies (see Box 1 for more details).

This paper reviews issues related to tax expenditures in the EU and presents some stylised facts related to tax expenditures in personal, value-added, and corporate taxation. First, Section 2 defines tax expenditures and presents conceptual issues related to their assessment and comparability across countries. The following three sections focus on issues related to tax expenditures in three areas: personal income taxation (PIT, Section 3), value-added taxation (VAT, Section 4), and corporate income taxation (CIT, Section 5), with a focus on incentives for investment in research and development. The tax-benefit microsimulation model EUROMOD is employed to simulate the fiscal and distributional impacts of two specific sets of tax expenditures: those in PIT that can be modelled in EUROMOD in Section 3 and reduced VAT rates in Section 4.[3] Finally, Section 6 draws conclusions for policy.

[2] The ASGS calls on Member States to "wind down crisis-related energy support measures as soon as possible and use the resulting savings to reduce deficits". Some of these measures are tax expenditures, e.g., reduced taxes on energy.

[3] A quantitative analysis of tax expenditures in corporate taxation was not possible for the present note, but tools that allow for such an analysis are being developed at the European Commission. For more detail, see Section 5.

Box 1. **TAX EXPENDITURES IN EU ECONOMIC POLICY SURVEILLANCE**

- Tax expenditures in the context of budgetary frameworks. Under the Directive 2011/85/EU, which lays down requirements for budgetary frameworks, Member States have been required since 1 January 2014 to publish detailed information on the effect of tax expenditures on revenue (Article 14(2)). However, the Directive does not specify a standardised procedure for measuring and evaluating tax expenditures.
- Energy-related tax expenditures are also covered by the monitoring and reporting framework for energy subsidies set under the Regulation on the Energy Union and Climate Action Governance.
- Tax expenditures in the EU Semester. References to reviewing or reducing tax expenditures are included in country-specific recommendations issued in 2023. In some Member States this reference is explicitly targeted to specific measures (mortgage interest tax relief in Luxembourg and Sweden, reduction of distortions in the housing market in the case of the Netherlands), while in other Member States (Belgium and Italy) a reference to tax expenditure is more general (although it mentions some specifics such as environmentally harmful impacts). Some issues related to aggressive tax planning (ATP) also have a link to tax expenditure. In 2023, Luxembourg and Malta received CSRs related to ATP.
- Tax expenditures in the Recovery and Resilience Facility (RRF). The implementation of the RRF will continue to drive the EU's ambitious reform and investment agenda for years to come. Reforms included in Member States' Recovery and Resilience Plans (RRPs) are monitored in the European Semester. The RRPs includes several measures related to tax expenditures. While it is not possible to enumerate them all, they include reforms streamlining current schemes, for instance related to housing (e.g. in the Netherlands) or fuel (e.g. in Sweden); as well as those introducing new tax expenditures to foster investments in the green transition (e.g. in Greece and Denmark). Member States's plans also include reforms related to ATP (in particular in Cyprus, Hungary, Ireland, Luxembourg, Malta, Netherlands).

2. TAX EXPENDITURES: DEFINITION, RATIONALE, ISSUES

2.1. DEFINITIONS

Tax expenditures are tax policy instruments that reduce the amount of tax to be paid for some activities or groups of taxpayers. They include tax credits, allowances, deductions, exemptions, reduced rates and tax deferrals (OECD, 2010). The term tax expenditure has come to be used to emphasise the notion that these tax policy instruments have similar aims and similar effects as outlay expenditure, that is, spending programmes like benefits or subsidies, even though they are instruments on the revenue side of the budget (Surrey and McDaniel, 1975, p. 679). In some countries they are known as tax reliefs, tax subsidies, or tax aids.

Defining and quantifying tax expenditures can only be done as compared to a "benchmark tax system" compared to which tax expenditures provide relief. There is no single accepted method to define a benchmark tax system. A benchmark tax system can be defined based on "normative" concepts (e.g. of an optimal or efficient tax system) or, as it is more common, it can aim to be "positive", based on the general rules and aims stated in actual tax legislation to identify the exceptions as compared to these (Heady and Mansour, 2019, p. 12). EU Member States surveyed by a recent OECD report follow the latter approach (OECD, 2010). It is often considered that the benchmark tax system includes: the rate structure,

accounting conventions, the deductibility of compulsory payments, provisions to facilitate administration, and provisions relating to international fiscal obligations.[4]

Deciding what should be considered tax expenditures and which provisions are part of the baseline tax system involves judgement calls, and countries differ in the methodologies they choose. Criteria that some countries (but not all) use include whether the measures target a small or a large group of taxpayers, or whether the aim of the measure is different from the core aims of the tax system.[5] At a fundamental level, countries can decide to define the benchmark tax system in a more or less detailed fashion, which leads to a narrower or broader definition of tax expenditures.[6]

The fiscal impact of tax expenditures is usually measured by the "revenue forgone" method. Also called the "initial revenue loss" method, it calculates the tax that would be payable if the tax concession were removed, and economic behaviour remained unchanged.[7] While taking into account behavioural effects (sometimes called "final revenue loss" method) may make the estimation more precise, it is difficult in practice. Moreover, behavioural effects may not be taken into account because the dynamic revenue effects of outlay expenditures are typically also not included in the government budget.[8]

There are limitations to the comparability of tax expenditures across countries. The fact that they can be defined and assessed in multiple ways, including with respect to the benchmark tax system used, means that comparisons of tax expenditures across countries should be treated with caution. Moreover, comparisons are made more difficult by the fact that the same policy goal may be pursued by a tax expenditure in one country and a spending program in another.

2.2. RATIONALE AND ISSUES

Like spending programmes, tax expenditures can be used for allocative or redistributive purposes.[9] Tax expenditures following an allocative purpose may give incentives for individuals or firms to engage in economically or socially desirable activities. An example of a tax expenditure whose rationale is to stimulate an activity with a positive externality is the tax credit for research and innovation (R&I) by companies. Countries also use tax expenditures to promote investment (in general or of specific types), homeownership, or incentivise savings for old age, among other things. In turn, examples of tax expenditures devised for redistributive purposes include tax credits for families with low earnings, families with children, but also reduced value-added tax rates on some necessities that represent a larger share of spending of poorer households. In addition, there are tax expenditures which are motivated by a mixture of redistributive and economic efficiency goals. For example, tax expenditures for work-related expenditure of the self-employed may be used to ensure a fairer tax base as compared to employees (redistributive considerations) but may also be used to encourage entrepreneurship (economic efficiency – allocative considerations).

At the same time, tax expenditures can make the tax system more complex, less transparent, may have adverse distributional impacts, and result in substantial revenue loss. While their effects can be equivalent to those of a spending programme, tax expenditures are often less transparent because they result in reductions of tax revenue that are hard to quantify, as opposed to direct spending which normally appears

[4] See, e.g. OECD (1996); Kraan, D. J. (2004, 121-142); as well as OECD (2010).

[5] For instance, measures aiming at increasing the redistributive effects of personal income taxation may not be tax expenditures since redistribution is one of the main aims of the tax system (OECD, 2010).

[6] The Netherlands considers its benchmark to be the "primary structure" of the actual tax system, which allows for a relatively detailed definition of the benchmark. In the past, long-standing tax expenditures in France could be considered to become part of the "norm", but this practice was ceased (OECD, 2010, p. 150).

[7] See Whitehouse (1999), as cited by OECD (2010).

[8] See Heady and Mansour (2019, p. 8). Besides the revenue foregone method, there also exists an "outlay equivalence approach", which estimates the level of direct spending that would be required to achieve the same goals and benefits. See, e.g. OECD (2010) and Kalyva et al. (2014).

[9] Countercyclical stabilisation, another possible aim of fiscal policy measures is usually not among the aims or main effects of tax expenditures, and such effects are outside the scope of this paper.

in budgets. In addition, the use of many tax expenditures increases the complexity of tax systems and may increase administrative and compliance costs. Depending on their design, targeting and interplay with other instruments, tax expenditures may also lead to unintended and adverse redistributive outcomes. Finally, they may in some cases result in fiscal externalities to other jurisdictions and can be used as a tool for harmful tax competition.

3. PERSONAL INCOME TAXATION

In the EU, the most common forms of tax expenditures in personal income taxation (PIT) are those related to employment, family, and housing.[10] Tax expenditures related to employment include those targeted to low earners, aiming to "make work pay", exemptions for work-related expenditures, and tax reductions for certain fringe benefits. Mortgage interest tax relief, a prominent housing-related tax expenditure in many countries, aims to incentivise home ownership. However, it may involve a significant revenue loss and lead to distortions in tenure choices and capital allocation. It may also lead to over-indebtedness of households and reduce the progressivity of the tax system, if not properly designed.[11] General tax reductions benefiting all taxpayers (e.g. a general tax allowance, deductions for compulsory social security contributions) and provisions related to joint taxation of couples are usually not regarded as tax expenditures but rather as part of the basic tax structure.

Whether some tax expenditures are distortionary depends also on other elements of the tax-benefit system as well as the initial income distribution. For example, whether owner-occupied housing is favoured by the tax system depends not only on the mortgage interest tax relief but also on the level and design of recurrent property taxation. There is a similar relationship between the tax treatment of certain types of savings and the revenue resulting from those savings (e.g. pension benefits). In particular, most systems of pension taxation adopt a benchmark system in which pension contributions are exempt and taxes apply when benefits are received.[12] Finally, the effect of tax expenditures will also depend on the initial income distribution on which they are applied. For example, the same (hypothetical) tax expenditure on pension income can be progressive or regressive depending on whether pensioners are located mostly at the bottom or upper part of the income distribution.

Tax expenditures and social benefits can have similar budgetary and distributional goals, but often there are differences in terms of their final impact depending on their design. An earned-income tax credit can be targeted towards low-income earners and can have a similar impact on the income distribution as an in-work benefit. Similarly, a refundable tax credit for a dependent child may have a similar impact on income redistribution as a universal child benefit. However, the final impact of these tax expenditures and social benefits differs often in practice. For example, tax credits are typically not refundable, i.e. they do not benefit those who do not pay income taxes. In this case, a universal benefit (or a refundable tax credit) has a stronger redistributive impact than a (non-refundable) tax credit. Moreover, social transfers are often means-tested and hence more targeted, while tax expenditures are often not means-tested and benefit all income levels. Furthermore, there can also be differences in the administrative costs between tax expenditures and social benefits. In general, tax expenditures are less costly to manage than social benefits since they are administered as part of the existing procedures of personal income tax assessment. This contrasts to social benefits, for which government spending agencies need to engage in the administrative effort to collect the necessary information to manage and deliver the payments. Hence, the choice of the most optimal instrument will depend on the trade-off between targeting and administrative costs as well as country-specific elements, such for example the strength of public administration and the initial income distribution (OECD, 2010).

[10] For a more detailed analysis of tax expenditures in direct taxation, see Kalyva, A. et al. (2014).

[11] For a detailed discussion of the mortgage interest tax relief see Fatica (2015) as well as Leodolter and Rutkowski (2022).

[12] See, e.g., Barrios et al. (2020).

The fiscal and distributional impacts of tax expenditures in personal income taxation in the EU are analysed in this study based on the EU's tax-benefit microsimulation model EUROMOD.[13] EUROMOD uses survey data on gross incomes, labour market status and other characteristics of individuals and households, which it then applies to the tax-benefit rules in place in each of the 27 EU Member States in order to simulate taxes, social insurance contributions and cash benefits. Some components of the tax–benefit system that cannot be simulated (for example, those depending on prior contributions such as pensions) are read off the model's underlying input data.[14] The tax and benefit rules refer to those in place in June 2023.

Zero PIT rate bands, as well as basic tax allowances or credits for which all taxpayers are eligible, were considered to be part of the basic tax structure and hence were not considered as tax expenditures in this exercise. Similarly, tax allowances or credits for compulsory social security payments were also considered as part of the basic tax structure and not considered as tax expenditures. Tax structures, definitions related to tax expenditures, as well as methodologies to assess and report information on them, vary across countries. Hence, model simulations presented in this paper should not be viewed to imply prescriptive views about what should count as a tax expenditure.

One important advantage of EUROMOD is that it allows for a better understanding of the incidence of tax expenditures in personal income taxation on a comparable basis and simulating their impact. In particular, it is possible to assess categories of tax expenditures which are defined in a comparable way across countries. At the same time, the assessment will generally not cover the full set of tax expenditures existing in all countries under study since not all tax expenditures can be modelled in EUROMOD.[15] Another advantage of the model is that it is able to simulate the effect of various policy measures and their interactions on the income distribution. At the same time, simulated fiscal impacts are less accurate than it would be the case if administrative data were used.[16] Simulations are static; they do not take into account behavioural effects or dynamic adjustments over time.

In the simulations carried out in the present paper, tax expenditures are grouped into six categories. These are tax expenditures with respect to employment, housing, education, health, family, as well as a sixth category for those not related to any of the first five. The tax expenditures included in each category are presented in the Table A.1 in the Annex 2. To explore the fiscal and distributional impact of tax expenditures, the baseline scenario (actual situation) is compared with a hypothetical scenario in which simulated tax expenditures related to employment, housing, education, health, family, and other areas are set to zero.

Aggregate tax expenditures represent a sizeable share of PIT revenue in some Member States. On average, simulated tax expenditures in employment, housing, education, health, family and other areas reduce government revenues from personal income taxation by 16% (Graph 3.1). However, there is large variation across Member States with the simulated tax expenditures representing 5% of total PIT revenue or less for Cyprus (1%), Malta (3%), Estonia (4%) and Denmark (5%). In contrast, they represent more than 25% in Slovakia (25%), Greece (27%), Portugal (30%) and Romania (32%). The cost associated with tax expenditures can also be expressed as a percentage of GDP (see Graph A.1 in Annex 1): the simulated tax expenditures represent on average 1.2% of GDP in the EU, ranging from 0.03% in Cyprus to 2.8% in Belgium.

[13] EUROMOD is maintained and updated by the European Commission Joint Research Center, in collaboration with National Teams, while Directorate-General Eurostat (DG ESTAT) is the main data provider. For a detailed description of the model, see Sutherland and Figari (2013).

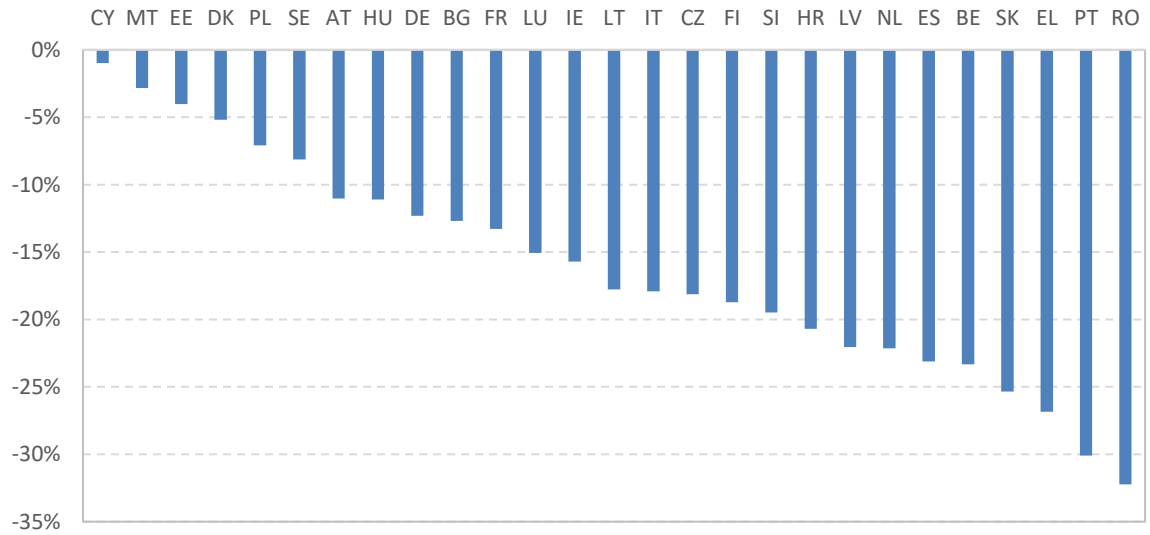
[14] Depending on the country, the latter are drawn either from the 2020 or the 2021 EU-SILC.

[15] In many cases, the information on income, assets, or other characteristics of individuals and households in the SILC data underlying the EUROMOD analysis is not detailed enough to allow a modelling of certain tax expenditures. Methods to impute such information are possible in some cases but require high-quality external data sources that can be matched to EUROMOD input data. Another limitation is the complexity of tax systems: provisions which affect only few people in very specific situations are often not modelled in microsimulation analysis. These limitations affect all tax-benefit simulation models that are not based on the actual (individual-level) administrative tax data of a specific country.

[16] On the other hand, using administrative data has the disadvantage that such datasets are less comparable across countries than standardised surveys such as SILC, because their structure depends on the needs and procedures of the national public administration that generated them.

The majority of tax expenditures is related to employment and family. On average, the simulated tax expenditures related to employment and family make up about one-third each of the total PIT revenue reduction. However, there is large variation across Member States in the relative importance of the simulated tax expenditure in the different areas (Graph 3.2). For example, there are no employment-related tax expenditures among the measures analysed in nine Member States,[17] while in some countries (Greece, Italy, Lithuania) they represent more than 80% of the total PIT revenue reduction. Such differences in policy may be affected by many factors, including economic structure, budget constraints, administrative capacity, sector-specific considerations, among other things.

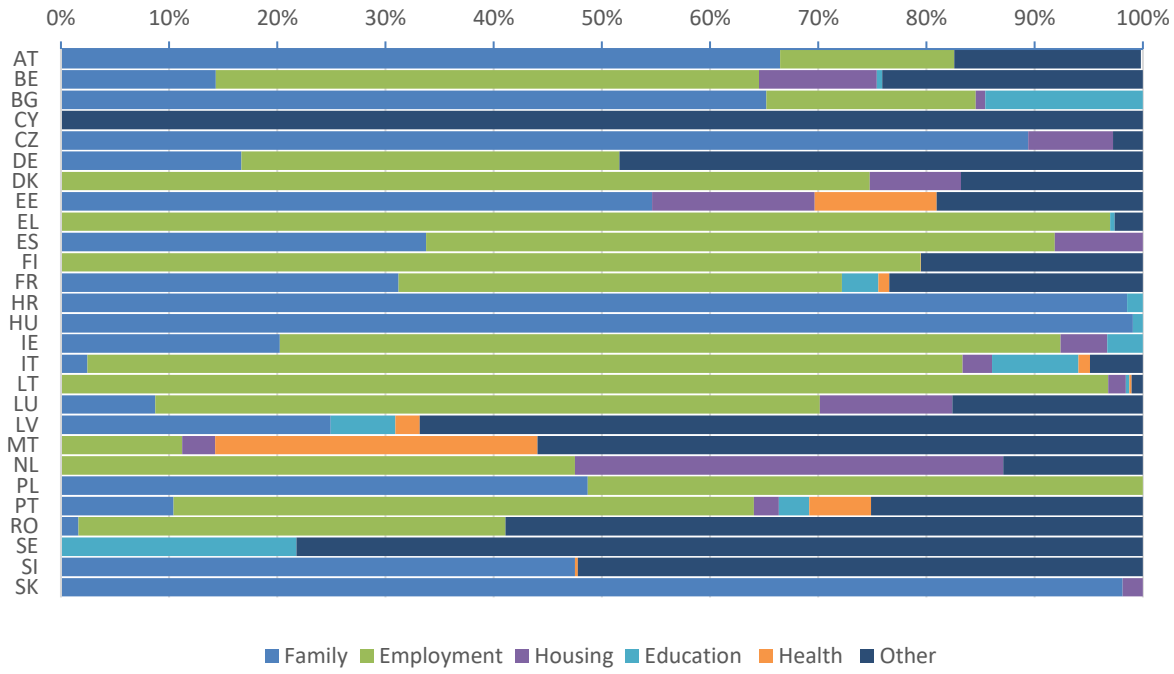
Graph 3.1. **Impact of the simulated tax expenditures in PIT tax revenue (% change in PIT revenue)**



Note: Values are computed as the revenue reduction due to the simulated tax expenditures as a share of the total PIT revenue before jointly applying the simulated tax expenditures in employment, housing, education, health, family, and other areas.
Source: European Commission Joint Research Centre simulations based on EUROMOD Version I6.2.

Graph 3.2. **Share of simulated tax expenditures related to employment, housing, education, health, family, and other areas by type, % of total fiscal impact**

[17] These are Cyprus, Czechia, Croatia, Hungary, Latvia, Sweden, Slovenia and Slovakia.

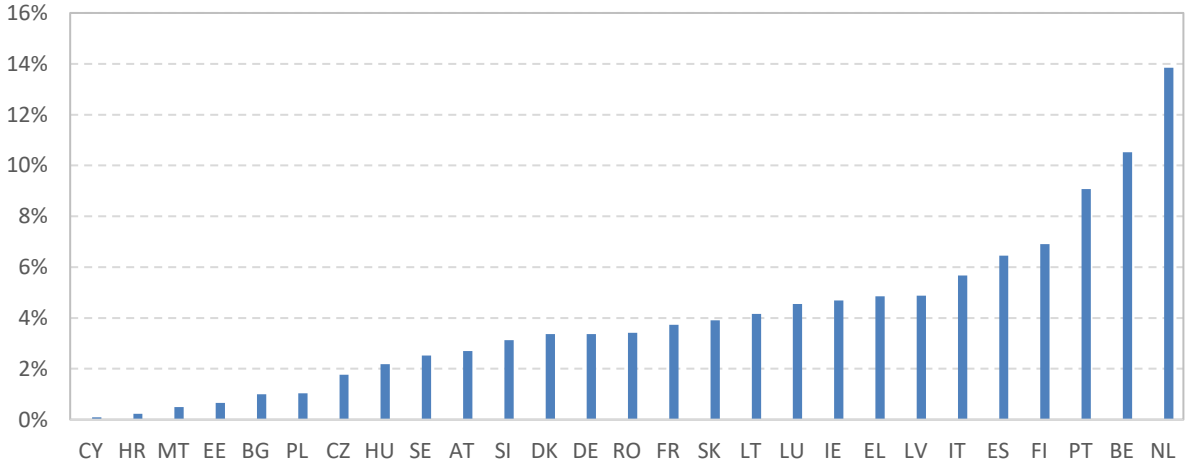


Note: Values are computed as the revenue reduction due to the simulated tax expenditures as a share of the total PIT revenue before jointly applying the simulated tax expenditures in employment, housing, education, health, family and other areas.

Source: European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

There is substantial variation in the impact of tax expenditures on disposable household income across Member States (Graph 3.3). In some Member States, the simulated tax expenditures have a small impact on disposable household income (e.g. Cyprus, Croatia and Malta). In others, however, simulated tax expenditures have a sizeable impact on disposable household income. For example, in the Netherlands, simulated tax expenditures lead to a 14% increase in the average disposable household income. Differences in the effect of tax expenditures on disposable income across Member States can be attributed to the combined effect of (1) the extent to which tax expenditures are used in the PIT and (2) the overall tax burden associated with PIT in the country.

Graph 3.3. **Impact of simulated tax expenditures in PIT on average disposable household income (% change in disposable income)**



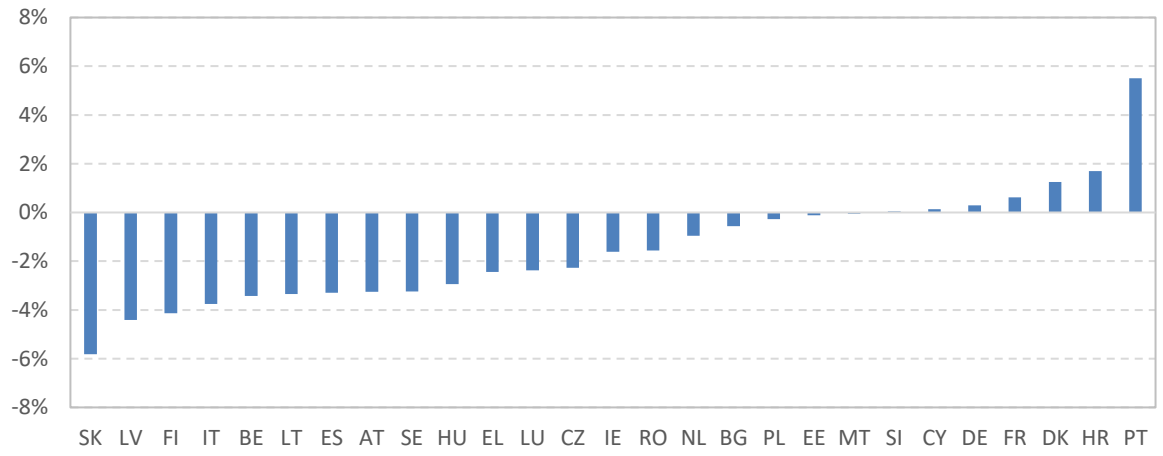
Note: Values are computed as the total percentage change in disposable income due to the simulated tax expenditures divided by total disposable income before jointly applying the simulated tax expenditures in employment, housing, education, health, family, and other areas.

Source: European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

Tax expenditures reduce income inequality in most but not all Member States. Graph 3.4 presents the percentage change in the Gini coefficient due to the simulated tax expenditures. These findings suggest that in many Member States households in lower income deciles gain more from the simulated tax expenditures, as a proportion of their disposable income, than those at the top of the income distribution. Nevertheless, income gains are mostly concentrated in the second to fourth income decile, while they are substantially smaller in the lowest decile.[18] This may suggest that low-income earning households are not able to fully benefit from tax expenditures because they have a low (or zero) tax liability to start with (Graph 3.5). In a few Member States, the simulated tax expenditures lead to an increase in income inequality as measured by the Gini coefficient.

[18] Note that for HR, the simulated tax expenditures have a negative impact on disposable income in the first and second income decile. This is the result of very specific policy interaction. During the period 2022-23, there was a temporary top-up one-off payment for pensioners. Following the introduction of the tax allowance for pensions in the simulations, many pensioners in the lower income deciles were no longer eligible for this benefit, explaining the negative impact that the introduction of the tax expenditure have on disposable incomes in these lower income deciles.

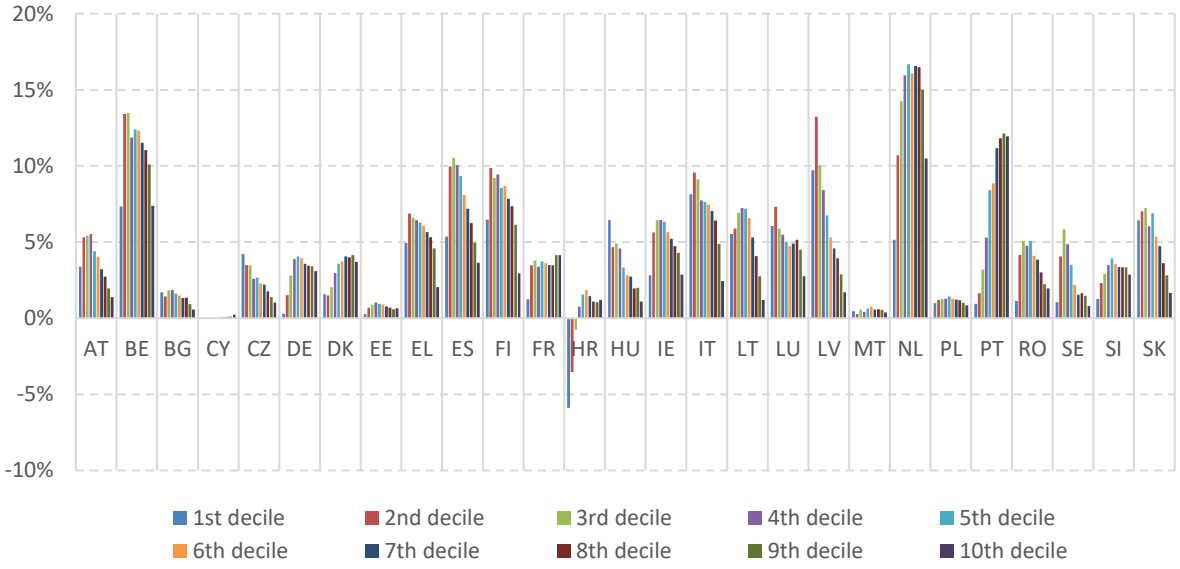
Graph 3.4. **Impact of simulated tax expenditures in PIT on income inequality as measured by the Gini coefficient (% change in Gini coefficient)**



Note: Values are computed as the change of the Gini coefficient due to the simulated tax expenditures divided by the Gini coefficient before jointly applying the simulated tax expenditures in employment, housing, education, health, family, and other areas (expressed in percentage change).

Source: European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

Graph 3.5. **Impact of the simulated tax expenditures in PIT on the income distribution, by income decile (% change in disposable income)**



Note: Values are computed as the total percentage change in disposable income due to the simulated tax expenditures divided by total disposable income before jointly applying the simulated tax expenditures in employment, housing, education, health, family and other areas. Deciles are defined based on actual equivalised disposable income of the tax-benefit systems that include all applicable tax expenditures.

Source: European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

While family-related tax expenditures mostly reduce inequality, those related to housing tend to increase it. In most Member States, tax expenditures related to family support have a progressive redistributive effect, i.e., they reduce income inequality (Graph A.2 and A.3). This could be linked to the fact that family-related tax expenditures are mostly targeted towards larger and younger households, who are more likely to be in the lower half of the income distribution. In contrast, tax expenditures related to housing generally increase income inequality. These forms of tax expenditure often take the form of mortgage interest tax relief for owner-occupied housing and hence are more likely to benefit households in higher income deciles.[19] The impact of tax expenditures related to employment is mixed. In some Member States (Greece, Italy, Lithuania, Luxembourg), mainly households in the lower- and middle-income deciles experience an increase in disposable income and hence tax expenditures reduce income inequality. In contrast, in other Member States (e.g. Belgium, Denmark, France, Poland and Portugal) mainly households in higher income deciles benefit, suggesting tax expenditures related to employment increase inequality in disposable income.

4. VALUE-ADDED TAXATION

Value-added taxation (VAT) is relatively harmonised in the EU as compared to other types of taxes. The EU VAT Directive provides the legislative framework that national VAT legislation must adhere to. The VAT Directive[20] establishes that each Member State must have a standard rate of at least 15% and can apply up to two reduced rates of at least 5% to goods and services from a list in the Directive's annex. Additionally, Member States may apply a super-reduced rate (below 5%) to specific goods and services. Table A.2 in Annex 2 provides an overview of the reduced VAT rates applied in the EU in 2021 (latest available data).

Indicators of tax expenditures in EU value-added taxation include the so-called VAT (actionable) policy gap (European Commission, CASE, et al., 2023). The VAT gap estimates serve as a tool to understand the magnitude of unrealised potential revenues in VAT but also help to understand their nature.[21] The VAT policy gap is an indicator of the additional VAT revenue that could theoretically be generated if the standard VAT rate were applied to the final domestic consumption of all goods and services in a given country. It is generally broken down into two components: the VAT rate gap captures the forgone VAT liability due to the application of reduced rates, while the exemption gap captures the forgone VAT liability due to the implementation of exemptions or the exclusion of part of household final consumption from the tax base. The "actionable policy gap" is defined as the sum of the VAT rate gap and the actionable exemption gap. The actionable exemption gap excludes types of consumption which are either not taxable "in principle" or are exempted by the EU VAT Directive.[22]

In 2021, the actionable VAT policy gap accounted for about 16% of notional ideal VAT revenue.[23] Of this, approximately 10 pps can be attributed to the application of various reduced and super-reduced rates and about 6 pps to the "actionable" VAT exemptions (Graph 4.1). Another, larger part of the exemption gap is not actionable.

The actionable VAT policy gap varies substantially across Member States. In some countries, such as Spain, Greece, Poland and Italy, the actionable policy gap is above 25% of notional ideal VAT revenue (Graph 4.1). In other countries, such as Bulgaria, Denmark, Estonia, Lithuania, and Malta it is close to or

[19] This is in line with previous analyses, including Fatica (2015) and Leodolter and Rutkowski (2022).

[20] Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax.

[21] This section focuses on tax gaps related to policy as opposed to tax compliance that are also covered by the VAT gap studies (see e.g. European Commission, CASE, et al., 2023).

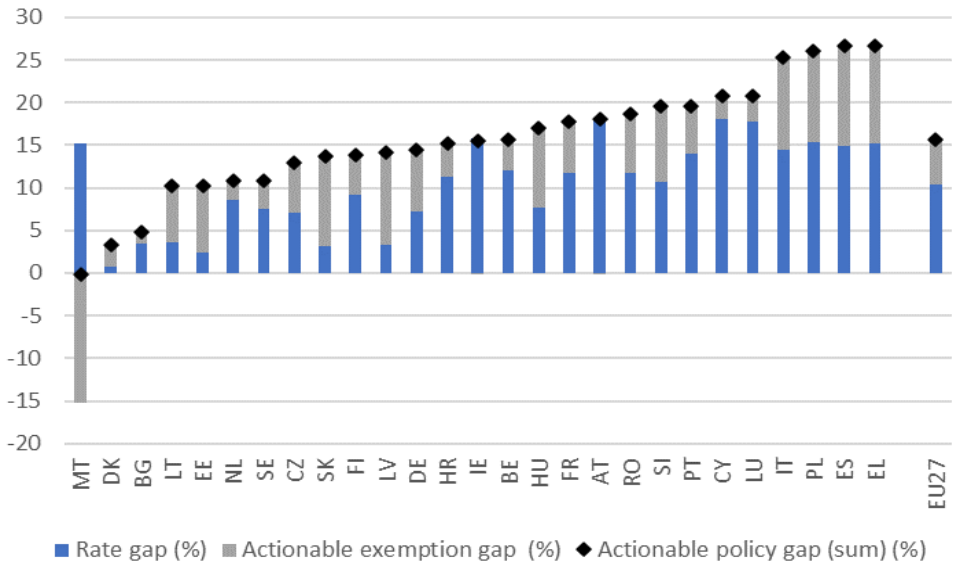
[22] An example of the former is the final consumption of "imputed rents" (the notional value of home occupancy by homeowners) which is not taxable "in principle" because it is not a service that is bought and sold. Examples of the latter include financial services (see European Commission, CASE, et al., 2023). Exemptions are covered in Title IX of the EU VAT Directive.

[23] The notional ideal VAT revenue refers the VAT revenue that a Member State could theoretically collect if it applied a uniform VAT rate on all consumption of goods and services.

below 10%. Of these countries, Denmark applies the standard VAT rate to almost all the tax base and has the lowest rate gap. Lithuania, Estonia and Bulgaria apply a limited number of reduced or super-reduced rates and therefore display small actionable policy gaps. Finally, in Malta, the negative actionable exemption gap was related to the gambling sectors, providing their electronic services abroad, but no right to deduct input VAT.

Temporary measures related to tax expenditures in VAT have been widely used in the context of the pandemic and, subsequently, following the spike in energy prices. From 2020 to 2022, several EU Member States introduced temporary changes to their VAT system. For instance, Czechia, Germany, Greece, and Austria introduced reduced VAT rates for tourism and hospitality services in mid-2020 (European Commission, CASE, et al., 2023). In 2021 and 2022, in the context of rising energy prices, exacerbated by Russia's war of aggression on Ukraine, the Commission gave policy guidance to Member States to provide "temporary, targeted reductions in taxation rates for vulnerable households," to mitigate the potentially grave social impacts of higher energy and consumer prices. Almost all Member States introduced reductions of taxes on energy, such as reduced VAT rates or reduced excise duties on energy.[24]

Graph 4.1. **The VAT rate gap and actionable gaps (as % of notional ideal VAT revenue, 2021)**



Note: The notional ideal VAT revenue refers the VAT revenue that a Member State could theoretically collect if it applied a uniform VAT rate on all consumption of goods and services. In Malta, the negative actionable exemption gap was related to the gambling sectors, providing their electronic services abroad, but no right to deduct input VAT.

Source: European Commission, VAT gap 2023 report.

Reduced VAT rates aim to make consumption taxation less regressive but have in general limited effectiveness in redistributing income. The VAT is commonly considered to be regressive, which spurred demands for making it more progressive by applying reduced rates on food and other consumption items weighing more heavily in the consumption basket of poorer households. Many EU Member States apply reduced rates on essentials and other goods and services. In turn, these measures are often considered to be not sufficiently targeted as they also benefit more affluent households.[25]

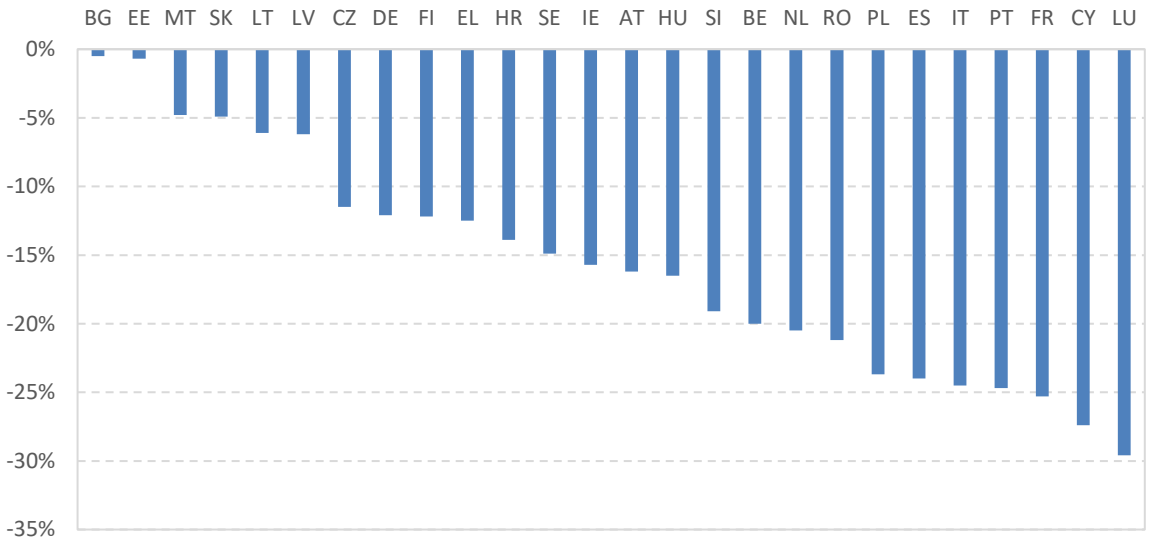
[24] See the Commission communication on Energy prices from October 2021 and subsequent updates. See also: European Commission (2022a).

[25] See e.g. OECD (2014). See also: Bastani and Koehne (2022) and Maier and Ricci (2024).

The fiscal and distributional effects of the reduced VAT rates are assessed in this study by microsimulation analysis using EUROMOD.[26] Fiscal effects of reduced VAT rates are simulated for all EU Member States using a counterfactual hypothetical scenario where all commodities and services are subject to the standard rate of VAT, while for the distributional effects the counterfactual is a hypothetical scenario in which actual VAT systems as of 2019 are turned into a flat VAT rate in a revenue-neutral way.[27] The year 2019 was chosen to make sure that the pandemic and temporary policy measures do not affect the analysis. The scope of the analysis excludes VAT exemptions, commodities and services subject to zero VAT rate and consumption by economic agents other than households (e.g. government purchases). The focus on households therefore implies that the results of the study are not directly comparable with the rate gap estimated in the VAT gap report discussed above. Similarly to the PIT case, simulations do not model behavioural effects.

Reduced rates are estimated to reduce VAT revenues from the household sector by 16% on average in the EU (Graph 4.2). The figures vary significantly across countries, spanning from close to or above 25% in Cyprus, France, Italy, Luxembourg and Portugal to about 5% or below in Bulgaria, Estonia, Malta and Slovakia. This corresponds to roughly 1.1% of GDP on average in the EU, ranging from 0.04% in Bulgaria to 2.4% in Portugal (see Graph A.4 in Annex 1).

Graph 4.2. **Simulated impact of VAT reduced rates paid by households on tax revenue, 2019 (% of VAT revenues paid by households)**



Note: The household rate gap is calculated with respect to a counterfactual scenario where all commodities and services are subject to the standard rate of VAT.

Source: European Commission Joint Research Centre, simulations based on EUROMOD version I6.30.

Reduced VAT rates are found to have a progressive impact on income distribution for the EU aggregate, although the effect is very small (Lanterna and Ricci, 2024). The VAT overall is estimated to have a regressive distributive effect with respect to income, i.e., households with low incomes pay more VAT as a proportion of their income than households with higher incomes. Reduced VAT rates are estimated to

[26] The analysis has been conducted by the Joint Research Center, using the indirect taxation tool (ITT) module of the EUROMOD microsimulation model. For more detail on this tool, see Akoguz et al (2020).

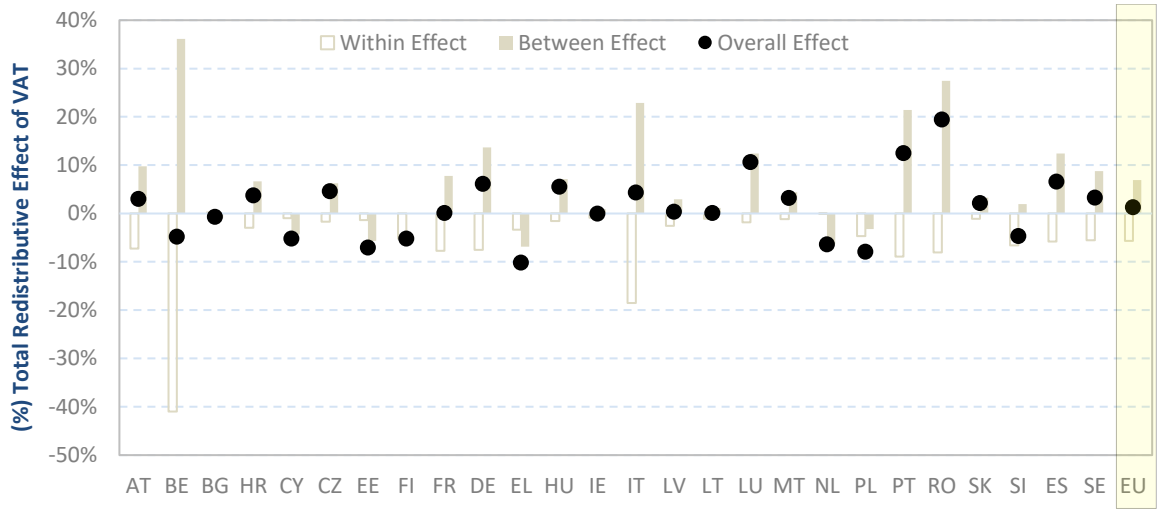
[27] For the redistributive analysis, a revenue-neutral benchmark is chosen to abstract from the use of the additional resources that would be available if the reduced rates were eliminated. The simulations exclude Denmark which did not have reduced rates in 2019. See also Table A.2 in the Annex 2 for reduced rates effective in 2019.

reduce this regressivity on average, albeit to a small degree: they lower the regressivity of VAT taxation by 1% in the EU (Graph 4.2).

While reduced rates benefit lower-income groups more, they also introduce 'arbitrary' redistribution between households of similar incomes having different consumption patterns.[28] The distributive effect of VAT reduced rates can be broken down into (1) a '*between effect*', i.e., a redistributive effect between households belonging to different income groups; and (2) a '*within effect*', i.e. a redistributive effect among households having about the same income but different consumption patterns.[29] For the EU aggregate, the *between effect* is progressive as it lowers the regressivity of VAT taxation by 8% (this effect is shown with positive sign in Graph 4.2).[30] This indicates that reduced VAT rates decrease the VAT burden proportionally more for low-income households. It is the result of reduced VAT rates for necessities (i.e., consumption categories such as food, non-alcoholic beverages and water and heating), which represent a larger share of consumption for households with lower incomes. However, households with the same income do not necessarily consume the same bundle of goods and services, depending on age, family structure, etc. This means that, in many cases, two households with the same income will benefit from reduced rates to a different degree. Since this is effectively an additional source of inequality, the *within-effect* is regressive (shown with a negative sign in Graph 4.2). Accounting for the *within-effect*, the overall redistributive impact of reduced VAT rates turns out to be much lower, reducing the regressive effect of VAT by only 1%.

There is substantial variation across Member States in the overall redistributive effect of reduced VAT rates. While the distributive impact of reduced VAT rates is estimated to be progressive in a majority of countries, it is regressive in 10 Member States. In some cases, this is due to the "within effect" which more than offsets the "between effect" (e.g. in Belgium, Ireland and Slovenia). In other cases, even the between effect appears negative (i.e. in Bulgaria, Cyprus, Estonia, Finland, Greece, Netherland and Poland), suggesting that the goods covered by reduced rates are mostly not those that are more likely to be consumed by lower-income households.

Graph 4.3. **The redistributive effect of reduced VAT rates in the EU, 2019**



[28] For a presentation of this argument in more detail see, e.g., Bastani and Koehne (2022).

[29] The decomposition of the redistributive effect disentangles the impact of a policy over the Gini of the different groups that make up the population, considering both the within-group and between-groups effects. For this purpose, the Analysis of Gini (ANOGI) method is used, originated from the works of Frick et al. (2006) and Yitzhaki and Schechtman (2013).

[30] The redistributive effect is measured as the variation in the Gini of post-VAT income. To make the impact of reduced rates of VAT easier to interpret, values are reported as a percentage of the redistributive effect of the VAT system as a whole in each country.

Note: The figure shows the redistributive effect (i.e. the variation of the Gini index of post-VAT income) of reduced VAT rates in each EU country, as well as the breakdown in the within and between effect. Values are reported as a percentage of the total redistributive effect of VAT.

Source: European Commission Joint Research Centre, simulations based on EUROMOD version I6.30.

5. CORPORATE TAXATION

Tax expenditures in corporate taxation are used to reduce the cost of taxation to businesses and support specific activities, including R&D. Prevailing tax rules and differences across countries can influence business decisions. Member States governments wish to provide an attractive business environment to stimulate growth, ensure job creation in certain regions, and answer national policy needs. In this context, tax rules can be and are often put in place to support certain types of investment, such as R&D.[31] This way, tax expenditures can be a means of industrial policy. Advanced economies also, in some cases, apply temporary investment tax incentives as part of countercyclical stabilisation policy.[32] In the EU, investment incentives and other fiscal support measures to companies are regulated by state aid rules safeguarding a level playing field for competition in the single market.[33]

The definition and measurement of tax expenditures in corporate taxation has additional complexities as compared to other types of taxes. The tax base of corporate income taxation results from an interplay of accounting and tax rules: taxes are only paid if profits are realised and most expenses are deductible, i.e. they reduce taxable profits.[34] This means that standard depreciation, based on a general accounting principle, is part of the benchmark tax system, and only accelerated depreciation is considered a tax expenditure (to the extent it offers tax relief as compared to the standard rate). Moreover, it is sometimes not straightforward to estimate the precise revenue loss resulting from tax expenditures. For instance, timing and the underlying discount rate will impact the effect of accelerated depreciation, which allows for the deduction of costs at an earlier point in time than would normally be the case. Revenue losses resulting from tax expenditures will also depend on the number of taxpayers who are profitable.[35]

While there is no direct evidence about the trends in tax expenditures in corporate taxation, tax rates have been falling while tax revenues remained broadly stable. This suggests that tax bases for corporate taxation have broadened. The average top statutory tax rate on corporate income in the EU-27 was 21.2% at the beginning of 2023. This is about 14 pps lower than in 1997 and 2.4 pps lower than 2009. The (forward-looking) effective average tax rate declined from 21.3% in 2009 to 18.8% in 2022 (EU average).[36] At the same time, CIT revenues have remained comparatively stable between 2010 and 2020 and they have reached very high levels in 2021 and 2022 (see Graph 5.1). This is sometimes referred to as the "rate-revenue puzzle". The main explanation for the above trends is that tax reforms have combined the cuts to statutory rates with compensating measures broadening the tax base (which may or may not have reduced tax expenditures).[37] In addition to base-broadening reforms, an increase in the size of the corporate sector also seems to have played a role (Nicodème et al., 2018), as well as a pronounced

[31] See e.g. European Commission (2023c) for information on how various tax incentives vary across Member States.

[32] See, e.g. House and Shapiro (2008).

[33] See Art. 107 of the Treaty on the Functioning of the EU (formerly Art. 87 of the Treaty Establishing the European Community, enshrined in community law since the Treaty of Rome). The Treaty exempts aid in some cases including to make good the damage caused by natural disasters. It also allows for exceptions in some other cases, including to promote economic development of disadvantaged areas, to promote the execution of important projects of common European interest or to remedy a serious disturbance in the economy of a Member State, to facilitate the development of certain economic activities, to promote culture and heritage conservation, or other categories of aid as may be specified by decision of the Council on a proposal from the Commission. See also Chesaites (2017).

[34] The deductibility of interest payments for example gives rise to the so-called debt-equity bias, since equity costs are non-deductible.

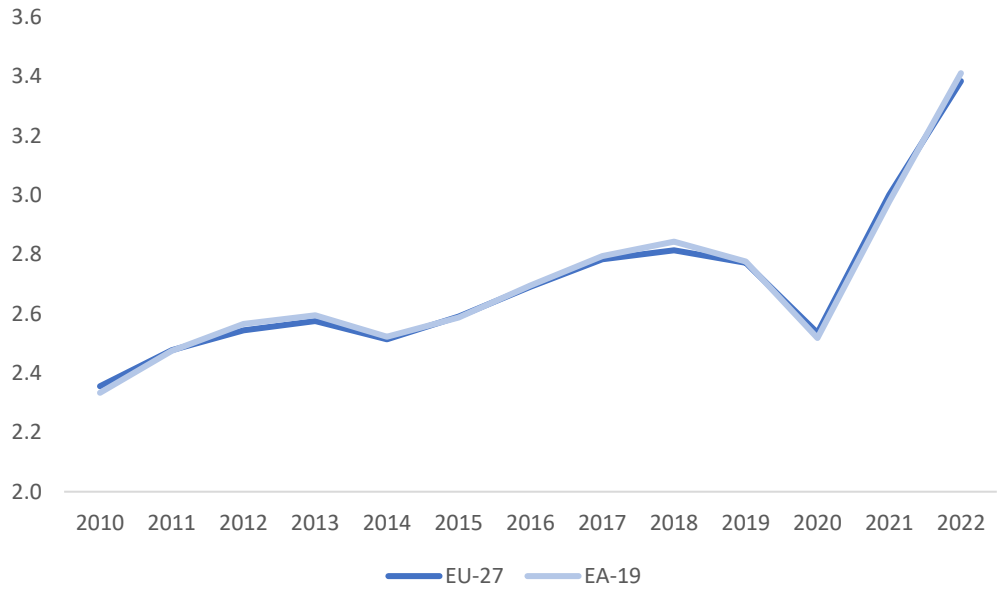
[35] For example. a small tax credit will result in much higher revenue losses if there are many companies with small profits, compared to a situation where there are few companies with large profits.

[36] 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. See, e.g. European Commission (2023c, especially Chapter 3).

[37] The effect of base-broadening tax reforms have been documented early in the literature, e.g. by Devereux et al., (2002).

increase in corporate profits before taxes in recent years (Fuest et al., 2020). Finally, tax arbitrage by high-income taxpayers between personal and corporate taxation could also be contributing to enlarging the CIT base (Hourani et al, 2023).

Graph 5.1: **Revenues from corporate income taxation as % of GDP**



Source: DG TAXUD Data on Taxation Trends (https://taxation-customs.ec.europa.eu/taxation-1/economic-analysis-taxation/data-taxation-trends_en).

There are several ways in which countries can incentivise investment through corporate income taxation. Main categories of measures include reduced tax rates, tax exemptions, tax allowances, and tax credits, as well as incentives arising from timing differences in taxation, including accelerated depreciation or the deferral of the recognition of income.[38] Such measures may apply on a temporary or permanent basis. This section focuses on incentives for investment into research and development (R&D) as this type of incentives is prominent in recent policy discussions.

Tax incentives to support private investment into R&D are increasingly employed by governments to spur innovation, productivity, and economic growth. OECD data show that, on average, tax relief for R&D in the EU jumped from 0.02% of GDP in 2000 to 0.1% in 2020, reaching more than 0.2% in Austria, Belgium, Italy, and France.[39] Today, R&D tax incentives are larger than direct support for R&D in the EU (European Commission, 2022b).

Tax incentives successfully increase R&D efforts (OECD, 2023). Recent evidence by the OECD indicates that tax relief for R&D yields a gross incrementality ratio (IR) of around 1.4 (one extra unit of R&D tax support translates into 1.4 extra units of R&D). This is about the same effect as that of direct funding measures. The effect of R&D tax incentives on experimental development is found to be more than three times as large as the effect on basic and applied research. The effect of tax incentives is larger for small (IR: 1.6) and medium-sized (IR: 1.4) than for large companies (IR: 0.4). The effectiveness of R&D tax incentives seems to be very heterogenous and driven by the underlying features of (national) tax incentive schemes (Blandinières and Steinbrenner, 2021).

Policy design of R&D tax incentives greatly influences their impact. New policy design analysis shows that businesses' responsiveness to tax incentives is estimated to be nearly twice as large when refund provisions are available to loss-making firms, and three times as large when tax incentives are redeemable against payroll taxes and thus disconnected from the profit situation of firms (OECD, 2023). Tax credits targeted to small and new firms may be particularly effective, as they will find it more difficult to obtain funds (IMF, 2016). At the same time, smaller businesses, especially startups and SMEs, may not fully benefit from these tax incentives due to limited tax liability or administrative complexities.[40] Linking R&D

[38] See, e.g., OECD (2022); Holland and Vann (1998).

[39] See OECD R&D Tax Incentives Database, April 2024.

[40] See, e.g. Schoonackers (2020). Also, targeting based on firm size may involve the risk of incentivizing firms to remain below the size threshold, see e.g. Spengel et al. (2015).

tax incentives to input (i.e. expenditure) and not to output (such as in the case of patent boxes) is also seen to better address the lack of incentives for private firms to invest into R&D and while avoiding the use of the tax incentives for aggressive tax planning purposes. Finally, there is evidence of complementarity with direct funding measures.

A high number of tax expenditures increase tax complexity, reduce transparency, and raise the risk of loopholes and negative externalities between different corporate tax systems. Differences in the corporate tax rules across countries can be used by companies to reduce their tax liability, reinforced by the opportunities provided by digitalisation and globalisation. Examples include outbound payments towards non-EU zero- or low-tax jurisdictions in the absence of a withholding tax, transfer pricing assessments, residency rules, or the use of specific tax regimes. In the case of R&D, it can lead to a relocation of R&D activities or entities relabelling other activities as R&D. Such practices by firms in one Member State can have negative spillover effects on other Member States and intensify the uneven playing field between different types of companies (domestic vs. multi-national, small vs. large). Such elements of corporate taxation that can be abused for aggressive tax planning were identified in European Semester country reports and country-specific recommendations in recent years for a number of Member States (in particular Cyprus, Hungary, Ireland, Luxembourg, Malta, Netherlands), which resulted in subsequent reforms adopted or included in the countries' respective Recovery and Resilience Plans (see Box 1 above).

On 12 September 2023, the Commission adopted a package consisting of three complementary proposals to improve the EU business tax environment. The package includes: (1) the Business in Europe: Framework for Income Taxation (BEFIT) Directive, which is a structural corporate tax reform primarily aimed at large cross-border groups and that builds on the Two-Pillar Solution; (2) a Directive on Transfer Pricing (TP), to take a common approach on transfer pricing; and (3) the Head Office Tax (HOT) Directive, to reduce tax compliance costs for SMEs notably those that wish to expand across borders. The goal of the proposals is to find shared solutions to the common challenges of tax complexity and an uneven level playing field and their consequences, which include high tax compliance costs, barriers to cross-border activity, distortions to business decisions and tax uncertainty. BEFIT will introduce a common set of rules to determine the tax base of cross-border groups in the EU, which includes tax expenditures, although the proposal retains flexibility for nationally determined tax expenditures.

There is an ongoing policy discussion about the need for an EU approach to tax benefits for environmental investments. Tax policies have been recognised as important "horizontal" tools in industrial policy: policies that are available to all firms, irrespective of their activity, technology or location (e.g. R&D tax credits of fiscal incentives to support the green transformation of businesses) (Criscuolo, et al., 2022). The recent spike in energy prices and policy action in other advanced economies (e.g. the Inflation Reduction Act in the U.S.) have renewed the interest in policies to enhance competitiveness and support the green transition. The Communication on the Green Deal Industrial Plan of 1 February 2023 refers to the objective that Member States could *"align their national fiscal incentives along a common scheme that the Commission stands ready to prepare"* to offer greater transparency and predictability.[41] To avoid fragmenting the Single Market due to varying levels of national support, the Communication also calls for stepping up EU funding.

More evidence is needed on the impact of tax expenditures in the corporate taxation area. This is true not only related to R&D but also to other outcomes such as employment and productivity and the adoption of more environmental and energy-efficient production processes. As with PIT, countries typically offer a

[41] These incentives are referred to as "tax benefits" or "tax breaks" in the Communication on A Green Deal Industrial Plan for the Net-Zero Age, or as "tax advantages" in section 2.8 of the Temporary Crisis and Transition Framework (TCTF), the newly revised temporary state aid framework. The Communication "Securing our future: Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society" of 6 February 2024 notes that an additional 1.5% of GDP compared to the 2011-2020 decade should be invested annually in the transition, and that a strong mobilisation of the private sector will be pre-requisite to make this possible. This "requires a comprehensive reflection on all elements: from taxation to access to finance, from skills to regulatory burdens, and from a deepening of the Single Market to energy costs."

wide range of tax support and just as with PIT and VAT it is important to design and assess the policies based on evidence on their effectiveness and cost-effectiveness.[42]

6. CONCLUSIONS

Most tax expenditures are designed to achieve allocative or redistributive goals. At a relatively low administrative cost, they can support the reallocation of resources needed in light of specific policy objectives, such as the green and digital transitions, while mitigating negative welfare impacts for the most vulnerable households. However, this requires addressing some of the limitations of these instruments.

Tax expenditures may make tax systems more complex, less transparent, and less efficient. This may negatively affect the desired allocative and redistributive objectives. Thus, tax expenditures are to be simplified and streamlined when possible. In some cases, spending programs with similar aims may be more transparent than tax expenditures, although they often come at a higher administrative cost. Overall, reducing the complexity of the tax system is likely to reduce compliance costs for firms and citizens and collection costs for public administration.

Tax expenditures may in some cases lead to significant losses in government revenues. Their fiscal impact is not always as easy to assess as that of spending programmes. EUROMOD simulations suggest that tax expenditures in personal income taxation that can be modelled with Euromod represent about 16% of tax revenues from personal income taxation in the EU27 (corresponding to about 1.2% of GDP on average). Reduced VAT rates represent a similar magnitude: about 16% of VAT paid by households in the EU27 (corresponding to about 1.1% of GDP on average). In some cases, eliminating or reducing (ineffective or cost-ineffective) tax expenditures can create crucial fiscal space that allows for stronger fiscal consolidation, a revenue-neutral reduction in statutory tax rates, or growth-friendly tax shifts. For example, in some Member States the elimination of some distortive VAT reliefs could finance a reduction in labour taxes.

Depending on their design, targeting and interplay with other instruments, tax expenditures may lead to unintended redistributive outcomes. Evidence on the distributional impact of tax expenditures in direct and indirect taxation suggests that the overall impact on the income distribution can be either progressive or regressive, depending on the type of tax expenditure and its design. However, even in Member States where tax expenditures are found to be progressive overall, households with the lowest income levels tend to benefit less than proportionally. Refundability of some tax expenditures can address the issue of regressivity of tax credits in personal income taxation, although this comes at substantial fiscal cost and make the administration of tax expenditures more complex. Furthermore, tax expenditures are often not targeted to vulnerable groups. Means-tested benefits are more efficient at targeting, but they are more costly to administer and may have adverse incentive effects. Finally, by lowering the potential tax revenue, tax expenditures further limit the government's capacity to spend on inequality-reducing programs through direct spending.

Tax expenditures may in some cases be used as tools for harmful tax competition. This underscores the need for co-ordinated action as it risks undermining the good functioning of the single market, one of the EU's key policy objectives. There are various EU initiatives that aim to enhance cooperation and work towards more harmonisation of indirect and direct taxation, such as for example the Directive on Administrative Cooperation (DAC) or the revision of the Energy Taxation Directive. Furthermore, taxation is one of the key policies monitored through the European Semester with several country-specific recommendations referring to the design of Member States' tax systems, especially as regards the need to tackle aggressive tax planning and other harmful tax practices.

[42] Microsimulation can also be used in the area of corporate taxation. For instance, the Joint Research Centre is currently developing a corporate tax microsimulation model for the EU, known as DiRECT (Distributional and Revenue Effects of Corporate Taxes).

In view of these considerations, regular reporting, monitoring and assessment of tax expenditures is crucial as it allows Member States to review and revise their tax policies. Although Member States have some reporting obligations under the Budgetary Frameworks Directive, there remains a wide variation in the extent to which Member States engage in a systematic and regular evidence-based evaluation of tax expenditures.

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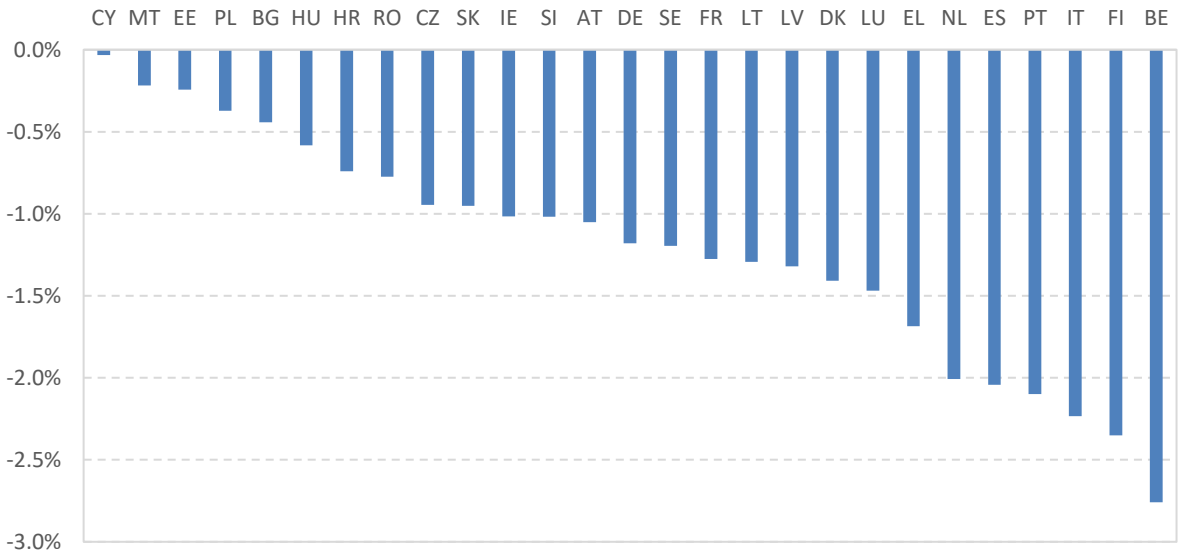
ANNEX I: ADDITIONAL GRAPHS

Graph A.1: **Impact of the simulated tax expenditures in PIT on tax revenue (% of GDP)**

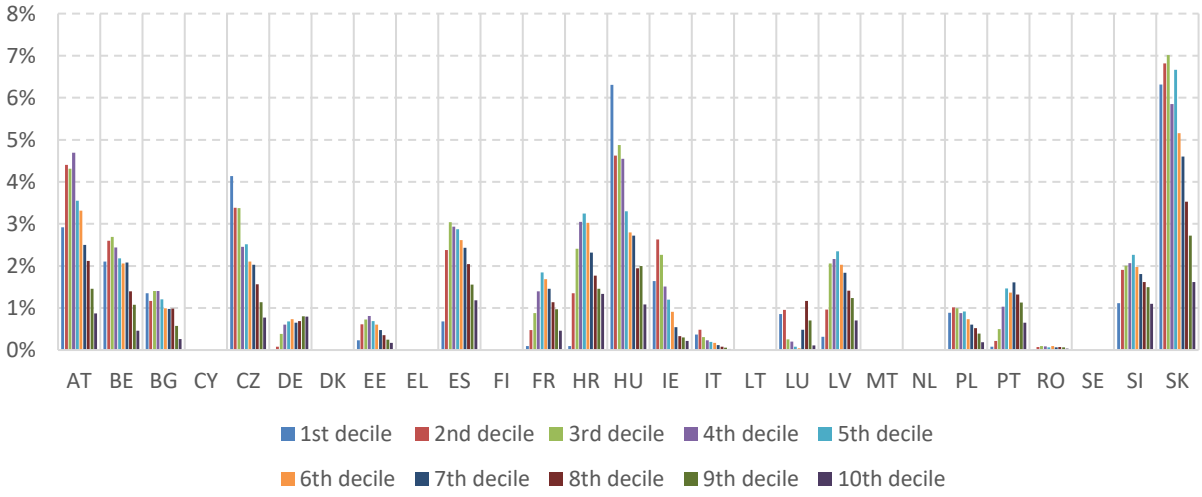


Note. Values are computed by multiplying the PIT revenue reduction due to the simulated tax expenditures in employment, housing, education, health, family, and other areas as a percentage total PIT revenue (obtained from the simulations) with total PIT revenue expressed as a percentage of GDP (obtained from ESTAT – indicator: TAX_TYPE).

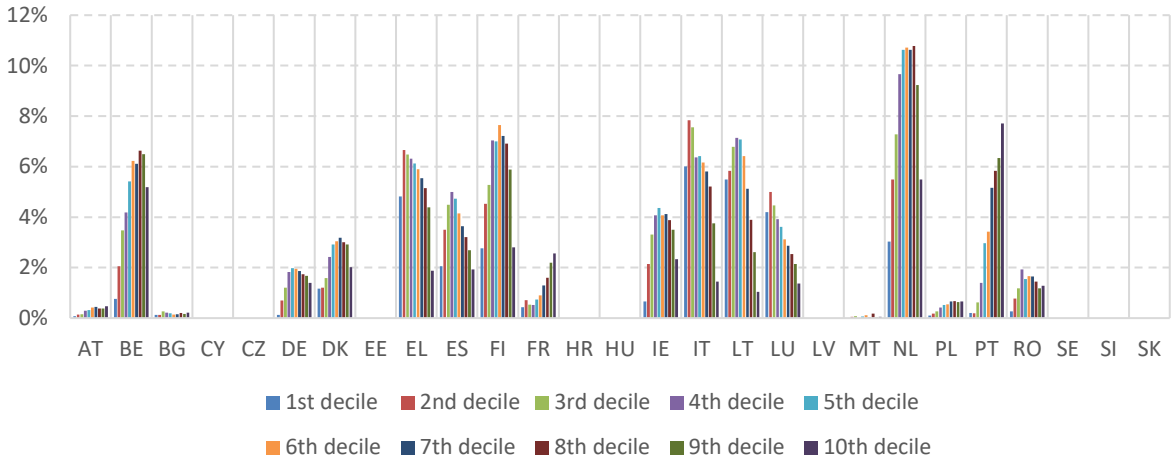
Source. European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

Graph A.2: **Impact of the simulated tax expenditures, by type of tax expenditure and income decile (% change in disposable income)**

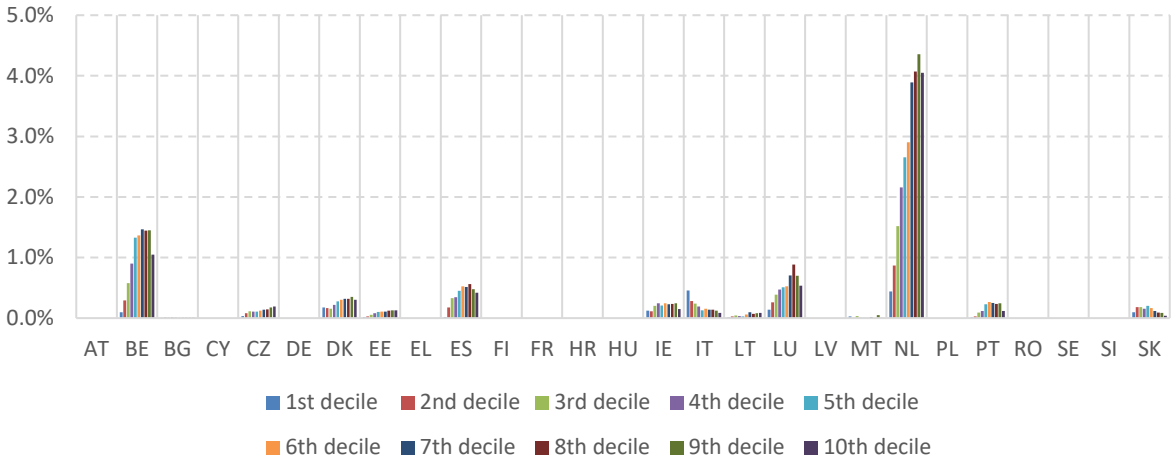
Panel A: Tax expenditures related to family



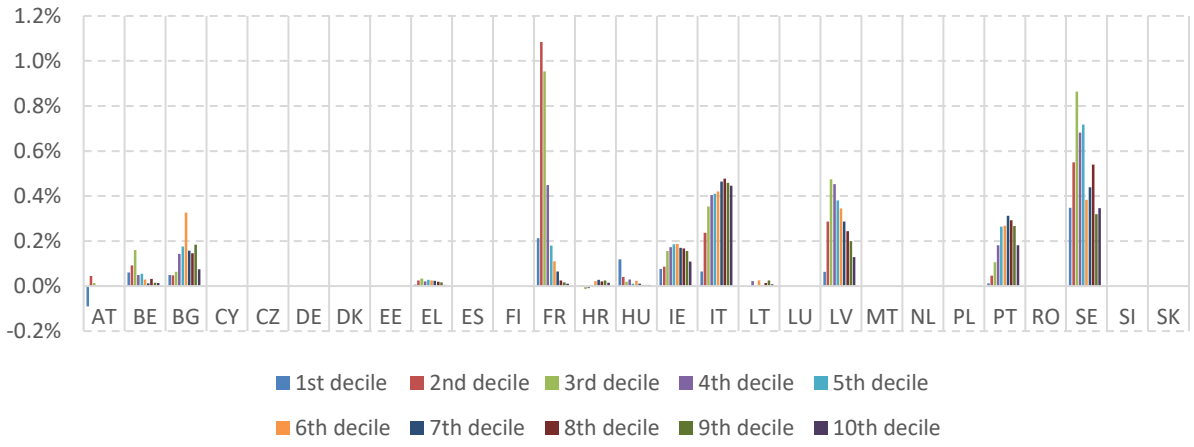
Panel B: Tax expenditures related to employment



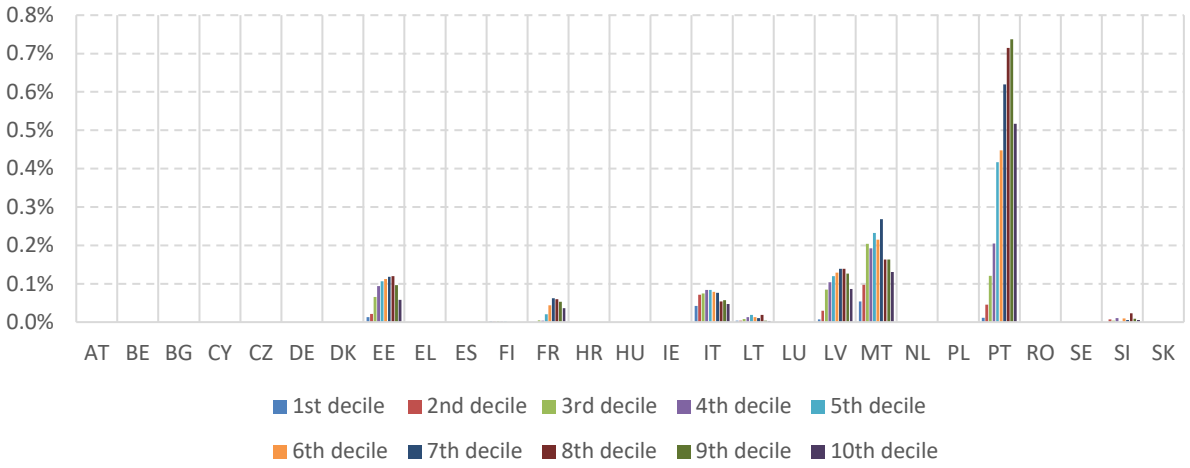
Panel C: Tax expenditures related to housing



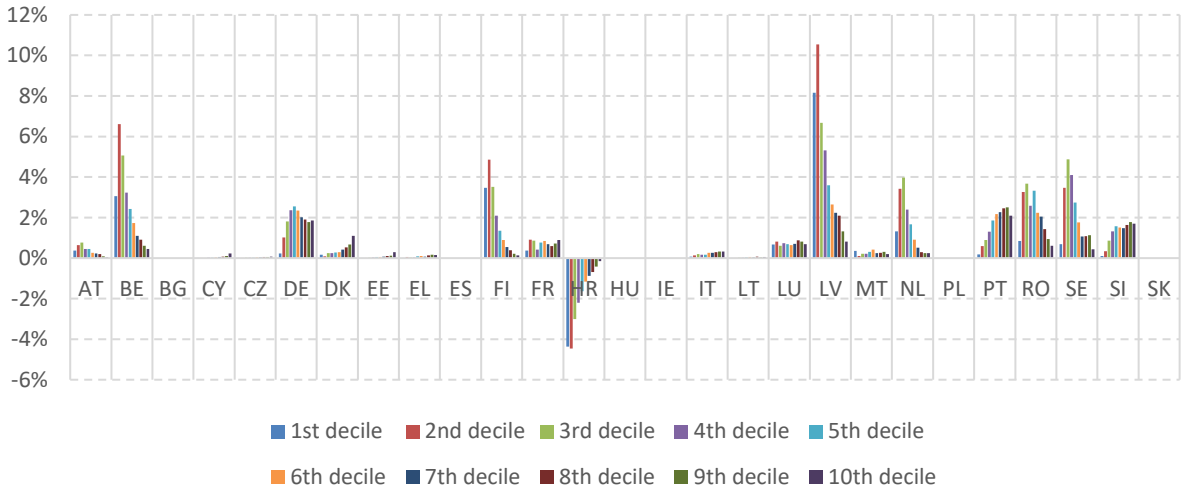
Panel D: Tax expenditures related to health



Panel E: Tax expenditures related to education



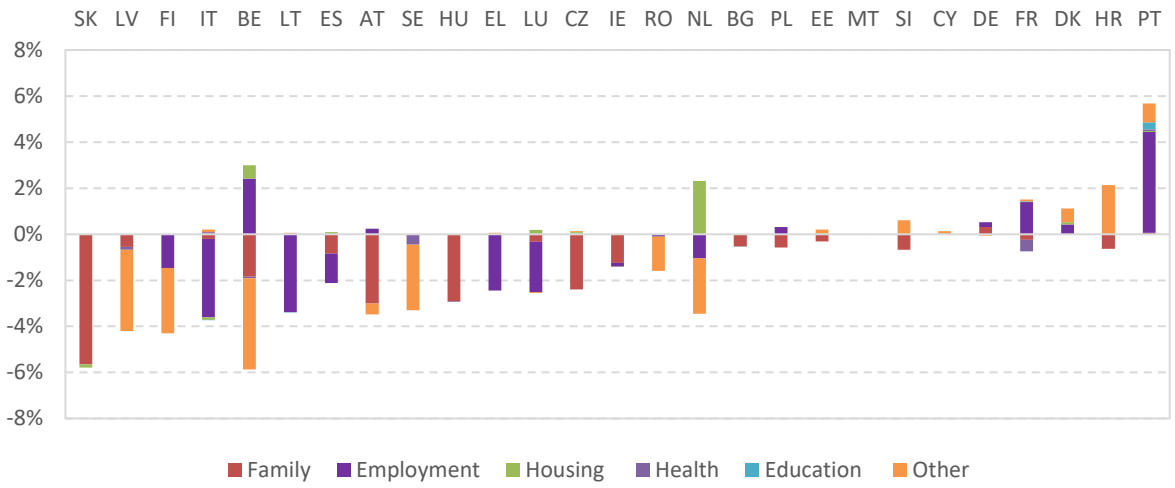
Panel F: Other tax expenditures



Note: Values are computed as the total percentage change in disposable income due to the simulated tax expenditures divided by total disposable income before jointly applying the simulated tax expenditures in employment, housing, education, health, family and other areas. Deciles are defined based on actual equivalised disposable income of the tax-benefit systems that include all applicable tax expenditures.

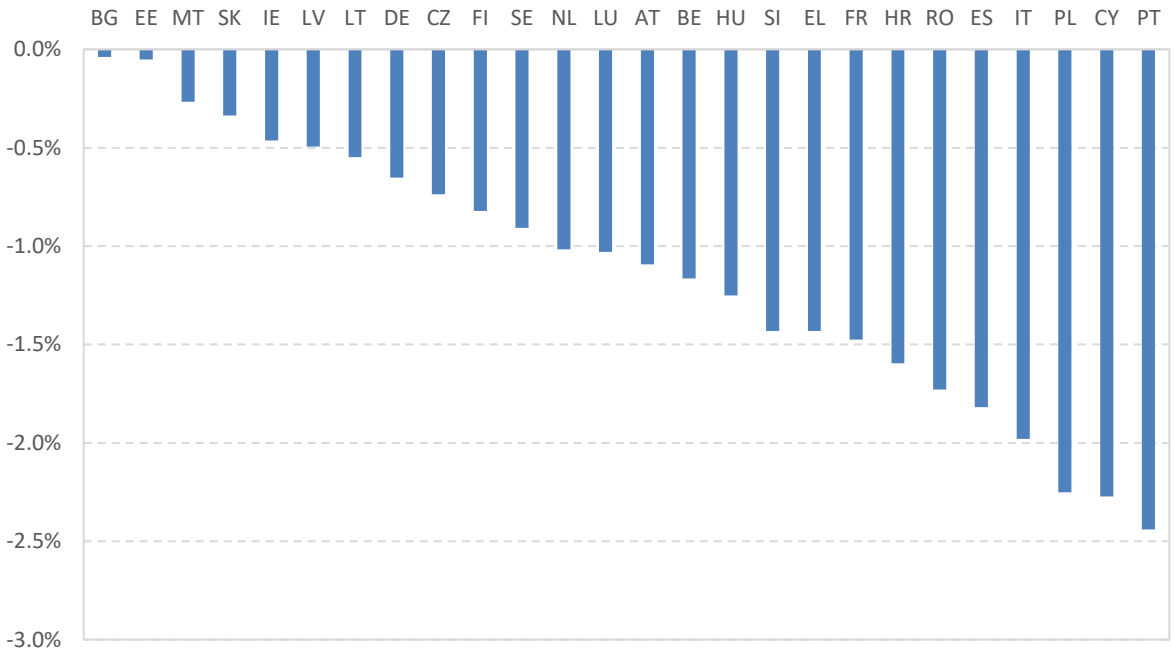
Source: European Commission Joint Research Centre, simulations based on EUROMOD Version I6.2.

Graph A.3: **Impact on income inequality, by type of tax expenditure in PIT (% change in Gini coefficient)**



Note. Values for each simulated tax expenditure category are computed as the change of the Gini coefficient due to that simulated tax expenditure after the other simulated tax expenditures have been applied, divided by the Gini coefficient before applying this simulated tax expenditure, in percentage; i.e. they show how inequality changes when applying this simulated tax expenditure category after all the others. Note that, due to policy interactions, the sum for all the components may not add up to the overall effect presented in Figure 3.

Graph A.4: **Impact of reduced VAT rates on tax revenues, 2019 (% of GDP)**



Note: The household rate gap is calculated with respect to a counterfactual scenario where all commodities and services are subject to the standard rate of VAT.

Source: European Commission Joint Research Centre, simulations based on EUROMOD version I6.30.

ANNEX II: ADDITIONAL TABLES

Table A.1: **Types of tax expenditures by area in the EUROMOD simulations for the PIT**

Country	Family	Work	Housing	Education	Health	Other
BE	TA for dependents (main & supplementary) child TA refundable TC for children	professional expenses TA refundable TC for low activity income	mortgage interest TC		disability TA	maintenance payments TA replacement incomes TC
BG	child TA	freelancer income TA	rent TA		disability TA	private pension contributions TA
CZ	spouse TC student TC child TC		mortgage interest TA			complementary pension insurance TA
DK		Earned Income Tax Credit	mortgage interest TA			investment income TA private pension plans TA
DE	lone parents TA child TA spouse TA childcare expenses TA	agricultural earnings TA private health SIC TA non-pension incomes TA minijobs TC income-related expenses TA				pension income TA capital income TA
EE	income-dependent basic allowance - additional amount for the elderly	self-employment income from agriculture TA	deduction of mortgage payments deduction of rental payments	deduction of education expenses		deduction of voluntary pension contributions
IE	home carer TC age TC widowed TC lone parent TC low income TC	employee TC EITC self-employed TC			health related TC	
EL		employment income TC	mortgage interest TC		disability TC	charitable donations TC pensioners' solidarity contributions TA
ES	family TC (dependent children and parents) maternity TC	employment TA large working families TC single working parent TC	mortgage interest TC			

Country	Family	Work	Housing	Education	Health	Other
FR	ascendants & children over 18 TA widows TC tax rebate capital income tax tax rebate general income tax child tax credit	TA for C1 income		TC for children in high-school/tertiary education	disability TA complementary disability TC	private pension contributions TA
HR	dependent children TA dependent relatives TA				disability TA	pension income TA
IT	dependent children TC	employment income TC self-employment income TC low income earners bonus	mortgage interest TC rent TC	education expenses TC	health expenses TC	private pensions TA maintenance payments TA
CY						property income TA private pension contributions TA
LV	dependent child TA dependent parent TA dependent spouse TA			education expenses TC	health expenses TC	private pension contributions TA non-taxable minimum for pensioners TA
LT		self-employed TC employment-related income basic TA	mortgage interest TC	education expenses TC	disability TA	private pension contributions TC
LU	lone parent TC	extra-professional TA salaried income TA agricultural income TA employees TC self-employed TC employees TC for energy self-employed TC for energy TC for social minimum wage TC for conjuncture, CIC for employees, pensioners & self-employed	rental income TC mortgage interest TA			private pension contributions TA maintance payments TC public pension income TA private pension income TA income from movable assets TA social assistance benefit TA pensioners TC
HU	family TA young people under 25 TA mothers under 30 TA women with 4 children TC				serious disability TC	

Country	Family	Work	Housing	Education	Health	Other
MT	child care fees TA	TC for women returning to employment tax exemption for individuals earning the min wage only	self-employed rent TA	education expenses TA		private pension income - single TC private pension income - married TC private pension income - parent TC Alimonies TA
NL		self-employement TA work credit TC	mortgage interest TA			Old age TC maintanance payment TA
AT	family TC additional family TC single earner TC lone parent TC child TC	cost of earnings TA self-assessment income TA self-employment profits TA			private healthcatre expenses TC	pensioners TC
PL	spouse TA	revenue costs TA	mortgage interest TA			donations to charities TA
PT	youngsters TA child TC	employee TA self-employed TA	rent TC mortgage interest TC	students TA education and training TC	employment, self employment and pensions income TA for individuals with disability health expenses TC health insurance TC	pensioner TA retirement home TC household general expenses TC
RO	supplementary TA for children	employee TA employees in construction sector TA young employees supplementary TA				pensioners TA private pension contributions TA
SI	child TA other dependent family members TA			students TA		private pensions contributions TA pensions TC
SK	spouse TA child TC	employee TC	mortgage interest TC			
FI		TA for work-related expenses low earned income TA entrepreneurial income TA low earned income TC		student grant TA		pension income TA deficit capital income TC special deficit TC
SE					disability TC	pensioners TA negative capital income TC

Table A.2: **VAT rate structure as of 1 January 2019 and 2021 and changes during 2021 (%)**

	2019				2021			
	Standard rate	**Reduced rate(s)**	**Super-reduced rate**	**Effective rate**	**Standard rate**	**Reduced rate(s)**	**Super-reduced rate**	**Effective rate**
BE	21	6 / 12	-	**10.2%**	21	6 / 12	-	**9.9%**
BG	20	9	-	**13.9%**	20	9	-	**13.5%**
CZ	21	10 / 15		**12.6%**	21	10 / 15		**11.8%**
DK	25	-	-	**15.1%**	25	-	-	**15.3%**
DE	19	7	-	**10.6%**	19	7	-	**10.2%**
EE	20	9	-	**12.7%**	20	9	-	**12.8%**
IE	23	9 / 13.5	4.8	**11.8%**	21	9 / 13.5	4.8	**11.7%**
EL	24	6 / 13	-	**12.2%**	24	6 / 13	-	**10.9%**
ES	21	10	4	**8.8%**	21	10	4	**8.6%**
FR	19.6	5.5 / 10	2.1	**9.7%**	20	5.5 / 10	2.1	**9.7%**
HR	25	5 / 13	-	**15.6%**	25	5 / 13	-	**15.5%**
IT	22	10	4 / 5	**9.9%**	22	5 / 10	4	**9.5%**
CY	19	5 / 9	-	**9.7%**	19	5 / 9	-	**11.3%**
LV	21	12		**11.8%**	21	5 / 12		**11.4%**
LT	21	5 / 9	-	**13.1%**	21	5 / 9	-	**13%**
LU	17	8	3	**11.8%**	17	8	3	**11.5%**
HU	27	5 / 18	-	**14.7%**	27	5 / 18	-	**14.4%**
MT	18	5 / 7	-	**12.0%**	18	5 / 7	-	**13.8%**
NL	21	9	-	**10.6%**	21	9	-	**10.7%**
AT	20	10 / 13	-	**11.3%**	20	5 / 10 / 13	-	**10.4%**
PL	23	5 / 8	-	**12.1%**	23	5 / 8	-	**11.9%**
PT	23	6 / 13	-	**11.4%**	23	6 / 13	-	**11.1%**
RO	20	5 / 9	-	**12.5%**	19	5 / 9	-	**12.3%**
SI	22	9.5	-	**11.7%**	22	5 / 9.5	-	**11.4%**
SK	20	10	-	**11.2%**	20	10	-	**10.6%**
FI	24	10 / 14	-	**12.1%**	24	10 / 14	-	**12.2%**
SE	25	6 / 12	-	**13.4%**	25	6 / 12	-	**13.9%**

Source: European commission, VAT gap reports, 2021 (2019 data) and 2023 (2021 data).