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Labour Taxation & Inclusive Growth

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Labour Taxation and Inclusive Growth

Athena Kalyva, Savina Princen, Alexander Leodolter and Caterina Astarita

Abstract

The importance of tackling income inequality has been stressed in the context of the European Pillar of Social Rights. In this context, the 2018 Annual Growth Survey underlined the relevance of labour taxes to pursue inclusive growth, as it has an important impact on economic growth but also on income inequality. Not all labour tax reforms, however, can simultaneously foster growth and reduce income inequality: some reforms imply a trade-off while others offer a win-win situation. This paper focusses on those labour tax reforms which offer complementarities between growth and income inequality objectives. It expands on work carried out for the Eurogroup (tax wedge, financing labour tax cuts) and the Economic Policy Committee (secondary earners, design of labour taxation) in supporting the EU political imperative of addressing income inequalities while fostering growth.

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Keywords: labour taxation, inclusive growth, financing of tax cut, tax shift, taxation of secondary earners, tax expenditure, labour supply determinants.

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INTRODUCTION

In recent years, there has been increased attention for income inequality and its impact on growth. Although income inequality is, on average, still lower in the EU than in other advanced economies, the increased inequality in several Member States has fuelled a perception of an unfair burden-sharing within societies. This perception has been amplified by the impact of the financial and economic crisis, which resulted in high unemployment, low growth together with a dire outlook in particular for the younger generation in some Member States. Excessively high income inequality can have negative economic effects, like weakened aggregate demand, underinvestment in human capital and reduced labour productivity, misallocation of resources, etc. However, policies aiming at reducing income inequalities can also hamper economic performance by distorting incentives for work, education, entrepreneurship and investment (European Commission, 2018).

To foster inclusive growth, growth and equity considerations should be reconciled. In order to ensure inclusive growth, i.e. economic growth where the benefits of growth are more evenly shared between individuals across the income and wealth distributions, growth and equity considerations should be aligned (Brys et al., 2016). This is particularly relevant when reforming the tax and benefit system, which is one of the main tools available for governments to reduce income inequalities. Growth considerations would require the tax and benefit system to be efficient. Equity considerations would require the system to be fair, i.e. individuals with similar income pay the same amount of taxes (neutral) and individuals with higher income pay a higher amount of taxes (progressive).

After the benefit system, the tax system is one of the most effective instruments to address inequalities. In Member States on average, benefits are estimated to contribute to approximately 75% of the reduction in inequality between market and disposable income, while taxes account for the remaining 25% (Brys et al., 2016). As all taxes generate the resources necessary to finance social benefits, they are all used to redistribute income. In most Member States, however, personal income taxes play a particular role in addressing income inequality, as they put a higher burden on high income earners than on low income earners. Also property and wealth taxes are in some countries used in a redistributive way, though their revenue potential is limited as compared to personal income taxes. Other types of taxes are much less used in a redistributive manner, as targeting is more difficult (e.g. energy taxes) or less efficient (e.g. reduced VAT rates for some categories of goods or services). The design of the labour tax system deserves particular attention, given its potential to reduce income inequality.

The tax structure in most EU Member States tends to be skewed towards labour taxes. In many Member States, labour taxes play a determinant role as revenue raising instrument. This is due to the relatively broad base of the personal income tax and social security contribution system. Moreover, labour taxes are often less subject to tax evasion, as the enforcement and administration procedures are easier to implement. It should, however, be kept in mind that also country-specific choices with regard to the level of social protection impact the level of labour taxes. A high level of social benefits requires the necessary revenues to finance them.

A tax structure heavily reliant on labour taxes can depress economic growth and employment. High labour taxes are a clear impediment to an efficient and smooth functioning of labour markets and runs counter to the objective of boosting economic activity and increasing employment. Reducing labour taxes has the potential to support consumption, stimulate labour supply and create work incentives for low-income earners, as well as to improve firms' profitability and cost-competitiveness. It should therefore increase demand, growth and support job creation, and contribute to the smooth functioning of the Economic and Monetary Union. High labour taxes per se do not necessarily constitute a problem. However, a high labour tax burden on vulnerable groups may be problematic. It should be kept in mind that labour taxes interact with other labour market features including the

wage-setting system and the minimum wage. What is of greater importance is a country's tax structure and the distribution of the tax burden over the different income groups.

The negative impact of high labour taxes is particularly pronounced for vulnerable groups, i.e. groups with more elastic labour supply and demand. Some groups within the population, such as low-income and second earners, are indeed more responsive to changes in after-tax wages. It is therefore essential to have a special focus on those segments of the labour market and identify for which of these groups labour taxation is designed in such a way that it discourages those groups from taking up work and contributes to an underperforming labour market. Targeting the most vulnerable groups can maximise the employment effect of labour tax reductions. At higher income levels, the negative effects of high labour taxation are much less relevant, as demand elasticity tends to be lower and the fixed cost of participation in the labour market becomes comparatively lower.

In the context of the European Pillar of Social Rights, the 2018 Annual Growth Survey underlined the relevance of labour taxes to pursue inclusive growth. The European Pillar of Social Rights, setting out 20 principles and rights to benefit citizens in the EU, serves as a compass for a renewed process of convergence towards better working and living conditions. It prioritises reforms that aim at helping the labour force acquire skills, promoting equal opportunities in the labour market, fair working conditions, increasing labour productivity to support wage growth and adequate and sustainable social protection systems. The Pillar is fully integrated in the 2018 Annual Growth Survey, which focusses on reforms to boost investment and to improve the functioning of product, service and labour markets. Fairer taxation was identified as one of the ways to achieve these reform objectives. While tax-related issues and their impact on growth have regularly been addressed in the context of the European Semester, special emphasis is now also put on their impact on income inequality. This further underlines the efforts that are being made at other levels, like the annual benchmarking of the labour tax wedge for low-income earners by the Eurogroup.

This paper identifies those labour tax reforms which simultaneously foster growth and reduce income inequality. Tax and benefit reforms not necessarily address both considerations simultaneously and often complementarities need to be found and trade-offs made to ensure inclusive growth. This discussion paper focusses on those labour tax reforms which lead to win-win situations and which offer a positive impact both on economic growth and inequality reduction. The paper shows that these win-win reforms are often linked to the overall tax structure and the labour tax design. The analysis presented in this paper has fed the discussions held in the Eurogroup and the Economic Policy Committee and is structured as follows: the first chapter describes the Eurogroup benchmarking exercise to reduce the tax burden on labour of average and low-income earners. Chapter two is devoted to the different options for financing labour tax reductions with a focus on shifting the tax burden away from labour to other less growth-distortive tax bases. Chapter three focusses on the taxation of secondary earners and on the impact of the tax and benefit system on the labour market participation of secondary earners. Chapter four analyses how a carefully-designed labour tax system can contribute to more inclusive growth.

1. BENCHMARKING THE TAX WEDGE ON LABOUR

Reducing the tax burden on labour is one of those structural reforms which is crucial to foster growth and job creation in the EU. Structural reform in the area of taxation, market competition and regulation, labour market, education and research and developments, leads to large potential gains in output and employment. Empirical estimation shows that EU countries closing only half of the gap towards the 3 best performing countries in the EU in these areas (which are ambitious though not unrealistic goals) raise EU GDP by 3% after five years and 6% after ten years and EU employment by 4% after five years and 6% after ten years¹. Reducing labour taxes was identified as one of the structural reforms with the largest potential growth impact in the short run. This is not surprising as for euro area Member States the tax burden on labour is among the highest in the world.

Benchmarking has been identified as an effective policy tool to support the implementation of structural reforms. The European Commission uses different policy instruments to bring structural reforms forward, like thematic scoreboards, the macroeconomic surveillance framework and the Europe 2020 medium-term strategy. The Five Presidents' report highlighted the potential of benchmarking to complete the Economic and Monetary Union, but this instrument can also be used to support growth-enhancing reforms more broadly. Benchmarking means the comparative evaluation of country experience using agreed policy indicators. It can help detect underperformance and understand good practice, it can anchor accountability and commitment, and it can underpin monitoring and communicating results of reform effort. Benchmarking exercises need to fulfil certain requirements², which quite naturally made the Eurogroup taking a leading role.

The first agreed benchmarking exercise is the one related to reducing the tax burden on labour. Since 2014, the Eurogroup takes important steps to encourage Member States to reduce their tax burden on labour. These are described in detail in this chapter. Section 1 explains how the Eurogroup committed to reduce the tax burden on labour. Section 2 describes the common principles which Member States agreed to follow when implementing reforms in this area. Section 3 describes the benchmark against which Member States agreed to compare their tax burden labour. Section 4 examines the trend of the tax wedge indicators over the past years and takes stock of the progress made so far.

1.1. EUROGROUP COMMITMENT TO REDUCE THE TAX BURDEN ON LABOUR

In June 2014, the European Commission put forward a specific recommendation to the euro area to reduce the tax wedge on labour. The Commission recommended euro area Member States to "*regularly hold thematic discussions on structural reforms in the labour and product markets with potentially large spill overs, focussing on reducing the high tax wedge on labour and reforming services markets.*" Following this recommendation, the Eurogroup started to discuss the plans and experiences in reducing the tax wedge on labour in the context of its thematic discussions on growth and jobs.

¹ http://ec.europa.eu/economy_finance/publications/economic_paper/2014/pdf/ecp541_en.pdf

² The selected areas must be relevant for growth and jobs; the agreed benchmarks should be appropriately ambitious; discussions need to be embedded in a formal governance framework to monitor compliance; the selected benchmarking indicators must be under policy makers' control; and the indicators must fulfil several statistical properties (simple and of high statistical quality).

The Eurogroup discussion highlighted the importance of reducing the tax burden on labour, but also the obstacles impeding the implementation of such reductions. Despite the broad consensus on the relevance of reducing the tax wedge to promote growth and jobs, the Eurogroup noted that there has been limited progress in this area over past years. On the contrary, large fiscal consolidation needs actually led some Member States to increase personal income taxes. Improving the implementation record often necessitates overcoming important political economy obstacles and also garnering consensus on what are the most effective and expedient ways of achieving reductions in tax wedge and raising resource to compensate the tax revenue fallout. The varied experiences of Member States showed that there is large potential for sharing of best practices. Also the question to what extent labour tax reductions should be targeted to specific groups was discussed. Targeting reductions in the tax wedge for low-income earners may be more cost-effective as it focuses on groups with more elastic labour supply and demand. Also, they may help in avoiding equity concerns. However, for concerns linked to competitiveness and firms' profitability, untargeted reductions of the part of the tax wedge paid by firms might be more appropriate. Country-specific circumstances will have to be reflected when designing specific national tax reforms.

In July 2014, the Eurogroup agreed that reducing the tax burden on labour was an important issue for the euro area. The tax burden on labour in euro area Member States is among the highest in the world. Taxes on labour increase the gap between labour costs and take-home pay and consequently reduce labour supply and demand. These effects are particularly important for groups with more elastic labour supply and demand such as low income earners. The Eurogroup established that the relatively high tax burden on labour in the euro area is an impediment to the objective of supporting economic activity and increasing employment³. At the same time, the Eurogroup identified reducing the tax burden on labour as a policy priority. It also concurred that a coordinated approach to the implementation of the necessary reforms, notably through the exchange of best practices, will provide an impetus for carrying reforms forward across the euro area.

1.2. COMMON PRINCIPLES ON REDUCING THE TAX WEDGE ON LABOUR

In September 2014, the Eurogroup agreed on common principles which should guide Member States when reducing the tax wedge on labour⁴. Following the discussion on reducing the tax wedge on labour, the Eurogroup agreed on four common principles when implementing reforms in this area⁵:

- *Design of reforms.* The reforms should be targeted at country-specific challenges, so as to maximise the impact of the reforms. To that end, they should be aimed at the relevant components of the tax burden and at specific groups facing the greatest employment challenges. It should also be ensured that the reforms do not make the tax system overly complicated for tax payers and the tax administration.
- *Broader policy context.* The positive effects of labour tax reforms can only materialise fully in well-functioning labour markets. Therefore, the impact of reducing the tax burden on labour can be significantly enhanced when they are part of a broader package of labour market reforms.
- *Political and societal support.* The implementation of labour tax reforms with offsetting tax or expenditure measures can affect income distribution. To ensure a successful reform

³ <http://www.consilium.europa.eu/en/meetings/eurogroup/2014/07/07/>

⁴ <http://italia2014.eu/media/2066/eurogroup-statement-12-september-2014.pdf>

⁵ <http://www.consilium.europa.eu/media/23891/eurogroup-statement-tax-labour-2014-09-12.pdf>

strategy, it is important to ensure broad societal and political support. This may be achieved inter alia through sharing impact assessments and consulting all the relevant stakeholders, as well as a gradual phasing in of the reforms.

- *Financing of reforms.* Given the overall limited fiscal space in the euro area, reductions of the tax burden on labour need to be duly compensated, while taking into account the country specific fiscal margin for manoeuvre. To this end, reforms for reducing the tax burden on labour should be accompanied by either a compensatory reduction in (non-productive) expenditure, or by shifting labour taxes towards taxes less detrimental to growth, with a view to respecting fiscal targets in line with the Stability and Growth Pact.

However, the Eurogroup noted the limited progress made in reducing the tax wedge on labour. In December 2014, the Eurogroup took stock of the progress made in reducing the tax wedge on labour. It noted that reducing the tax burden on labour receives attention in many euro area countries but that the size of reforms is modest.

1.3. BENCHMARKING THE TAX BURDEN ON LABOUR

In May 2015, the European Commission put forward a specific recommendation to the euro area to follow-up on reducing the tax burden on labour. The Commission recommended the euro area to "*By spring 2016, take decisions on the follow-up to the coordination exercise on reducing the high tax wedge on labour and on reforming services markets.*" In this context, the Commission underlined that thematic discussions in the Eurogroup can help the reform process via the assessment and benchmarking of reforms.

Benchmarks may prove a powerful tool, providing a sense of urgency and direction. If well-designed, benchmarks can increase national ownership of EU-level policy guidance and accountability and thus boost reform implementation across the euro area. The idea of agreeing benchmarks for key structural policies has also been raised in the context of the discussions on the next steps on better economic governance in the euro area, with an eye to fostering convergence and lifting growth potential. Progress towards such benchmarks would be regularly monitored. To ensure that a benchmark has the highest possible impact, the indicator to which the benchmark is applied needs to fulfil a number of criteria. The indicator should be simple, measurable and under direct control of policy makers. Particularly the last criterion makes some desirable policy outcomes (such as the level of economic growth) difficult to capture in an indicator that lends itself to benchmarking.

The tax wedge was identified as a suitable indicator for benchmarking the tax burden on labour. The tax wedge on labour, which measures the difference between the total labour costs to employ a worker and the worker's net earnings, meets these criteria to a large extent. Importantly, the tax wedge fulfils the crucial criterion of being under government control. It consists of personal income taxes and employer and employee social security contributions, the rates of which are generally set by national governments. The tax wedge indicator has limitations as well. In particular, it looks back at the previous year and therefore does not capture recent measures taken. It also does not capture interaction with other relevant policies such as social benefits and active labour market policies. To be able to draw firm policy conclusions, it is therefore important to complement a reading of the indicator with further information, also of a country-specific nature, including economic outcomes. Such a more in-depth analysis is carried out in the context of the European Semester.

The GDP-weighted EU average was identified as a benchmark which is ambitious but realistic. For the tax burden on labour in the euro area on average, the EU average may be considered an appropriate benchmark. The GDP-weighted EU average provides a significant level of ambition and is used since several years by the Commission to assess which countries have a burden that is

relatively high or relatively low⁶. At the same time, it was noted that the EU average is still high and should by no means be considered an ideal level in the longer run.

In September 2015, the Eurogroup agreed to benchmark euro area Member States' tax burden on labour against the GDP-weighted EU average⁷. On 12 September 2015, the Eurogroup discussed benchmarking as a tool to further inform and support reforms in the area of labour taxation. In this context, the Eurogroup agreed to benchmark euro area Member States' tax burden on labour against the GDP-weighted EU average, relying in the first instance on indicators measuring the tax wedge on labour for a single person earning an income at the average wage and at a low wage. It agreed to also relate this to the OECD average for purposes of broader comparability.

1.4. PROGRESS MADE OVER TIME TO REDUCE THE TAX WEDGE ON LABOUR

After the economic crisis, some Member States resumed efforts to reduce the tax burden on labour. In the years prior to the crisis, several Member States took measures to gradually reduce the tax burden on labour although these were often of limited ambition. In the context of the crisis, however, many Member States raised taxes, including labour taxes, to contribute to consolidation efforts. When circumstances allowed, some Member States again implemented targeted measures to reduce labour taxes, focussing in particular on low-income earners. Reducing the tax wedge on lower income earners can increase the incentives to work while increasing disposable income near the bottom of the income distribution. It also has the potential to support job creation for this more vulnerable population group.

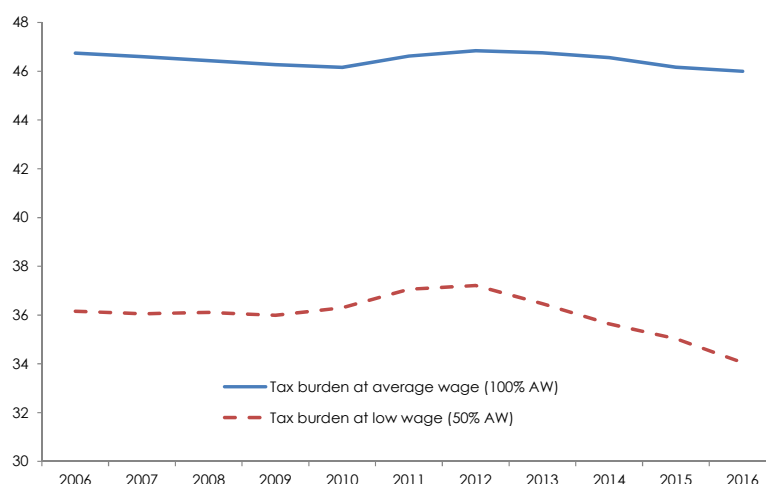
As a result of policy measures in some Member States, the tax burden on labour decreased in the euro area. Graph 1.1 illustrates these developments, showing the euro area average tax burden on labour for a single worker earning an income at the average wage (100% of the average wage) and for a single worker earning a low income (50% of the average wage). The drop in the tax burden for low income earners since 2012 reflects more ambitious measures in notably France, Belgium, Italy and Estonia. Also a reduction of the tax burden for low income earners in the Netherlands contributed to this decreasing trend. Overall, the euro area tax wedge for the average wage is more stable, although a slight decrease can be observed since 2014. In particular, labour tax cuts in Belgium and France contributed to this decrease.

⁶ The methodology applied to determine relatively low and relatively high values was developed in the context of the so-called Lisbon methodology assessment framework in the Economic Policy Committee's LIME Working Group. Based on the methodology, an indicator value that is relatively high or relatively low compared to the EU average means that the indicator is at least 0.4 standard deviations below or above the GDP-weighted EU average (after normalisation). This approach captures the top and bottom third of the distribution under the normality assumption. The values between the lines capture the middle third, which is not significantly different from the EU average. Full details on the methodology may be found in *The LIME assessment framework: a methodological tool to compare the performance of EU Member States*.

http://ec.europa.eu/economy_finance/publications/publication_summary13273_en.htm

⁷ <http://www.consilium.europa.eu/en/press/press-releases/2015/09/12-eurogroup-statement-structural-reform/>

Graph 1.1. The euro area average tax burden on labour for a single worker

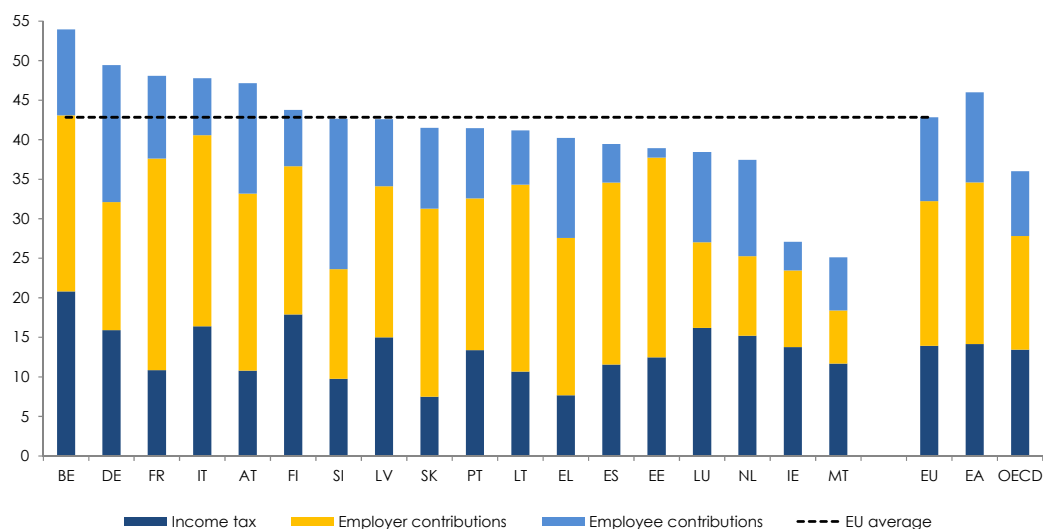


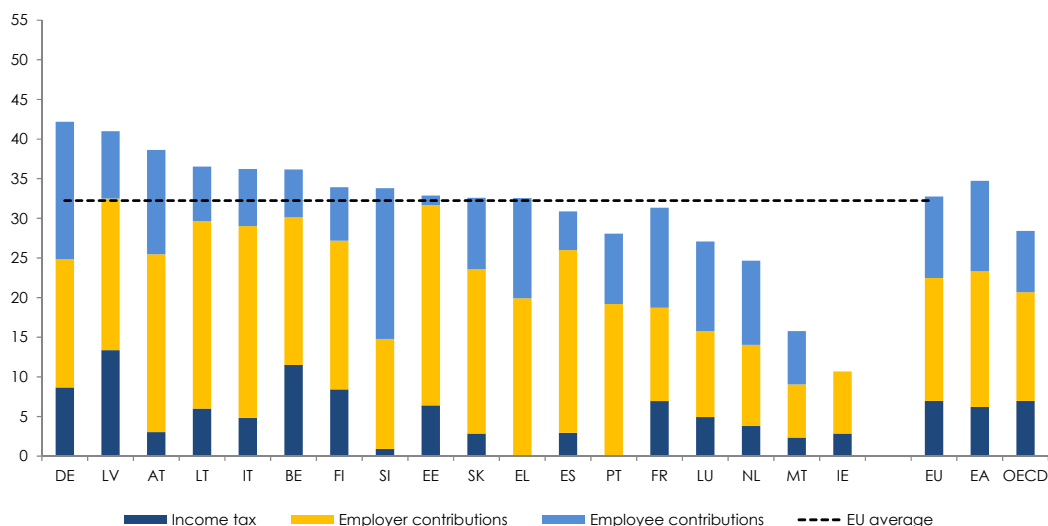
Notes: The indicator shown in the graph is the tax wedge on labour. The tax wedge is defined as the sum of personal income taxes and employee and employer social security contributions net of family allowances, expressed as a percentage of total labour costs (the sum of the gross wage and social security contributions paid by the employer). No recent data is available for Cyprus. The euro area averages are GDP-weighted.

Source: European Commission Tax and Benefits Indicator database based on OECD data.

Within the euro area, there are large differences between Member States in terms of the size of the tax burden on labour and its composition. Graph 1.2 illustrates these differences in the size of tax burden and its composition (i.e. employer social security contributions, employee social security contributions, personal income taxes). Moreover, the graph shows that most Member States with a high burden on the average wage also have a high burden on the low wage (Belgium, Germany, Italy, Austria, and Finland). In 2016, tax wedge cuts for average income earners were most significant in Belgium and Austria. In Austria, the tax cuts concerned income taxes, while in Belgium cuts were made in both income taxes and employer contributions. For low income earners, labour tax cuts in 2016 were particularly large in Belgium and Estonia, reducing the tax wedge by more than four percentage points. In France, employer contributions were cut, partially counterbalanced by increases on the employees' side. In the Netherlands, the tax wedge for low income earners was reduced by lowering personal income taxes. The labour tax cuts in Austria also reduced the tax wedge for low income earners.

Graph 1.2. The tax burden on labour for a single person at the average wage and at low wage (2016)





Notes: The line in the graphs represents the benchmark, i.e. the GDP-weighted EU average. The EA average is GDP-weighted, whereas the OECD average is not weighted as it is not customary for the OECD to do so. No recent data is available for Cyprus. The low wage indicator is 50% of the average wage. The indicators for 2016 reflect the reforms introduced in 2016, as an annual average based on monthly data. This means that, if a reform became effective early 2016, it will be more strongly reflected in the indicator. If a reform became effective only at the end of 2016, it does not show strongly yet and will only be fully reflected in the 2017 indicator.

Source: European Commission Tax and Benefit Indicator database based on OECD data.

Assessing the state of play to reduce the tax wedge on labour shows that reform efforts continue into the right direction, although the size of most measures is relatively limited. Measures announced in the 2018 Draft Budgetary Plans⁸ show continued progress in the direction of reducing the tax burden on labour. These measures contribute to the efforts Member States have made in recent years to reduce the tax burden on labour. For average income earners, the average euro area tax wedge continues to decline only slowly. While for low income earners, the average tax wedge continues its steady decrease since 2012 in the euro area. Although planned reforms in this area are steps in the right direction, their size is often relatively limited. Against this background, benchmarking is a useful tool for highlighting the possible need and scope for reform in individual Member States and in the euro area as a whole.

⁸https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/stability-and-growth-pact/annual-draft-budgetary-plans-dbps-euro-area-countries/draft-budgetary-plans-2018_en

2. FINANCING LABOUR TAX REDUCTIONS

While several Member States have undertaken reforms, the tax burden on labour remains high.

After the Eurogroup agreement in September 2015 (see previous chapter), several Member States have undertaken reforms to address the high tax wedge on labour. More recently, however, reform efforts have decreased and Member States have identified the financing of labour tax reductions as a key challenge in this context⁹. This chapter is organised along the three main financing options identified in line with the common principles adopted by the Eurogroup in September 2014. Section 1 focusses on an uncompensated labour tax reduction, while Section 2 discusses how an offsetting expenditure cut can finance a labour tax reduction. Section 3 analyses revenue-neutral tax shifts away from labour to taxes considered less detrimental to growth, i.e. consumption taxes, recurrent property taxes and environmental taxes. Section 3 further extends on revenue-neutral tax shifts by identifying which Member States have need and scope for shifting taxes away from labour. It also discusses the growth and distribution effects of a shift, as well as possible alternatives. Moreover, it focusses on specific issues related to consumption taxes, recurrent property taxes and environmental taxes.

2.1. TAX BURDEN ON LABOUR

Several Member States have a high overall tax burden on labour and have potential scope to reduce it. In Table 2.1, the values significantly deviating from the weighted EU average are highlighted in blue. Some Member States have relatively high values on all (Belgium, France, Austria) or almost all indicators (Germany, Italy, Sweden). When focussing on the tax burden on an individual (implicit tax rate on labour and labour tax wedge), Belgium, France, Italy, Hungary and Austria values are relatively high. To evaluate which are the Member States that have an high overall tax burden on labour, 4 indicators are here taken into consideration:

- *Revenue from labour taxation as a percentage of GDP* provides an insight in the absolute level of labour taxation in a country. When comparing Member States, it is important to keep in mind that in Member States with relatively higher overall tax levels individual tax categories are likely to be relatively higher as well;
- *Labour tax revenue as a percentage of total tax revenue* gives an insight in the extent to which a Member State relies on labour taxation compared to other taxes. However, it should be considered that country-specific choices with regard to financing social protection impact the level of labour taxation;
- *The implicit tax rate on labour* represents the ratio of the revenue from labour taxation to the total compensation of employees (i.e. labour tax base). This indicator gives an insight in the average level of labour taxation on an individual;

⁹ <http://www.consilium.europa.eu/en/press/press-releases/2015/09/12-eurogroup-statement-structural-reform/>

- *The so-called tax wedge on labour income* provides a more granular insight in the burden on an individual, zooming in on specific income categories¹⁰. It provides a measure of the difference between total labour costs to the employer and the corresponding net take-home pay of the employee (the tax wedge is defined as the sum of personal income taxes and employee and employer social security contributions net of family allowances, expressed as a percentage of total labour costs (the sum of the gross wage and social security contributions paid by the employer)).

Several countries have a relatively high labour tax burden on low-income and secondary earners, which may substantially discourage labour market participation. As labour market participation is crucial to foster inclusive growth, the tax system should reduce work disincentives for vulnerable groups. Some groups within the population are considered particularly responsive to changes in after-tax wages, e.g. low-income earners and secondary earners. It is therefore essential to have a special focus on those segments of the labour market and identify for which of these groups labour taxation substantially contributes to an underperforming labour market. Targeting the most vulnerable groups can maximise the employment effect of labour tax reductions. Table 2.1 provides a number of indicators that express the tax burden on low-income earners. Several Member States have a tax wedge on low wages (50% or 67% of the average wage) significantly above the weighted EU average. Moreover, Annex I shows that a few countries that have a relatively high tax wedge for low-income earners also have labour taxes and benefit systems that substantially contribute to both inactivity and unemployment traps.

¹⁰ The OECD's 2017 Taxing Wages report includes a special feature on specific groups, analysing the participation decisions and computing the tax wedge specifically for these groups (http://www.oecd-ilibrary.org/taxation/taxing-wages-2017_tax_wages-2017-en).

Table 2.1. Overall tax burden on labour and labour tax burden of vulnerable groups

Country	Overall labour tax burden				Low-income earners		Secondary earners
	Revenue % GDP	Revenue % total tax revenue	Implicit tax rate	Tax wedge (100% AW) (2016)	Tax wedge 67% AW	Tax wedge 50% AW	Secondary earner (67% AW)
	2015	2015	2015	2016%	2016	2016	2014
Belgium	24.0	53.2	43.6	54.0	47.5	36.2	60.2
Bulgaria	9.9	34.0	23.9	33.6	33.6	33.6	33.6
Czech Republic	17.0	49.6	39.3	43.0	40.2	37.3	48.6
Denmark	23.9	51.3	34.2	36.5	34.3	32.3	40.5
Germany	21.8	56.6	38.0	49.4	45.3	42.2	54.7
Estonia	16.8	49.7	34.4	38.9	37.8	32.9	42.2
Ireland	10.3	43.0	32.9	27.1	21.2	10.7	28.6
Greece	14.5	39.9	40.2	40.2	36.1	32.6	37.5
Spain	16.2	47.8	31.3	39.5	35.9	30.9	41.7
France	23.9	52.1	41.3	48.1	43.0	28.0	51.5
Croatia	14.6	38.9	30.7	39.5	35.3	33.4	41.0
Italy	21.2	49.0	43.2	47.8	40.8	36.2	44.9
Cyprus	11.3	34.3	25.0	-	-	-	-
Latvia	13.9	47.5	30.4	42.6	41.8	41.0	48.5
Lithuania	13.6	46.7	32.1	41.1	39.2	37.3	38.9
Luxembourg	17.2	45.6	32.7	38.4	31.2	27.1	40.2
Hungary	17.6	45.0	41.8	48.2	48.2	48.2	49.0
Malta	11.4	33.8	23.0	24.6	18.9	16.1	18.8
Netherlands	20.6	54.7	32.7	37.5	30.6	24.7	35.6
Austria	24.8	56.6	43.1	47.1	42.8	38.6	44.8
Poland	13.5	41.7	34.1	35.8	35.1	34.4	36.5
Portugal	14.6	42.3	29.5	41.5	36.3	28.1	44.1
Romania	10.3	36.7	31.2	39.3	38.3	37.3	41.4
Slovenia	18.4	50.0	36.0	42.7	38.7	33.8	43.3
Slovakia	16.8	52.1	36.7	41.5	39.0	32.6	46.5
Finland	22.7	51.7	40.7	43.8	37.9	33.9	38.4
Sweden	24.9	57.6	38.9	42.8	40.8	39.2	40.5
United Kingdom	12.6	37.8	24.8	30.8	25.9	20.8	26.4
EU average	19.3	49.1	35.9	42.8	38.2	32.2	45.6
EA average	21.0	52.1	38.6	46.1	41.0	34.1	49.2
OECD average	-	-	-	36.0	-	-	-
Relatively high	21.1	51.9	38.4	45.8	41.1	35.4	48.9
Relatively low	17.4	46.3	33.3	39.9	35.3	29.0	42.4

Source: 2017 Taxation Trends Report and European Commission tax and benefit database based on OECD data http://ec.europa.eu/economy_finance/db_indicators/tax_benefits_indicators/index_en.htm

Notes: AW refers to average wage. Tax wedge data for Bulgaria, Croatia, Latvia, Lithuania, Malta and Romania are for 2014. Recent data for Cyprus is not available. EU and EA averages are GDP-weighted. Relatively high/low refers to significantly above/below the EU average.

Box 1. INDEXATION OF LABOUR TAXES TO ENSURE ITS BUDGETARY AND DISTRIBUTIONAL EFFECTS

As inflation is expected to soon exit its current low phase, its impact on taxation deserves a closer look. Even modest inflation rates can substantially impact tax revenues (Heinemann, 2001) or affect the distributional effect of the tax system (Immervoll, 2005) and work incentives. This is particularly true for personal income taxation, as it is progressive in most Member States. The impact on other tax categories is less clear.

Revenue impact

In a progressive personal income tax system, if the tax brackets are not adjusted accordingly, inflation will over time make a larger part of taxpayers' income subject to a higher marginal tax rate (so-called "*bracket creep*"). Moreover, if tax credits and deductions are stated in nominal values, their amount will decrease in real terms with inflation and they will therefore affect a smaller part of income than previously. If these values are not indexed (or adjusted regularly), personal income tax revenues are therefore expected to be substantially increased by inflation.

As regards social security contributions, their base is often restricted by a ceiling (taxable maximum), sometimes justified by the real value of the benefit received. These upper limits have a regressive effect, as they benefit high-income earners. At the same time, social security contributions can also exhibit a progressive element in the form of different rates or a minimum threshold for the contribution base (although this can also be regressive). When inflation increases nominal incomes, the revenues from social security contributions will decrease due to the ceilings.

Concerning labour incentives, inflation will increase the tax wedge on labour through bracket creep in a system of progressive personal income tax. Additionally, nominally stated tax deductions and credits will also increase the tax wedge, as the tax relief they provide will become smaller as a share of the total personal income. The effect of taxation on labour supply is considered to be particularly large for groups with larger elasticities of labour supply, such as low income and secondary income earners. Alternatively, the real tax burden might also be on employers and they might have to increase wages or have a reduced incentive to hire workforce.

Distributive effects

The question whether inflation makes the personal income tax system less or more progressive can a priori not be decided upon. Yet, a simulation of the impact of personal income taxation and social security contributions on inequality in Germany, the Netherlands and the United Kingdom with the use of the microsimulation model EUROMOD finds that, if tax systems are not adjusted for inflation, tax progressivity is reduced. However, at the same time the difference between before-tax and after-tax inequality (measured by a difference in Gini coefficients) will also grow, as inflation increases total tax revenues. Inflation therefore may reduce the progressivity of a tax system compared to the initial situation, but at the same time it may increase the equality-increasing effect of the tax system, because it increases the tax burden. Therefore, real household incomes are more equally distributed than before inflation in the simulated scenarios (Immervoll, 2005).

Since inflation decreases during recessions and increases during expansions (recoveries), personal income tax with its revenue increases due to inflation can act well as an automatic stabiliser over the economic cycle. However, the bulk of automatic stabilisation actually comes from constant government expenditures, more than from taxes or unemployment benefits, as In 't Veld et al. (2012) have shown in simulations with the macroeconomic model QUEST.

Indexation of the personal income tax system

In order to correct for the effects of inflation on the personal income tax system, some countries index their tax systems to price developments. A similar adjustment can be done for social security contributions, which are most often adjusted to wage developments. In fact, almost all social security systems with maximum or minimum thresholds or a differentiated rate system feature an adaption mechanism.

One fourth of the Member States have adjusted their personal income tax systems for inflation (Table 2.2). Amid countries with a progressive personal income tax system, Belgium, Denmark, France, the Netherlands, Finland, Sweden and the United Kingdom regularly adjust their tax elements for inflation. Member States with flat personal income tax systems do not index for inflation; in any case indexation would only be necessary for allowances and tax credits if they did.

Almost all Member States applying income limits or differentiated rates for social security contributions index their social security contribution system to inflation (Table 2.2). Only a limited number of countries apply the same social contribution rates for all income levels and do not use income thresholds (Belgium, Estonia, Hungary, Portugal, Slovenia and Finland). In most other countries, where social security contributions have some progressive or regressive effects, rates or thresholds are adjusted, mostly to wage developments. Indexation of social security contributions is expected to cancel out both progressive and regressive effects stemming from different brackets and maximum thresholds.

Table 2.2. Annual adjustment of personal income tax brackets and social security contribution ceilings

Country	Personal income tax	Employee SSC ceiling	Employer SSC ceiling
Belgium	Yes (to prices)	N.a. (no ceiling)	N.a. (no ceiling)
Bulgaria	N.a. (flat tax)	-	-
Czech Republic	No (flat tax with basic tax credit)	Yes (to average wage)	Yes (to average wage)
Denmark	Yes (to average wage)	No	No
Germany	No	Yes (to gross wages)	Yes (to gross wages)
Estonia	No (flat tax with basic allowance)	N.a. (no ceiling)	N.a. (no ceiling)
Ireland	No	N.a. (no ceiling)	No
Greece	No	Yes (to basic salary)	Yes (to basic salary)
Spain	No	Yes (to minimum wage)	Yes (to minimum wage)
France	Yes (to consumer prices)	Yes (to wages)	Yes (to wages)
Croatia	No	Yes (to average wage)	N.a. (no ceiling)
Italy	No	Yes (to consumer price index)	Yes (to consumer price index)
Cyprus	No	No	No
Latvia	No (flat tax with basic allowance)	-	-
Lithuania	No (flat tax with basic allowance)	N.a. (no ceiling)	N.a. (no ceiling)
Luxembourg	No	Yes (to minimum wage)	Yes (to minimum wage)
Hungary	N.a. (flat tax)	N.a. (no ceiling)	N.a. (no ceiling)
Malta	No	Yes (to minimum wage)	Yes (to minimum wage)
Netherlands	Yes (to prices)	Yes (to minimum wage)	Yes (to minimum wage)
Austria	No	Yes (to projections of contributions)	Yes (to projections of contributions)
Poland	No	Yes (to average salary)	Yes (to average salary)
Portugal	No	N.a. (no ceiling)	N.a. (no ceiling)
Romania	No (flat tax with basic allowance for employees)	Yes (to average wage)	Yes (to average wage)
Slovenia	No	N.a. (no ceiling)	N.a. (no ceiling)
Slovakia	No	Yes (to average wage)	Yes (to average wage)
Finland	Yes (to prices)	N.a. (no ceiling)	N.a. (no ceiling)
Sweden	Yes (to nominal wages)	Yes (to average income)	N.a. (no ceiling)
United Kingdom	Yes (to consumer prices)	Yes (to earnings projections)	N.a. (no ceiling)

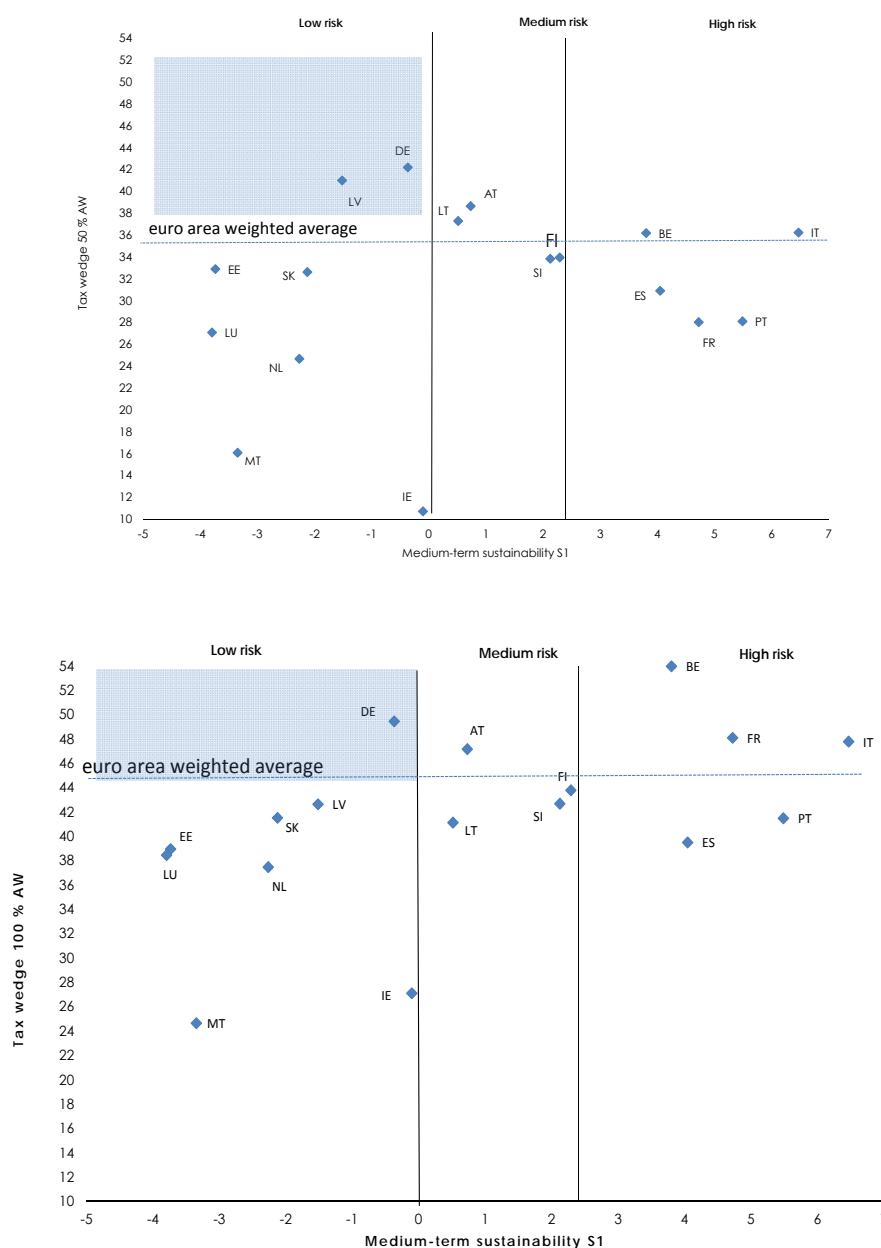
Sources: Commission Services, Lemmer 2017, OECD.

Notes: N.a. (not applicable) applies when the rate system for PIT consists of a flat rate or when there is no ceiling for any social security contributions. "Yes" for social security contributions means that contributions with a ceiling in the respective Member State are indexed. It does not imply that all contributions have a ceiling. '-' indicates that the information could not be found. Irregular adjustments are not captured by this table. Information relates to 2016 or 2017 and therefore also to the tax system at the time.

2.2. AN UNCOMPENSATED LABOUR TAX REDUCTION

To draw strong policy conclusions on the fiscal space needed for an uncompensated labour tax cut, indicators and country-specific circumstances have to be examined. Although the main challenges across Member States are comparable, country-specific circumstances need to be taken into account¹¹. Given that public finances are still strained in many Member States and in order not to put fiscal sustainability at risk, options to finance labour tax reductions must also be examined.

Graph 2.1. Tax wedge (50% and 100% of average wage) and medium term-sustainability risk, 2016



Source: Commission services.

¹¹ Also in full respect of the existing EU economic surveillance framework, in particular the Stability and Growth Pact.

Given the overall limited fiscal space, only few Member States appear to have the fiscal space to reduce the tax burden on labour without the need to offset revenue losses. To illustrate this point, Graph 2.1 sets out the tax wedge on labour (as an indication of those countries that may, in particular, wish to consider reducing labour taxation) against the S1 indicator of medium-term fiscal sustainability¹². In 2016, only Germany, Latvia, Lithuania and Austria in the euro area (tax wedge for low-income earners) had enough fiscal margin for manoeuvre to consider an uncompensated labour tax cut (European Commission, 2016a). Some Member States face a need to decrease relatively high taxes on labour (overall or for low-income groups) but are still facing a fiscal sustainability challenge (with the S1 indicator of medium-term sustainability risk above 0).

2.3. AN OFFSETTING EXPENDITURE CUT

In this context, a labour tax cut can be financed in a budget-neutral manner by cutting or by better and more efficient use of public expenditure. Reviews and reforms of priorities in public expenditure, could contribute to a more overall growth-friendly composition of the budget. This option is particularly relevant for countries with both high labour taxation and important fiscal sustainability issues. Since 2014, expenditure cuts, especially in euro area countries, occurred in a context of consolidation needs. Over the period 2014-2017, expenditures declined more (from 49.4% of GDP in 2014 to 47.7% in 2017) than revenues (from 46.8% to 46.1%) in the euro area (European Commission, 2016a), though only 0.5 pp of the expenditure decline ratio is estimated to be structural (e.g. attributed to labour tax cuts). This reflects the diverse nature of the main factors driving the expenditure ratio, namely the impact of the economic recovery on automatic stabilisers and lower interest expenditure.

Although growth-enhancing in the long-run, the impact of an offsetting expenditure cut could be mixed in terms of growth and employment in the short-run. If the expenditure cuts do not affect 'productive' spending (e.g. education, infrastructure, innovation and input based R&D tax incentives), the long-term outcome for growth and jobs will be favourable through a stimulation of labour supply and an increase in the productive potential. However, in the short run, the expenditure cut may have contractionary effects that are more pronounced than the expansionary effects of the tax reduction, especially if the expenditure cut affected government consumption and investment.

One way in which Member States can cut expenditures is by limiting the use or reducing the generosity of tax expenditures. Tax expenditures are generally reductions in government revenue through preferential tax treatment of specific groups of tax payers or specific economic activities. Some tax expenditures are recorded in the National Accounts as reductions on tax revenues while others (e.g. tax credits) as expenditures¹³. EU Member States make ample use of tax expenditures with a wide variety of aims, including employment creation, innovation, education, entrepreneurship, home ownership and income redistribution. Reported tax expenditures add up to a non-negligible share of GDP in many EU Member States. It could amount to 2%-4% of GDP in some countries

¹² The need to improve fiscal sustainability is determined on the basis of the commonly accepted indicator of fiscal sustainability in the medium term — the S1 indicator ('debt compliance risk'). S1 corresponds to the required adjustment in the budget balance (as % of GDP) to achieve a general government gross debt of 60 % of GDP — the debt threshold in the Treaty — by 2032. The higher these indicators are, the less sustainable the level of public debt is. The S1 values are those of the European Commission's Spring 2017 Economic Forecast.

¹³ The move from ESA 95 to ESA 2010 changed the classification of some tax expenditures. ESA 2010 introduces among others explicit new rules for recording tax credits in national accounts. This treatment represents a clear difference as compared to the previous recording under the ESA 95. Tax credits that constitute non-contingent liability of government are now treated as expenditure instead of reduction of tax revenue and recorded at the moment when government recognises the obligation to pay.

(European Commission, 2014). While tax expenditures may be motivated by relevant economic or social goals, they are not necessarily the most cost efficient instrument and may in some cases lead to severe economic impacts and distortions (OECD, 2010 a and b). Alternative targeted measures on the expenditure side of the budget may often be more economically efficient such as incentives to boost investment or targeted benefits for low-income households etc. Possible tax expenditure cuts could also concern those which are too expensive to maintain, with potentially large revenue losses, with large administrative and compliance costs or which can be replaced by more efficient measures. Scaling back specific tax expenditures which may benefit high income earners disproportionately (e.g. preferential tax treatment of immovable property/interest mortgage deductibility, fringe benefits etc.) could also free budget resources for productive spending, for tax base broadening or for cuts in labour tax rates.

Since 2016, most Member States use spending reviews to rationalise expenditure allocation. In September 2016, the Eurogroup called on euro area Member States to actively use spending reviews and approved a set of common principles for improving expenditure allocation through their use¹⁴. Almost all euro area Member States are now using spending reviews, either as a first-time exercise or, to a lesser extent, as a regular, annual effort to rationalise expenditure allocation. To allow periodic monitoring, the Eurogroup invited its preparatory committees and the Commission to develop a work stream on the exchange of best practices and lessons learnt from spending reviews undertaken in euro area Member States, in order to identify scope to rationalise expenditures in non-productive areas of spending. Member States also face calls from different directions to promote the quality of public spending in order to create favourable conditions to support investment.

2.4. A REVENUE-NEUTRAL TAX SHIFT

While labour taxes hamper growth, recurrent property taxes, consumption taxes and environmental taxes are considered less detrimental to growth. Based on econometric analysis investigating the effect of the tax structure on long-run GDP, the OECD proposed a growth-friendliness ranking of tax instruments (Arnold, 2008; Arnold et al., 2011; Johansson et al., 2008). Property taxes, in particular recurrent taxes on immovable property, are classified as the least growth-distortive, followed by consumption taxes, including environmental taxes. Corporate and personal income taxes were identified as having the most negative effects on economic growth.

¹⁴ <http://www.consilium.europa.eu/en/press/press-releases/2016/09/09-eurogroup-statement/>

Table 2.2. Revenue from taxes less detrimental to growth (2015)

Country	VAT rate gap	Actionable VAT exemption gap	VAT gap as % of VAT theoretical tax liability
Belgium	12.0	4.1	10.8
Bulgaria	2.3	6.6	20.6
Czech Republic	5.5	7.3	16.5
Denmark	0.8	-0.1	10.8
Germany	7.1	6.7	9.6
Estonia	2.6	9.6	4.9
Ireland	9.1	9.4	9.9
Greece	11.3	12.2	28.3
Spain	14.6	12.4	3.5
France	11.7	6.1	11.7
Croatia	8.8	2.9	3.9
Italy	15.5	7.1	25.8
Cyprus	29.8	-7.4	7.5
Latvia	3.2	10.3	18.0
Lithuania	4.0	10.1	26.4
Luxembourg	16.3	9.7	5.6
Hungary	4.6	10.3	13.7
Malta	15.7	7.2	22.6
Netherlands	11.1	2.4	7.9
Austria	11.0	3.5	8.2
Poland	15.5	12.4	24.5
Portugal	11.6	7.5	11.5
Romania	5.8	3.0	37.2
Slovenia	11.7	9.4	5.5
Slovakia	1.5	12.2	29.4
Finland	7.1	5.0	7.0
Sweden	7.8	3.4	-1.4
United Kingdom	8.7	8.6	10.9
EU average	10.2	7.1	12.3
EA average	10.9	6.9	12.3
Relatively high	11.6	8.2	15.2
Relatively low	8.8	6.0	9.4

Source: European Commission services

Notes: EU and EA averages are GDP-weighted. Relatively high/low refers to significantly above/below the EU average.

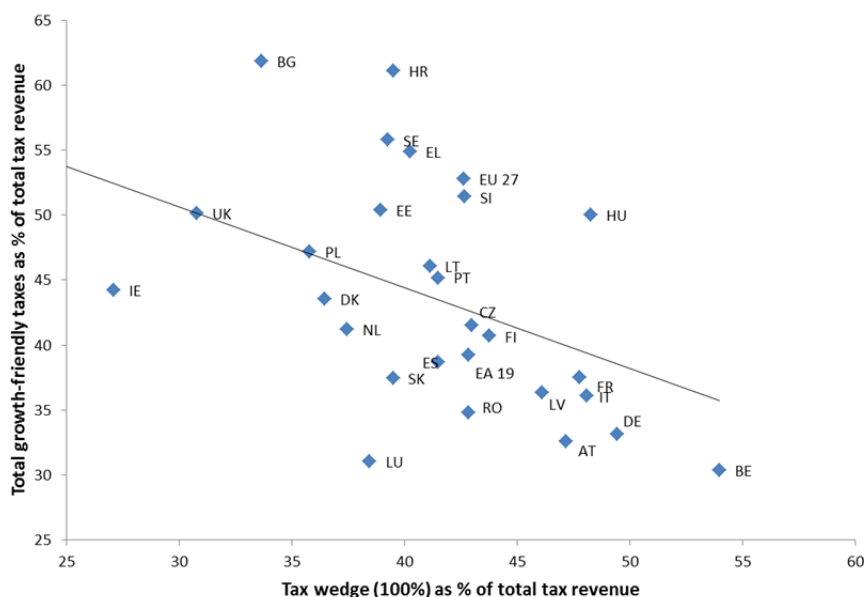
Member States that heavily rely on labour taxes but rather modestly on taxes less detrimental to growth might consider a revenue-neutral tax shift away from labour. A labour tax reduction can be financed by increasing other taxes to offset the revenue loss, in particular for Member States that face a need to decrease relatively high taxes on labour, overall or for specific groups, while having relatively low taxes in areas considered less detrimental to growth. Taxes less detrimental to growth could also be used with an eye to contributing to the sustainability of public finances or boosting investment. Table 2.2 examines which Member States have relatively low revenue from consumption,

recurrent property and environmental taxes. The values significantly below the EU average¹⁵ are highlighted in blue. More particularly, the table shows:

- *Revenue from these taxes as a percentage of GDP.* When comparing Member States on the basis of this indicator, it is important to keep in mind that in countries with relatively higher overall tax levels (e.g. to finance a higher level of public service provision or redistribution) individual tax categories are likely to be relatively higher as well.
- *Revenue from these taxes as a percentage of total tax revenue.* This gives an insight in the extent to which a Member State relies on a certain tax compared to others. This indicator hence gives a better insight in the tax structure than revenue as a percentage of GDP.
- The *implicit tax rate on consumption* represents the ratio of revenue from consumption taxes to households' total consumption expenditure (i.e. the consumption tax base). This indicator gives an insight in the effective average tax burden on consumption.

Notably, most Member States with a relatively high tax wedge on labour appear to have at least some scope to increase revenue from less distortive taxes, i.e. for a tax shift away from labour. As illustrated by Graph 2.2, Belgium, Germany, France, Italy, Austria and Latvia combine a high tax wedge and rather low revenue from taxes less detrimental to growth. That said, some types of taxes have more potential than others in terms of revenue rising because of differences in the size of the potential tax base.

Graph 2.2. Correlation of tax wedge with total taxes less detrimental to growth, 2016.



Source: European Commission tax and benefit database on the basis of OECD data and Eurostat. Recent data for Cyprus is missing.

¹⁵ 'Significantly above/below the average' means that the value is at least 0.4 standard deviations above/below the weighted EU average (after normalisation). This approach captures the top and bottom third of the total distribution, under the normality assumption.

2.4.1. Growth and distributional effects of a revenue-neutral tax shift

A shift from labour to other tax bases favours economic growth and employment. Lowering the tax burden on labour has the potential to boost growth and support employment as a consequence of lower marginal tax rates on labour income, implying higher incentives to take up work. Higher consumption taxes (e.g. increased VAT rates) are often associated with lower progressivity and higher inequality. However, employment increases from a tax shift may outweigh adverse distributional impacts. The degree to which there exists a trade-off between equity and efficiency in this context is an empirical question. For example, as far as environmental taxation is concerned, a tax shift from labour to environment supports growth, inter alia, through the channels of increasing the level of resource productivity and enhancing innovation¹⁶.

Moreover, a revenue-neutral tax shift has the advantage of not deteriorating a country's budgetary position. Tax reforms also affect the economy through changes in governments' budgets. If the reform takes the form of a revenue-neutral tax shift, there is no financing issue, since the reformed system is expected to raise the same amount of revenue as the existing system. The financing of a tax cut must always be incorporated into its impact analysis in order to assess whether the government's budget constraints are met.

It is important to recognise, however, that a tax shift has a distributional impact and macroeconomic effects that need to be considered when designing it. Recent studies (Baiardi, D. et al., 2017) underlined the importance of the overall design of the tax system when it comes to identifying financing sources. Indeed, focussing on the distributional effects of changes in the tax system as a whole, rather than on specific taxes, would allow limiting or circumventing potential undesired distributional effects. The latter would also increase the political buy-in for this type of reform¹⁷. From a distributional perspective higher consumption taxes are often associated with lower tax progressivity and higher levels of inequality (Pestel and Sommer, 2015). In this line, managing the trade-offs between equity and efficiency may be crucial.

Furthermore, when shifting from labour to other tax bases, it is important to take into account second round effect. A rise in taxes, and in particular a rise in consumption taxes, could increase prices, leading to higher inflation in the short run. Depending on how wages react to higher prices, which in turn is also influenced by indexation of benefits, this may lead to wage increases that, at least partly, counteract the reduction in labour costs resulting from the tax shift. If wages do not react quickly, a shift from labour to consumption taxes could have the same effect as a currency devaluation.

Even at an unchanged overall tax level, the tax burden may be shifted from low to high-income tax payers by changing tax brackets or tax rates. In particular over the last decade, policymakers have often resorted to cuts in labour taxes that are targeted to the bottom end of the wage scale in order to boost employability of low-skilled workers (e.g. Germany, Belgium, Estonia, France, Italy, Malta, etc.).

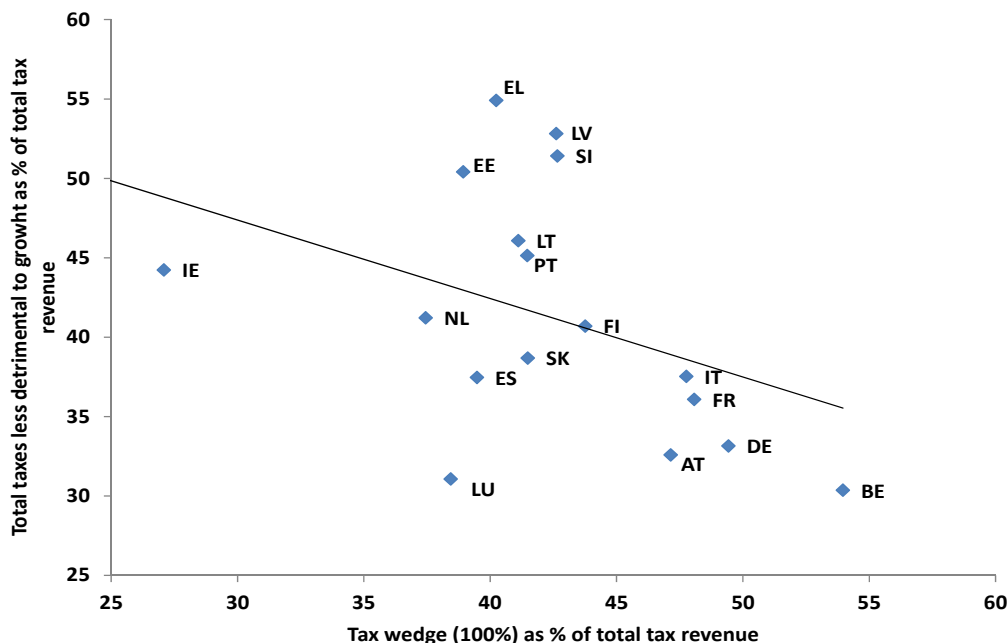
When fiscal constraints do not allow for labour tax cuts, the overall tax structure could be improved, by increasing taxes less detrimental to growth, which could allow for future labour tax cuts ('relative tax shift'). A Member State may face significant fiscal constraints, implying a need to increase overall revenues to contribute to consolidation. In such a situation, the Member State concerned could still create a tax environment which could allow for labour tax cuts in the future.

¹⁶ As suggested for example in EC (2015) or European Environment Agency (2016).

¹⁷ A precise quantification of the costs or value of tax shift is, however, not always straightforward. Such quantification ideally needs to consider macroeconomic and behavioural effects, interactions with other tax bases and other methodological issues.

This can be done through a relative tax shift away from labour, i.e. keeping labour taxes constant while increasing those specific taxes (e.g. through tax base broadening) less detrimental to growth (see Graph 2.3). This would limit the negative impact on growth and create an overall more growth-friendly tax structure.

Graph 2.3. Correlation of tax wedge with taxes less detrimental to growth as % of total tax revenue



Note: Based on 2015 data, not reflecting recent tax reforms like in Belgium or Austria.
Source: European Commission (2015)

2.4.2. Designing a tax shift away from labour

When designing a revenue-neutral tax shift away from labour, the following considerations on consumption taxes, recurrent property taxes and environmentally-related taxes should be taken into account.

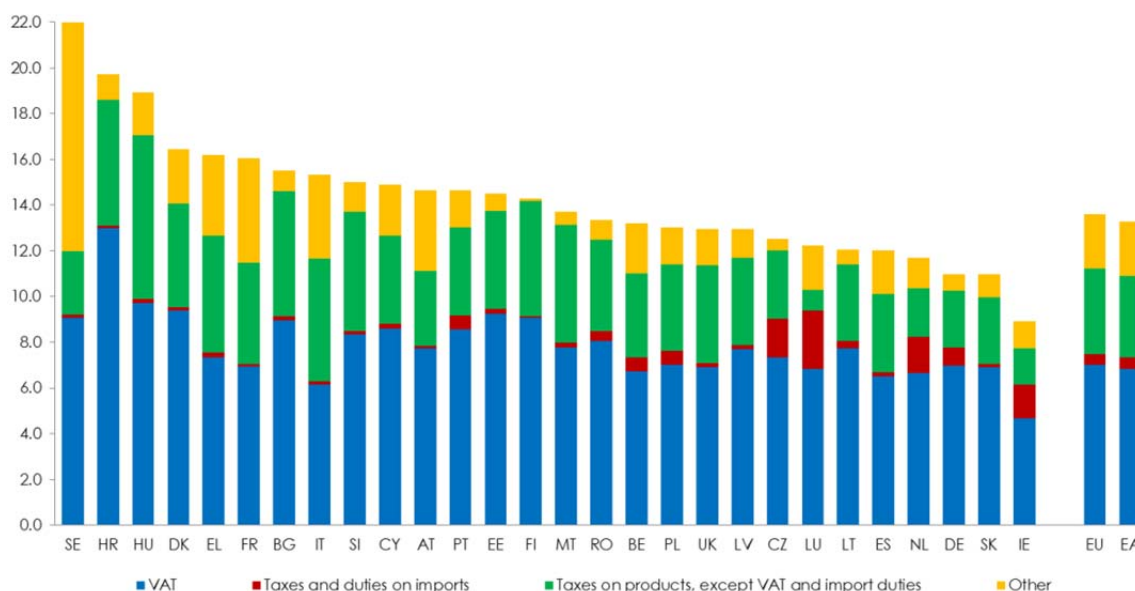
2.4.2.1. Consumption taxes

Consumption taxes and in particular value-added taxes (VAT) are an important revenue source for most Member States, although there are significant differences between countries. In general, Central European Member States tend to raise a higher proportion of their revenue from consumption taxes. VAT is one of the most important consumption taxes, although there is, again, considerable variation between Member States. On average across the EU, VAT revenue represents around 7.0 % of GDP; excise duties 3.7 %; revenue from other consumption taxes 2.4 %; and taxes and duties on imports 0.4% (Graph 2.4).

An increase in VAT revenue by broadening the base rather than by increasing the standard VAT rate is less distortive. Although the use of reduced VAT rates is sometimes justified to serve employment related objectives, to favour demand for certain goods or to address distributional or compliance issues, reduced VAT rates and exemptions may not be the most (cost) efficient instrument

to address the policy aims¹⁸. Over the last decades, Member States have generally increased their standard VAT rate, but did not always increase correspondingly the reduced rates; nor have they made any attempt at reducing the existing complex array of super-reduced or zero rates. This creates distortions of competition and increases complexity, compliance and administrative costs. It is also a missed opportunity in terms of increasing the efficiency and growth-friendliness of the VAT system (European Commission, 2016b).

Graph 2.4. Decomposition of consumption tax revenue as a percentage of GDP, 2015



Note: Data for Estonia have been adjusted by national authorities.

Source: Commission services.

As Member States apply a variety of non-compulsory exemptions¹⁹ and reduced rates, VAT revenues are far below the level that could theoretically be collected. According to three VAT indicators representing the VAT policy gap (the VAT rate gap²⁰ and the actionable VAT exemption gap²¹) and the VAT compliance gap (as % of VAT tax liability)²² some Member States with relatively low revenues from consumption taxes make a relatively higher use of non-compulsory exemptions and/or (low) reduced rates (showing high policy gap) (Table 2.3). The indicators also suggest that

¹⁸ There are arguments in favour and against the use of reduced VAT rates (see Copenhagen Economics, 2007; Mirrlees et al., 2011 and European Commission, 2016b).

¹⁹ EU legislation lays down a number of compulsory exemptions such as for health care.

²⁰ Rate gap. This indicator expresses the potential revenue loss – compared to a theoretical maximum where all products and services are taxed at the standard rate – due to the existence (and level) of reduced rates

²¹ Actionable exemption gap. This indicator expresses the potential revenue loss – compared to a theoretical maximum where all products and services are taxed at the standard rate – due to the existence of non-compulsory exemptions. The indicator assumes that it is not possible to raise VAT on imputed rents, public goods and financial services even if these are not compulsory exempt.

²² VAT gap (as a percentage of VAT theoretical tax liability). This indicator expresses the revenue loss due to VAT non-compliance by comparing actual VAT revenue to the VAT that would have been paid if all those liable for VAT had reported all their transactions correctly. However, VAT gap indicator includes also VAT lost due to, for example, insolvencies, bankruptcies, administrative errors, and legal tax optimisation.

some other Member States with relatively low revenues from consumption taxes and a low VAT rate or actionable exemption gap may face compliance and enforcement issues (e.g. Romania, Lithuania, Latvia, Bulgaria).

Table 2.3: VAT indicators (2015)

Country	VAT rate gap	Actionable VAT exemption gap	VAT gap as % of VAT theoretical tax liability
Belgium	12.0	4.1	10.8
Bulgaria	2.3	6.6	20.6
Czech Republic	5.5	7.3	16.5
Denmark	0.8	-0.1	10.8
Germany	7.1	6.7	9.6
Estonia	2.6	9.6	4.9
Ireland	9.1	9.4	9.9
Greece	11.3	12.2	28.3
Spain	14.6	12.4	3.5
France	11.7	6.1	11.7
Croatia	8.8	2.9	3.9
Italy	15.5	7.1	25.8
Cyprus	29.8	-7.4	7.5
Latvia	3.2	10.3	18.0
Lithuania	4.0	10.1	26.4
Luxembourg	16.3	9.7	5.6
Hungary	4.6	10.3	13.7
Malta	15.7	7.2	22.6
Netherlands	11.1	2.4	7.9
Austria	11.0	3.5	8.2
Poland	15.5	12.4	24.5
Portugal	11.6	7.5	11.5
Romania	5.8	3.0	37.2
Slovenia	11.7	9.4	5.5
Slovakia	1.5	12.2	29.4
Finland	7.1	5.0	7.0
Sweden	7.8	3.4	-1.4
United Kingdom	8.7	8.6	10.9
EU average	10.2	7.1	12.3
EA average	10.9	6.9	12.3
Relatively high	11.6	8.2	15.2
Relatively low	8.8	6.0	9.4

Notes: EU and EA averages are GDP-weighted. Relatively high/low refers to significantly above/below the EU average. Possible reasons for negative VAT Gap are the use of cash vs accrual revenues in estimations, underestimation of liabilities etc.

Source: Commission services, CPB/CASE (2014, 2015, 2016, 2017).

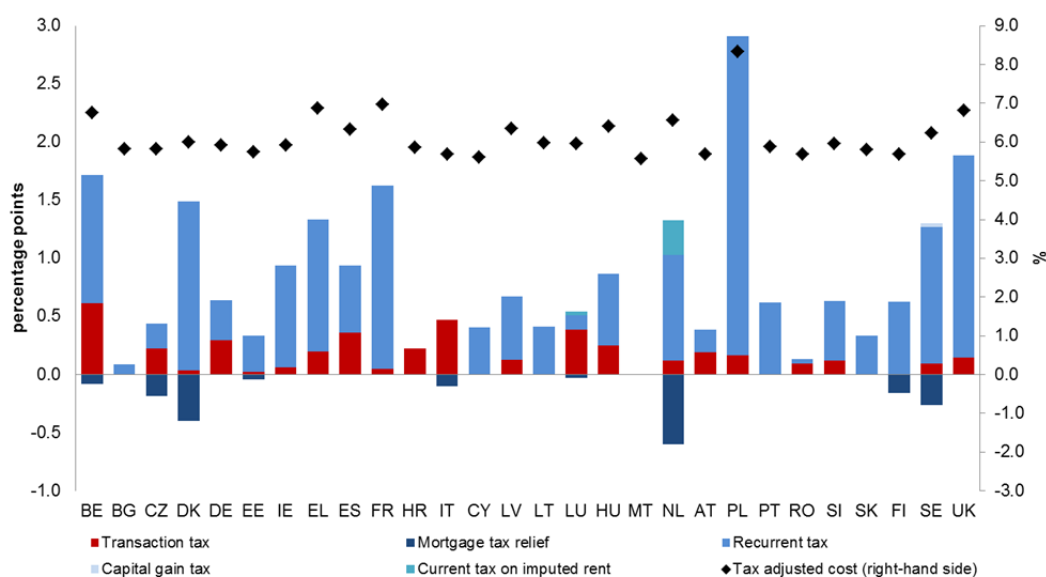
2.4.2.2. Recurrent housing taxes

Although least detrimental to growth, taxes on immovable property generate relatively little revenue. Almost all Member States apply a transaction tax at the time of buying the property and a recurrent tax often levied on an annual basis. In a few Member States, the imputed rent is taxed, or the capital gains at the time of selling the house asset. In 2015, revenue from property taxes was equivalent to 2.6% of GDP in the EU on average and around a third of it came from taxes on transactions. As many Member States have not updated property values for many years, increasing revenue could be done by bringing the tax base in line with market values instead of increasing tax rates. Failure to regularly update the tax base erodes the tax base over time, while giving further support to rising property prices and creating potentially inequitable effects.

Housing transaction taxes and other design issues of housing taxation can have relevant macroeconomic implications. Although a tax on property transactions could theoretically deter speculation, this relation is empirically ambiguous. Moreover, from a budgetary perspective a transaction tax will generate a more volatile revenue stream than a recurrent property tax yielding the same revenue. A high transaction tax will also tend to discourage property sales and purchases, which may result in a less active market for immovable property and restrict workers' mobility. A shift away from transaction taxes and towards recurrent property taxes would maintain a constant level of revenue while reducing the distortions caused by transaction taxes.

Moreover, the preferential tax treatment of owner-occupied housing in many Member States may distort investment decisions. In all Member States owner-occupied housing is taxed at a lower level than investments in other assets. The size of the preferential tax treatment of owner-occupied housing can be estimated through an indicator that measures the user cost of owner-occupied housing. This normalised measure represents the annual tax-adjusted cost of owning and operating the main residence per additional euro invested in housing capital. Graph 2.5 shows the contribution of different taxes to the user cost of owner-occupied housing based on 2017 tax rules. It also shows which Member States allow for mortgage interest to be deducted. The existence of mortgage interest deductibility can contribute to rising house prices and increased leverage by lowering the cost of debt, especially if supply is inelastic. Several Member States abolished this tax instrument over recent years, at least for new mortgages, or took steps to limit its generosity (e.g. Finland, the Netherlands). The debt bias can be offset, to a certain extent, by sufficiently high recurrent property tax and/or taxes on imputed rent (the latter are rare and usually low). One also has to take into account the capitalisation effects of the preferential tax treatment of owner-occupied housing, whereby tax increases may lead to a corresponding decline in housing prices and tax cuts may lead to increases in prices.

Graph 2.5. The contribution of different taxes to the user cost of owner-occupied housing as a percentage of an additional euro of house value



Notes: The bars (left-hand scale) depict the contribution of taxes to the tax-adjusted user cost of an additional euro of house value (right-hand scale). Based on 2016 house price data. For the countries where 2016 data was missing, the latest available year was used and updated with the consumer price index (CPI). The tax code rules accounted for are those in place in 2017.

Source: European Commission's Joint Research Centre.

When reforming property taxes, distributional effects should be assessed carefully as they may be substantial. Reforms of property taxation may follow various objectives and policy makers should be aware of the complementarities and trade-offs between those. Carefully designed property tax reforms may contribute to a fairer and more widely accepted property tax system, where property owners pay taxes according to true market property values. In Member States where property values were not updated for many years, revision of those values may have drastic redistributive effects and may therefore be difficult to implement from a political point of view. Property tax reforms can also have indirect effects on the housing market, as they may affect land use and planning decisions.

2.4.2.3. Environmentally-related taxes

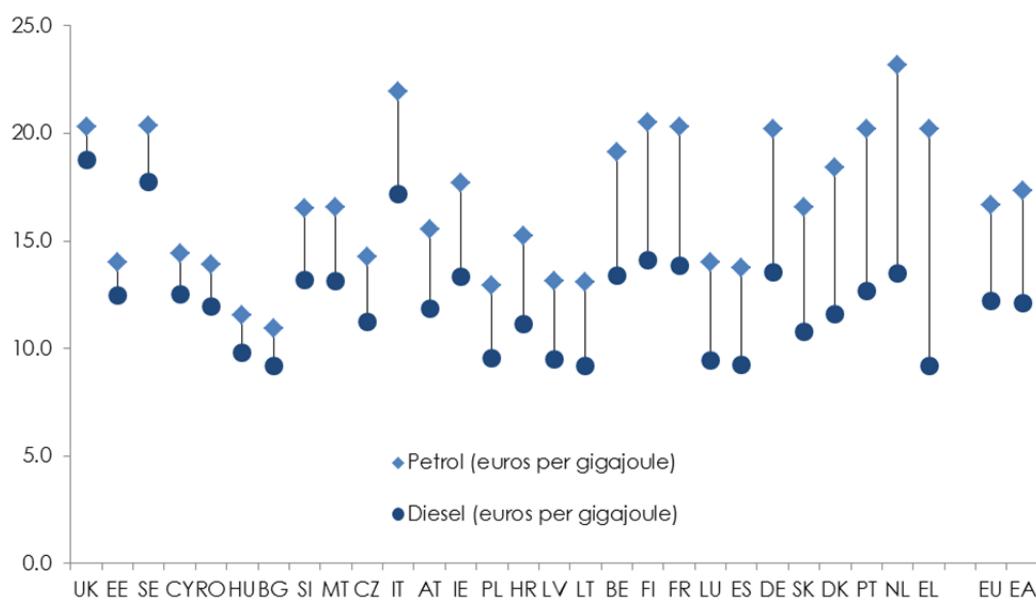
Environmentally-related taxes can be used both as a way of raising revenue and to help a country achieve its environmental objectives. Environmentally-related taxes need to be carefully designed in order to guarantee a stable level of revenue and to achieve the desired outcome without causing distortions to the market. Energy taxes and vehicle taxes are considered to be the most revenue-generating and the most macro-relevant amongst environmentally-related taxes.

Energy taxes need to be carefully designed in order to continue raising revenue while influencing consumer behaviour. Taxes on energy are probably the type of tax that has the greatest effect in terms of reducing carbon dioxide emissions. Furthermore, energy taxes may stimulate innovation and encourage companies to develop alternative, more energy-efficient processes. In the long run, however, increased energy efficiency, moving to alternative energy sources and national environmental regulations will reduce the level of revenue that can be generated from energy taxes and it is, therefore, important to find ways to maintain their revenue-generating potential, while still ensuring their effectiveness in influencing consumer behaviour.

Differentiating tax rates according to the carbon content of the energy source, and indexing the rates to inflation could help to continue raising revenue while influencing consumer behaviour.

When taxation is used as an environmental policy instrument, the level of taxation should be determined according to the environmental damage caused by the energy product, e.g. by taking into account its carbon content. Graph 2.6 shows that in all Member States, excise duty rates on diesel are lower than those on unleaded petrol, despite diesel having a higher carbon and energy content than unleaded petrol²³. Moreover, a number of Member States apply reduced VAT rates on energy. Reduced VAT rates do not allow taking into account the negative externalities energy consumption creates and may distort consumers' choice of energy source. Indexing energy taxes to inflation would help to maintain both their influence on consumer behaviour and their contribution to tax revenue. Despite the potential usefulness of such a system of indexation, very few Member States currently index environmentally-related taxes.

Graph 2.6. Marginal tax rates on petrol and diesel when used as propellants, 2016 (euros per gigajoule)



Source: Commission services.

The design of car-related taxes can counter the negative externalities related to car use and ownership. Taxes on vehicles can be used to address sources of pollution linked to car use and ownership that are not addressed through fuel taxation (e.g. air pollution, noise and congestion). Most Member States therefore levy vehicle taxes (registration taxes and circulation taxes) in addition to excise duties on energy and some countries make the vehicle tax rate dependent on the carbon dioxide emissions of the vehicle to encourage fuel efficiency. Several Member States also subsidise the private use of company cars by offering advantageous company car schemes. These schemes risk counteracting the incentives provided by energy and vehicle taxation to reduce fuel consumption.

²³ Some Member States, however, offset the lower excise duty rate on diesel as compared to petrol by levying a higher vehicle tax on diesel cars.

3. LABOUR TAX BURDEN ON SECONDARY EARNERS

Taxation is one of several factors which negatively impact the labour supply decisions of secondary earners. Several factors can explain the work disincentives faced by secondary earners: high costs and shortage of childcare services, school hours incompatible with parents' full-time employment, unequal share of care responsibilities between men and women, as well as low flexibility of working arrangements. Also design features of the tax and benefit system can constitute a barrier to secondary earners' workforce participation, as some systems create low financial incentives to take up (full-time) work. Jaumotte (2004) focusses on the impact of the tax system and suggests that an equal tax treatment of secondary earners would increase female participation by 4 percentage points on average for the OECD area. Expanding female employment could also substantially contribute to boost growth and to make growth more inclusive. OECD (2012) found that the size of the total economy could increase with 12.4% on average across OECD countries by 2030, if male and female labour force participation completely converges in the next 15 years.

To address work disincentives of secondary earners, it is important to understand the extent to which taxation influences their labour supply decisions. Secondary earners are considered particularly responsive to labour taxes and work incentives. This chapter analyses the extent to which taxation influences their labour supply. Section 1 puts forward some descriptive statistics of the labour supply of secondary earners. Section 2 describes the tax provisions affecting the labour supply of secondary earners and analyses their economic impact. Section 3 assesses the impact of the tax and benefits systems on the decision of non-working partners to enter the labour market and on the decision of secondary earners to increase their number of hours worked. Annex 2 econometrically analyses the impact of the marginal effective tax rate (METR) on different proxies of labour supply at the intensive margin.

3.1. LABOUR SUPPLY OF SECONDARY EARNERS IN EU MEMBER STATES

In almost 75% of working age couples in the EU, one of the partners does not work or is earning less than the other, the vast majority of which are women. When analysing the contribution of each partner to the labour earnings of a couple, four categories²⁴ of households can be identified: (i) no-earner households, where none of the partners receives labour income; (ii) one-earner households, where one of the partners is non-working; (iii) dual-earner households with unequal earnings, where one partner is earning less than the other; and (iv) dual-earner households where both partners have roughly equal earnings²⁵. In the second and third categories one partner earns no or less labour income than the other. A partner earning no labour income is qualified as non-working partner. A partner earning less labour income than the other is qualified as secondary earner as compared to the primary earner of the household²⁶. In the EU on average, the category of dual-earner households with unequal earnings is the largest corresponding to approximately 43.8% of working age couples in 2015. Graph 3.1 indicates that the vast majority of non-working partners and

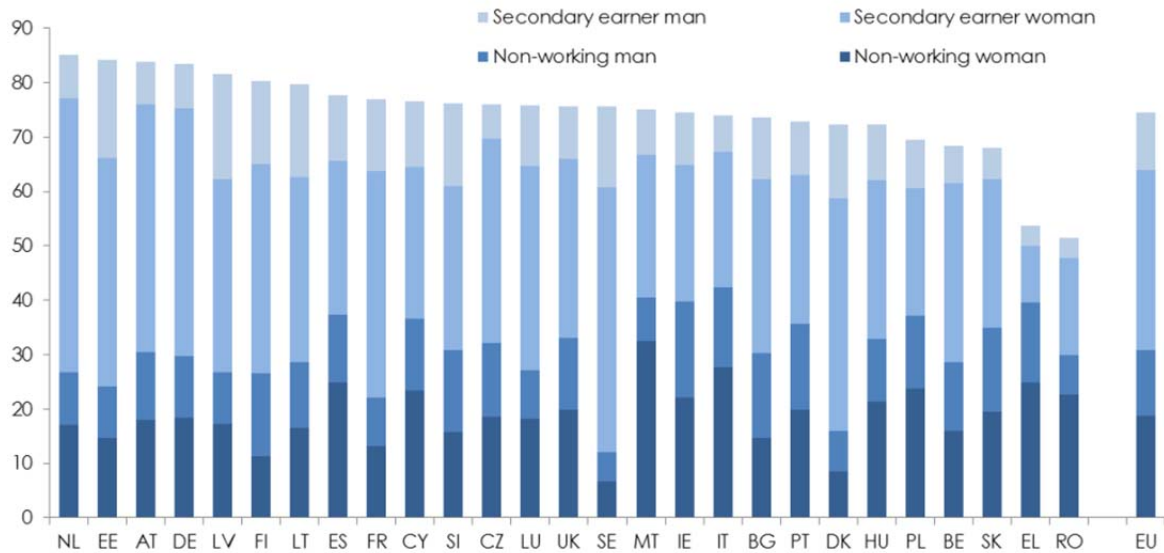
²⁴ These categories are based on the sample in which both partners are of working age (16-64 years old). By labour earning we refer to is the "employee cash or near cash income" (EU-SILC code: py010).

²⁵ Equal earners are considered those whose income is between the 45% and the 55% of the household income.

²⁶ In some literature, secondary earners cover both actual earners (employed) and potential earners (not employed). In this Paper we use the restrictive definition of secondary earners, i.e. partners whose income is less than 45% of the household income.

secondary earners in the EU are women. Analysing the economic status of secondary earners-women shows that on average 45% of them worked part-time in 2015 in the EU. This share increases to 52% when focussing on secondary earners-women with young children, since women tend to lower their number of hours worked to take care of the children.

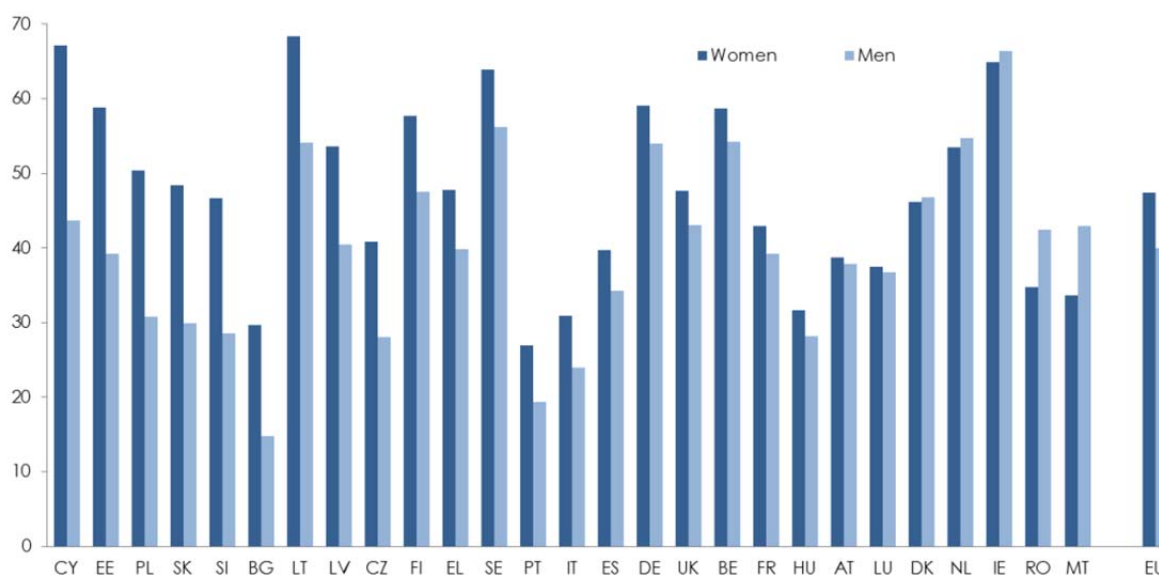
Graph 3.1. Percentage of non-working partners and secondary earners within working age couples by gender (women vs. men), 2015



Note: The first bar represents the situation for women; the second bar for men. Working age couples are couples where both partners are of working age (16-64). For Germany, 2014 data are used.

In most Member States, women out-perform men in terms of educational attainment. Comparing the highest level of education attained by men and women (Graph 3.2), shows that among 30 and 34 years old almost 45% of secondary earners-women, as compared to only 33% primary earners-men, attained tertiary education in the EU on average. This is confirmed at country level where in all but five Member States (Malta, Romania, Ireland, the Netherlands and Denmark), more women enjoyed tertiary education than men among 30-34 years old. Although, women are increasingly well qualified, they still spend more time on caring and on household activities than men. As educational attainment is linked to earnings potential, this provides an indication of the potential for women to participate to the labour force and to increase income.

Graph 3.2. Comparison of highest level of attained education of secondary earners-women and primary earners-men within working age couples, 2015



Note: The first bar represents the highest level of attained education of women as secondary earners and the second bar of men as primary earners (30-34 years old). The education level includes ISCED levels 4 to 8.

3.2. TAX AND BENEFIT FEATURES WHICH COULD DISCOURAGE LABOUR SUPPLY

Both a tax system based on household income and a tax system based on individual income can be justified by equity grounds. To ensure that households with the same total income are treated equally, most tax systems in the EU use family income to determine (part of) the tax due or the entitled benefit. Table 3.1 provides an overview of the family-based features used in the personal income tax system of each Member State. While ensuring fairness between households, features of family-based taxation also lead to an unequal tax treatment of individuals within a household. Since the primary earner benefits from the family-based features, including the lower tax brackets, the non-working partner or secondary earner will be subject to a higher effective tax rate when increasing their labour supply. Features of family-based taxation therefore discourage non-working partners and secondary earners of increasing their working time. An individual-based tax system overcomes this issue, as it considers the income of the individual irrespective of the income of other members of the household. As each of the working household members will be able to benefit from the lower tax brackets, an individual-based system encourages labour supply and allows for economic independence of each partner. Moreover, an individual-based tax system compensates for the additional expenditure that dual-earner households face in terms of paid child care and domestic work (OECD, 2016). Individual-based taxation is sometimes perceived as less equitable as it does not consider the total income generated by the household.

When income tax is levied on household income rather than individual income, non-working partners and secondary earners face financial disincentives to increase their labour supply. The unit of taxation of most personal income tax systems in the EU is the individual. This means that a person is taxed on its individual income, irrespective of the income of other household members. While individual-based taxation treats primary and secondary earners in a similar way, it may create an equity issue. Households with the same total income may indeed pay different amount of taxes, depending on how the earned income is divided among household members. Many Member States,

therefore, introduced some elements of family-based taxation within their individual-based tax system or opted to use the household as tax unit. This type of policy, however, disadvantages single earners and secondary earners as compared to primary earners in terms of financial disincentives to work. As shown in Table 3.1, a large majority of Member States apply an individual-based tax system, where each individual is taxed separately on its income. Three Member States (Estonia, France and Portugal) do not allow partners to be taxed individually and apply a family-based tax system. The remaining Member States have an optional tax system, where partners can choose to be taxed at individual or household level²⁷ or apply an income-splitting system²⁸.

Other features of the tax and benefit system can also affect the labour supply of non-working partners and secondary earners. Although applying an individual-based tax system, several Member States apply features of family-based taxation (see Table 3.1). The three main features of family-based taxation are:

- *Family-based deductions (credits)* aim at better targeting support to the least well-off households. By granting tax expenditures based on family-income rather than individual income, one avoids to support households with a high-income earner and a low-income earner, which at family-level benefit from a comfortable income level. However, those tax expenditures may be lost when the low-income partner increases its labour supply.
- *Dependent spouse deductions (credits)* aim at supporting one-earner couples by granting a tax deduction or credit to the earning partner for taking care of the non-earning partner. When the non-earning partner increases his/her labour supply, the earning partner loses the tax benefit, which makes the household less well-off.
- *Transferrable deductions (credits)* aim at treating one-earner and dual-earner couples with a similar income in a similar way by allowing the working partner to benefit from the personal allowance (credit) of the non-earning partner, which would have been lost otherwise. Although granting the same amount of tax expenditure to one-earner and dual-earner couples, the transferability grants a financial advantage which a pure individual-based system would not offer.

²⁷ Luxembourg introduced the possibility of individual taxation as of 2017.

²⁸ Belgium applies an income-splitting system (*'marital quotient'*) which allows attributing a proportion of the professional income of the earning partner to the non-earning partner.

Table 3.1. Features of the tax and benefit system in EU Member States, 2017

Country	Tax unit	Family-based elements			Tax-related work disincentives
		Family-based deductions (credits)	Dependent spouse deductions (credits)	Transferrable deductions (credits)	
Belgium	Individual with partial splitting		X		X
Bulgaria	Individual				
Czech Republic	Individual	X	X		X
Denmark	Individual			X	X
Germany	Optional				X
Estonia	Family				
Ireland	Family (individual option)				X
Greece	Individual	X			X
Spain	Individual (family option)				X
France	Family				X
Croatia	Individual		X		X
Italy	Individual	X	X		X
Cyprus	Individual				
Latvia	Individual				
Lithuania	Individual			X	X
Luxembourg	Optional				X
Hungary	Individual	X			X
Malta	Family (individual option)				X
Netherlands	Individual	X	X	X	X
Austria	Individual		X		X
Poland	Optional	X			X
Portugal	Family				X
Romania	Individual		X		X
Slovenia	Individual	X	X		X
Slovakia	Individual		X		X
Finland	Individual				
Sweden	Individual				
United Kingdom	Individual	X		X	X

Also the progressivity of the tax system affects the importance of the disincentives to work. Except for seven Member States which apply a flat tax system with a single rate (Bulgaria, Czech Republic, Estonia, Latvia²⁹, Lithuania, Hungary and Romania), all tax systems in the EU have a progressive tax rate schedule (i.e. the tax rate increases as the taxable base amount increases). As family-based features – like any other tax expenditure – reduce the taxable base (deduction) or the tax due (credit), they alleviate the progressivity of the tax system. This also means that the impact of family-based features on work disincentives will be higher in countries with a progressive tax system as compared to those with a flat tax system. In a progressive tax system, non-working partners and secondary earners increasing their labour supply will face higher marginal tax rates, as the lowest tax bands have already been used by the primary earner.

The benefit system may reinforce tax-related work disincentives for secondary earners. Analysing work disincentives for non-working partners and secondary earners requires both the tax and the benefit system to be taken into account. Labour supply disincentives created by the tax system are indeed often exacerbated by the benefit system. When the non-working partner enters the labour market or the secondary earner increases his/her number of hours worked, the family often loses some of its social benefits, as most benefit systems assess entitlement against family income. Benefit withdrawal therefore further discourages secondary earners to increase their labour market participation.

These features of the tax and benefit system also weigh on the complexity of the whole tax system. Family-based features not only raise barriers for the labour supply of non-working partners

²⁹ On 1 January 2018, Latvia moved from a flat tax system to a tax system with a progressive tax rate schedule.

and secondary earners, they also increase the complexity of the tax system, increasing tax collection and compliance costs. Moreover, granting tax deductions and credits do not allow targeting support and are rarely the most cost-efficient policy tool. Preferential treatment for families could alternatively be provided through direct government spending or granted through specific and targeted regulation.

3.3. IMPACT OF TAXATION ON THE LABOUR SUPPLY OF SECONDARY EARNERS

As suggested by the literature, the tax and benefit system has an impact on the labour supply of non-working partners and secondary earners. Labour supply decisions are twofold: entering the labour market or not (extensive) and the number of hours worked (intensive). The empirical literature analysing the determinants of labour supply and, in particular, the impact of taxation is quite vast³⁰. Based on general equilibrium models, several authors (Prescott, 2004; Ohanian et al. (2006); Rogerson and Wallenius, 2007) stress the importance of taxes to explain the differences in labour supply. In the cross-country cross-time econometric analyses, Dew-Becker (2006) and Faggio and Nickell (2007) found a negative and significant relationship between the number of hours worked and average tax wedge. The view that taxes are crucial in explaining the differences in labour supply, however, has been challenged by many authors highlighting the importance of other factors. Unobserved country-specific determinants still seem to be the most relevant driver of the relationship between taxation and the labour supply of secondary earners. Most micro-econometric studies³¹ conclude that the elasticity of labour supply in presence of taxes is higher when calculated on the extensive margin than when calculated on the intensive margin. Moreover, the elasticity of labour supply is found to be higher for women than for men³².

3.3.1. Disincentives for a non-working partner to move into work

In most EU Member States, non-working partners face a high tax burden when entering employment. The average tax wedge on labour income is one of the indicators to measure the tax burden on an individual's labour income. It allows focussing on the labour tax burden of specific income groups like low-skilled workers or non-working partners. The OECD tax wedge for non-working partners³³ (OECD, 2016) measures how much extra tax (income tax, employer and employee social security contributions) the household will have to pay as a result of the non-working partner entering employment. The average tax wedge is therefore a good measure of the extent to which the tax system influences the labour supply decision at the extensive margin³⁴. Graph 3.4 compares the

³⁰ And far from reaching consensus. It worth noting that also from a microeconomic theory perspective the effect of taxation on labour supply is not clear cut. Indeed, in the simplest case, with a proportional tax on labour the effect on the individual choice on the number of hours worked, *ceteris paribus*, is ambiguous depending on whether the income or substitution effects prevail. For a review of the microeconomic theory on this topic see Causa (2008).

³¹ Micro-econometric studies are generally based within utility maximisation context with a (non-linear) budget constraint incorporating in various way taxes and social security contributions.

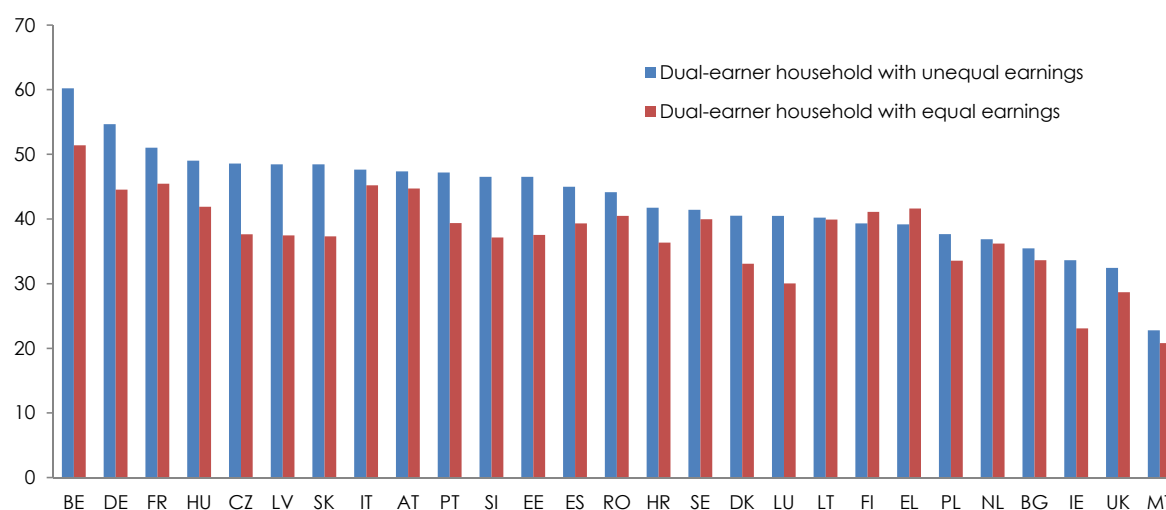
³² For a meta-analysis of the elasticities see Evers et al. (2006) and for a literature review on the topic Causa (2008).

³³ When analysing the tax burden on labour of non-working partners, one should distinguish between the tax wedge for the whole household (see Tax and Benefit indicators database) versus the tax wedge for the non-working partner considering entering the labour market. The difference between the two indicators lies in the assumptions made as regards the tax incidence.

³⁴ Although not influencing labour supply decisions, employer social security contributions are included in the average tax wedge indicator and may therefore influence the ordering of countries.

average tax wedge of a non-working partner when entering employment at 67% of average wage (primary earner at average wage, two children) with the average tax wedge of a non-working partner when entering employment at average wage (equally earning household, two children)³⁵. It shows the heterogeneous situation across countries, with the indicator for a secondary earner ranging from 60.2% in Belgium to 22.8% in Malta. In most EU Member States, the average tax wedge for equally earning households is considerably lower, with differences exceeding 10% in Germany, Luxembourg, Ireland, the Czech Republic, Latvia and Slovakia. Only in Finland and Greece, the average tax wedge for equally earning households is higher. Data also show that in all EU Member States, non-working partners with children face considerable tax disincentives to move into work.

Graph 3.4. Average tax wedge for a non-working partner and equally earning household with two children, 2014



Note: Dual-earner households with unequal earnings are defined as those with a primary earner earning 100% of average wage and a secondary earner earning 67% of average wage. Dual-earner households with equal earnings are defined as those with both partners earning 100% of average wage.

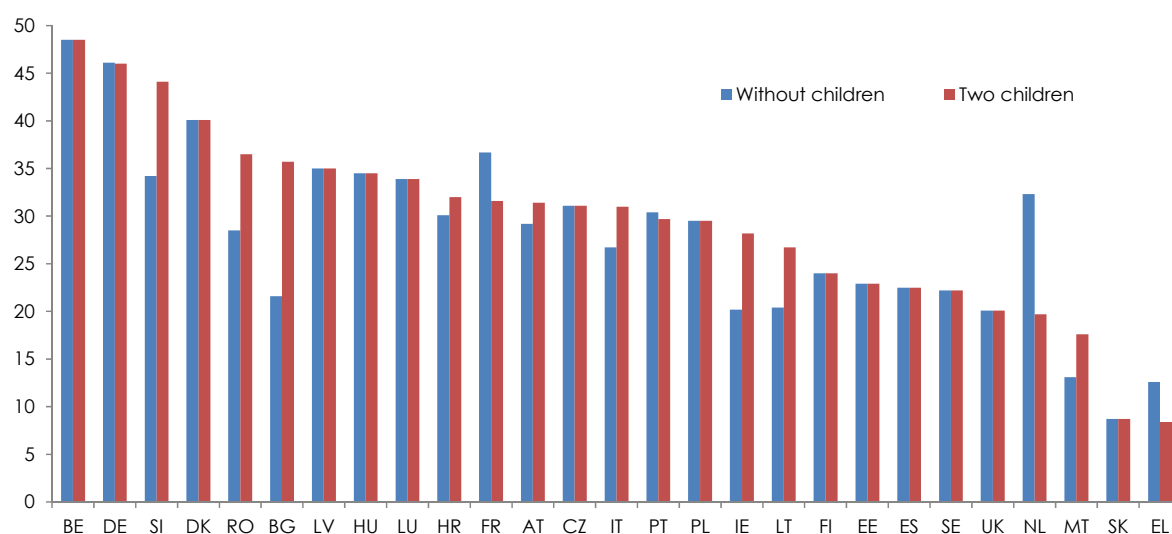
Source: OECD 2016 Taxing Wages and European Commission tax and benefits indicator database, based on OECD data. Recent data for Cyprus is not available.

In most countries, the benefit system further discourages non-working partners to enter into employment. The indicator taking into account the impact of the benefit system is the average effective tax rate, also called participation tax rate³⁶. This tax rate measures the percentage share of an additional income earned – when the non-working partner enters employment – which is lost due to an increase in taxes and social security contributions or a withdrawal of benefits (unemployment benefits or income-tested benefits). The participation tax rate therefore jointly assesses the effect of the tax and benefit system. Graph 3.5 shows the tax and benefit disincentives faced by non-working partners to move into work. When comparing the ordering of countries with that of Graph 3.4, it shows that the withdrawal of benefits for households with children is particularly costly in Slovenia, Denmark, Romania and Bulgaria when non-working partners move into work.

³⁵ In line with Rastrigina and Verashchagina (2015), equally earning households are chosen as comparison group. Unlike the comparison with one-earner households, this comparison allows capturing the disadvantage that secondary earners face due to progressivity under a family-based tax system.

³⁶ Unlike the inactivity trap, the participation tax rate measures the impact on the household disposable income, rather than on the individual income.

Graph 3.5. Participation tax rate for a non-working partner without children and with two children, 2015



Source: OECD 2016 Taxing Wages database. Recent data for Cyprus is not available.

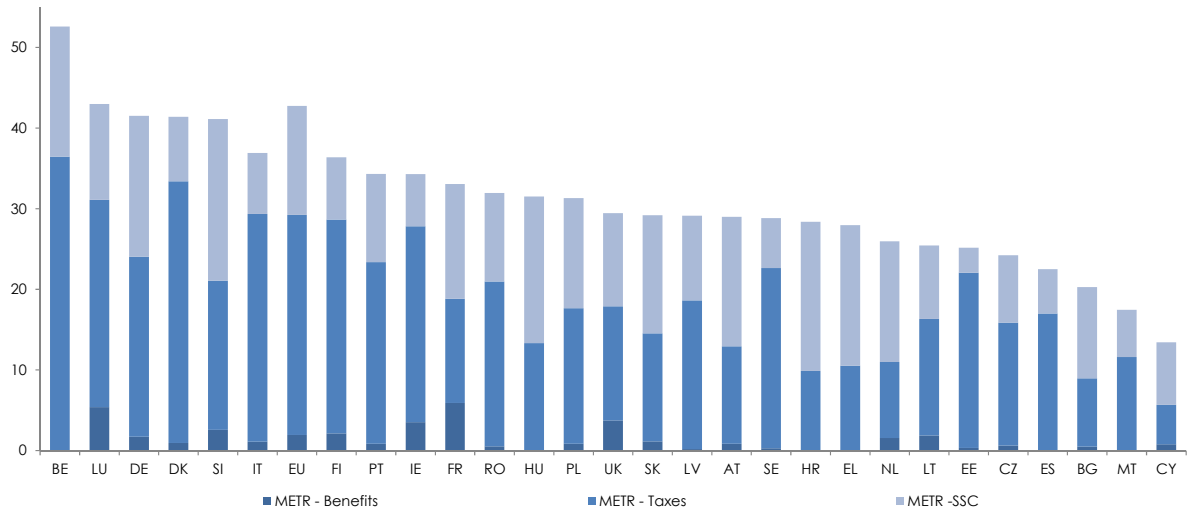
3.3.1. Disincentives for secondary earners to increase the number of hours worked

In most EU Member States, the tax and benefit system discourages secondary earners to increase their number of hours worked. To identify the extent to which the tax and benefit system hampers the decision to increase the number of hours worked, the marginal effective tax rate (METR) on labour is used as indicator (see Annex 2 for a detailed description of the methodology and data). The METR measures the disincentive for those in employment to supply additional hours of work. It is computed as the percentage share of additional gross labour income which is lost due to an increase in taxes and social security contributions or a withdrawal of benefits (income-tested benefits). For a secondary earner, the METR is computed based on the overall household income rather than the individual income, as household income plays a role in most tax and benefit systems in the EU. Graph 3.6 shows the high METR values in the EU, exceeding 50% in Belgium and 40% in Luxembourg, Germany, Denmark and Slovenia in 2016. Conversely, a METR below 25% is observed for Cyprus and Malta.³⁷

In the majority of EU Member States, the marginal effective tax rate for secondary earners is mostly driven by its tax component. The METR can be decomposed in three elements: the share of the gross labour income that is lost due to (1) a decrease in benefits, (2) an increase in taxes or (3) an increase in social security contributions. Focussing on the decomposition of the METR, in most countries the tax component is the most important one, exceeding 30% in Belgium and Denmark (Graph 3.6). Second in relevance is the social security contributions component, whereas the benefit component represents the smallest contribution to the total METR. In countries like France, Luxembourg, the United Kingdom and Ireland, however, the value of the benefit component is relatively high and above 3%, due to the presence of high means-tested benefits. Annex 2 econometrically analyses the impact of the marginal effective tax rate (METR) on different proxies of labour supply at the intensive margin.

³⁷ In terms of country order, these results largely reflect the ones reached by Tumino and Jara (2013), who calculated the METR in 2007 for the overall population.

Graph 3.6. Marginal effective tax rate for secondary earners, decomposition in benefits, taxes and social security contributions, 2016



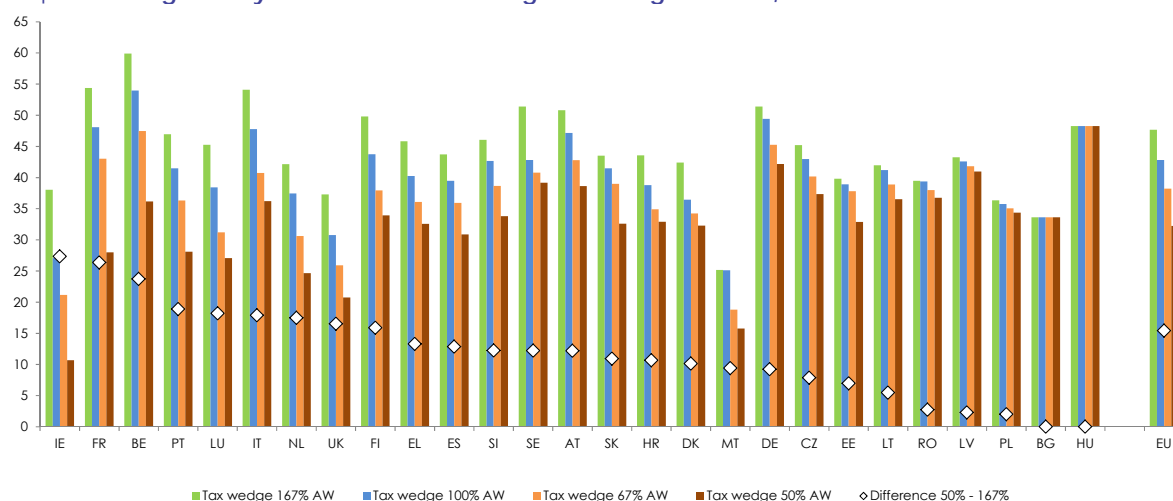
Source: Commission services based on EUROMOD calculation by its Joint Research Centre.

4. LABOUR TAX DESIGN AND INCLUSIVE GROWTH

Reducing labour taxation for vulnerable groups is one of the tax reforms that achieve both growth and equity considerations. Revenue needs, labour supply elasticities and social preferences shape the design of the personal income tax system. The extent to which taxation affects labour supply is considered especially relevant for groups with larger elasticities of labour supply, including low-income earners and secondary income earners. Labour tax reforms should therefore be aimed at the relevant components of the tax burden and at specific groups facing the greatest employment challenges. Labour taxation seems to play an important role in the decision of these more vulnerable groups to enter the labour market (extensive margin) (Meghir and Phillips, 2010), as they are most responsive to financial incentives. At higher income levels, employment effects are much less pronounced, as the fixed cost of participation declines (Blundell et al., 2011 and European Commission, 2015). Economic theory therefore advocates reducing the tax burden for low-income groups, as increased employment of these groups has the potential of boosting growth while limiting the income distribution. Most Member States use the labour tax system to reduce the tax burden on labour of those groups.

The personal income tax system is the tax category mostly used to address income inequality. Labour taxes are composed of personal income taxes, as well as employee and employer social security contributions. Most Member States apply flat rates to social contributions, making the latter proportional. Very often, however, the social contribution base is restricted by an upper income limit (ceiling), which benefits high-income earners and causes a regressive effect. Some Member States also apply rate reductions, which may lead to some progressive effect. Belgium, for instance, applies reduced employer's social contribution rates for employees of specific income groups. Also Hungary applies reduced social contribution rates for targeted groups of employees. The redistributive capacity of social security contributions also depends on the income distribution in the country (Verbist and Figari, 2014). Personal income tax, however, is the tax category mostly used to redistribute income. In most Member States, this is done by using a progressive personal income tax rate schedule and by providing a basic tax-free allowance (see section 4.1). Many Member States also offer specific tax deductions and credits to address particular issues, although their redistributive impact is less straightforward (see section 4.2).

Graph 4.1. Progressivity of the labour tax wedge for a single worker, 2016



Source: Commission services and OECD tax and benefit database.

Note: AW is average wage.

The progressivity of the labour tax system provides a rough estimation of how tax design is used to foster inclusive growth. Graph 4.1 shows the tax wedge (employer social security contributions and personal income taxes) on labour income for a single person

earning an income of respectively 167%, 100%, 67% and 50% of the average wage. It also shows the difference between the wedge at 50% and 167%, as a measure of the progressivity of the labour tax system. Graph 4.1 illustrates the substantial differences in progressivity between Member States, with the largest difference observed in Ireland and the smallest in Bulgaria and Hungary, which are countries with flat rate tax systems. The decomposition of the tax wedge would also show that on average, personal income taxes constitute a much larger part of the total wedge for higher than for lower income levels. This is due to the fact that many Member States apply progressive tax rates, while applying an income ceiling to social security contributions. As the experience in Nordic countries show, reducing income inequality does not necessarily require a highly progressive tax structure. In countries like Denmark and Sweden, a universal benefit system and a little progressive income tax system go hand in hand with low income inequality (OECD, 2012).

Table 4.1. Personal income tax structure in EU Member States, 2016

Country	Tax system	Basic tax-free allowance (EUR)	Top statutory rate (%)	Threshold of top tax bracket (EUR)
Belgium	progressive	7,420*	53.19	38,080
Bulgaria	flat	0	10.00	-
Czech Republic	flat	0 ⁽¹⁾	15.00	-
Denmark	progressive	5,910	55.80	62,762
Germany	progressive	8,652	47.48	254,447
Estonia	flat	2,040	20.00	-
Ireland	progressive	0	48.00	33,800
Greece	progressive	0	55.00	42,000
Spain	progressive	5,550	43.50	60,000
France	progressive	9,710	50.23	152,108
Croatia	progressive	4,142	42.40	21,038
Italy	progressive	0	47.23	75,000
Cyprus	progressive	19,500	35.00	60,000
Latvia	flat	1,200*	23.00	-
Lithuania	flat	2,400*	15.00	-
Luxembourg	progressive	11,264	45.78	100,000
Hungary	flat	0	15.00	-
Malta	progressive	9,100	35.00	60,000
Netherlands	progressive	0	52.00	66,421
Austria	progressive	11,000	50.00	90,000
Poland	progressive	0	32.00	19,688
Portugal	progressive	4,104	56.21	80,000
Romania	flat	780*	16.00	-
Slovenia	progressive	6,520*	50.00	70,907
Slovakia	progressive	3,803*	25.00	35,022
Finland	progressive	16,700 ⁽¹¹⁾	51.37	72,300
Sweden	progressive	3,612*	57.10	66,191
United Kingdom	progressive	12,935*	45.00	181,353
EU-28	N/A	5,227	38.96	78,148
EA-19	N/A	6,261	42.00	80,630

Source: Commission services.

Note: National currencies are converted into euro using the AMECO exchange rate. Information for the basic tax-free allowance relates to a single person without dependents. Those allowances usually apply to all income, although in some cases their application is restricted to wage income. Tax credits are not considered (e.g. Greece and Italy apply a tax credit similar to a basic tax-free allowance in lowering the tax liability).

* The basic tax-free allowance is income-dependent in Belgium, Latvia, Lithuania, Romania, Slovenia, Slovakia, Finland (for municipal tax), Sweden and the UK. In those cases, the table shows the maximum value of the allowance. The basic tax-free allowance is fully phased-out for higher incomes in Lithuania, Romania, Slovakia, Finland (for municipal tax) and the UK. ⁽¹⁾ The Czech Republic has an income-independent tax credit of 24840 CZK (919 €), which has the effect of an income-independent basic tax-free allowance of 6127 € due to its flat tax system.

⁽¹¹⁾ For Finland, the value represents the basic tax-free allowance for central government income tax, but not for municipal tax. The municipal tax has an earned income tax allowance with a maximum of 3570 €, as well as a basic tax-free allowance amounting to a maximum of 3020 €.

Although some features of the labour tax system aim at altering behaviour rather than redistributing income, they have distributional consequences. Promoting societal goals by steering the choices and behaviour of individuals can be a general purpose of the tax system, as much as raising revenue. For example, refundable tax credits targeted to low income earners aim foremost at creating work incentives, alongside redistribution. Addressing income inequality while promoting labour market participation requires some trade-offs to be made (see Mirrlees Review, 2011) for detailed discussion). As individual choices impact the individual's ability to pay, steering these choices through the tax system inevitably generates distributional consequences.

The design of the labour tax system should be considered within the broader policy context and in light of country-specificities. To address income inequality, it is relevant to take into account the interactions of the tax and benefit systems, as the latter is the main redistributive instrument in most Member States. To reconcile equity and growth, it is equally important to consider the overall tax mix and structure of the tax system. Also the wage dispersion and employment level proper to each country is crucial. Moreover, country-specificities and national preferences are an important consideration when analysing the design of the labour tax system.

4.1. IMPACT OF THE TAX RATE SCHEDULE ON INCLUSIVE GROWTH

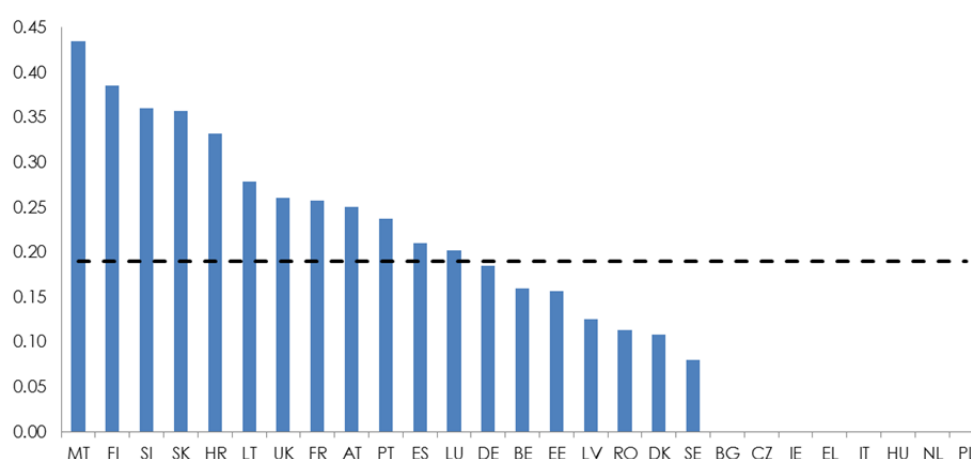
The design of the personal income tax is very heterogeneous across Member States. A basic tax-free allowance and a progressive tax rate schedule are the two structural components of a tax system, taking into account the ability to pay of individuals. Table 4.1 above shows some descriptive features of the personal income tax structure in EU Member States. They appear to be very different from one country to another.

4.1.1. Basic tax-free allowance

The basic tax-free allowance creates a first tax bracket, often for all taxpayers. The basic tax-free allowance (also called standard tax deduction, personal allowance or zero-rate band) is a general tax deduction exempting the first income share from taxation. Through a basic tax-free allowance a first tax bracket is created to which a zero rate applies. In some Member States the basic tax-free allowance is income-dependent or includes a phasing-out mechanism (see Table 4.1). Graph 4.2 shows the size of the basic tax-free allowance as a percentage of the average gross wage in each Member State, to take into account the difference in the wage level across countries. It shows the heterogeneity across Member States, with the basic tax-free allowance exceeding 30% of average gross wage in Malta, Finland, Slovenia, Slovakia and Croatia while being inexistent in eight Member States.

Although the basic tax-free allowance effectively reduces the tax burden on low-income earners, it is costly and may create work disincentives. The basic tax-free allowance often considerably reduces the tax burden of low-income earners, in particular as in some countries the size of the basic tax-free allowance is set to cover minimum consumption needs. It also facilitates tax administration, as taxpayers with a low income are not subject to income tax. As it is often designed as a general tax deduction, benefitting all taxpayers, the basic tax-free allowance is costly in terms of forgone revenue. A high basic allowance may also reduce the supply of hours worked of individuals already in employment (Brys et al., 2016). Analysis based on the OECD Tax-and-benefit model (OECD, 2018) shows that in Member States with a very high tax allowance, reducing this allowance leads to an increase in tax wedge, participation tax rate and marginal tax rate for certain population groups. Reducing the basic tax-free allowance primarily affects personal income taxes, but can have some interactions with other elements of the tax and benefit system.

Graph 4.2. Basic tax-free allowance (% of average gross wage), 2016



Source: European Commission Tax and Benefits Indicator database based on OECD data.

Note: No recent average gross wage data is available for Cyprus.

To ensure the basic tax-free allowance to be growth-enhancing and distribution-friendly, it can be made income-dependent or increased in a budget-neutral way. In order to limit the budgetary cost of a basic tax-free allowance and to target it to low-income earners, it can be made income-dependent or being phased-out when income increases. Increasing the basic tax-free allowance in a budget-neutral way reduces income inequality, as shown by EUROMOD-QUEST analysis (see Box 2). Although the impact on the implicit tax rate on labour is not homogeneous across countries, the share of winners and losers is clearly skewed in all countries in favour of the former with the top income deciles experiencing a rise in the tax burden. Moreover, introducing or increasing a basic tax-free allowance in general brings positive effects in terms of GDP, although limited in size.

Box 2. QUANTIFYING THE IMPACT OF PROGRESSIVITY FEATURES BASED ON EUROMOD-QUEST

Making the tax system more progressive may serve both growth and income inequality objectives (Joumard et al., 2012). Enhancing progressive elements in the personal income tax system through budget-neutral reforms is expected to reduce income inequality and to positively affect GDP. By way of example, the analysis is introducing specific progressive elements into tax systems with limited progressivity. This is part of the current trend, as several countries have - or are in the process of introducing - features of progressivity into their personal income tax system. For instance, Estonia, Latvia, Lithuania and Romania - although in principle applying a flat tax rate schedule - have also a basic tax-free allowance and the Czech Republic has an in-work tax credit. Moreover, Estonia will increase its basic tax-free allowance, while Latvia will move from a flat tax rate to a progressive tax rate structure as of 2018.

For analytical purposes, the Joint Research Centre of the European Commission analysed some hypothetical reforms based on the EUROMOD microsimulation model, quantifying the fiscal and redistributive impact of progressivity features (JRC., 2018). The analysis focusses on EU Member States currently featuring a flat rate structure, namely Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary and Romania. Three hypothetical scenarios, introducing some elements of progressivity, were simulated and compared to the 2017 policy baseline: (i) introduce a progressive tax rate schedule in a revenue-generating way; (ii) introduce a refundable in-work tax credit, financed by introducing a progressive tax rate schedule and (iii) increase/introduce the basic tax-free allowance, financed by an increase in the flat tax rate.

Overall, the empirical analysis shows that all three hypothetical scenarios have a positive redistributive impact (Graph 4.3). However, there are substantial variations across Member States depending on country-specificities and tax system characteristics. The macro-impact of reform scenarios (ii) and (iii) are estimated based on the QUEST model. The results show that, with the exception of the Czech Republic, all reform options bring slight positive effects in terms of GDP (Graph 4.4). They also show that cutting taxes for low-skilled workers

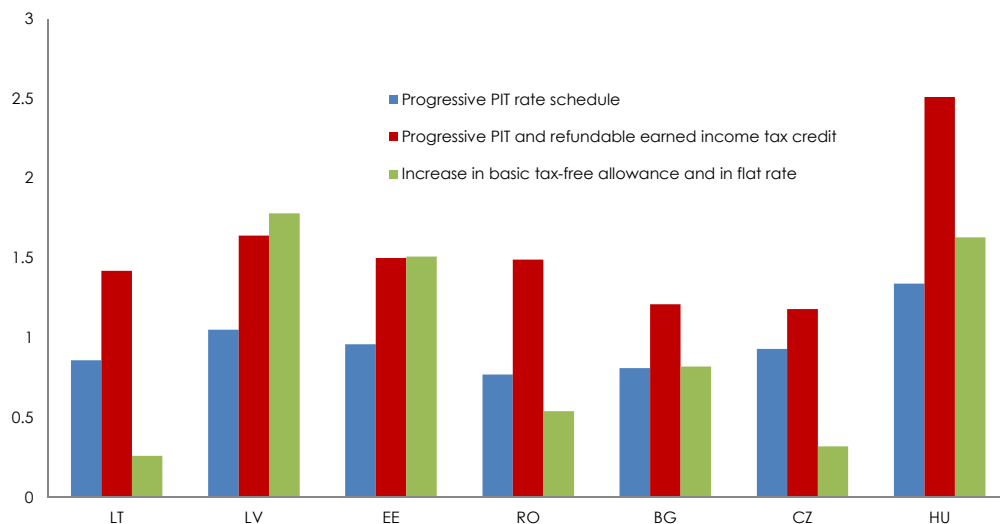
increases employment for that skill group while raising taxes for high skilled reduce their employment rate. Overall, the empirical results suggest that making the tax system more progressive can address the equity concerns, while GDP effects are modest.

Second round macroeconomic and behavioural effects

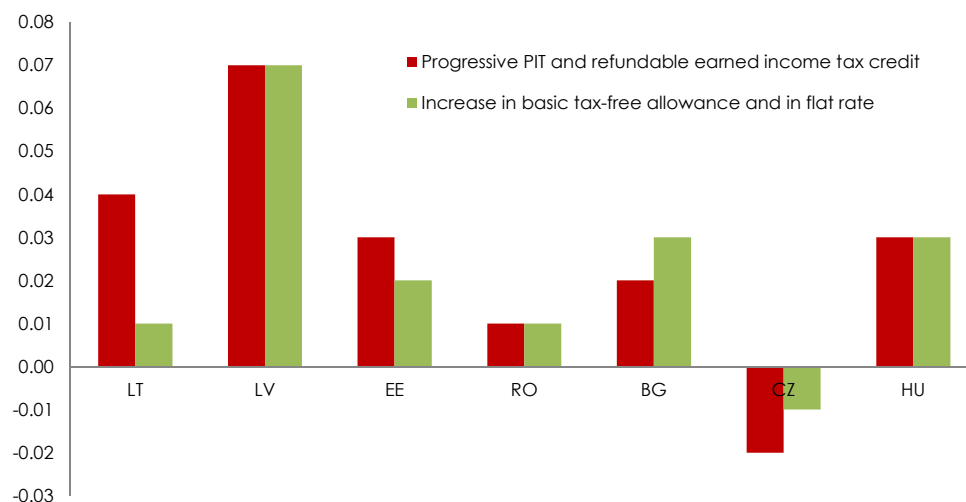
In the next step second round macroeconomic effects (i.e. the macroeconomic feedback and behavioural response to the tax change) are estimated by introducing the impulse responses for employment, gross real wages and consumer price index generated by the QUEST general equilibrium model back into the EUROMOD microsimulation model. In addition, a second scenario is simulated in which the second-round effects, i.e. the macroeconomic feedback and behavioural response to the tax change, are disregarded. The analysis is done over the period 2018-2022 by comparing the variation in tax revenues against the baseline.

Overall, the microsimulation results show, as expected, that the behavioural impact is negligible, reaching a maximum of 1 pp. for Latvia compared to the static scenario (given the more significant effects on employment and gross wages for all skill groups). Incorporating the macro impact of the tax reforms in EUROMOD slightly decreases revenues from PIT. This is mainly due to the fact that the increases in employment for the largest share of employees (the middle and the low skilled) are offset by the decline in their gross wages.

Graph 4.3. Impact on inequality (changes in Gini index)



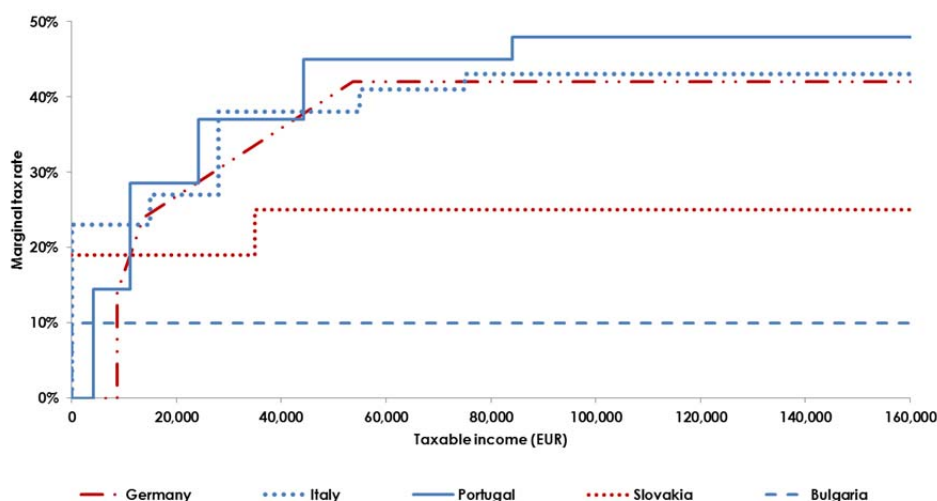
Graph 4.4. Impact on growth (% of GDP)



4.1.2. Tax rates and brackets

The personal income tax rate structure is very heterogeneous across Member States. In most Member States with a progressive rate schedule, a piecewise linear rate function is used with a kink at each point where the marginal tax rate increases ('step function') (Graph 4.5). Only Germany uses and administrates a continuous linear function as tax rate schedule, which has the advantage of more gradually increasing tax rates and of avoiding rent-seeking behaviour around kink points. Several Member States used a flat rate structure for their personal income tax system in 2016, namely Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary and Romania.

Graph 4.5. Progressive tax rate schedule in specific countries, 2016



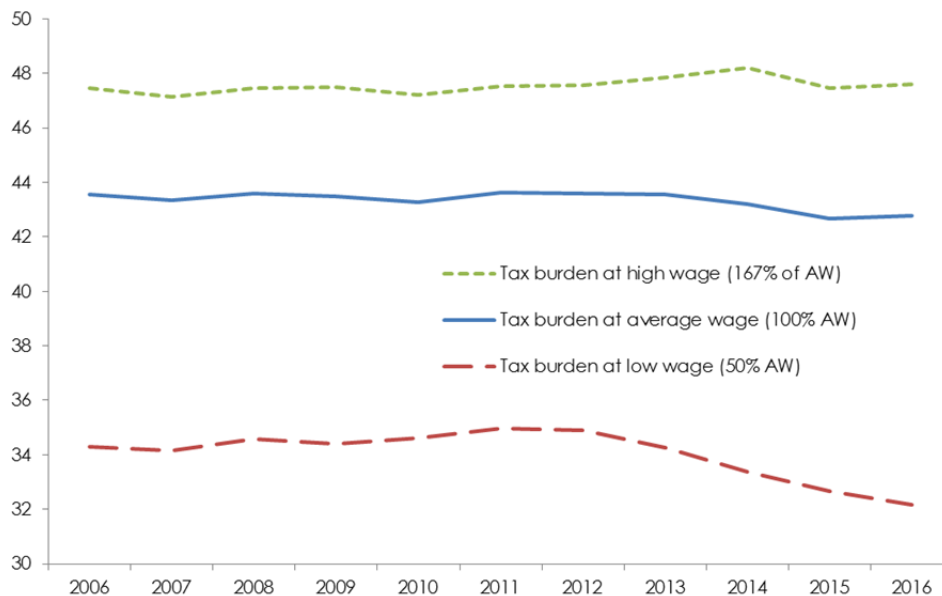
Source: Commission services.

A carefully designed tax system would need to avoid overly high marginal tax rates, which may lead to economic distortions. While a higher tax rate increases revenues for a given taxable base, it also triggers behavioural responses that may shrink the base and therefore lower revenues. High marginal tax rates may imply disincentives for investment in skills and for entrepreneurship, innovative activity and productivity (OECD, 2011; Guvenen et al., 2014). They may also increase tax avoidance and tax evasion, which may reduce tax revenues and undermine the progressivity of the tax system. The Laffer curve suggests a revenue-maximising rate above which the negative revenue effect outweighs the positive one and above which government revenues would shrink. It is important to underline that this does not necessarily imply that top marginal rates should be reduced. Broadening the tax base and thereby eliminating tax avoidance opportunities as well as addressing tax evasion, for example through the increased exchange of tax information, reduce the size of the response and may provide a more efficient (and equitable) route.

Moving from a flat rate to a progressive tax rate schedule appears to serve both growth and income inequality objectives. Simplicity would justify applying a single marginal tax rate across income levels. Such a flat tax could positively affect employment and economic growth, reduce tax distortions, limit administrative and compliance costs, as well as remove incentives for tax avoidance and evasion. Optimal taxation theory (Mirrlees, 1971), however, suggests that applying the same tax rate to different income levels may entail significant revenue losses and has a low redistributive potential. Tax rate differentiation according to an individual's ability to pay is also justified by equity

reasons. EUROMOD-QUEST analysis (see Box 2 above) confirms that moving from a flat rate to a progressive rate schedule reduces income inequality with some modest growth effects. Recently, some Member States have opted for this type of tax policy to lower taxes on low-income earners³⁸.

Graph 4.6. Average tax burden on labour for a single worker, EU average, 2006-2016



Source: European Commission Tax and Benefits Indicator database based on OECD data.

Notes: AW stands for average wage. The indicator shown in the graph is the tax wedge on labour. The tax wedge is defined as the sum of personal income taxes and employee and employer social security contributions net of family allowances, expressed as a percentage of total labour costs (the sum of the gross wage and social security contributions paid by the employer). No recent data is available for Cyprus. The euro area averages are GDP-weighted.

4.2. IMPACT OF LABOUR TAX EXPENDITURES ON INCLUSIVE GROWTH

A broader tax base combined with lower tax rates is, in general, considered more efficient and neutral (OECD, 2010). Tax expenditures include exclusions, deductions, credits and reduced rates for specific activities³⁹. The will to encourage investment, employment and growth has resulted in a wider application of specific tax expenditure items in many Member States (European Commission, 2014). The use of tax expenditures, however, makes the tax system complex, increases taxpayers'

³⁸ Several EU Member States are undertaking sizeable tax reforms impacting the labour tax design. Estonia increased its basic tax-free allowance, while Latvia moved from a flat tax rate to a progressive tax rate structure as of 1 January 2018.

³⁹ A tax deduction is a reduction in taxable income, while a tax credit directly reduces the tax amount due. In general, under a progressive tax rate schedule, the value of tax deductions increases with marginal tax rates. The higher the marginal tax rate, the higher the value of the deduction. Hence progressive tax rate structures make high-income earners benefitting more from tax deductions, as they are subject to higher marginal tax rates than low and middle-income earners. Tax credits, on the other hand, reduce the amount of taxes after the progressive tax rate schedule is applied to the taxable income. Hence the value of tax credits is not affected by marginal tax rates. Tax credits can be refundable or non-refundable, depending on whether they give rise to a refund when they exceed the tax amount due. Unlike a non-refundable tax credit, a refundable tax credit provides a tax advantage also for tax payers without tax liability. If the tax credit is refundable, low and middle-income earners benefit as much of tax credits as high-income earners.

compliance costs and governments' administrative costs. Constrained public finances push towards the reduction of tax expenditures, as tax expenditures narrow the tax base and are costly in terms of forgone revenue. Limiting the use of tax expenditures also makes the tax system simpler and contributes to the neutrality of the tax system as it reduces the extent to which the tax system distorts work, investment and consumption decisions. Broad tax bases also make revenue collection easier and therefore increase the efficiency of the tax system (OECD, 2010). In turn, increased revenue collection provides the necessary fiscal space to reduce marginal tax rates.

While the use of some labour tax expenditures could be justified, the decision to keep them should be based on a cost and benefit analysis. A case-by-case evaluation with the focus on specific groups of tax expenditures associated with specific economic issues is needed. Such an evaluation will help limit the use of tax expenditures to cases where market failures exist and where obvious administrative advantages over comparable spending programs can be identified. This should be done cautiously because the actual effects of specific tax expenditures depend greatly on the particular context in which they are applied in individual Member States. The sections below discuss the impact on growth, the budget and income distribution of a number of key labour tax expenditures.

Losses in terms of revenue and efficiency could be avoided by using targeted benefits to support the most vulnerable households⁴⁰. Many tax expenditures are not targeted, i.e. they are not means-tested and benefit all income levels. Therefore, they do not necessarily have a positive impact on income distribution and may even be regressive. Depending on the purpose and design of the tax expenditure, this could generate large dead-weight costs. Losses in terms of revenue and efficiency could be avoided by using targeted spending programs. Overall, the distributional effects of targeted spending programs are often easier to control, although they may in some cases require more administration. Moreover, among countries with progressive taxation, the presence of means-tested spending programs supporting low-income households, affects the shape of automatic income stabilisation across the income distribution (In 't Veld et al., 2012).

4.2.1. Tax expenditures targeted at low-income earners

Tax expenditures targeted at low-income earners, like work-related tax expenditures, aim at boosting employment and redistributing income. Work-related tax expenditures, also called 'in-work benefits' or 'making work pay policies', targeted at low-income earners have been introduced by several Member States. They aim at (i) making work more attractive by providing a financial incentive to become employed for those who are unemployed or inactive; and (ii) supporting those who are at risk of poverty or social exclusion even when employed. Work-related tax expenditures have the advantage of offsetting the risk of 'benefit dependence' (unemployment and inactivity traps) and avoiding an increase in labour costs, as compared to unemployment benefits or minimum wages. On the other hand, the complexity of their design and their lack of a real-time effect due to the annual account basis for declaring income taxes (OECD, 2010) are found to be the major drawbacks of work-related tax expenditures.

Tax expenditures targeted at low-income earners combined with a carefully designed tax rate schedule may reconcile growth and equity objectives. Work-related tax expenditures can take different forms, including tax deductions, (non)-refundable tax credits, tax rate reductions and exemptions for low-income individuals. As highlighted by recent literature, the distributional impact of work-related tax expenditures depends on the specific design of the measure (European

⁴⁰ The distributional effects of targeted spending programs are often easier to control, although they may in some cases require more administration.

Commission, 2014). The redistributive impact is the highest when the tax expenditure takes the form of a refundable tax credit. Unlike tax deductions, the value of tax credits is not affected by marginal tax rates. Moreover, refundable tax credits give rise to a refund when they exceed the tax amount due and as such also benefit tax payers without tax liability. Cross-country analysis shows that a top rate increase combined with tax expenditures targeted to low-income earners may both benefit growth and equity (Joumard et al., 2012). Similar results are obtained through EUROMOD-QUEST analysis showing that adding a refundable in-work tax credit to a flat rate tax structure (in a budget-neutral way) reduces income inequality (see Box 2 above). Overall the mean disposable income decreases, although substantially less compared to the introduction of a progressive rate schedule.

4.2.2. Tax expenditures benefitting high-income earners disproportionately

Except for work-related tax expenditures, most tax expenditures benefit high-income groups disproportionately. Unlike tax credits, tax expenditures taking the form of a tax deduction reduce the taxable income. As the value of tax deductions increases with marginal tax rates, a progressive rate schedule makes high-income earners benefitting disproportionately from tax deductions. Moreover, by their nature, certain types of tax expenditures favour high-income earners who have the possibility to save and build up capital. This is in general the case for tax expenditures inducing higher private pension savings or promoting home ownership, like mortgage interest deductibility which benefits foremost those who have access to credit. Moreover, more affluent tax payers often have a better knowledge of the tax system and may use tax expenditures as a tool for tax optimisation. Hence, tax expenditures –other than those targeted to low-income earners - are generally considered to be detrimental to social equity.

4.2.2.1. Pension-related tax expenditures

Tax expenditures granting a favourable treatment to private pensions are widely used. Different countries developed different ways to achieve the main objectives of pension systems, i.e. poverty prevention, insurance, consumption smoothing and redistribution. In the context of an ageing population, most Member States provide tax incentives to induce higher rates of private pension savings or offer a more favourable tax treatment of private pension schemes to compensate the income loss after retirement. Pension-related tax expenditures include among others: (a) exemption for some or all pension income often below certain thresholds, (b) a lower rate on pension income than ordinary labour income, (c) specific tax deductions and credits of pension contributions (which exceed those available to tax payers of working age) or (d) no application of social security contributions to pensions.

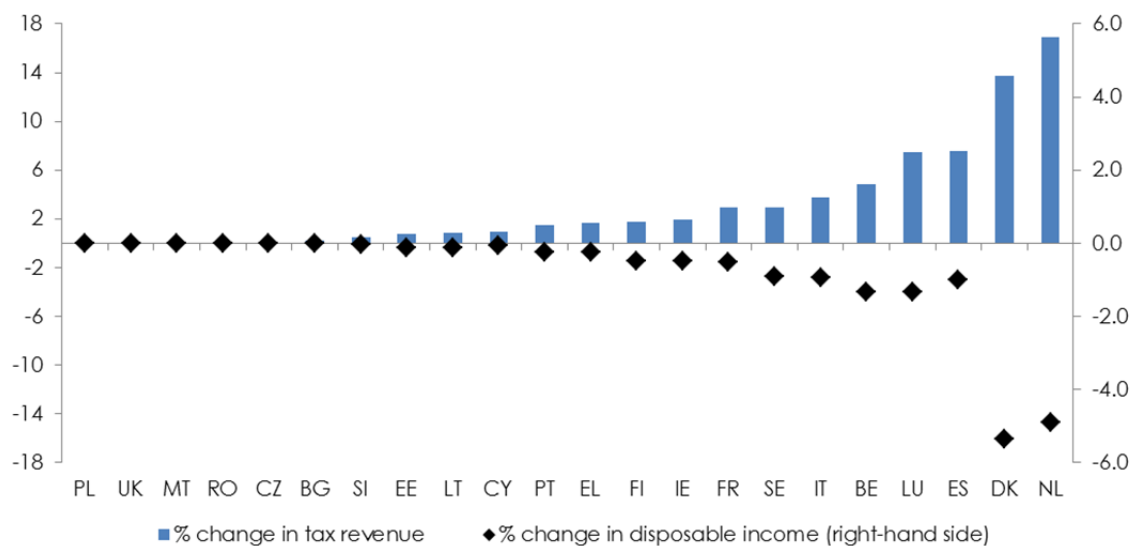
Depending on their design, the redistributive impact of pension-related tax expenditure can be progressive or regressive. Empirical work based on the micro-simulation model EUROMOD (Barrios et al., 2016) suggests that pension-related tax expenditure can have a significant impact in terms of redistribution. Assessing the existing pension-related tax expenditure against a tax expenditure free scenario shows that removing pension-related tax expenditure has a positive budgetary impact in almost two third of the countries and in particular in Portugal, Romania and Bulgaria. Regarding the distributional impact, the results suggest that the impact of this type of tax expenditure very much depends on the design in the country considered.

4.2.2.2. Housing-related tax expenditures

Housing-related tax expenditures can take different forms and are used in several Member States. Many Member States want to promote home-ownership as it is seen to bring benefits and inclusiveness to the overall community. They, therefore, offer a favourable tax treatment to housing in the personal income tax system. Housing-related tax expenditures include a preferential tax treatment for paid mortgage interest, for income from renting immovable property, for paid rent for immovable property and for expenses related to immovable property.

Limiting the use of housing-related tax expenditures tends to have a positive impact both on revenue and on redistribution. Empirical work based on the EUROMOD micro-simulation model (Barrios et al., 2016) suggests that housing-related tax expenditures can have a significant budgetary and distributional impact (Graph 4.7). By comparing a tax expenditure free scenario with the actual tax regime in each Member State, it appears that removing housing-related tax expenditures has a positive budgetary impact in all countries and in particular in the Netherlands, Denmark, Spain and Luxembourg. The tax revenue impact is of a lower magnitude, though, as compared with pension-related tax expenditures. Regarding the distributional impact,⁴¹ the results suggest that the impact of housing-related tax expenditure can be sizeable for several Member States, with changes in the Gini coefficient going as low as -1.5 pp in Denmark.

Graph 4.7. Redistributive and budgetary effects of abolishing housing-related tax expenditures



Source: Barrios et al. (2016)

⁴¹ The measure of income is the equivalised Disposable Personal Income (DPI), which is the after tax income of a household, available for spending or saving, divided by the number of household, weighted according to the following factors: 1.0 to the first adult; 0.5 to the second and each subsequent person aged 14 and over; 0.3 to each child aged under 14, according to the Eurostat definition.

CONCLUSIONS

A well-structured and carefully-designed labour tax system can support inclusive growth, i.e. simultaneously foster growth and reduce income inequality. Tax and benefit reforms not necessarily address both growth and equity considerations simultaneously. Often complementarities need to be found and trade-offs made to ensure inclusive growth. The wish to address income inequalities has provided increased attention for the structure and design of the labour tax system. Given that labour taxation is the tax instrument which is most often used to correct for inequalities, this paper shows how the structure and design of the labour tax system can contribute to more inclusive growth. It highlights those labour tax reforms which lead to win-win situations and simultaneously achieve growth and equity objectives.

A tax structure less relying on labour taxes can have a significant positive impact on a country's economy. The tax systems of EU Member States tend to be heavily reliant on labour taxation, which can be detrimental to growth and can depress both the supply and demand for labour. In this context, several Member States seem to have scope to reduce labour taxes for vulnerable groups or to shift from labour taxes to housing, consumption and environmental taxes, which are considered to less distort economic growth. In addition, many EU Member States still make ample use of tax expenditures with a wide variety of aims, including employment creation, home ownership and income redistribution. While these economic or social goals are fully justified, tax expenditures are not necessarily the most cost efficient instrument to achieve these goals and may in some cases lead to severe economic impacts and distortions.

A tax system designed to limit labour taxes for vulnerable groups is crucial to ensure inclusive growth. Workers with a low level of income are particularly responsive to changes in taxation, which tend to have a substantial impact on their decision to work or not. Several countries have a relatively high tax wedge for low-income earners, which may substantially discourage labour market participation. In this context, the Eurogroup decided to benchmark the tax burden on labour for both average wage and low-wage earners. In addition, the paper shows that in some Member States labour taxation is designed in such a way that it discourages secondary earners from taking up work, which may create economic distortions and raise fairness issues. Elements of family-based taxation, present in almost all national tax and benefit systems, are probably the most important tax barrier for secondary earners to work more. The empirical analysis of this paper provides robust evidence of this negative employment impact of the tax and benefit system, but also shows that country-specific elements contribute to explain labour supply decisions of secondary earners.

Moreover, a carefully-designed tax rate schedule, combined with a well-considered use of tax expenditures could foster inclusive growth. A little-distortive tax rate schedule is designed in a way that limits disincentives for work, education, entrepreneurship and investment. This implies avoiding overly high marginal tax rates, which may trigger behavioural responses and may lead to economic distortions. Moreover, empirical results suggest that making the tax system more progressive can address equity concerns, while effects on growth are modest. In addition, the paper shows how inclusive growth can be fostered by limiting the use and generosity of tax expenditures. It shows that by better targeting tax expenditures, their budgetary cost can be limited while enhancing their distributional effect. Overall, the eventual design of a labour tax system should be considered within the broader policy and tax-benefit context and in light of country-specificities and national preferences.

ANNEX 1 – TAX BURDEN ON LABOUR

Table A.1. Tax burden on labour for low-income earners (2015)

Country	Inactivity Trap				Unemployment Trap			
	Trap 67% AW	Contribution of taxation	Trap 50% AW	Contribution of taxation	Trap 67% AW	Contribution of taxation	Trap 50% AW	Contribution of taxation
Belgium	66.7	35.2	65.5	23.3	92.2	35.2	88.3	23.3
Bulgaria	34.5	21.6	38.8	21.6	81.6	21.6	81.6	21.6
Czech Republic	62.8	19.5	66.5	15.5	80.3	19.5	79.3	15.5
Denmark	83.7	22.2	98.5	16.2	89.6	10.1	94.3	7.0
Germany	61.9	34.6	67.5	30.9	73.1	34.6	74.2	30.9
Estonia	46.2	18.7	54.1	17.2	62.9	12.9	62.9	12.9
Ireland	72.6	13.1	82.7	3.1	71.8	12.4	81.8	2.1
Greece	18.5	18.5	15.5	15.5	50.6	18.5	58.5	15.5
Spain	42.3	16.9	44.0	10.0	81.4	11.4	75.3	5.3
France	54.8	25.8	58.5	22.0	76.5	19.1	76.8	19.1
Croatia	46.8	24.1	52.2	21.9	80.1	24.1	77.9	21.9
Italy	23.3	23.3	15.9	15.9	80.8	20.9	86.9	15.1
Cyprus	-	-	-	-	-	-	-	-
Latvia	53.0	27.9	60.5	26.8	87.9	27.9	86.8	26.8
Lithuania	41.6	20.4	46.2	17.8	81.6	20.4	86.2	17.8
Luxembourg	70.1	19.3	81.5	13.6	87.6	7.6	90.8	6.1
Hungary	47.4	34.5	51.8	34.5	78.4	19.1	78.9	18.9
Malta	57.5	13.1	69.5	10.0	57.0	13.1	68.9	10.0
Netherlands	78.5	32.3	87.5	25.6	82.3	7.3	94.6	6.4
Austria	67.5	29.2	75.3	24.0	68.1	29.2	75.3	24.0
Poland	48.9	25.9	55.2	24.5	81.8	25.9	99.3	24.5
Portugal	39.5	21.1	35.7	11.0	80.3	21.1	76.0	11.0
Romania	28.3	28.3	27.1	27.1	49.4	28.3	53.5	27.1
Slovenia	62.0	28.7	58.7	23.0	89.6	9.7	79.7	5.4
Slovakia	28.9	19.7	26.7	14.5	44.7	19.7	39.5	14.5
Finland	72.0	29.7	83.5	27.8	76.3	14.7	83.5	13.2
Sweden	68.8	29.8	80.0	27.9	68.9	12.9	80.0	7.1
United Kingdom	61.6	19.2	71.7	14.8	61.6	19.2	71.7	14.8
EU average	55.0	25.8	59.5	20.9	74.1	21.8	78.2	18.0
EA average	52.8	27.4	55.4	22.0	76.8	23.0	78.8	19.1
Relatively high	61.2	28.4	67.8	23.8	77.6	25.2	81.7	21.3
Relatively low	48.8	23.3	51.3	18.0	70.5	18.5	74.8	14.6

Source: European Commission Tax and Benefits Indicator database based on OECD data.

Notes: The inactivity trap measures the short-term 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 at a certain wage level. The unemployment trap measures the short-term financial incentive for an unemployed person receiving unemployment benefits to move to paid employment at a certain wage level. The higher the trap, the lower the incentive to take up work. No recent data is available for Cyprus. AW refers to the average wage. EU and EA averages are GDP-weighted. Relatively low/high refers to significantly below or above the EU average. The values significantly above (below) the EU average are highlighted in blue.

Table A.2. Tax burden on labour for secondary earners (2015)

Country	Inactivity trap (2015)		Low wage trap (2015)	
	Trap 67% AW	Contribution of taxation	Trap 33% - 67% AW	Contribution of taxation
Belgium	48.5	35.2	59.9	59.9
Bulgaria	35.7	21.6	50.2	21.6
Czech Republic	31.1	19.5	27.6	27.6
Denmark	45.2	10.1	40.1	40.1
Germany	46.0	34.6	48.0	48.0
Estonia	22.9	12.9	22.9	22.9
Ireland	28.2	12.4	34.5	34.5
Greece	8.4	18.5	17.8	33.0
Spain	22.5	11.4	21.4	21.4
France	31.6	19.1	44.3	38.8
Croatia	33.2	24.1	28.1	28.1
Italy	31.0	20.9	40.8	40.2
Cyprus	-	-	-	-
Latvia	35.0	27.9	31.1	31.1
Lithuania	26.7	20.4	27.0	27.0
Luxembourg	33.9	7.6	42.0	42.0
Hungary	34.5	19.1	34.5	34.5
Malta	17.6	13.1	15.9	15.9
Netherlands	19.7	7.3	35.3	39.1
Austria	31.4	29.2	44.2	44.2
Poland	30.1	25.9	30.3	30.3
Portugal	29.7	21.1	42.8	31.2
Romania	36.5	28.3	32.7	32.7
Slovenia	58.4	9.7	48.1	35.2
Slovakia	8.7	19.7	-9.9	33.1
Finland	24.0	14.7	36.1	34.3
Sweden	22.2	12.9	28.7	35.4
United Kingdom	20.1	19.2	32.0	32.0
EU average	31.2	21.8	38.5	38.1
EA average	33.9	23.0	41.1	40.3
Relatively high	35.3	25.2	42.3	41.4
Relatively low	27.1	18.5	34.6	34.7

Source: Commission services, European Commission tax and benefits indicator database and OECD data.

Notes: The data on the tax wedge and the inactivity trap is for a single earner with no children. 'Contribution of taxation' refers to the contribution made by taxation to the respective 'traps' in percentage points (other contributors being, e.g. withdrawn unemployment benefits, social assistance and housing benefits). Recent data for Cyprus is not available. The age group considered for the employment rate is 20-64 years. 'Low-skilled' refers to levels 0-2 ISCED. For the tax wedge, the second earner has an income at 67% of the average wage while the principle earner has an income at the average wage. Relatively low/high refers to significantly below or above the EU average. The values significantly above (below) the EU average are highlighted in blue.

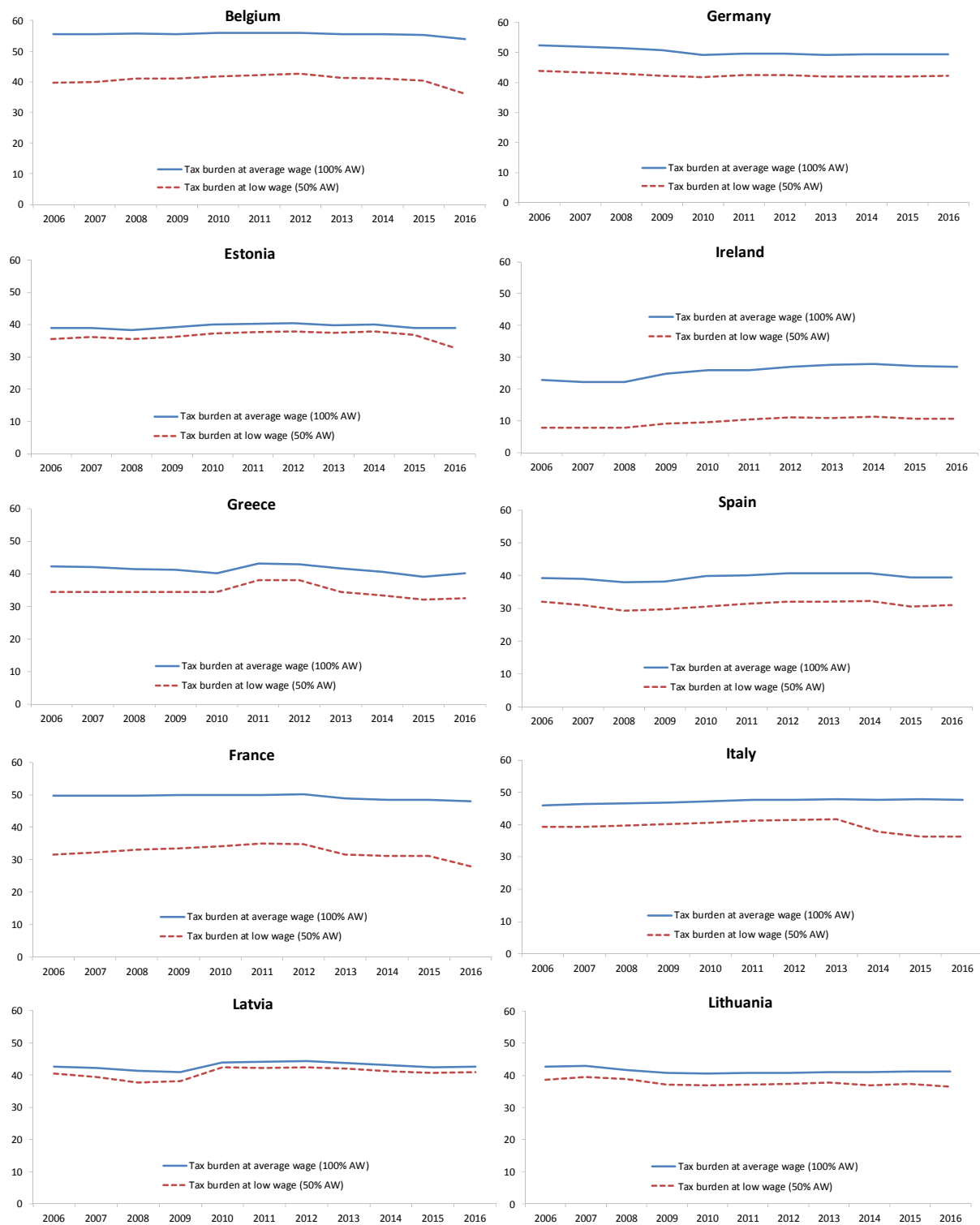
Table A.3. Labour market outcome for average wage, low wage and female earners

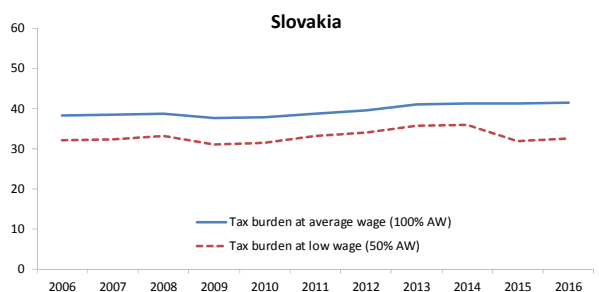
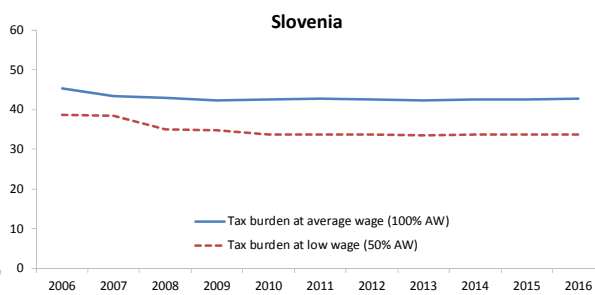
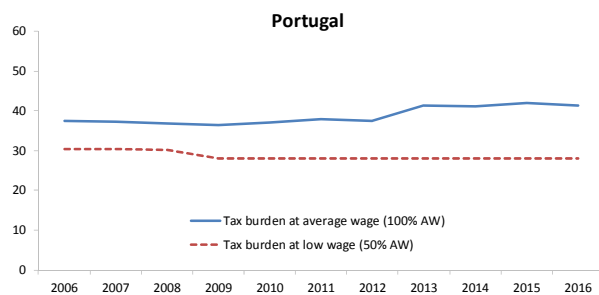
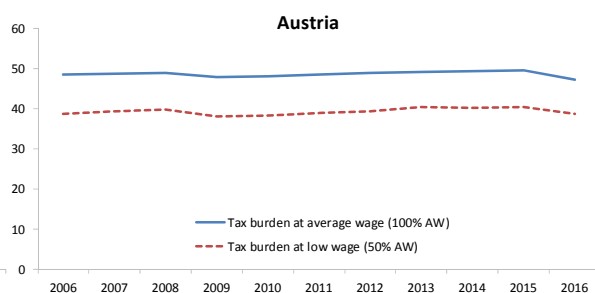
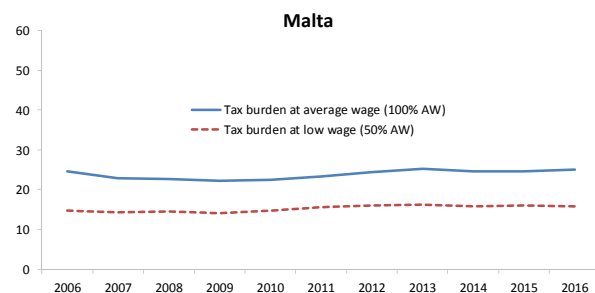
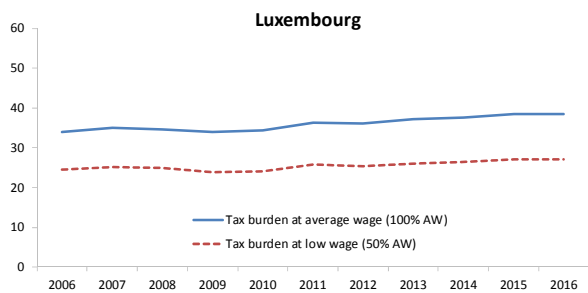
Country	Overall		Low-skilled		Female		Average hours worked / week
	Employment rate	Unemployment rate	Employment rate	Unemployment rate	Employment rate	Unemployment rate	
Belgium	67.7	7.7	45.6	15.7	63.0	7.4	33.2
Bulgaria	67.7	7.6	39.2	22.4	64.0	7.0	40.5
Czech Republic	76.7	3.9	43.7	20.4	68.6	4.6	38.5
Denmark	77.4	5.7	61.8	7.4	74.0	6.2	30.7
Germany	78.7	4.1	59.0	10.6	74.5	3.7	30.5
Estonia	76.6	6.8	61.8	12.2	72.6	6.2	37.1
Ireland	70.3	7.7	49.0	14.5	64.2	6.2	31.7
Greece	56.2	23.5	48.1	26.7	46.8	28.1	39.2
Spain	63.9	19.3	52.9	27.5	58.1	21.1	34.7
France	70.0	9.7	50.5	17.5	66.3	9.5	34.4
Croatia	61.4	12.5	38.9	17.5	56.6	13.2	38.5
Italy	61.6	11.5	50.3	15.4	51.6	12.6	32.8
Cyprus	68.8	13.0	56.9	15.8	64.1	13.3	37.3
Latvia	73.2	9.8	54.8	21.1	71.8	8.6	37.9
Lithuania	75.2	8.0	42.3	26.6	74.3	6.8	37.8
Luxembourg	70.7	5.9	56.4	8.2	65.1	6.3	34.1
Hungary	71.5	5.0	50.7	12.7	64.6	5.0	39.0
Malta	69.6	4.3	57.1	7.1	55.5	4.7	35.0
Netherlands	77.1	5.5	60.7	8.2	71.6	6.0	24.9
Austria	74.8	5.8	53.9	12.8	70.9	5.3	31.9
Poland	69.3	6.1	39.5	14.5	62.2	6.1	38.7
Portugal	70.6	11.2	64.7	12.3	67.4	11.2	38.0
Romania	66.3	5.7	52.3	7.7	57.4	4.8	39.3
Slovenia	70.1	8.1	45.5	15.3	66.7	8.6	38.1
Slovakia	69.8	9.5	35.9	30.6	62.7	10.6	38.8
Finland	73.4	8.2	52.0	13.1	71.7	7.8	34.6
Sweden	81.2	6.3	61.0	16.0	79.2	5.8	34.5
United Kingdom	77.6	4.3	62.1	7.3	72.1	4.2	31.8
EU average	72.4	7.9	54.9	13.9	67.1	8.0	32.8
EA average	71.0	9.0	53.9	15.3	65.7	9.2	32.5
Relatively high	75.0	9.7	57.4	16.2	70.3	10.2	34.0
Relatively low	69.9	6.1	52.4	11.6	63.9	5.9	31.6

Source: Eurostat.

Notes: The age group considered is 20-64 years. Low-skilled refers to levels 0-2 ISCED. EU and EA averages are GDP-weighted. Relatively low/high refers to significantly below or above the EU average. The values significantly above (below) the EU average are highlighted in blue.

Graph A.1. Evolution of tax wedge reductions for euro area countries (2006-16)





Notes: AW refers to the average wage. EU and EA averages are GDP-weighted.

Sources: European Commission Tax and Benefits Indicator database based on OECD data.

ANNEX 2 – TAX BURDEN ON SECONDARY EARNERS

This part estimates the effect of taxes, social security contributions and benefits on the labour supply at the intensive margin. It describes the results of an econometric exercise, based on panel data techniques, estimating the impact of the METR on different proxies of the labour supply at the intensive margin (number of hours worked per week and the average number of months worked part-time per year). Estimations have been run on the basis of a balanced pooled dataset of the EU-SILC database. Before describing the methodology and the results of the empirical exercise the a description of the way METR is calculated together with some descriptive statistics on the evolution of METR in time are offered.

Definition of METR

The METR represents the share of additional gross labour income withheld by taxes, social security contributions and benefit withdrawal. It measures the disincentive for an employed individual to supply additional hours of work. The METR is related to the overall household income because, due to the high complexity of the tax and benefit systems, a variation in the earnings does not only affect the disposable income of the person whose earnings changed but also that of the household he/she belongs to. The METR is calculated as follows (Jara and Tumino, 2003):

$$METR = 1 - \frac{Y_{HH}^1 - Y_{HH}^0}{E_i^1 - E_i^0}$$

Where (i) Y_{HH}^1 is the household income after the change in disposable income; (ii) Y_{HH}^0 is the household income before the change in the disposable income; (iii) E_i^1 is the individual earning after the change; (iv) E_i^0 is the individual earning before the change. The METR can also be decomposed in three elements: $METR_B$ ⁴², $METR_T$ and $METR_S$ which are, respectively the share of the gross labour income that is lost due to a decrease in benefits or to an increase in taxes or social security contributions.

$$METR = METR_B + METR_T + METR_S$$

Computation of METR

The estimations of the METR described in this Paper have been conducted by the Joint Research Centre of the European Commission using EUROMOD⁴³, the tax-benefit microsimulation model for the European Union. In EUROMOD, the METR is calculated by increasing individual gross earnings by 3%. This increase corresponds approximately to one additional hour of work per week for a full-time worker. The calculations have been performed for the period 2007-16 (with the data referring to t-1) for all Member States (with the exception of Croatia for which the time series start in 2011).

The sample of couples has been selected according to the following rules, which are similar to the ones used in Rastrigina and Verashchagina (2015): (i) only heterosexual couples are considered; (ii)

⁴² The benefits in the METR calculation include public pensions, means-tested and non means-tested benefits.

⁴³ EUROMOD simulates benefit entitlements and tax liabilities of individuals and households according to the tax-benefit rules in place in each Member State. The simulations are based on representative survey data from the European Statistics on Income and Living Conditions (EU-SILC) and cover the main elements of direct taxation and social contributions as well as non-contributory benefits.

partners can be married or non-married, but belong to the same household; (iii) both partners are of working age (between 16-64 years old) and are in paid work, i.e. only positive labour earnings are considered⁴⁴; (iv) none of the partners receives old-age pensions, disability pensions or self-employed income⁴⁵; (v) if within an household there is more than one couple that respects the abovementioned selection rules, the couple selected is the one whose main earner has the highest earning level of the household.

In order to avoid any population effect⁴⁶ on the calculation of the METR, the sample has been selected in EU-SILC 2012, as it provides the best compatibility with the majority of policy modules developed across countries and years. The same sample is used to compute the dependent variables for the econometric analysis with the difference that all available time series of EU-SILC have been considered (from 2007 to 2015)⁴⁷.

Secondary earners are considered those whose income is less than 45% of the household income, whereas equal earners are considered those whose income is between the 45% and the 55% of the household income. In theory METR are expected to range between 0% and 100%, but as explained in Jara and Tumino (2013) a METR outside this interval is possible.

For instance, if the marginal increase in earnings causes the loss of some benefit entitlement it is possible to have a METR exceeding 100%. Negative values of METR might arise from tax allowances or benefit entitlements that are only paid to people with income above a given threshold, i.e. those with income just below the threshold will see their household disposable income increase more than earnings do, resulting in a negative METR.

Marginal effective tax rates: evolution across time and country

In the EU on average, the marginal effective tax rate for secondary earners is relatively stable across time and across income levels (Graph 1a and 1b). The METR for secondary earners evolves quite constantly over the period 2007–16 with an average of 30.9% and 35.7%, respectively. To better understand the effect of the tax and benefit system on secondary earners, the METR is compared to that of households in which both partners have roughly equal earnings. The METR for equal earners is in general higher, as the level of income of an equal earning couple is overall higher. Also across income levels the evolution is quite stable.

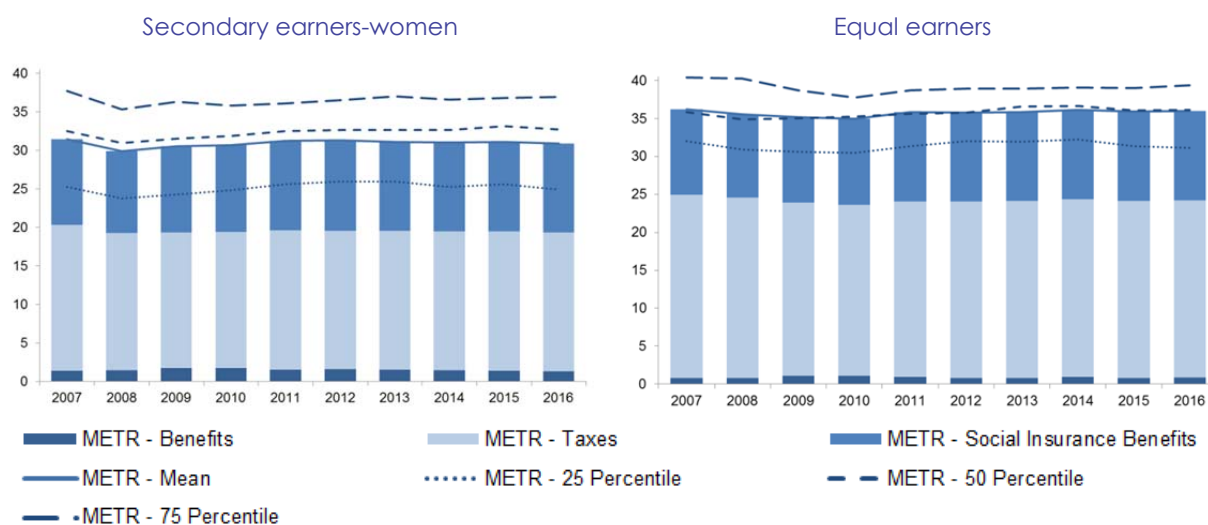
⁴⁴ EU SILC variable "employee cash or near cash income" (code py010).

⁴⁵ To exclude this categories of income the EU SILC variable "self-defined current economic status" has been used (code: pl030 in 2007-08 and pl031 in 2009-15 for the categories "in retirement or in early retirement or has given up business", "permanently disabled or/and unfit to work") and "status in employment" (code pl040 excluding those which status in employment is different from "employee").

⁴⁶ I.e. effects of the changes of the population on the changes of the METR.

⁴⁷ The selection of the sample has been done on the basis of variables describing the economic status of the individual (pl030 and pl031 as explained above). Nevertheless, in the selected sample there may be some discrepancies between the status declared and the types of income declared. For instance, there are individuals (1) who declare not to be retired (code pl030 in 2007-08 and pl031 in 2009-15) and at the same time perceive an old age pension (code py100g); (2) who declare not to be disabled (code: pl030 in 2007-08 and pl031 in 2009-15) and at the same time perceive a disability pension (code: py130g); (3) who declare not to be self-employed (code pl040) but at the same time have a positive self-employment earning (code: py050g). A reason for these discrepancies may be that the status declared refers to the main number of months spent in that status. Robustness checks on the regressions have been performed with a sample including and excluding these individuals.

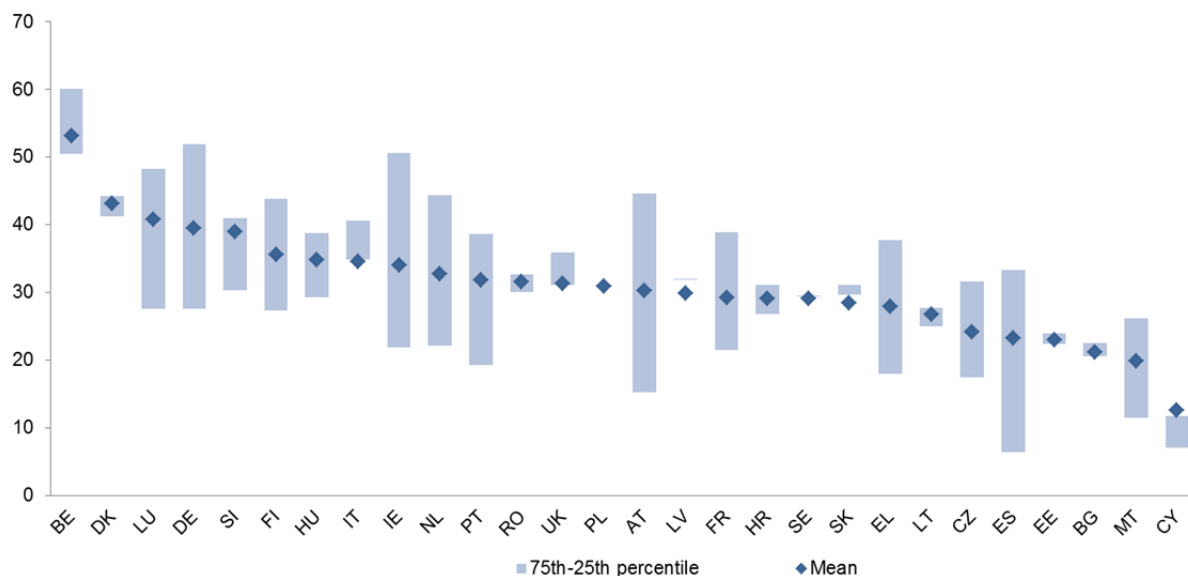
Graphs 1a and 1b. Marginal effective tax rate for secondary earners, EU average 2007-16⁴⁸



Source: Commission services based on EUROMOD calculation by its Joint Research Centre.

At country-level, however, the marginal effective tax rate for secondary earners varies considerably across income levels, which reflects the heterogeneity across Member States (Graph 2). The distance between the METR for low-income earners (25th percentile) and high-income earners (75th percentile) indicates the level of progressivity of the tax and benefit system. Some countries present a very narrow difference as in the case of Poland, Latvia, Sweden, Slovakia, Estonia, Bulgaria, Romania and Denmark⁴⁹. A higher degree of progressivity is observed instead in Luxembourg, the Netherlands, Germany, Spain, Ireland and Austria.

Graph 2. Marginal effective tax rate for secondary earners, country averages 2007-16



Note: Member States are ordered according to METR mean from high to low.

Source: Commission services based on EUROMOD calculations by its Joint Research Centre.

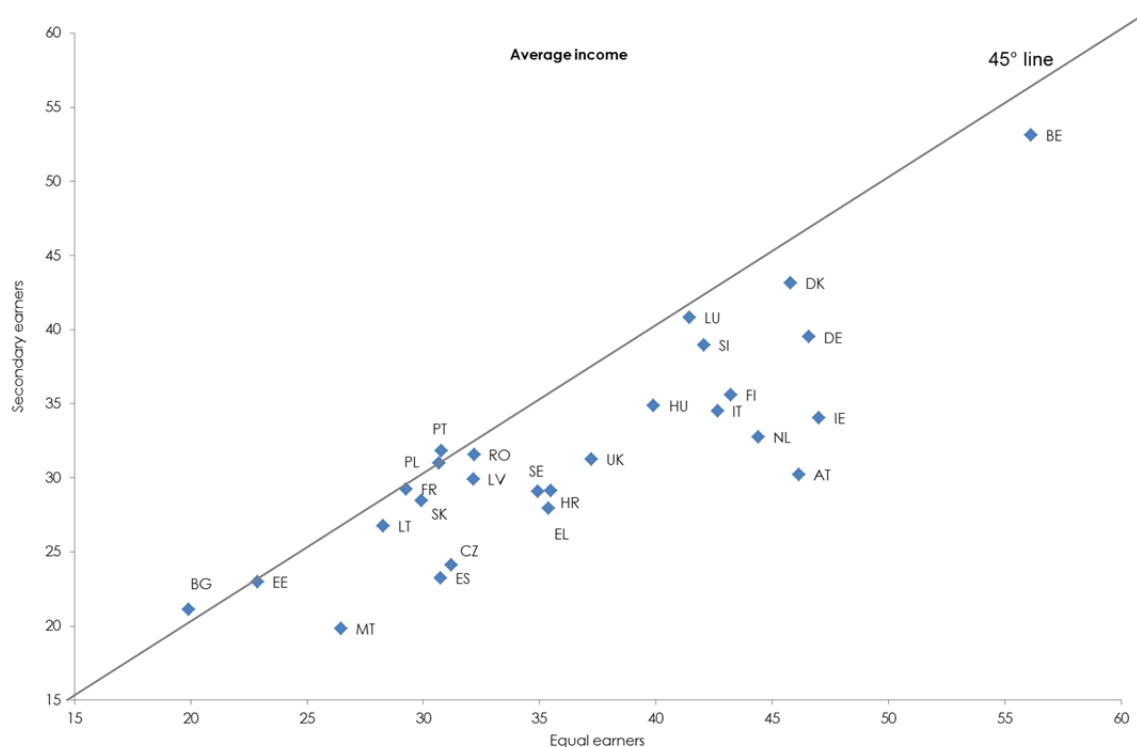
⁴⁸ Simple average of the 28 Member States over the period 2007–16.

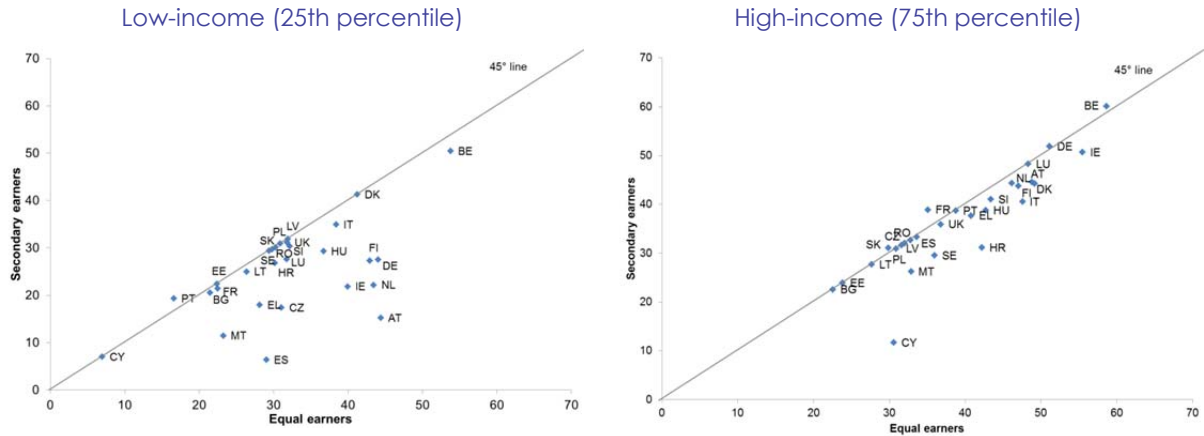
⁴⁹ In the case of Estonia, Latvia, Bulgaria and Romania this is due to a flat tax regime, which however may contain progressive features in some countries.

At average income level, the marginal effective tax rate for secondary earners seems to be lower than that for equal earners in most countries. As suggested by Rastrigina and Verashchagina (2015), using equally earning couples as benchmark allows capturing the impact of family-based tax elements, which exist in the tax and benefit system of many Member States. Plotting the METR of secondary earners against the METR for equal earners gives an idea of the additional tax burden faced by secondary earners. Considering that the 45 degree line represents the condition in which the METR of the two groups is the same, Graph 3a shows at average income level the countries that tax secondary earners more than equal earners (countries above the 45 degree line). The graph reveals that in most countries (except in Portugal and Bulgaria) the METR of secondary earners is lower than that of equal earners, which would indicate that secondary earners have higher work incentives than equal earners. This - at first sight surprising - result is due to the difference in the level of income, which, on average, is higher for equal earners than for unequally earning couples and to the progressivity of the tax and benefit system. This also indicates that the situation may be different across income levels.

The marginal effective tax rate for secondary earners and that for equal earners tend to converge when income levels become similar (Graph 3a, b and c). Analysing the METR at different income levels (25th and 75th percentile) allows having a better view of the tax burden on secondary earners, as it partially overcomes the difference in the level of income between equally and unequally earning couples. Indeed, as shown in Graphs 3 b and c, differences between the METR for secondary earners and equal earners are most important for low-income earners (25th percentile) as compared to average and high-income earners and differences get smaller in passing from the 25th to the 75th percentile. This indicates that, regardless the level of income, the METR tends to be similar for the two groups or even higher for the secondary earners in a higher number of Member States.

Graph 3a, b and c. Marginal effective tax rate for secondary earners and for equal earners, average 2007-16.





Source: Commission services based on EUROMOD calculation by its Joint Research Centre.

Empirical evidence of the effect of the tax and benefit system on the number of hours worked

To quantify the impact of the METR on the labour supply of secondary earners at the intensive margin, the following equation has been estimated on the basis of a balanced pooled dataset including 243 observations (27 Member States and 6 years covering the period 2007-14):

$$Lab\ Int_{i,t} = \alpha + \beta_1 METR_{i,t} + \eta_i + \eta_t + \varepsilon_{i,t}$$

The dependent variable ('Lab Int'), i.e. the labour supply at the intensive margin, is proxied by two alternative variables: the average number of hours worked per week and the average number of month worked part-time. The independent variable is the METR or alternatively the METR as decomposed in METR benefits, METR tax and METR social security contributions. i , t , η_i and η_t are respectively, countries, years, country fixed effects and year fixed effects. $\varepsilon_{i,t}$ is the idiosyncratic error. The full sample, as well as four subsamples of secondary earners-women, are considered: (i) full sample, (ii) low skilled, (iii) medium-high skilled, (iv) without children and (v) with children younger than 12 years old. As a benchmarking exercise, the same regressions are run for households in which partners are equal earners. The dependent and the independent variables are calculated exclusively for the secondary earners and for the equal earners on the basis of the EU-SILC database.

From a methodological point of view, three specifications are considered: (i) a pooled OLS estimator and, in order to account for unobserved heterogeneity, (ii) a fixed-effect (and random-effect) estimator with time dummies as well as (iii) a fixed-effect (and random-effect) estimator without time dummies. A Hausmann test (against the null hypothesis that η_i is uncorrelated with the dependent variables) allows choosing between fixed effect and random effect models in favour of the first. Furthermore, a Wald test (against the null hypothesis that the time dummies are not jointly significant) is, as well, performed.

In theory, the increase in the marginal effective tax rate for secondary earners is expected to negatively impact the number of hours worked. In response to an increase in the METR, some individuals (households) will find the financial return from working insufficient to compensate the time forgone, often spent for caring for children or other relatives. As suggested by the literature (for example Causa, 2008 and 2009), the effect of taxation on the intensive margin is in general stronger for the low-skilled and for those with young children. Also, when the average number of month worked part-time is used as dependent variable, the marginal effective tax rate is expected to have a positive impact, because when taxes increase, the number of secondary earners preferring part-time jobs is also expected to increase.

The empirical results confirm the theoretical expectations, showing that the marginal effective tax rate negatively influences the number of hours worked (Table 2). The average number of worked hours per week shows a significant negative relationship with respect to the METR (Table 2, column 1). This result is confirmed by the fixed-effect (FE) estimation (Table 2, column 2), showing however lower coefficients, which indicates the presence of country-related effects. These effects reflect unobserved independent variables such as structural and institutional factors. The abovementioned results are confirmed when using the average number of months worked part time as dependent variable, but, as expected, with the opposite sign (Table 3 column 1 vs. columns 2).

Table 2. Regressions for average number of hours worked per week for secondary earners - women, full sample

Average number of hours worked per week	OLS	FE	OLS	FE
	(1)	(2)	(3)	(4)
METR	-0.146*** -0.0248	-0.0851* -0.04		
METR on Benefit			-0.742** (0.264)	-0.041 (0.0673)
METR on Tax			-0.101*** (0.0287)	-0.0562 (0.0403)
METR on SSC			-0.234** (0.0761)	-0.191*** (0.0502)
Constant	39.14*** (0.765)	37.31*** (1.208)	39.94*** (0.994)	37.93*** (1.155)
Robust SE	Yes	Yes	Yes	Yes
Observations	243	243	243	243
Time Dummies	No	No	No	No

Empirical findings also show that benefits have the strongest impact on secondary earners' labour intensity (Table 2, column 3). Although not confirmed by using fixed-effect estimation (Table 2, column 4)⁵⁰, the number of hours worked by secondary earners seem to be mainly driven by the

⁵⁰ The correlation among the different METR for secondary earners (as well as for equal earners) is in general low but significant. Is negative between taxes and benefits (-0.10) as well as between taxes and social security contributions (-0.20), whereas is positive between benefits and social security contributions (0.20).

benefits component. As discussed above, the withdrawal of benefits can be costly for secondary earners and can create disincentives to increase their number of hours worked.

However, when taking into account country specificities, the empirical results show that tax and/or social contributions can also play a role. Indeed, once the country/time related effects are taken into account, the only driver(s) of the relationship is the METR of social security contributions (Table 2 column 4). If the average number of months worked part-time is used as dependent variable, the tax component of the METR seems to be driving the impact of the METR on labour intensity (Table 3 column 5)⁵¹.

⁵¹ As a robustness exercises: i) the sample of secondary earners has been split in different levels of education and according to the presence of children; ii) for providing a benchmark the regressions have been run with equally earning couples. The details of these additional regressions are described in Annex 2.

Table 3. Regressions for average number of months worked part-time - women secondary earners

Women secondary earners - full sample						
Average number of months worked part-time	OLS	FE	FE	OLS	FE	FE
	(1)	(2)	(3)	(4)	(5)	(6)
METR	0.0976*** (0.0145)	0.0764** (0.021)	0.0783** (0.0225)			
METR on Benefit				0.0750* (0.0451)	0.0615 (0.0727)	0.0653 (0.0475)
METR on Tax				0.0787*** (0.0136)	0.0827** (0.0239)	0.0830*** (0.014)
METR on SSC				0.0698*** (0.0202)	0.0722* (0.0364)	0.0765*** (0.0205)
Constant	-0.224 (0.405)	0.417 (0.634)	0.36 (0.705)	0.561 (0.663)	0.451 (0.663)	0.369 (0.738)
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243	243	243	243	243	243
Time Dummies	No	No	Yes	No	No	Yes
Women secondary earners - low skill						
	OLS (7)			FE (8)		FE (9)
METR	0.0947*** (0.0171)			0.0771* (0.0367)		0.0790* (0.0378)
Constant	0.181 (0.495)			0.713 (1.108)		0.678 (1.16)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - medium and high skill						
	OLS (10)			FE (11)		FE (12)
METR	0.104*** (0.0136)			0.0724*** (0.0187)		0.0739** (0.0199)
Constant	-0.528 (0.368)			0.437 (0.565)		0.411 (0.622)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - without children						
	OLS (13)			FE (14)		FE (15)
METR	0.0935*** (0.0143)			0.0653* (0.0264)		0.0703* (0.0281)
Constant	-0.298 (0.398)			0.554 (0.797)		0.432 (0.869)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - with children less than 12 yo						
	OLS (16)			FE (17)		FE (18)
METR	0.101*** (0.0151)			0.0879*** (0.0214)		0.0867*** (0.022)
Constant	-0.142 (0.422)			0.264 (0.647)		0.262 (0.698)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes

Additional regression results

Two robustness exercises are performed, with the aim of showing the impact of the METR on different subcategories of secondary earners and to provide a benchmark using the couples with equal earnings is here performed showing that:

Also the level of education/skills and the presence of young children are important elements.

Using OLS estimation, the effect of the METR for the secondary earner-women is stronger for those with a low level of education than for those with a medium/high level of education (Table 4, comparison between column 7 and 10). Furthermore, the effect on secondary earners with children is stronger than those without children (Table 4, comparison between column 13 and 16). The results about the subsample of secondary earners low skill and high/medium skills and that of the secondary earners with and without children are confirmed also in the case of fixed effects estimator with and without time effects and with both dependent variables (Table 4, column 7 vs. column 10 and column 13 vs. column 16).

A comparison with equally earning couples tends to confirm that secondary earners are more sensitive to changes in tax systems. When running the regressions for equally earning couples, only the OLS estimation still provides a negative relationship between the number of hours worked and the METR. The coefficient value of the METR is half the one related obtained for secondary earners (Table 5, column 1 vs. Table 1 column 1). Decomposing the METR, in the OLS both taxes and social security contributions shows a significant coefficient (Table 5 column 4) that stays significant only for social security contribution in the fixed effect specification (Table 5, column 5 and 6). For the other subgroups (low/high skilled and with/without children) the coefficients only stay significant in the OLS specification with low-skilled being more sensitive than medium/high skilled and with no substantial differences between couples with and without children.

Further analysis and extensions are possible. These initial estimates of the relationship between labour supply at the intensive margin and the METR based on EU-SILC data can be further extended in several ways: (i) divide the sample according to possible clusters of Member States as a robustness check; (ii) further exploit the micro-dimension of EU-SILC, rather than referring to aggregated variables (both dependent and independent) and calculating the METR on a fixed year sample. The estimation instead can be performed using the micro data for the full time series dimension as it is possible to calculate the METR for each year and to attribute it to each household; (iii) including more control variables reflecting economic/policy and institutional aspects.

Table 4. Regressions for average number of worked hours per week – secondary earners woman

Women secondary earners - full sample						
Average number of hours worked per week	OLS	FE	FE	OLS	FE	FE
	(1)	(2)	(3)	(4)	(5)	(6)
METR	-0.146*** (0.0248)	-0.0851* (0.0400)	-0.104* (0.0446)			
METR on Benefit				-0.742** (0.264)	-0.041 (0.0673)	-0.0891 (0.117)
METR on Tax				-0.101*** (0.0287)	-0.0562 (0.0403)	-0.088 (0.0515)
METR on SSC				-0.234** (0.0761)	-0.191*** (0.0502)	-0.232* (0.0823)
Constant	39.14*** (0.765)	37.31*** (1.208)	38.02*** (1.465)	39.94*** (0.994)	37.93*** (1.155)	38.96*** (1.757)
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243	243	243	243	243	243
Time Dummies	No	No	Yes	No	No	Yes
Women secondary earners - low skill						
	OLS (7)			FE (8)		FE (9)
METR	-0.186*** (0.0318)			-0.0917* (0.0452)		-0.107* (0.0638)
Constant	39.60*** (0.986)			36.17*** (2.04)		36.91*** (2.236)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - medium and high skill						
	OLS (10)			FE (11)		FE (12)
METR	-0.149*** (0.0228)			-0.0727* (0.0414)		-0.0910* (0.0455)
Constant	39.43*** (0.688)			37.13*** (1.25)		37.82*** (1.478)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - without children						
	OLS (13)			FE (14)		FE (15)
METR	-0.134*** (0.027)			-0.113* (0.0492)		-0.132* (0.0493)
Constant	38.18*** (0.839)			37.53*** (1.486)		38.27*** (1.602)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes
Women secondary earners - with children less than 12 yo						
	OLS (16)			FE (17)		FE (18)
METR	-0.157*** (0.0234)			-0.075* (0.0422)		-0.0801* (0.0441)
Constant	40.08*** (0.713)			37.68*** (1.719)		37.50*** (1.604)
Robust SE	Yes			Yes		Yes
Observations	243			243		243
Time Dummies	No			No		Yes

Table 5. Regressions for average number of worked hours per week - equal earners

Equal earners - full sample						
Average number of worked hours per week	OLS	FE	FE	OLS	FE	FE
	(1)	(2)	(3)	(4)	(5)	(6)
METR	-0.0767*** (0.00968)	-0.00493 (0.0415)	-0.0139 (0.0448)			
METR on Benefit				-0.15 (0.114)	-0.0365 (0.106)	0.0209 (0.14)
METR on Tax				-0.0968*** (0.0095)	0.0036 (0.0327)	-0.0049 (0.0357)
METR on SSC				-0.197* (0.0558)	-0.157* (0.0578)	-0.176* (0.0646)
Constant	43.00*** (0.315)	40.47*** (1.053)	40.75*** (1.076)	42.85*** (0.335)	41.99*** (1.184)	42.34*** (1.207)
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243	243	243	243	243	243
Time Dummies	No	No	Yes	No	No	Yes
Equal earners - low skill						
	OLS		FE		FE	FE
	(7)		(8)		(9)	
METR	-0.121*** (0.0124)		-0.0417 (0.0566)		-0.0602 (0.0559)	
Constant	44.80*** (0.481)		42.03*** (1.987)		42.34*** (1.987)	
Robust SE	Yes		Yes		Yes	
Observations	243		243		243	
Time Dummies	No		No		Yes	
Equal earners - medium and high skill						
	OLS		FE		FE	
	(10)		(11)		(12)	
METR	-0.0702*** (0.00998)		-0.00479 (0.0383)		-0.00269 (0.0425)	
Constant	42.70*** (0.322)		40.07*** (1.346)		40.35*** (1.537)	
Robust SE	Yes		Yes		Yes	
Observations	243		243		243	
Time Dummies	No		No		Yes	
Equal earners - without children						
	OLS		FE		FE	
	(13)		(14)		(15)	
METR	-0.0765*** (0.00952)		-0.00448 (0.0395)		-0.00811 (0.0437)	
Constant	42.91*** (0.311)		40.21*** (1.387)		40.56*** (1.61)	
Robust SE	Yes		Yes		Yes	
Observations	243		243		243	
Time Dummies	No		No		Yes	
Equal earners - with children less than 12 yo						
	OLS		FE		FE	
	(16)		(17)		(18)	
METR	-0.0780*** (0.0112)		-0.0104 (0.0564)		-0.0192 (0.0598)	
Constant	43.14*** (0.382)		40.77*** (1.98)		40.98*** (2.07)	
Robust SE	Yes		Yes		Yes	
Observations	243		243		243	
Time Dummies	No		No		Yes	

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