Chapter 4

Taxation in the context of the Europe 2020 strategy on employment and poverty[1]

1. Introduction

1.1. Europe 2020 employment and poverty targets: the role of taxation

Taxation is the main source of funds for government spending in areas ranging from infrastructure to education to social programmes.

The budgetary situation in many EU Member States, along with fiscal consolidation programmes, have heated up the debate on the effects of labour taxation on employment and the distribution of incomes, and the consequences of shifting the tax burden between consumption, capital and labour. Recent policy recommendations were formulated with the primary aims being to correct excessive budget deficits and enhance efficiency. In this chapter, the potential for tax shifts is explored from the point of view of two targets of Europe 2020: an increase in the employment rate and a reduction of (income) poverty and social exclusion. The focus of the chapter does not exclude tax shifts having an equally important impact on aspects such as growth, capital formation and savings and on the behaviour of economic agents[2]. The analysis, specifically in section 3, complements other studies by adding a microeconomic perspective to the policy debate on tax issues.

Among the taxes which could potentially be increased while lowering labour taxation are VAT, housing and environmental taxes which are the focus of special interest in policy recommendations. VAT is relatively important in terms of tax revenues and efficiency, while owner-occupied housing represents the largest share of most households' wealth and currently enjoys favourable tax treatment in most countries.

The analysis of this chapter does not cover other capital taxes than those on owner-occupied housing. Taxes on financial transactions, capital gains and wealth (including financial assets) are not considered specifically in this chapter, since they are not the subject of official policy recommendations and/or their social impact would go beyond the income concept underlying the Europe 2020 targets. Other capital taxes deserve further analysis in other publications, as the focus of our analysis is restricted to income, while wealth has gained importance with respect to income. Top 1% income and wealth shares grew considerably in the last decades and the fairness potential of wealth taxes is similarly discussed at the policy level. The analysis in the chapter will also highlight possible trade-offs, and the interplay of employment and social impacts on selected taxes and tax designs. Indeed, taxes on non-labour income sources are not as progressive as personal income taxes or can even be regressive.

Changes in taxation generate immediate and dynamic effects. In the short-run, economic agents may not have the time to react to tax changes. A new tax regime is applied to the current economic setting. In the long-term, economic agents may search for a new equilibrium, adapting to the tax changes. For instance, depending on the distribution of market power, economic agents may be able to shift the initial tax burden to other economic agents. As a result, the medium- to long-term effects of taxes do not depend on where the revenue is collected, but on the price elasticities of demand and supply in various markets.

The social effects of taxation analysed in this chapter are based on static tax micro-simulation models. Behavioural effects such as changes in consumption patterns (for tax shifts to consumption), investment decisions (for tax shift to property), the probability of tax compliance and life-cycle dynamics are not taken into account. The results should be interpreted as the immediate effects of taxation on the current distribution of income. The analysis of the employment effects of taxation (such as simulations using DG EMPL's Labour Market Model) takes behavioural changes into account. The results often focus on long-term effects, with a horizon of about 20 years.

1.2. Overview of the chapter

The structure of this chapter is as follows: Section 2 illustrates key facts on developments in overall and labour taxation, analysing recent developments in labour taxation within overall taxation, as

(1) By Guy Lejeune, Virginia Maestri, Jörg Peschner.

(2) For an account of tax policies with a focus on efficiency and macroeconomic aspects such as fiscal consolidation and sustained growth see European Commission (2012c).

Box 1: Definitions and statistical sources

Labour taxation definitions

Labour taxes can be broken down into:

1. Social security contributions by employers (SSCR)

2. Social security contributions by employees (SSCE)

3. 'Calculated' personal income taxes (PITC). These are personal income taxes (PIT) allocated to employed labour income (see below).

Other labour taxes paid by employers (mainly payroll taxes) and labour taxes on the non-employed (including all taxes and compulsory social contributions raised on transfer income of non-employed persons) are of minor importance and are not considered in this chapter unless otherwise indicated.

Personal income taxes are typically levied on different sources of income: labour income, as well as social benefits, dividend and interest income and self-employment income. Annex B of European Commission (2012b) explains how taxpayers' data have been used to allocate PIT revenue across different sources of income. On average, PITC is about 70% of PIT, ranging from 96% in the Czech Republic to 49% in Poland in 2010.

Concepts related to the social effects of taxation

Income data reported in Sections 3 and 5 refer to equivalised disposable income (of the household), using the OECD-modified equivalence scale. The OECD-modified equivalence scale assigns a weight of 1 to the first adult of the household, 0.5 to the second and each subsequent person aged 14 and over and 0.3 to each child aged under 14.

Inequality and poverty indicators are based on household income equivalised by using the OECD-modified scale.

Income **inequality** is measured with the Gini coefficient.

The relative income **poverty** line is set at 60% of the national median equivalised disposable income, unless differently specified.

Imputed rent is defined as the income advantage enjoyed by homeowners and tenants who pay rent below market prices. The estimation of imputed rents in EU-SILC data is provided by the national statistical offices of Member States.

Imputed rents can be estimated by using the rental equivalence approach or the capital market approach. The first approach consists of estimating the market rent that homeowners or below-market-rate tenants would pay if they rented their dwelling at full market price. The estimation can be made using either objective (regression/stratification) or subjective methods. The second approach corresponds to potential returns from investing the house value in an alternative portfolio.

Estonia, Slovak Republic and Sweden use the capital market approach, Czech Republic uses the subjective rental equivalence approach, and all other Member States use the objective rental equivalence approach.

The imputed rent values used in this chapter are net of mortgage interest payments.

EU27, EA17 and NMS12 averages reported in Charts of Section 3.2 are weighted averages.

Statistical sources

The main source of statistical data is the European Commission publication, *Taxation trends in the European Union*, 2012 edition, referred to below as European Commission (2012b). This publication provides tax trends by tax type, level of administration, tax base, as a share of GDP and total tax revenues, and implicit tax rates.

Taxation trends are often analysed at the OECD level. However, a comparison with non-EU OECD countries is not carried out here [(1)] for two reasons. The first is to avoid confusion: the data used here are the official data from the above publication, which were approved by the EU Member States. The corresponding data in the OECD database are not always the same. The second reason is that the six EU Member States which are not members of the OECD are not covered in the OECD database. Finally, OECD tax revenue data do not allow for the allocation of personal income taxes to the different sources of economic income (labour, capital and rents). The exact amount of labour taxation according to the OECD data remains, as a result, unknown. The reader who is interested in a comparison with non-EU OECD countries is referred to Econpubblica (2011), pp. 37-50.

Note that for certain concepts related to the tax wedge, data from the OECD publication *Taxing Wages* are used, supplemented by data calculated by the OECD for the six EU Member States which are not members of the OECD [(2)].

(1) Except in sub-section 3.2, on property taxation.

(2) In the framework of the OECD-European Commission co-operation on 'Tax wedge and the effective tax rates on labour'.

well as developments within labour taxation. Section 3 presents key elements of the distributional effect of taxation. It focuses on the equity effects of VAT and property taxes and on the distributional effects of tax shifts away from labour and towards consumption and real estate. The social effects of direct taxation are illustrated in Section 4.

Section 4 deals with the employment aspects of taxation, with the focus on direct taxation. It analyses revenue-neutral tax shifts away from labour. Simulation results for such shifts are presented. Section 5 considers the trade-offs and interplays between social and employment effects of tax shifts, with a focus on shifts to property and consumption. It adds an analysis of green taxes and tax evasion. Section 6 concludes.

2. Key facts on developments in overall and labour taxation

2.1. Trends in labour taxes and other tax revenues

This section focuses on the extent to which taxation is shifting away from labour toward consumption and property in particular, in line with recent reforms in some Member States. It describes the tax developments in the period before the start of the economic crisis (1995-2007), in the subsequent period (2007-2009) as well as the most recent trend visible in the Eurostat data (2009-2010). Recent tax reforms in Member States are described at the end of the section in order to shed some light on expected trends in terms of shifts away from labour taxation after 2010.

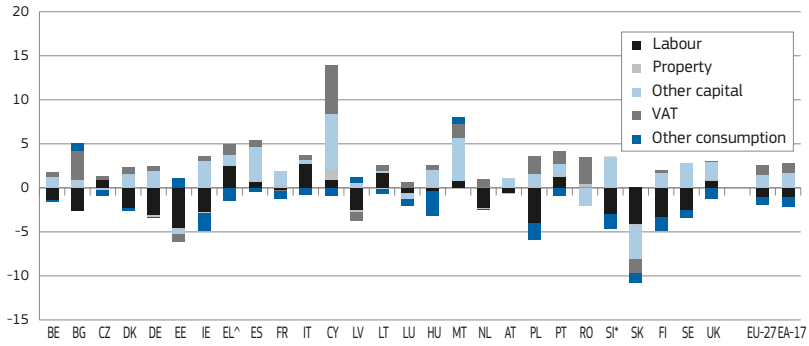
A suitable measure to assess tax shifts away from labour is to compare and assess taxation by tax base (labour, consumption and capital), showing the trend of tax shifts with respect to both GDP and total tax revenues. Implicit tax rates provide a somewhat different overview by showing the burden of taxation for each tax base.

In terms of the specific focus of the chapter, taxes on consumption are split between value added taxes (VAT) and other taxes on consumption, with taxes on capital split between recurrent taxes on immovable property, and other taxes on capital. It was not possible, however, to apply this distinction to implicit tax rates.

The volume of tax revenues is sensitive to the economic cycle, but implicit tax rates express tax revenues of each tax category (consumption, labour and capital) as a share of the corresponding tax base. Thus implicit tax rates are not affected by the cycle through their tax base, but rather through changes in the composition of the tax base (for instance a recession tends to increase the consumption of basic goods that are often taxed at a lower rate).

Short-term changes in tax revenues and implicit tax rates can be affected not only by cyclical factors but also by structural tax reforms. Cyclical factors affect tax revenues and implicit rates temporarily, while structural reforms have an impact on long-term trends in taxation. In the short-term, however, it is generally difficult to distinguish between the effects of cyclical and structural factors.

Chart 1: Changes in the taxation of different tax bases (% GDP), 1995-2007

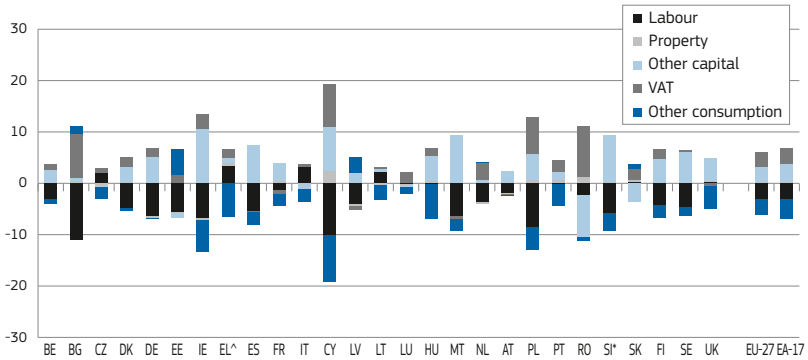


Source: European Commission (2012b).

Notes: * missing data on VAT (introduced in 1999); ^ provisional data for 2007, 2009, 2010; EU-27 and EA-17 are arithmetic averages; property corresponds to recurrent taxes on immovable property.

excel file gif

Chart 2: Changes in the taxation of different tax bases (% total tax revenues), 1995-2007



Source: European Commission (2012b).

Notes: * missing data on VAT (introduced in 1999); ^ provisional data for 2007, 2009, 2010; EU-27 and EA-17 are arithmetic averages; property corresponds to recurrent taxes on immovable property.

excel file gif

2.1.1. Tax trends before the crisis

Before the onset of the recession (1995-2007), most Member States showed a clear shift away from labour taxation, with Chart 1 showing negative changes in labour tax revenues as a share of GDP in most Member States. While revenues from labour taxation were decreasing, however, revenues from capital (other than from recurrent taxes on immovable property), and VAT were increasing for EU-27 as a whole.

EU-27 and EA-17 both experienced a slight overall average increase in recurrent taxes on immovable property over the 1995-2007 period. However, considerable changes in property tax revenues were concentrated in two Member States: Cyprus (+1.1 pps) and Romania (+0.4 pp).

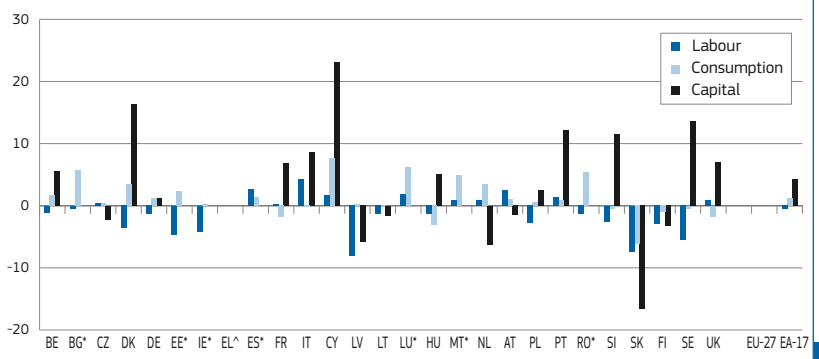
The tax shift away from labour in the 1995-2007 period is confirmed by the changes in taxation as a share of total tax revenues (see Chart 2).

The notable exceptions to the general trend of tax shifts away from labour are the Czech Republic, Greece, Spain, Italy, Cyprus, Lithuania, Malta, Portugal and the United Kingdom, where labour taxation as a share of GDP increased during the 1995-2007 period. In the Czech Republic, Greece, Italy, Lithuania and, to a smaller extent, in the United Kingdom labour taxation as a share of total tax revenues increased as well. This data shows that in the latter group of countries, labour tax revenues increased more than did other taxes.

As shown by Chart 3, the implicit tax rate on labour decreased in most Member States over the period preceding the economic crisis. However, in some countries the burden of taxation on labour increased, these being the same countries for which labour taxation increased as a share of total tax revenues and/or as a share of GDP (plus France, Luxembourg, the Netherlands and Austria). In the latter group of countries this may be explained by the fact that GDP increased proportionally more than tax revenues on labour.

On the other hand, the implicit tax rate on consumption and capital increased. However, the implicit tax rate on consumption includes VAT and other taxes which can move in opposite directions. Likewise, the implicit tax rate on capital includes business, self-employment and wealth/stocks and it is difficult to interpret this data in relation to the issues addressed in this chapter.

Chart 3: Changes in implicit tax rates by tax base, 1995-07



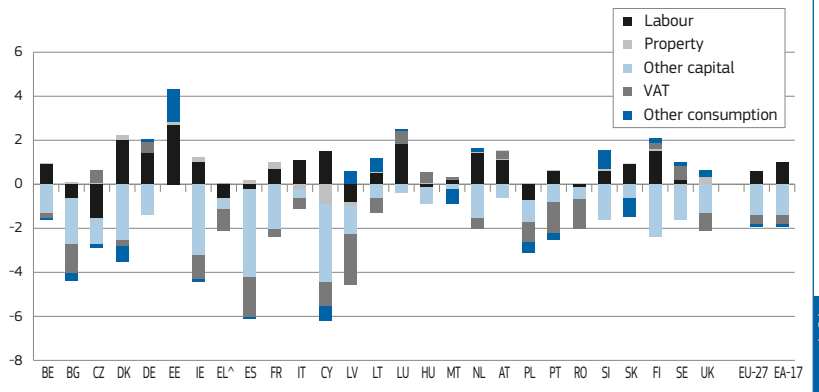
Source: European Commission (2012b).

Notes: ^ no ITR data for EL for this period; * missing ITR on capital; ** missing ITR on labour, consumption and capital; *** adjusted average excluding EE, ES, LU from ITR on capital and EL from ITR on labour, consumption and capital; EU-27, EA-17 arithmetic averages.

excel file

gif

Chart 4: Changes in the taxation of different tax bases (as % GDP), 2007-2009

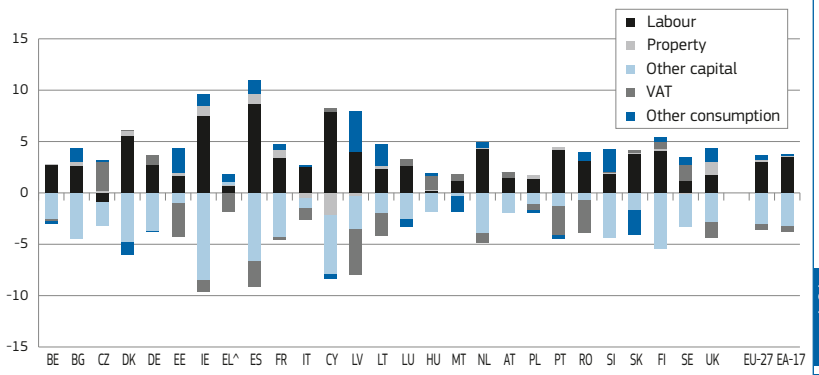


Source: European Commission (2012b).

excel file

gif

Chart 5: Changes in the taxation of different tax bases (as % total tax revenues), 2007-2009



Source: European Commission (2012b).

excel file

gif

2.1.2. Tax trends during 2007-2010

Following the onset of the recession, the trend shift in taxes away from labour came to a halt in most Member States, with the exception of Bulgaria, the Czech Republic, Greece, Spain, Latvia, Hungary, Poland and Romania. Apart from the Czech Republic, where labour tax revenues fell, they fell by no more than other tax revenues (as is reflected in Charts 4 and 5).

The increase in labour tax revenues only partially compensates for the considerable fall in consumption and capital tax revenues between 2007 and 2009. In particular, tax revenues from capital other than property decreased sharply, due to the financial market crash. Recurrent tax revenues on immovable property increased in relative terms, as these taxes are less sensitive to cyclical changes.

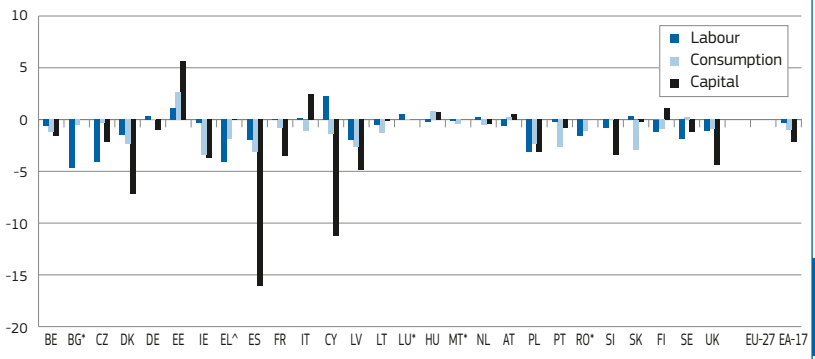
The overall burden of labour taxation decreased in most Member States between 2007 and 2009 but it started to increase again in 2010 (Chart 6 and 9). However, Germany shows an opposing trend with the implicit tax rate on labour increasing in the 2007-2009 period, and decreasing in 2010. In Estonia, Italy, Cyprus, Luxembourg, Netherlands and the Slovak Republic, the increase in the burden of labour taxation in 2010 confirmed an earlier increase between 2007 and 2009.

Contrary to the general trend between 2009 and 2010, there was a fall in the burden of labour taxation in Denmark, France, Lithuania, Poland, Slovenia and, in particular, Bulgaria and Romania (Chart 9).

Between 2007 and 2009, the burden of taxation on both consumption and capital decreased, with the fall in consumption taxes explained by the composition effect, due to a shift in expenditure towards basic goods that are generally subject to lower tax rates.

Estonia and Italy increased the tax pressure on consumption and, considerably, on capital.

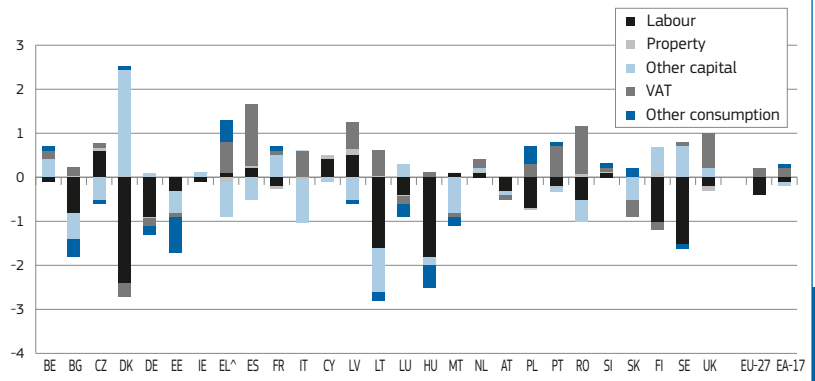
Chart 6: Changes in the implicit tax rates by tax base, 2007-2009



Source: European Commission (2012b).

excel file gif

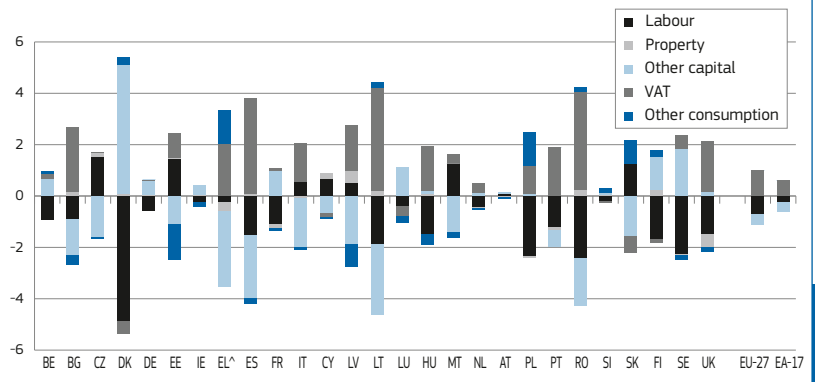
Chart 7: Changes in the taxation of different tax bases (as % GDP), 2009-2010



Source: European Commission (2012b).

excel file gif

Chart 8: Changes in the taxation of different tax bases (as % total tax revenues), 2009-2010

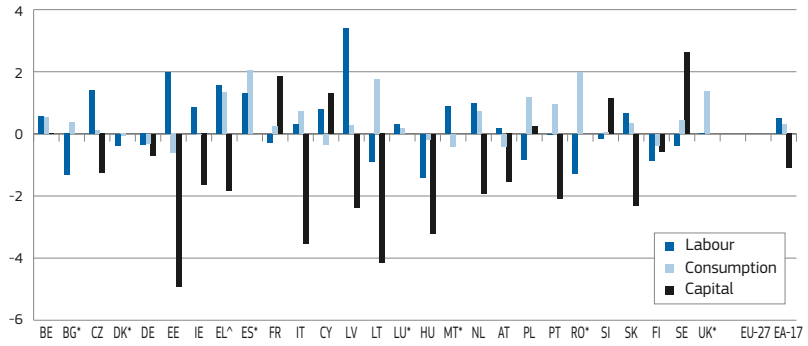


Source: European Commission (2012b).

excel file gif

Opposite to the change in trend which occurred in 2010 for the implicit tax rate on labour, tax revenues from labour decreased in most Member States, both as a share of GDP and relatively to total tax revenues (Chart 7 and 8). However, the tax burden on labour is still below its pre-crisis level (European Commission, 2012b). Tax revenues from labour had increased in the earlier phases of the crisis (2007-2009) and started to fall afterwards (2009-2010). Indeed, the fall in GDP disproportionately affected the consumption and capital tax bases early in the recession, while the cyclical effects on employment were generally delayed.

Chart 9: Changes in the implicit tax rates by tax base, 2009-2010



Source: European Commission (2012b).

gif | excel file

The opposite development in terms of the burden of labour taxation and labour tax revenues in the period 2009-2010 can be explained by the increase in unemployment. Although labour tax revenues decreased due to the rise in unemployment, the burden of labour taxation for those in work did not decrease in most Member States.

A cyclical effect on the implicit tax rate on labour can be expected in a recession if it affects the labour income of those in work (for example by reducing hours of work), since lower incomes are subject to lower marginal tax rates.

In the Member States in which the implicit tax rate on labour decreased considerably in 2010 (Bulgaria, Hungary and Romania), this may be due to structural reforms of the tax system rather than to cyclical factors.

Contrary to the change observed in most Member States in 2010, in the Czech Republic, Cyprus, Latvia and Malta, labour tax revenues increased with respect to both GDP and other tax revenues. In Greece, Spain, Netherlands and Slovenia, labour tax revenues increased as a share of GDP but not with respect to other tax revenues. In Estonia, Italy, Austria and the Slovak Republic, labour tax revenues increased more than revenues from other tax bases, but not with respect to GDP.

The increase in the implicit tax rate on consumption in 2010 in most Member States can be attributed to the rise in VAT rates (European Commission, 2012b). In 2010, Bulgaria, Spain, Greece, Italy, Lithuania, Hungary, Poland, Portugal, Romania and the United Kingdom all witnessed a substantial increase in consumption tax revenues with respect to other tax revenues. In 2010, property taxation was mostly stable relative to other tax revenues.

While the tax burden on consumption started to increase again after 2009, the implicit tax rate on capital has continued to fall.

Table 1 summarizes the tax developments with a focus on tax shifts away from labour. Although all three measures are informative, the implicit tax rate is the most suitable for assessing tax shifts away from labour [3]. The data show a shift away from labour taxation between 1995 and the earliest phases of the recession in the majority of Member States. The burden of taxation shifted towards consumption and capital until the onset of the recession. The increase in capital tax revenues occurred despite the sizeable decline in capital tax rates and, in particular, in corporate income tax rates. Various factors can explain this development: the increasing importance of capital versus labour, the sensitivity to business cycles, the contemporaneous broadening of the corporate income tax base and the measures adopted to limit harmful tax competition [4]. Nonetheless, in 2010 the tax burden on labour started to increase again in several Member States, together with that on consumption (while for capital it kept falling as from the beginning of the crisis). Cyprus, Italy, Luxembourg and the Netherlands did not lower the burden of labour taxation over the entire period.

(3) One caveat is that the implicit tax rate on capital is a less reliable measure, mainly due to the fact that a large part of its tax base is a net flow, with potentially very small outcomes for the tax base and, as a result, very large outcomes for the implicit tax rate.

(4) The level of aggregation used in the above charts for capital tax revenues (that includes corporate income, capital and business income of households and self-employed in the form of rents, dividends, interest, etc.) does not enable us to precisely describe the factors underlying the development of capital tax revenues.

Table 1: Summary of tax shifts away from labour

	1995-2007	2007-2009	2009-2010
As % GDP	Yes, towards capital (other than property) and VAT (exceptions: CZ, ES, EL, IT, CY, LT, MT, PT, UK)	No (cyclical) (exceptions: BG, CZ, EL, ES, LV, HU, PL, RO)	Yes (cyclical), mostly towards VAT (exceptions: CZ, EL, ES, IT, CY, LV, MT, NL, SI, SK)
As % total tax revenues	Yes, towards capital (other than property) and VAT (exceptions: CZ, EL, IT, LT, SK, UK)	No (cyclical) (exceptions: CZ)	Yes (cyclical) (exceptions: CZ, EE, IT, CY, LV, MT, AT, SK)
ITR	Yes (lower burden) (exceptions: CZ, ES, IT, CY, MT, PT, UK, FR, LU, NL, AT)	Yes (lower burden) (exceptions: DE, EE, IT, CY, LU, NL, SK)	No (in 15 MS) (exceptions: BG, DK, DE, FR, LT, HU, PL, PT, RO, SI, FI, SE)

Source: European Commission (2012b).

Notes: ITR 1995-2007: no data for EL for this period.

excel file gif

2.1.3. Reforms after 2010

Following fiscal stimulus measures designed to counter the effects of the crisis in 2009, the years 2010 and 2011 marked a transition in tax policy from broad-based revenue-side support to fiscal consolidation. The consolidation requirements render tax shifts away from income taxes very difficult for the time being.

Consumption taxes, property taxes and green taxes, all deemed less harmful to growth than income taxes [5], have been raised in 2011-2012 in many Member States. However, at the same time, personal income tax was also increased in a majority of Member States, by raising statutory rates and/or measures to broaden the tax base [6].

(5) See 4.4.

(6) See, for example, the reductions in mortgage relief and the other tax expenditure cuts in Tables 2 and 3.

Table 2: Tax reforms in 2011

	PIT	PIT progressivity	VAT standard	VAT reduced	VAT exemptions/ reduced	Environmental	Mortgage relief	Property tax	Tax evasion measures
BE				-		+			
BG				+		-/+			
CZ			+ (1pp)	+ (1pp)		+		+	
DK	$	-			-	+			
DE	-				+	+			
EE						+			
IE	+		-			+			
EL	+ / $	+	+ (4pp)	+ (2-4pp)	-	+		+	+
ES	+		+ (2pp)	- (1pp)			-		
FR	+	+			-	+**		+	
IT						+		+	+
CY					-				+
LV	+		+ (1pp)	+ (2pp)	-	+		+	+
LT					+				
LU	+	+							
HU	- / $		+ (5pp)	1 new		+			
MT						+			
NL					+		-		
AT						+			
PL			+ (1pp)	+ (1pp)		+			
PT	+	+	+ (1pp)	+ (1pp)					
RO			+ (5pp)			+			
SI						+			
SK			+ (1pp)			-/+			
FI	-		+	+	+				
SE									
UK	+	+	+ (2.5pp)			+			

Source: European Commission (2011d).

Notes: This table lists tax changes implemented in 2010 and the first half of 2011 including temporary but significant changes. Minor changes are not included. * some goods are shifted from VAT exemptions to reduced rates and some from reduced rates to standard rates; $ major tax reform; ** compensating measures.

excel file gif

Table 3: Tax reforms in 2012

	PIT	PIT progressivity	VAT standard	VAT reduced	VAT exemptions/ reduced	Environmental	Mortgage relief	Property tax	Tax evasion measures
BE	TEC[2]			+	-				
BG				+		+			
CZ	+	+		+ (4pp)					+
DK	TEC[2]				-				
DE									
EE									
IE	+/-		+ (2pp)			+		+**	
EL	+/TEC[2]	+		+/-		+		+ (?)	+ (?)
ES	+	+			-			+	
FR	TEC[2]	+	+ (1.6pp)	+			-		
IT	+	+	+ (1-3pp)			+		+	+
CY	+	+	+ (2pp)	1 new	-/+			+	
LV	-		+ (1pp)	+ (2pp)	-	+		+	+
LT				-		+		+	+
LU	+/-	+							
HU	$	-	+ (2pp)			+			+ (?)
MT	-								+
NL	+/-				-	+/-	-	-/+(IR[3])	
AT	+	+			-	+		+	
PL	+	+	+ (1pp)	+ (1pp)	-	+			
PT	+	+	+ (2pp)		-	+	-	+	
RO						+			
SI						-			
SK						+			+
FI	+/-				-	+	-		
SE									
UK	+/-							+	+

Source: European Commission (2012c).

Notes: This table lists tax changes implemented in 2011 and the first half 2012, including temporary but significant changes. Minor changes are not included. (?) implementation of previous measures?; [2] TEC: tax expenditure cuts; ** from OECD (2012c); [3] IR : imputed rent (under PIT); $: major reform with flat rate.

gif excel file

A more detailed analysis of recent reforms can be found in Chapter 3 of European Commission (2012c).

2.2. Trends within labour taxes

While the previous sub-section dealt with the position of labour taxation within overall taxation, this sub-section deals with the composition of labour taxation [7]. It does so sequentially from three angles: the different shares in labour taxation, as a share of GDP, and finally, in terms of the composition of the (labour) tax wedge.

2.2.1. Shares in labour taxes

In the following analysis, the focus is on the two SSC and PITC, as the two remaining components [8] amount to only about 11% of total labour taxes at the EU level. On average, over 1995-2010, SSCR, SSCE and PITC accounted for, respectively, 37%, 20% and 32% of total labour taxes at the EU level. Table 4 shows that the 2010 GDP-weighted distribution was hardly different from these averages over 1995-2010.

The different distribution of labour taxes for the median values of Member State data is distorted by the United Kingdom data, where the share of PITC exceeds 50% [9], while other large Member States display smaller deviations from the EU averages.

Between 1995 and 2007, the EU weighted averages were heavily influenced by developments in France and the Netherlands, where the PITC share increased dramatically at the expense of the SSCE share. Over the same period, the SSCE share increased in a number of Member States, specifically the New Member States [10], pushing up the median share. The developments between 2007 and 2009 seem to reflect the consequences of the crisis. The share of the 'rest' component increased, mainly because payroll taxes are often not proportional to the wage sum.

Table A1 (in Annex) shows the within-labour-taxes distribution by Member State. The weight of SSCR exceeds 50% in half of the New Member States, while it is zero in Denmark and less than a quarter in the Netherlands. The relatively low SSCR weight in Germany and the United Kingdom drags down the GDP-weighted EU average for SSCR. The weight of SSCE is very small in Denmark, Estonia and Sweden (below 5%), while reaching 40% in Slovenia.

(7) Trends in the distribution of the different labour taxes could partly be due to so-called 'cold progression'. This means that the progressivity of PIT can lead to a disproportionate rise in the tax rate payable when income increases only due to inflation (no change in real terms).

(8) The five components of labour taxes and the relevant corresponding abbreviations are explained in Box 1.

(9) In the United Kingdom and Malta, the social security system is not separate from the central government level from an accounting viewpoint.

(10) These are the ten Member States which joined the EU in 2004 and Bulgaria and Romania, which joined in 2007.

Table 4: EU-27 composition of labour taxes (%)

Component	Method	1995	2007	2009	2010	95 to 07	07 to 09	09 to 10
SSCR	weighted	35.8	37.0	37.1	37.3	1.2	0.1	0.2
SSCE	weighted	22.8	19.3	19.3	19.4	-3.5	0.0	0.1
PITC	weighted	30.6	33.0	32.2	32.1	2.4	-0.7	-0.1
rest	weighted	10.8	10.7	11.4	11.1	-0.1	0.7	-0.2
SSCR	median	39.1	39.8	39.0	40.7	0.7	-0.8	1.7
SSCE	median	18.4	18.8	19.4	19.9	0.4	0.6	0.5
PITC	median	30.7	29.5	27.5	27.7	-1.2	-1.9	0.2
rest	median	11.8	11.9	14.0	11.6	0.1	2.2	-2.4

Source: European Commission (2012b) and own calculations.

Notes: 'weighted' are the GDP-weighted averages of Member State data, 'median' are the median values of Member State data.

excel file

gif

Table 5: EU-27 composition of labour taxes (% of GDP)

Component	Method	1995	2007	2009	2010	95 to 07	07 to 09	09 to 10
SSCR	weighted	6.8	6.6	6.9	6.8	-0.2	0.3	-0.1
SSCE	weighted	4.3	3.4	3.5	3.5	-0.9	0.1	0.0
PITC	weighted	5.7	5.8	5.9	5.8	0.1	0.1	-0.1
rest	weighted	2.0	1.8	2.0	2.0	-0.1	0.2	-0.1
total	weighted	18.8	17.7	18.4	18.1	-1.1	0.7	-0.3
SSCR	median	7.5	6.0	6.0	6.0	-1.5	0.1	0.0
SSCE	median	2.3	2.8	2.8	2.8	0.4	0.0	0.1
PITC	median	4.8	5.1	5.0	5.1	0.4	-0.2	0.1
rest	median	0.8	1.0	1.0	1.0	0.2	0.0	-0.1
total	median	16.2	15.6	15.7	15.9	-0.6	0.1	0.2

Source: European Commission (2012b) and own calculations.

Notes: 'weighted' are the GDP-weighted averages of Member State data, 'median' are the median values of data in % of GDP for individual Member States.

excel file

gif

Finally, the share of PITC reflects, to some extent, the outliers for the two other components. PITC accounts for over 70 % of labour taxes in Denmark and for more than 40 % in Ireland, Sweden and the United Kingdom. Denmark and Sweden are characterized by high PITC and lower SSC shares, since many social benefits are financed through direct taxation in those Member States. Table A2 (in Annex) shows the changes in within-labour-taxes distribution by Member State.

2.2.2. Labour taxes as shares of GDP

Relative to GDP, average labour taxes in the EU decreased between 1995 and 2007 from 18.8 % to 17.7 %, as set out in Table 5. During the crisis, however, GDP fell more than labour taxes. Median labour taxes in terms of GDP follow the same pattern as the weighted average, but at a lower level. This reflects the differences in this ratio within the EU, with typically higher ratios in Continental and Nordic Member States and low ratios in most New Member States. The drop in the weighted average between 1995 and 2007 was mainly due to lower SSCE, while the movements after 2007 were more even.

The large drop in the median SSCR ratio to GDP between 1995 and 2007 is related to large drops in a majority of (mostly New) Member States, but with little change in most large Member States. The rise in the median SSCE ratio to GDP between 1995 and 2007 reflected such rise in a majority of (mostly New) Member States, while the weighted average was brought down by the opposite development in some large Continental Member States.

European Commission (2012b) analyses the contributions of the different components of labour taxes to the development of the implicit tax rate on labour over time. It concluded that the reduction in the implicit tax rate on labour in most Member States between 2000 and 2010 was mainly due to PITC and SSCR.

2.2.3. Tax wedge

Macro-economic measures of the average tax burden on labour, as presented above, are useful in identifying trends in the overall structure of the tax system. However, the impact of taxes on the decisions of different economic agents depends, not only on the average tax burden, but also on marginal rates. Moreover, family composition and the wage level will also impact the individual tax burden.

An additional tool for analysing the evolution of the tax burden is the tax wedge, which is defined as the difference between labour costs to the employer and the net take-home pay of the employee as a percentage of labour costs. In practice this is equal to the sum of personal income tax, plus

both employee and employer social security contributions, together with any payroll tax (less cash transfers) – all expressed as a percentage of labour costs.

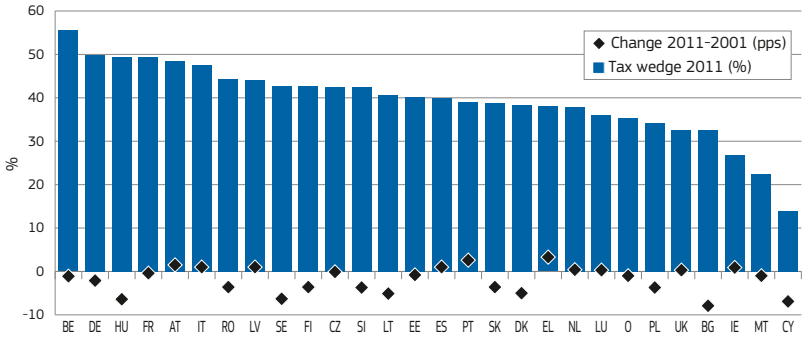
Contrary to the macro-economic measures of the average tax burden, the tax wedge can be calculated for various household types and different representative wage levels [11]. Moreover, the tax wedge is not affected by cyclical factors, as it is not related to actual tax revenue. In fact, the tax wedge result reflects only the rules of the tax and benefit systems which matter for various household types and different representative wage levels. This implies that the tax wedge may not be entirely accurate in so far as it omits specific factors such as special tax reliefs.

The above description shows that the ITR on labour and the tax wedge can be seen as complementary measures in assessing the tax burden on labour.

The EU is seen as an area of high tax wedges in international comparisons of developed economies. According to Chart 10, the tax wedge was below the OECD average in only six EU Member States (Poland, the United Kingdom, Bulgaria, Ireland, Malta and Cyprus). While the OECD average is 35%, the tax wedge exceeds 40% in a majority of EU Member States, with Belgium reaching 55% in this specific case [12]. The EU average and median values are about 40%.

However, tax wedges have converged somewhat to the OECD average over the last decade. In a majority of EU Member States, the tax wedge fell at a faster rate than the OECD average (which fell by 1 pp.). Nevertheless, the tax wedge increased by about 1 pp. or more in seven Member States, of which three were already above the EU average in 2001 (Italy, Latvia and Austria).

Chart 10: Tax wedge for a single person without children, 100% of average wage



Source: OECD, 'Taxing Wages'.

Note: 'O' refers to OECD average; data refer to 2010 for BG LV LT MT RO and to 2007 for CY.

excel file gif

Table 6: Tax wedges for different family compositions and wage levels (averages since 2001, %)

No. of persons	Single person	Single person	Married couple	Married couple
No. of children	0	0	2	2
Wage(s)	67%	100%	100% & 0%	100% & 67%
Belgium	49.7	55.7	40.9	48.7
Bulgaria	34.2	37.1	27.7	30.3
Czech Republic	40.6	42.9	24.0	36.4
Denmark	38.6	40.8	29.0	35.8
Germany	46.7	51.6	34.9	44.1
Estonia	38.7	40.2	31.1	35.8
Ireland	17.0	24.3	5.9	15.6
Greece	34.5	36.4	36.8	36.0
Spain	35.5	38.9	33.1	35.9
France	45.5	49.6	41.6	44.1
Italy	43.1	46.5	37.1	42.1
Cyprus	15.3	16.7	13.9	14.6
Latvia	41.8	42.9	33.8	38.0
Lithuania	41.0	43.4	39.7	40.5
Luxembourg	28.4	34.6	11.3	21.0
Hungary	45.7	52.1	40.8	42.8
Malta	17.7	23.3	12.7	20.1
Netherlands	36.5	38.2	29.5	33.9
Austria	43.6	48.0	36.4	40.1
Poland	35.8	36.9	32.7	34.7
Portugal	32.7	37.5	27.7	32.9
Romania	43.0	44.9	36.3	39.9
Slovenia	41.4	44.4	24.3	36.0
Slovak Republic	37.1	39.8	26.0	33.6
Finland	39.0	44.2	38.2	38.5
Sweden	44.5	46.2	40.4	42.1
United Kingdom	29.7	33.1	27.0	28.5

Source: OECD, 'Taxing Wages'.

excel file gif

(11) See the annual OECD publication *Taxing Wages*, www.oecd.org/ctp/taxingwages. Contrary to the analysis of macro-economic tax burden measures, the analysis of tax wedges starts only in 2000 or 2001. Time series for tax wedges contain a structural break in 2000, as prior data were based on a different definition of average wages.

(12) The case of a single person without children, 100% of average wage, is used for illustrative purposes, other family compositions and other wage levels may yield different results. This issue is dealt with on the next pages.

It should be recognised that the above findings are illustrative rather than universal to the extent that they relate to the case of a single person without children, earning average wages. Results can vary according to family compositions and at other wage levels.

In Table 6, three alternatives are considered. Except for Greece, where all tax wedges are very similar, the tax wedge is always highest for the single person without children earning the average wage, and lowest for the a one-earner married couple with two children, earning the average wage.

Except for Greece, Spain, Malta and Portugal, the tax wedge is always second-highest for a single person without children earning two-thirds of the average wage, and second-lowest for a two-earner married couple with two children, with respective earnings of 100% and 67% of average wage.

The ranking of Member States over these four cases is very similar, confirming the representativeness of the case of a single person without children, 100% of average wage. Except for the correlations involving the one-earner married couple (with two children, 100% of average wage), correlation coefficients [13] between the four respective Member States rankings are always very high (at least 94%). But even the correlations involving the one-earner married couple exceed 76%.

This similarity makes it possible to establish a sort of ranking of Member States according to the level of the tax wedge. High tax wedge levels are found in most continental Member States (Belgium, France, Germany and Austria), most Nordic Member States (Sweden, Finland), Italy and some new Member States (Hungary, Lithuania and Romania). Low tax wedge levels are found in Luxembourg and Anglo-Saxon countries (the United Kingdom and Ireland) together with Malta and Cyprus. Southern and New Member States have, in general, tax wedge levels around the EU average.

Table 7 shows the composition of the tax wedge over income tax and social security contributions. In general, almost half of the tax wedge is due to SSCR, a quarter to SSCE and somewhat above a quarter for PIT [14].

The tax wedge declined significantly (by at least 2 pps.) between 2001 and 2011 in two groups of countries:

(13) Spearman's rank correlation coefficients were calculated. A rank correlation coefficient measures the degree of similarity between two rankings.

(14) Contrary to European Commission (2012b), the OECD data do not include a PIT measure cleaned for non-labour income.

Table 7: Tax wedge (and its components) for a single person without children, 100% of average wage (2011, %)

	Total	Of which			Difference 2001 - 2011			
	Tax wedge	PIT	SSCE	SSCR	Total	PIT	SSCE	SSCR
Belgium	55.5	21.7	10.8	23.1	-1.1	-0.3	0.1	-0.9
Bulgaria	32.5	7.5	10.3	14.7	-7.9	-1.1	4.1	-10.9
Czech Republic	42.5	8.9	8.2	25.4	-0.1	1.5	-1.1	-0.6
Denmark	38.4	28.0	10.7	0.0	-5.0	-4.5	-0.1	0.0
Germany	49.8	15.9	17.4	16.5	-2.1	-1.9	0.4	-0.6
Estonia	40.1	12.5	2.1	25.6	-0.8	-3.7	2.1	0.8
Ireland	26.8	13.5	3.6	9.7	0.9	2.7	-0.8	-1.0
Greece	38.0	3.0	12.8	22.2	3.3	2.5	0.4	0.4
Spain	39.9	12.0	4.9	23.0	1.0	1.4	0.0	-0.4
France	49.4	10.0	9.6	29.7	-0.4	-1.0	0.1	0.5
Italy	47.6	16.1	7.2	24.3	1.0	1.7	0.3	-1.0
Cyprus	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Latvia	44.2	17.6	7.3	19.4	1.0	2.1	0.1	-1.3
Lithuania	40.7	10.0	6.9	23.8	-5.1	-9.6	4.6	0.0
Luxembourg	36.0	13.3	11.7	11.0	0.3	-0.4	1.4	-0.8
Hungary	49.4	13.6	13.6	22.2	-6.4	-5.0	4.7	-6.1
Malta	22.4	9.2	6.6	6.6	-1.0	-0.2	-0.4	-0.4
Netherlands	37.8	14.5	14.0	9.2	0.4	4.8	-3.9	-0.5
Austria	48.4	11.9	14.0	22.6	1.5	1.5	0.0	-0.1
Poland	34.3	5.9	15.5	12.9	-3.7	0.5	-2.8	-1.5
Portugal	39.0	10.9	8.9	19.2	2.6	2.6	0.0	0.0
Romania	44.3	9.5	12.9	21.9	-3.6	1.4	3.9	-8.9
Slovenia	42.5	9.6	19.0	13.9	-3.7	-1.5	0.6	-2.7
Slovak Republic	38.9	7.5	10.6	20.8	-3.6	1.8	1.3	-6.8
Finland	42.7	18.5	5.8	18.4	-3.6	-2.6	0.6	-1.6
Sweden	42.8	13.6	5.3	23.9	-6.3	-5.5	0.1	-0.8
United Kingdom	32.5	14.1	8.5	9.9	0.3	-1.6	1.0	0.9

Source: OECD, 'Taxing Wages'.

Note: 2010 data for BG LV LT MT RO.

excel file gif

- One group contained mostly New Member States, who lowered the tax wedge through SSCR (and increasing SSCE) in Bulgaria, Romania and Slovakia, with more mixed changes in Lithuania, Hungary, Poland and Slovenia.

- In a second group, the tax wedge decreased mainly due to a drop in PIT. This was the case for Germany as well as the Nordic countries (Denmark, Finland and Sweden).

By contrast, the tax wedge increased by at least 1 pp. mainly due to a rise in PIT in most programme countries (Greece, Spain, Ireland and Portugal), as well as in three Member States which had already a tax wedge above the EU average in 2001 (Italy, Latvia and Austria).

2.3. Recent policy recommendations

European Commission (2012c), Chapter 5, identifies those Member States which, from an efficiency point of view, are most likely to benefit from a shift of the tax burden away from labour [15]. These Member States, in particular, 'face the challenge of reducing the tax burden on labour (either overall or for specific groups) and at the same time appear to have room to increase taxes less detrimental to growth'.

The policy document also recommends broadening tax bases, which would make room to lower high tax rates which are potentially distortionary. One option to broaden tax bases is by lowering tax expenditures (see 4.1.4 on this topic). To boost tax revenues, tax compliance issues are also important (see 5.4 on tax evasion.

The policy document also pays attention to the redistributive effects of the tax system, pointing out that Member States facing substantial efficiency challenges in the tax-benefit system while achieving an inferior inequality outcome, may have scope for improving efficiency without compromising redistribution policies or for increasing redistribution without hampering efficiency [16].

3. The effects of taxation: key elements of the distributional aspects

This section focuses on the distributional effects of taxation in relation to the Europe 2020 poverty reduction and social inclusion target. The analysis goes beyond this target as such and considers inequality issues more generally.

Although inequality is not part of the Europe 2020 targets of social inclusion as such, it is a useful measure for assessing the burden-sharing impact of potential tax shifts. In this respect, the focus in this analysis is not the level of inequality as such, but the changes induced by taxation.

The analysis of inequality is also important in the context of fiscal consolidation. An increase in income inequality induced by a tax reform means that poorer people carry a higher burden than the rich. Moreover, the levels of poverty and inequality are highly correlated, with an increase in income inequality likely to be translated into an increase in the poverty rate.

In recent years, official recommendations advised Member States to lower taxes on labour and to compensate for this revenue loss by raising VAT revenues (including limiting the use of reduced rates and exemptions) and property taxes. At the same time, the EU-27 governments have committed themselves to reducing poverty and social exclusion by 20 million people.

Given these recommendations, this section focuses on the distributional effects of tax shifts away from labour towards consumption (through VAT) and property.

The social (and employment) effects of direct taxation are illustrated in Section 4, along with the employment aspects of tax shifts away from labour, in particular towards VAT.

Section 5 will consider the trade-offs and interplays between social and employment effects and add an analysis of green taxes and tax evasion.

The data presented in this section are mostly drawn from studies using tax micro-simulation models. These studies have some disadvantages. They do not consider behavioural responses to tax reforms. Moreover, the models are complicated tools that require a comprehensive set of policy rules to be established. In addition, tax micro-simulation studies on consumption taxes require the imputation of expenditures from external data. Information relevant to the scope of this section (such as property values) is missing in most surveys. Hence the country and time coverage of the evidence in this section is somewhat limited.

3.1. The social effects of consumption taxes

3.1.1. Introduction

As indicated in Section 1, several Member States have recently raised VAT rates as part of their tax reforms with the stated aim of contributing to fiscal consolidation and stimulating growth, given that a lower tax burden on labour compensated by an increase in consumption taxes might be expected to have a positive impact on employment and growth, without increasing budget deficits.

VAT (together with excise duties) has been an attractive candidate for tax changes and now contributes a large share of total tax revenues – ranging from 14.7 % in Italy to 33.7 % in Bulgaria [17].

Recent reforms and policy debate about VAT focus on two main issues. The first regards the increase in standard VAT rates. The second concerns the abolition or curtailment of reduced VAT rates and the number of VAT-exempt goods.

However, while tax shifts from labour to consumption may have favourable efficiency and consolidation effects, the rising burden of consumption taxation may have adverse social effects, depending

(15) These Member States are, in particular, Belgium, France, Italy, the Czech Republic, Latvia, Romania and, to a lesser extent, Germany, Austria, Latvia and Hungary. Please note that 'efficient' is synonymous with 'employment-friendly' in this chapter.

(16) The policy document does not identify these Member States.

(17) 2010 data from European Commission (2012b).

on the design of the reform and the conditions in particular Member States.

These adverse social effects are questioned by some observers, however, based on three arguments:

- First, the poorer the household, the higher the proportion of VAT payments as a share of disposable income, although poorer households may spend a lower proportion of their consumption on VAT payments in so far as they consume more goods that are VAT-exempt or taxed at a reduced rate (Econpubblica (2011); Crawford et al. (2010)).
- Second, richer households pay more VAT in absolute terms (Crawford et al. (2010)).
- Third, the distributional objectives could be better achieved by other taxes or benefits (Econpubblica (2011); Crawford et al. (2010)).

The opposite distributional effect found for consumption taxes when using income or expenditure as the relevant welfare concept is confirmed by other studies (Figari and Paulus (2012); Decoster et al. (2010)). However, these studies highlight that the choice of a proper welfare concept is debated.

Expenditure is less volatile than income from a life-cycle point of view, and is a better indicator of an individual's standard of living. On the other hand, to some extent expenditure patterns reflect personal tastes.

The distributional effect of consumption taxes can also be considered in a life-cycle perspective. In theoretical models that assume no bequests at the end of the life-cycle and uniform income and consumption taxes, VAT is thought to be proportional (see Box 2), as all income is eventually consumed. If individuals save more when young and consume more when old, a life-cycle assessment

Box 2: The optimal theory of taxation and indirect taxes

The optimal theory of taxation has long fascinated economists, but the 1970s mark the start of a series of dominant theoretical models on the best tax design to minimize the distortions and economic inefficiencies generated by taxation.

An earlier contribution to the optimal theory of commodity taxation is found in what is known as the Ramsey problem, with the conclusion that excise taxes should be inverse to the price elasticity of demand for the good. However, Ramsey's theory constrains the problem to one tax structure, while subsequent contributions widen the analysis of tax schemes (Mankiw et al. (2009)).

The contributions to the optimal design of a tax system are wide-ranging, while the considerations related to indirect taxation refer to two main aspects:

A) the optimal tax mix of income and consumption taxes

B) the optimal structure of consumption taxes

A) The first point results in the equivalence between income and consumption taxes. In the model, individuals use labour income to finance consumption. A proportional change in consumption taxes is equivalent to a proportional change in the income tax. The equivalence holds under specific conditions:

- taxes are proportional (not progressive);
- taxes are comprehensive (no deductions);
- taxes are uniform (consumption tax = income tax rate);
- there are no bequests, or bequests are taxed at the same rate (Crawford et al. (2010)).

The theoretical equivalence between uniform consumption and income taxes, resulting from the assumptions reported above, implies that shifting taxes from labour towards consumption will have no effect on the labour market (Crawford et al. (2010)). A tax shift from labour to consumption may have employment effects in this set-up if the labour market is regulated through a minimum net wage.

B) Concerning the structure of indirect taxes, the optimal theory of taxation prescribes two main lessons:

1B) intermediate goods should not be taxed (Diamond and Mirrlees (1971)), as this would distort the allocation of factor inputs;

2B) final consumption good should be taxed at a uniform rate (Atkinson and Stiglitz (1976)), as the disincentive effects of after-tax income are minimized when an individual's consumption choices are undistorted (Mankiw et al. (2009)).

Where certain specific goods generate externalities or when goods vary in their complementarity with leisure, differential VAT rates may be optimal.

The first case refers to commodities that generate externalities such as pollution or external costs (such as alcohol and tobacco). A recent view supporting the abolition of a reduced rate of VAT on food suggests obesity as a negative externality (Grueber, 2011).

The second case suggests to tax more heavily those goods that have a stronger complementarity with leisure, such as season tickets to watch football games as opposed to season ticket to commute to work (Crawford et al. (2010)).

of distributional effect of consumption taxes would turn out to be neutral. However, saving rates of individuals do not only depend on age. Indeed, Member States with a similar age structure display different saving patterns across income groups. Individuals do not spend all their income at the end of their lives and they leave bequests to their heirs.

Moreover, savings can be used for investments (housing, education), for renting houses or for in-home services that may not be subject to e.g. VAT. The application of taxes to consumption financed out of debt may further complicate the picture. The distributional effect of consumption taxes over the life-cycle has milder implications when household rather individual income is considered (as in this chapter).

The choice of (yearly household) income for the assessment of the distributional effect of taxes is grounded in the definition of the Europe 2020 targets of employment and poverty. Indeed, the standard measure of economic well-being adopted by the European Union, and included in its poverty-reduction target, is (household yearly) disposable income. The Europe 2020 poverty and social exclusion target has been defined on the basis of the at-risk-of-poverty rate, the index of material deprivation and the percentage of people living in households with very low work intensity. The second indicator is to some extent related to consumption, but only to define situations of severe material deprivation over a one year period. The chapter consistently follows the standard approach of considering (household yearly) income as the proper welfare concept.

3.1.2. Theory

The theoretical literature on indirect taxation provides a considerable contribution to recent reforms and policy debate. Indeed, one of its main findings – final consumption goods should be taxed at a uniform rate – is in line with recent tax reforms and proposals. Between 2011 and 2012, several Member States have increased their VAT standard and reduced rates and/or curtailed the number of goods eligible for reduced rates and exemptions (Tables 2 and 3).

The theoretical optimal mix between (uniform and proportional) income and consumption taxes has received little formal attention. The appropriate mix should depend on the differential administrative and compliance issues between income and consumption taxes (Crawford et al. (2010)). The equivalence between income and consumption taxation (see Box 2) does not hold in the real world mostly because income taxes are not proportional, there are bequests, and these are not taxed at the same rate. The growing interest in tax shifts away from labour toward consumption relies on the assumption that taxing consumption has a less distortive effect on the labour market than taxing labour.

The theoretical literature is more useful in suggesting the optimal structure of consumption taxes. Consumption taxes in the form of VAT are optimal as they do not tax intermediate goods. However, the actual structure of VAT in most European countries is not optimal as exemptions and reduced rates violate the prescription of the optimal tax theory (Mankiw et al. (2009)). From an efficiency point of view VAT exemptions are not optimal as they distort consumption choices, distort competition, create a bias towards imports (as exports are not subject to VAT) and add administrative and compliance burdens (Crawford et al. (2010)).

The theoretical literature privileges the efficiency and macroeconomic aspects of taxation. On the other hand, several empirical studies focus on the distributional aspects of taxation from a microeconomic point of view.

3.1.3. Empirical evidence

The regressive effect of VAT is well known. Households at the bottom of the

Box 3: Inequality and consumption

Standard measures of income inequality do not allow an assessment of the distributional effects of indirect taxes or tax shifts to consumption taxes to be carried out. Indeed, inequality is generally measured as disposable income inequality before expenditures. Therefore, consumption taxes are not included in the standard definition of disposable income.

The reasons for excluding taxes paid on expenditures from the measurement of disposable income are both theoretical and methodological. Firstly, many consider income as the appropriate measure of well-being, as consumption depends on preferences. Second, most surveys include information on income variables but not on detailed expenditures.

Consumption patterns reflect preferences towards, for instance, luxury or basic goods. These types of preferences are generally considered as individual responsibility. On the other hand, progressive taxation aims at reducing differences in endowments for which individuals are not held responsible. Of course, the distinction between what is or is not a personal responsibility is the subject of normative debate (Decoster et al., 2010).

The standard technique used to include consumption taxes in the assessment of the distributional effect of taxes is to use imputed expenditures. The imputation is based on income and other personal characteristics and derived from regressions of expenditure patterns based on expenditure data (see, for instance, Decoster et al. (2010) in Annex 7.2).

Beyond preferences, expenditure size and composition depend on income variables: the poor spend more of their income and, in particular, on basic commodities (taxed at lower rates). The regressive effect of the inclusion of indirect taxes in the disposable income concept is shown in the studies presented above (Figari and Paulus (2012); Decoster et al. (2010); O'Donoghue et al. (2004)) and resizes the conclusions on the progressivity of recent austerity measures (Callan et al. (2011)).

Measures of disposable income inequality that are not adjusted for tax payments on expenditures avoid the criticism of preference dependence. Nonetheless, the inclusion of consumption taxes into disposable income is particularly important when assessing the distributional effects of tax shifts.

income distribution consume a higher share of their income than households at the top. The burden of consumption taxes for the lowest income decile [18] is generally twice that for the top decile (Warren, 2008). Chart 11 shows the pattern of VAT payments as a percentage of disposable income by income decile in five European countries. Across countries, the shares range from 14% (in the UK) to 31% (in Ireland) for the bottom decile, and from 6% (in UK) to 11% (in Greece) for the top decile.

Although the pattern of VAT payments for the top nine deciles is quite similar across countries, the burden for the lowest decile varies considerably. In Ireland and Greece the bottom decile sustains a relatively high burden of VAT payments.

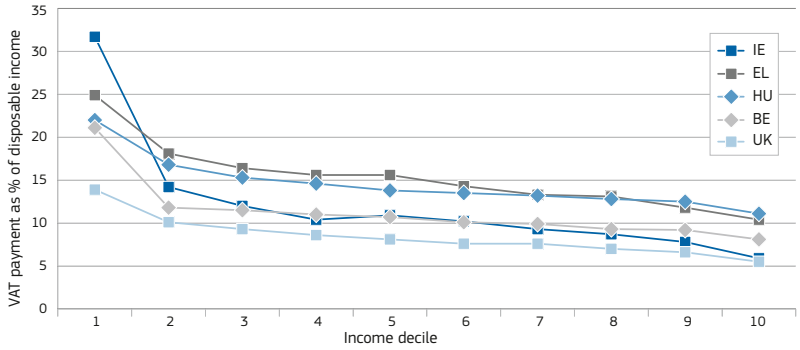
Country differences have implications for the distributional effects of VAT. Indeed, the regressive effect of VAT differs by country, and countries with similar levels of standard VAT rates can still report diverse impacts of indirect taxes on poorer households. Chart 12 shows the increase in inequality due to the deduction of VAT payments from disposable income for a number of European countries.

Considering the initial starting level of inequality, the deduction of VAT payments from disposable income has a relatively high regressive effect in France and Finland (more than a 10% change), a relatively low impact in Belgium, Luxembourg and the Netherlands (less than 5%) and an average effect (between 5-6%) in all the other countries.

Differences in the regressivity of VAT are only partially explained by the standard level of the VAT rate in the different countries. As Chart 13 shows, countries with a higher standard VAT rate are associated with a higher regressive effect from VAT. However, standard rates alone cannot explain why countries with similar VAT rates display large differences in terms of VAT regressivity, as is the case for the Netherlands and the UK (17.5% VAT rate in each case) and France and Belgium (20.6% and 21% VAT rate respectively)[19].

The only 'progressive' characteristic of indirect taxes is provided by reduced VAT rates or exemptions for goods that account

Chart 11: VAT payments as percentage of disposable income, by income decile

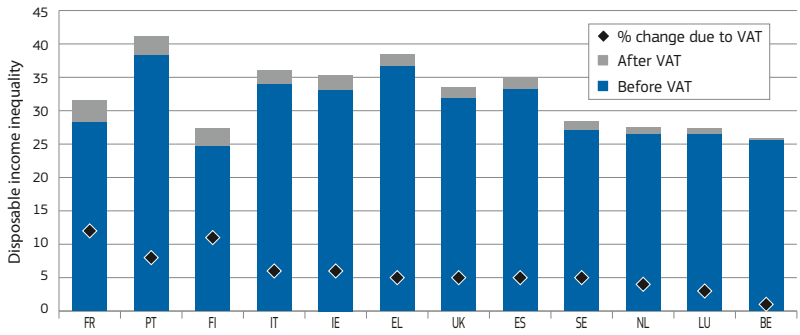


Source: Own elaboration from Decoster et al. (2010).

Note: Decoster et al. (2010) is based on 2003 HBS and 2004 EU-SILC for Belgium, 2005 HBS for Greece, 2005 HBS and 2005 EU-SILC for Hungary, 1999 HBS and 2000 Living in Ireland for Ireland, 2003/2004 FES and 2003/2004 FRS for the United Kingdom. For the estimation of VAT payments see Annex 7.2.

excel file gif

Chart 12: Disposable income inequality before/after VAT payments

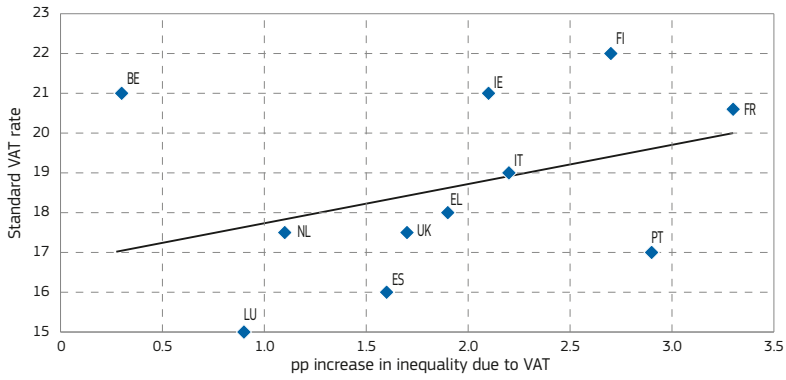


Source: Own elaboration from O'Donoghue et al. (2004).

Notes: For the data and tax rules used in O'Donoghue et al. (2004) see Annex 7.2. Countries are ranked in decreasing order of the percentage point increase in disposable income inequality due to VAT. For the estimation of VAT payments see Annex 7.2.

excel file gif

Chart 13: Correlation between standard VAT rates and percentage point increase in inequality due to VAT



Source: Own elaboration based on data from O'Donoghue et al. (2004).

Notes: For the data and tax rules used in O'Donoghue et al. (2004) see Annex 7.2.

$y = 0.7646x + 17.161$
$R^2 = 0.0901$

excel file gif

[18] First, (income) data are sorted according to rising value, then the population is divided into ten equal parts: these are the deciles.

[19] VAT rates refer to the late 1990s.

for a relatively larger share of spending by low income households. In this respect the most important category of reduced VAT rates is represented by food in most Member States, although the level of the reduced VAT rate on food has a relatively weak, albeit positive, correlation with the distributional effect of VAT (Chart 14).

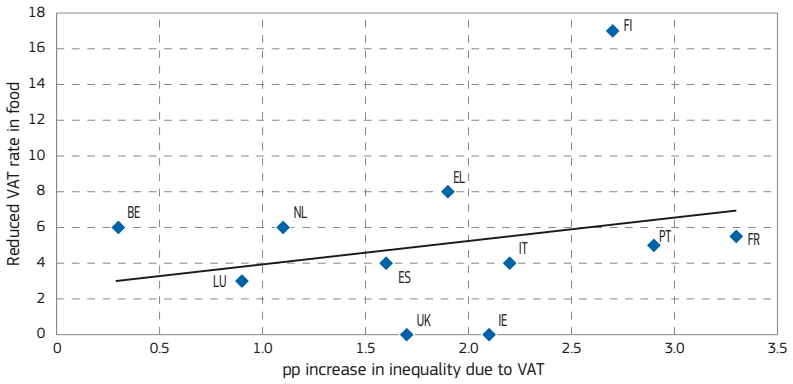
An important factor in explaining differences across countries in terms of the redistributive effect of VAT is the ratio between the saving rate of the top decile and the (dis)saving rate of the bottom decile (O'Donoghue et al. (2004)). Chart 15 suggests that the social impact of increasing VAT may be more regressive the higher is the dissimilarity in saving rates across income groups in each Member State. Dissimilarities in saving rates across income deciles seem to explain differences in the regressive effect of VAT across Members States much better than standard VAT rates.

Consumption taxes are a particular burden for the poorest group of households, with indirect tax payments as a share of disposable income being considerably higher for the bottom decile of the income distribution in most countries (Figari and Paulus (2012); Decoster et al. (2010); O'Donoghue et al. (2004)). Chart 16 presents the VAT payment ratio between the bottom decile and the average, indicating the extent to which the burden of indirect tax payments for the lowest income decile varies across countries.

The proportion of goods that are VAT-exempt, or taxed at a reduced rate, is an important factor in explaining differences in the burden of indirect taxation for the bottom income deciles (Figari and Paulus (2012)). Decoster et al. (2010) measure the importance of this share with the ratio between VAT revenues collected with current VAT structure and VAT revenues that would have been collected if the standard VAT rate had been applied to all goods (C-efficiency factor [20]). The correlation between the C-efficiency

[20] The C-efficiency factor provided by Decoster et al. (2010) is different from the official Charts reported by Eurostat. Decoster et al. (2010) assume full tax compliance and simulate the VAT revenues that would have been collected with the current VAT design and those that would be collected by applying a standard VAT rate to all goods. Eurostat uses official data on VAT revenues actually collected and compares this with the revenues that would have been collected by applying the standard VAT rate to all goods. The C-efficiency factor provided by Eurostat is influenced by VAT compliance and hence would not be useful for this analysis.

Chart 14: Correlation between reduced VAT rate on food and percentage point increase in inequality due to VAT



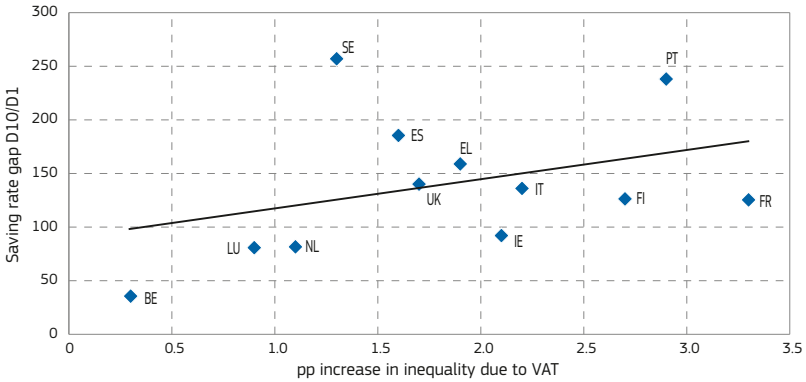
Source: Own elaboration based on data from O'Donoghue et al. (2004).

Notes: For the data and tax rules used in O'Donoghue et al. (2004) see Annex 7.2.

y = 1.2367x + 2.9909
R^2 = 0.0586

excel file
gif

Chart 15: Correlation between dissimilarity in saving rates and percentage point increase in inequality due to VAT



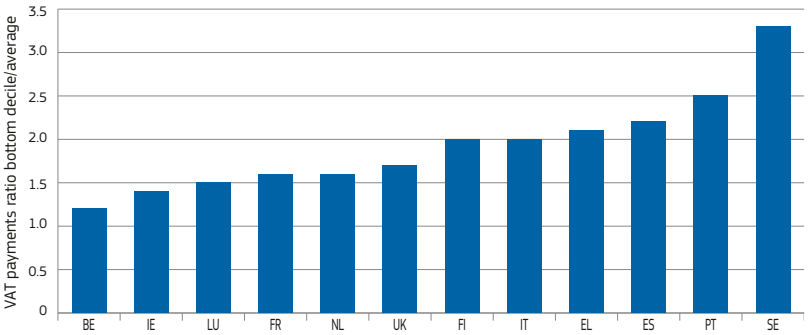
Source: Own elaboration based on data from O'Donoghue et al. (2004).

Notes: For the data and tax rules used in O'Donoghue et al. (2004) see Annex 7.2.
The saving rate gap is defined as the difference between the saving rate of the top income decile and that of the bottom decile. For the estimation of saving rates see Annex 7.2.

y = 29.102x + 84.78
R^2 = 0.532

excel file
gif

Chart 16: VAT payments ratio between the bottom decile and the average

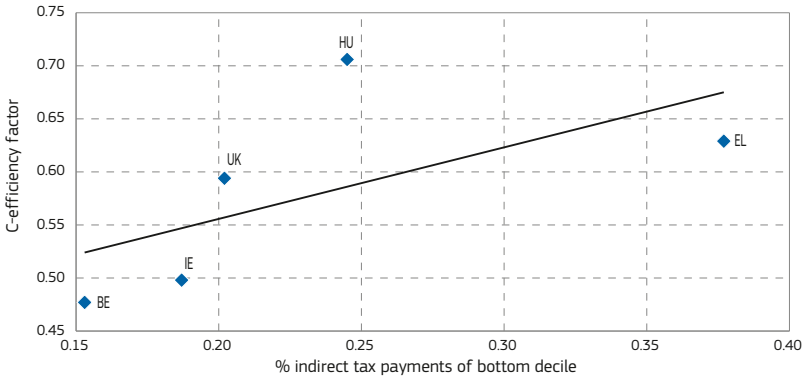


Source: Own elaboration based on data from O'Donoghue et al. (2004).

Notes: For the data and tax rules used in O'Donoghue et al. (2004) see Annex 7.2. VAT payments are expressed as a share of disposable income. For the estimation of VAT payments, see Annex 7.2.

excel file
gif

Chart 17: Correlation between VAT C-efficiency factor and indirect tax burden for the bottom income decile



Source: Own elaboration based on Figari and Paulus (2012) for the share of indirect tax payments as a share of disposable income for the bottom decile and on Decoster et al. (2010) for the C-efficiency factor.

Note: y = 0.6637x + 0.4263
R^2 = 0.3735

excel file gif

factor of VAT and the burden of indirect taxes for the bottom decile is rather high (Chart 17) indicating that the larger the share of goods that are taxed at a reduced or zero rate, the more shielded are the poorest households from any increase in standard VAT rates.

3.1.4. The social effects of tax shifts to consumption

From a theoretical point of view, a shift from labour to indirect taxes implies a broadening of the tax base. Indeed, higher taxes on consumption (and lower taxes on labour) shift the burden of taxation onto (a) those who partly finance their consumption with savings or bequests and, (b) tax evaders, in so far as VAT evasion rates are lower than income tax evasion rates (Econpubblica (2011)).

In a life-cycle perspective, shifting taxation away from labour towards VAT implies spreading taxation over the entire life-cycle rather than concentrating it during the working life. The fact that additional VAT revenues would have been otherwise collected through progressive income taxation and that people may leave different proportions of savings at death plays against the beneficial social effects of a tax shift from labour to consumption.

Beneficiaries of social expenditures (such as the unemployed or the retired) are likely to be adversely affected by such a tax shift, as they would not benefit from a reduction in labour taxes and the increase in consumption taxes would imply a real reduction in their incomes from social benefits [21] (Econpubblica (2011)).

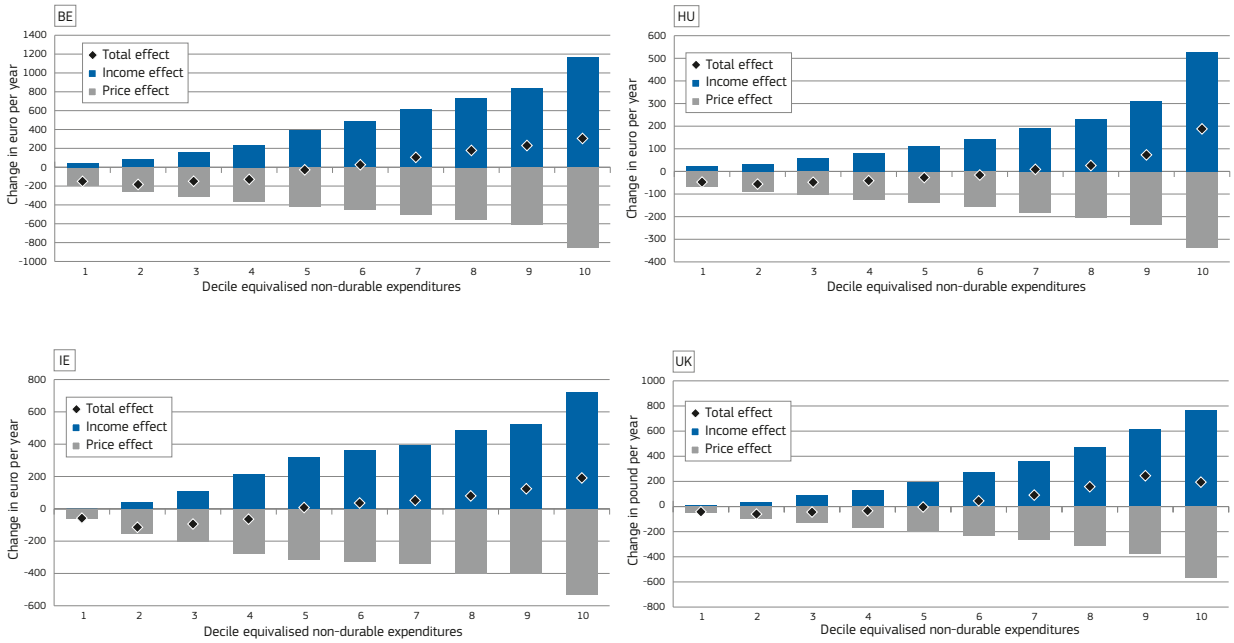
In a static model [22] – one in which changes in taxes do not produce changes in labour market behaviour – the effect of a shift in tax from labour to consumption is divided into two opposite effects:

- one is the increase in disposable income due to the lower tax on labour;
- the other is the price increase induced by the increase in the consumption tax.

(21) The indexation of social benefits and pensions to the consumer price index can partially offset the loss in purchasing power due to an increase in VAT.

(22) A model in which labour market effects generated by changes in taxes are not simulated.

Chart 18: Decomposition of welfare change into income and price effect by expenditure decile and country



Source: Own elaboration from Decoster et al. (2010).

Note: Decoster et al. (2010) is based on 2003 HBS and 2004 EU-SILC for Belgium, 2005 HBS for Greece, 2005 HBS and 2005 EU-SILC for Hungary, 1999 HBS and 2000 Living in Ireland for Ireland, 2003/2004 FES and 2003/2004 FRS for the United Kingdom (see Annex).

excel file gif

The overall redistributive effect depends on the balance between the two effects, and on how this affects those who are high or low on the income scale.

A revenue-neutral shift from social security contributions to VAT has adverse redistributive effects for the bottom income deciles, and a favourable effect on the top deciles since lower income deciles benefit less from a reduction in social security contributions and are more exposed to the increase in prices.

Chart 18 reports the welfare change by decile of equivalised non-durable expenditures generated by a 25% cut in social security contributions in a revenue-neutral context for four countries. The welfare change is decomposed into income and price effects. The price effect dominates the income effect for the bottom four deciles in Ireland, the bottom five deciles in Belgium and the UK, and the bottom six deciles in Hungary as a result of the fact that non-working people – who do not generally pay social contributions but do pay indirect taxes on their purchases – are over-represented at the bottom of the income distribution (Decoster et al. 2010).

This result points to the important conclusion that, while indirect tax payments are progressive with respect to expenditure, a tax shift to a less progressive instrument, such as from SSC to VAT, is regressive (Decoster et al. (2010)).

With respect to the current economic situation, it is relevant to examine the extent to which shifts in taxation will yield additional revenues. Crawford et al. (2010) simulate the effects of the application of the standard VAT rate to all commodities in the UK in order to raise £11 billion of extra tax revenues. This entails eliminating the current reduced VAT rates (including the zero rate on food) which have, as expected, a regressive effect in that the bottom decile loses 8% of its disposable income against 2% for the top income decile.

However, it is possible to introduce compensating measures in order to neutralize the regressive effects of the application of the VAT standard rate to all goods (for the details of the compensating measures simulated in Crawford et al. (2010) see Annex 7.2). On the basis of the compensating measures simulated in Crawford et al. (2010) it is possible to make the bottom three deciles better off (with the second decile gaining more than the first) and the top six deciles worse off (losing a maximum of 3% of their disposable income, while the bottom three deciles gain up to 3% of their disposable income).

Although this simulation was only conducted for the UK, it nevertheless shows that it is possible to increase indirect taxation without necessarily having adverse distributional effects if appropriate compensating measures are taken, as suggested by several authors both on efficiency and equity ground (Crawford et al. (2010); Econpubblica (2011); Decoster et al. (2010)). However, as reported in the Appendix on the Mirrlees simulation, the compensating measures on the income taxation and benefits side may need to be relatively large in order to be effective.

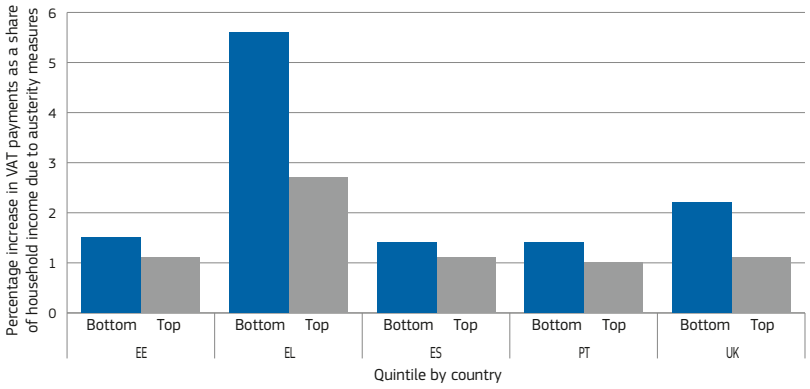
However, in practice, many of the tax and benefit reforms adopted between 2009 and 2011 in different Member States may have not counterbalanced the regressive effect generated by increasing VAT rates.

In the same period, the VAT standard rate was increased by 2 percentage points in Estonia and Spain, by 2.5 pps in the United Kingdom, by 3 pps in Portugal, and by 4 pps in Greece. Reduced VAT rates were increased by 4 percentage points in Estonia, by 1 pp in Spain and Portugal, by 1-2 pps in Greece. Moreover, austerity measures were also taken, including increased social security contributions and increases in top income tax rates (Callan et al. (2011)).

Chart 19 reports the increase in VAT liability as a share of household disposable income for the bottom and top income quintile in each of the countries indicated above. Greece is the only country where the VAT reduced rates were also increased, producing the largest increase in VAT rates and resulting in the bottom quintile suffering the greatest loss of the countries covered. In effect the inclusion of the VAT changes in the assessment of the overall social effects of austerity measures resulted in an increase in the burden sustained by low income households in Estonia, Greece, Spain, Portugal and the United Kingdom [23] (Callan et al. (2011)).

The shift from social security contributions to VAT has implications for the financing and entitlements to social protection. Member States differ in the financing of social protection, with Denmark financing it by more than 50% with general government contributions and Estonia by more than 70% with

Chart 19: Differential effects of austerity measures for the bottom and top of the income distribution



Source: Own elaboration based on data from Callan et al. (2011).

Notes: Callan et al. (2011) is based on Euromod simulations using 2008 EE-SILC, 2008 IE-SILC, 2007 EL-SILC, 2007 ES-SILC, 2007 PT-SILC, and 2008/2009 FRS for the United Kingdom. The increase in VAT payments has been estimated by Callan et al. (2011) using external information on the incidence of VAT by income decile group and assuming no change in pre-tax expenditure or in pre-tax relative prices.

gif excel file

(23) The increase from 5% to 9% (in 2010) of the reduced VAT rate in Estonia, the 30% increase in excise duties on tobacco, alcohol and fuel in Greece, the 1 pp increase in reduced VAT rates in Spain (2010) and Portugal (2011) are not included in the simulation results of austerity measures of Callan et al. (2011). For the United Kingdom, the VAT increase from 15% to 20% followed a reduction from 17.5% to 15%. Callan et al. (2011) define the increase from 17.5% to 20% as austerity measure.

employers' social security contributions [24]. A shift from social security contributions to VAT may have less important implications for social protection entitlements in Member States that finance a large proportion of their social protection with general taxation. However, Member States in which social security contributions finance a large part of social expenditures may have more room for such a shift. The financing of social protection can be preserved by earmarking part of the extra VAT revenues to this aim, as was done, for instance, by Germany in 2007 when it increased the standard VAT by 3 percentage points and consistently with the French proposal of a 'social VAT'. Simulations of the German reform point to a small positive employment effect and a slight increase in inequality (Bach et al., 2006).

3.2. The social effects of property taxation

3.2.1. Introduction

Recently, both the European Commission and the OECD have recommended that Member States increase property taxation as part of the reform of the tax treatment of housing. Table 8 summarizes the European Commission (2011d) and OECD (2012b) recommendations concerning the housing tax treatment.

Among OECD countries, the 'Anglo-Saxon' countries (Australia, Canada, Ireland, New Zealand, United Kingdom, and United States) collect an average of 2.4% of their GDP from recurrent taxes on immovable property, against the OECD and European Union average of only 0.7% [25]. OECD Asian countries (Israel, Korea, and Japan) collect 1.8% while other European OECD countries (Iceland, Norway, Switzerland, Turkey) and OECD South American countries (Chile, Mexico) collect a smaller share of revenues, respectively 0.6% and 0.4% of GDP [26].

In 2010 among EU-27 Member States recurrent tax revenues on immovable property range from 0% in Malta to 3.4% of GDP in the United Kingdom (European Commission, 2012b). France

Table 8: Assessments and recommendations on property taxation

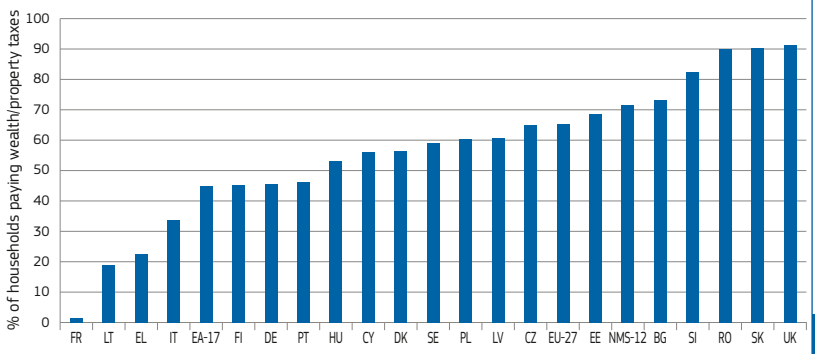
	European Commission (2011d)	OECD (2012b)
BE	Debt bias in housing taxation	
DK		Raise housing taxation
EE	Debt bias in housing taxation	
EL	Debt bias in housing taxation	
ES	Debt bias in housing taxation	
FI	Debt bias in housing taxation	Shift from labour to property taxation
DE		Shift from labour to property taxation
IT	Debt bias in housing taxation	Shift from labour to property taxation
LU	Debt bias in housing taxation	
NL	Debt bias in housing taxation	Shift taxation of housing away from purchase to ownership
PT	Debt bias in housing taxation	
SE		Shift from labour to property taxation, reverse the 2008 housing taxation cut

Sources: European Commission (2011d), OECD (2012b).

Notes: European Commission (2011d) only covers the Euro area.

excel file gif

Chart 20: Households paying wealth/property taxes by Member State

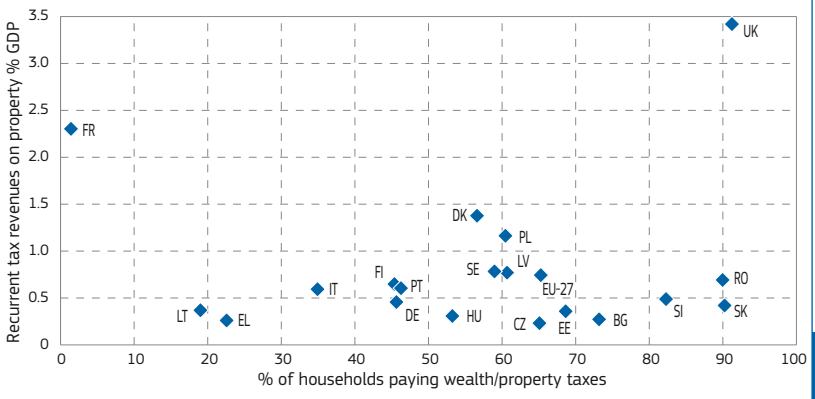


Source: Own elaborations based on 2010 EU-SILC data.

Note: Countries are ranked in increasing order of the share of households paying wealth/property taxes.

excel file gif

Chart 21: Correlation between share of households paying wealth/property taxes and recurrent taxes on immovable property



Source: Own elaborations based on 2010 EU-SILC data for the share of households paying wealth/property taxes and European Commission (2012b) for recurrent taxes on immovable property.

excel file gif

(24) 2009 ESSPROS data.

(25) The arithmetic averages for EU-27 and EA-17 are 0.7% and 0.6% of GDP, respectively (European Commission, 2012b).

(26) Data refer to 2009 recurrent taxes on immovable property (OECD Revenue Statistics – Comparative Tables).

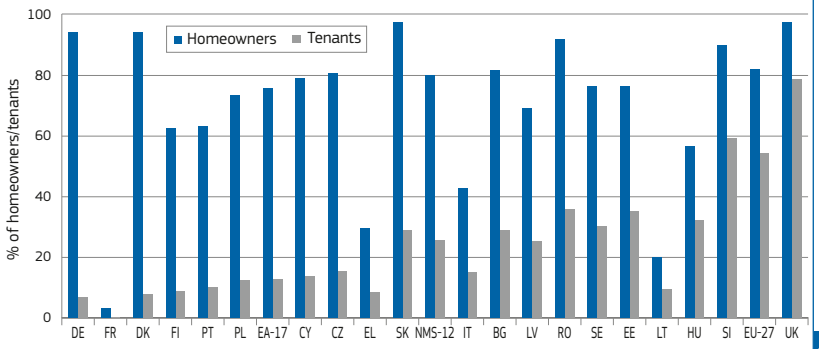
collects 2.3% of recurrent taxes on immovable property, but all other Member States collect less than 1.5% in property taxes [27].

The share of households paying wealth/property taxes also varies widely across Member States, as shown by Chart 20 [28]. However, there is no correlation between the revenues collected on immovable property and the share of households paying property taxes (Chart 21).

Taxes are not always paid by property owners, and over 50% of tenants (of their main residence) also pay property taxes (Chart 22), although the reliability of the wealth/property variable for this purpose is still to be verified [29]. For the United Kingdom, the large share of tenants paying wealth/property taxes is due to the fact that it is based on residency rather than ownership. Most new Member States also report a relatively large share of tenants paying wealth/property taxes.

Revenues from property taxes are low and the effective taxation of housing in many Member States is negative given that the tax treatment of housing allows for the deduction of mortgage interest and the widespread exemption of imputed rent and capital gains from the tax base. Chart 23 shows the effective average tax rates [30] on owner-occupiers.

Chart 22: Households paying wealth/property taxes by tenure status



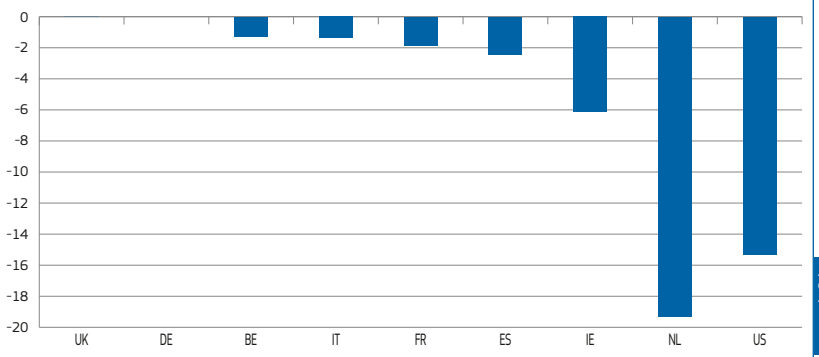
Source: Own elaborations based on 2010 EU-SILC data.

Notes: Shares are calculated for homeowners and tenants separately. Countries are ranked in decreasing order by the ratio between the share of homeowners and the share of tenants paying wealth/property taxes.

excel file

gif

Chart 23: The effective taxation of housing in a set of OECD countries



Source: Hemmelgarn et al. (2011).

excel file

gif

3.2.2. The social aspects of current forms of property taxation

From a theoretical point of view, fully neutral taxation of investments in owner-occupied housing requires taxation of imputed rent and capital gains, and deductibility of mortgage interest (International Monetary Fund (2009)). In practice, home ownership is tax-favoured in all EU countries, with the possibility to deduct mortgage interest charges and tax exemption on imputed rents and capital gains. Nonetheless, in the two Member States in which imputed rent is taxed [31], the cadastral value is below market value or the tax on the return is considerably lower than for other assets. Property taxes can be regarded as a proxy for taxation on imputed rent, but generally remains too low to ensure a neutral tax treatment of investments in owner-occupied housing. It should be noted that nominal house prices more than doubled in EU-27 between 1999 and 2010, while recurrent property tax revenues decreased slightly over the same period (European Commission (2012a)).

The current tax treatment of housing is seen as inefficient and unfair. The favourable tax treatment of housing creates distortions in investment decisions and can lead to excess investment in housing relative to alternative assets.

From a social point of view, the current design of property taxes is not always progressive, while property tax base has not kept pace with property values.

In France, for instance, property wealth corresponds to about three years of national revenues and grew more than labour income (Landais et al. (2011)).

(27) Taxes on property mainly fall on households or on business. In some Member States, tax revenues levied on the surface of the property occupied by business are substantial. This is the case of the '*taxe professionelle*' in France and the 'business rates' in the United Kingdom. Data on recurrent tax revenues on property provided by *European Commission* (2012b) exclude the first for France but include the second for the United Kingdom. OECD Revenue Statistics data for 2010 confirm that France and the United Kingdom collect the highest amount of recurrent taxes on immovable property as a share of GDP, even taking into account only those paid by households (1.9% and 1.8%, respectively).

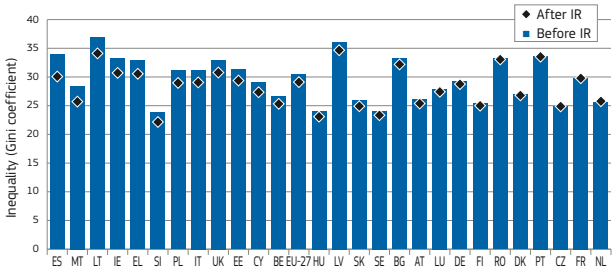
(28) The EU-SILC variable used is 'regular taxes on wealth'. This variable corresponds to property (or land) taxes, apart from France where the solidarity tax on wealth also applies to other types of assets. Eurostat (2008) highlights that five countries do not have taxes on wealth as defined in EU-SILC (Belgium, Ireland, Malta, Netherlands, Austria).

(29) The tenure status in EU-SILC data refer to the main residence, while wealth/property taxes can include taxes paid on secondary residencies. Tenants in shared ownership or beneficial owners may be subject to property tax in some Member States.

(30) Reduced VAT rates for construction on new buildings are not taken into account in this calculation.

(31) Luxembourg and Netherlands tax imputed rents, while Spain, Belgium and Italy apply it for other properties than the primary residence (European Commission, 2012e).

Chart 24: The effect of imputed rent on inequality



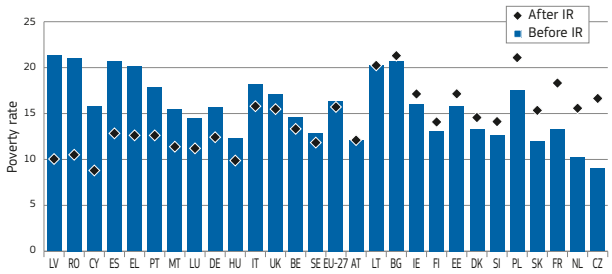
Sources: Own elaboration based on 2010 EU-SILC data.

Note: Member States are ranked in descending order of the percentage reduction in inequality.

excel file

gif

Chart 25: The effect of imputed rent on the poverty rate



Sources: Own elaboration based on 2010 EU-SILC data.

Note: The poverty line is set at 60% of the national median equivalised disposable income. Member States are ranked in descending order of the percentage reduction in the poverty rate.

excel file

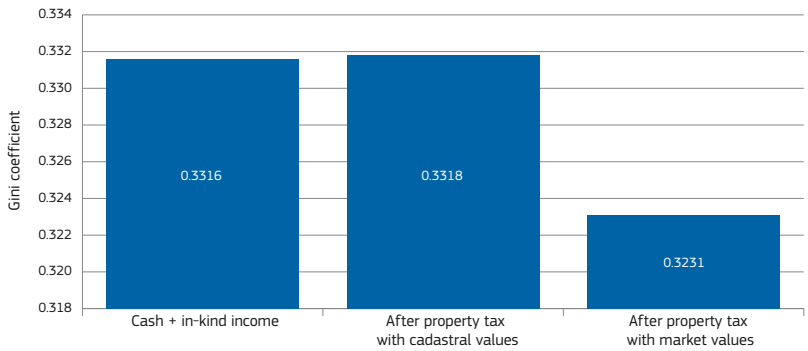
gif

Box 4: From cadastral to market values – the Italian case

In Italy owner-occupied housing was subject to property taxation until 2008. Imputed income from dwellings was considered as part of the personal income tax base. However, imputed incomes were based on cadastral values last updated in 1990 and main residences were effectively exempted from the personal income tax base. Since 2008 main residences have been completely exempted from the property tax. However, this tax was reintroduced under a 2012 reform.

The inclusion of imputed rent estimated at market rather than cadastral values in the personal income tax base would reduce inequality of economic well-being (cash income plus in-kind income from home-ownership). This reform would increase tax revenues by 20%. In a revenue-neutral setting, the extra revenue could be used to reduce marginal tax rates by 6 percentage points in the first bracket, 5 in the second, 2 in the third and 1 point in the last (Pellegrino et al. (2011)). Chart 26 below shows the level of inequality of disposable income plus in-kind income from owner-occupied dwellings before property taxes, after property taxes applied to cadastral values and after property taxes applied instead to market values.

Chart 26: Distributional effects of a tax reform substituting cadastral values for market values, Italy



Source: Own elaboration based on data from Pellegrino et al. (2011).

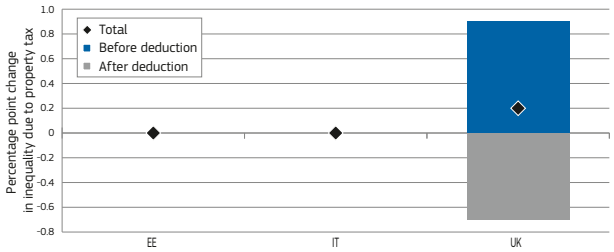
Notes: Pellegrino et al. (2011) is based on the 2008 Italian Survey of Household Income and Wealth. Income and wealth data refer to 2006.

excel file

gif

A new property tax was introduced in Italy in 2012 following recommendations on the reduction of favourable tax treatment for housing, and based on the relatively low distortionary effect of property taxes and the low rate of evasion. This tax is also applied to main residences. The new property tax is not added to the personal income tax base, but is taxed separately. The tax base is now closer to market values due to the preliminary 60% increase in all cadastral income values (European Commission (2012c). The reform includes some equity aspects (€200 deduction for the main residence, supplementary deductions for dependent children, a marked difference between the taxation of main and secondary residences). However, other aspects (update of cadastral values, deductions not linked to the income tax capacity of taxpayers, definition of main and secondary residence) could be further improved in order to enhance its progressivity. For instance, a proportional increase in cadastral values is not expected to reduce income inequality. The decrease in inequality expected from a shift from cadastral to market values is explained by a progressive increase in imputed rental values.

Chart 27: Effects of current property taxes on inequality in Estonia, Italy and United Kingdom



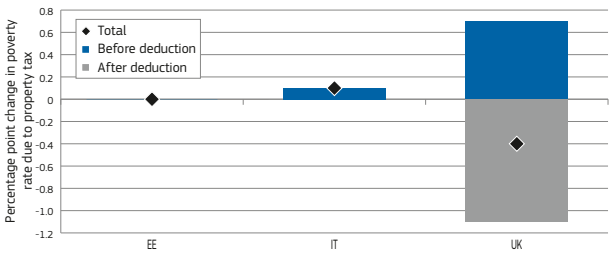
Sources: Own elaboration from Maestri (2012).

Notes: Maestri (2012) is based on Euromod elaborations using 2006 EE-SILC for Estonia, 2006 IT-SILC for Italy, and the 2003 UK Family Resources survey. Income data refer to 2005 for Estonia and Italy. The applied policy year is 2005. Inequality is measured with the Gini coefficient.

excel file

gif

Chart 28: Effects of current property taxes on the poverty rate in Estonia, Italy and United Kingdom



Sources: Own elaboration from Maestri (2012).

Notes: Maestri (2012) is based on Euromod elaborations using 2006 EE-SILC for Estonia, 2006 IT-SILC for Italy, and the 2003 UK Family Resources survey. Income data refer to 2005 for Estonia and Italy. The applied policy year is 2005. The poverty line is set at 50% of median income (including imputed rent).

excel file

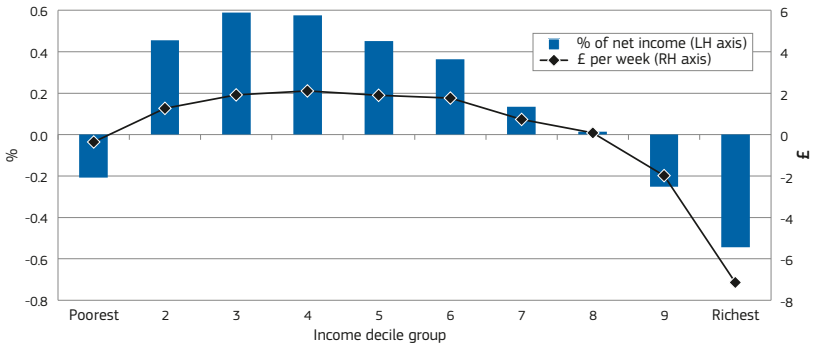
gif

The distribution of net wealth is very concentrated in Member States, and non-financial assets, in particular one's principal residence, represent the major component of household wealth (OECD (2008a)).

On the other hand, the income advantage of home ownership [32] reduces income inequality. The simultaneous presence of high levels of wealth inequality and the considerable redistributive effect of imputed rent may be explained by the fact that the first reflects housing investments, while the second reflects housing consumption. Moreover, inequality of net wealth takes into account the indebtedness of households with an outstanding mortgage, while the measurement of imputed rent is generally adjusted for the payment of mortgage interest.

Chart 24 shows that the inclusion of imputed rent (see Box 1 for definition) in the income concept reduces inequality in all Member States apart from the Netherlands [33]. However, in 2010 the reduction in the poverty rate due to imputed rent occurred in only 15 of the EU-27 Member States, with its inclusion increasing the poverty rate in the remaining 12 Member States, as shown by Chart 25. Compared to 2007 [34], the value of imputed rent may have fallen more for poor than for non-poor households.

Chart 29: Redistributive impact of the Mirrlees' proposal on property taxation



Source: Mirrlees et al. (2011a).

excel file

gif

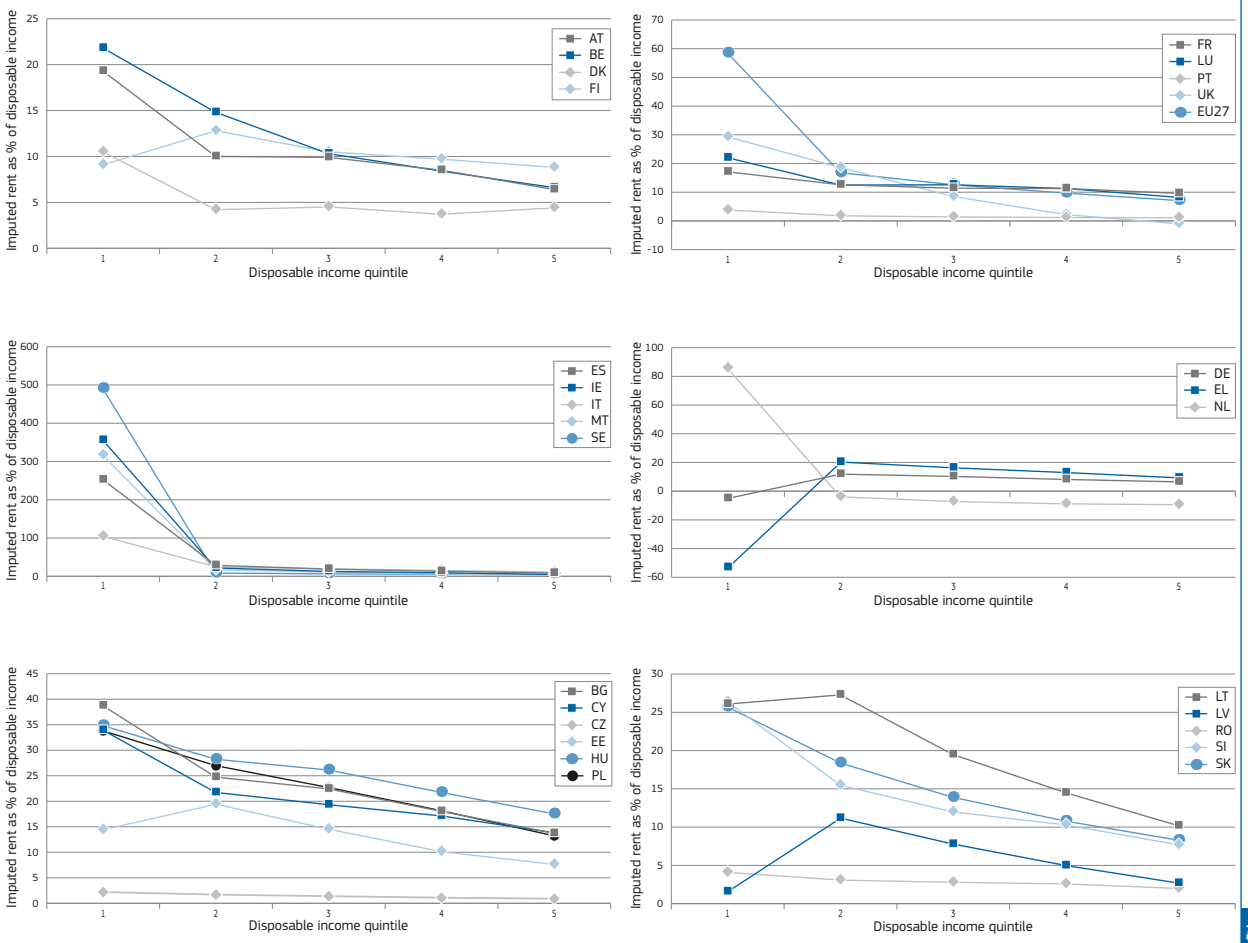
Current forms of property taxation may not be designed to redistribute income. Nonetheless, empirical evidence on the redistributive effect of property taxes is limited by data constraints as the information on property values or paid property taxes and, possibly, on imputed rents is rarely available in surveys. EU-SILC has recently collected information on paid property

(32) Homeownership refers to the main residence.

(33) The Indicators Sub-group of the Social Protection Committee decided that imputed rent should not be included in the standard definition of income underpinning the main indicators of the risk of poverty and inequality, while a separate indicator including imputed rent (with ad-hoc adjustments) should be developed. The main reasons motivating this decision were the lack of comparability of imputed rent across countries (depending on the method of estimation and on the parameters chosen), the problems of availability and reliability of data on housing allowances and after-tax mortgage interest payments, the in-kind nature of imputed rent and the problem of disentangling the consumption and investment portions of the principal mortgage repayment.

(34) See, for instance, Eurostat (2010a) for an assessment of the redistributive effects of imputed rent in 2007. Eurostat (2010b) explains the comparability problems inherent in the measurement of imputed rent in EU-SILC data.

Chart 30: Imputed rent as a share of disposable income, by income quintile



Source: Own elaboration based on 2010 EU-SILC data.

Notes: Imputed rent net of mortgage interest payments. Quintiles are based on disposable income equivalised with the OECD modified scale.

gif excel file

taxes and imputed rent, although there are still concerns about comparability across countries.

While the design of recurrent property tax rates is progressive in general, in the United Kingdom, for example, the design of the property tax (Council tax) is regressive in structure, and charges rose more slowly than property values over time (Mirrlees et al. (2011a). In general, the distributional properties of recurrent property taxation can be attributed to three main factors: the design of tax rates, the calculation of the tax base, and the distribution of home-ownership. On the second point, property taxes are generally applied to outdated cadastral assessments rather than updated market values, which impedes fairness. In many Member States, home-ownership of the main residence is distributed more equally than disposable income. Although relatively wealthy individuals are expected to own more immovable property, data on the distribution of secondary residences are not easily available.

Charts 27 and 28 show the redistributive role played by property taxes in Estonia, Italy and the United Kingdom, by considering cash and in-kind property income. In the United Kingdom property tax before the Council tax deduction [35] is regressive. However, a means-tested Council tax deduction for low income households partially offsets the increase in inequality and helps in reducing the poverty rate. Property taxes have no impact on inequality in Estonia [36] and Italy, and are seen to slightly increase poverty in Italy [37].

(35) Estonia and Italy do not have property tax deductions.

(36) For Estonia property tax refers to the land tax.

(37) Borge and Nyhus (2012) find mixed evidence about the distributional implications of municipal property tax in Norway: regressive in five municipalities, roughly proportional in three and progressive in one municipality.

3.2.3. Property tax reforms: housing as consumption

The policy debate on property taxation is complicated by the fact that housing represents consumption, in-kind income and wealth. Proposals for reforming property taxation rest on the specific nature attributed to households' real estates.

Housing can be thought of as a large consumer durable. Based on this concept of housing, a proposal for tax reform would involve applying VAT to the housing services that are consumed (Mirrlees et al. (2011a)). The Mirrlees' proposal is to introduce a housing service tax levied as a flat percentage of the rental value of each property, whether it is rented or owner-occupied.

In a revenue-neutral context, a rate of 12% of the value of housing services [38] would collect the same revenues as with the 2009 UK Council Tax. This rate is below the standard VAT rate in the United Kingdom. The Mirrlees proposal of the housing service tax envisages additional changes with respect to the current Council tax framework:

- First, the discount for single occupants and for second empty properties would be abolished in order to encourage an efficient use of the housing stock.
- Second, the proportionality of the housing service tax would allow tax bills to vary within tax bands.
- Third, the new tax would require a full revaluation of properties.
- A housing service tax rebate similar to that in place with the current Council tax would be retained (Mirrlees et al. (2011a)).

A shift from the current regressive UK Council tax to the housing service tax in a revenue-neutral setting, without modifying labour taxes would yield progressive results overall. Chart 29 shows the redistributive impact of the Mirrlees reform proposal. However, the reforms would, of course, create losers and winners. Losers would include low-income households living in expensive houses [39], many of whom are likely to be elderly. Indeed, the regressive effect of the tax reform observed for the poorest income decile reflects the fact that this type of household is overrepresented in the bottom income decile.

It should be recognised that this reform is specific to the United Kingdom situation which is currently characterized by a regressive property tax applied to all occupiers (owners and tenants) and by the highest tax revenues from property among EU Member States. The application of a tax on housing consumption close to standard VAT rates would be expected to bear the same adverse social effects discussed in the previous section.

Chart 30 shows that in 2010 the income advantage of imputed rent was larger at the bottom of the income distribution, with the exceptions of Estonia, Finland, Germany and Greece. The importance of imputed rent for the bottom income quintile is extremely high in Ireland, Italy, Malta, Spain and Sweden [40]. Retired people are often overrepresented in this group of 'income poor' and 'house rich', due to life-cycle dynamics. Indeed, retired people generally have a low disposable income (corresponding to their pension), while they are more likely to be outright owners (with its corresponding in-kind income advantage) than younger adults. The distribution of homeownership, in particular at the bottom of the income distribution, reduces disposable income inequality. The introduction of a proportional housing service tax without other tax instruments would produce regressive results, especially in the latter group of Member States. The application of a housing service tax to tenants would further deteriorate their position.

3.2.4. Property tax reforms: shift from labour to imputed rent

The housing advantage enjoyed by homeowners can be considered as a stream of in-kind income [41]. The taxation of imputed rent is closely related to replacing cadastral with property market values, as shown in Box 4. The idea of taxing imputed rent is to add this in-kind income to the personal income tax base. However, there are several options available for replacing property taxation with an imputed rent that is taxable.

In a revenue-neutral context, one option is to tax imputed rent and to introduce a proportional rebate on personal income tax rates (Reform 1). The extra revenues from taxing imputed rent are used to proportionally reduce the burden on personal income (including imputed rent). This reform increases inequality, as shown in Chart 31 (Reform 1). This result is explained by the fact that the benefit of personal income tax rebates only accrue to taxpayers with a positive personal income tax liability and, specifically, to the top quintile.

On this basis, the largest increase in inequality occurs in Belgium and the Netherlands, a moderate increase occurs in Greece, Italy and the United Kingdom and no effect is found for Germany. For Belgium and the Netherlands, the large social impact of the reform relates to the strong progressivity of the tax system (Figari et al. (2012)). On the other hand, from an efficiency point of view, this reform would lower marginal effective tax rates (METRs).

A further revenue-neutral reform option would be to tax imputed rent and introduce a lump sum tax credit. The additional revenues raised by taxing imputed rents would then be compensated by an equal tax credit for all taxpayers who enjoy a positive personal income. As shown in Chart 31 (Reform 2), this reform reduces inequality.

The share of losers increases with income in all countries and in most countries gainers are concentrated in the middle of the income distribution (Figari et al. (2012)). The largest reduction in inequality is found for the Netherlands, where

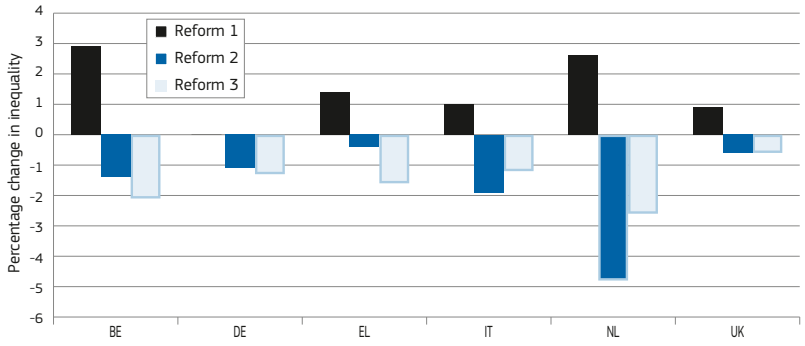
(38) Housing services are calculated as 5% of capital value (Mirrlees et al. (2011a)).

(39) Low-income households with more than £16 000 of non-pension wealth would not be entitled to the Council tax benefit.

(40) The comparability of imputed rent is still quite limited in EU-SILC data. However, from 2008 EU-SILC some harmonisation across countries has been reached. Most EU-SILC countries use the rental equivalence approach suggested by Eurostat to estimate imputed rent. However, the estimation is based on different parameters and different housing market situations. Estonia, Slovak Republic and Sweden use the user cost method. Czech Republic uses the subjective method (Eurostat (2010c)). With the user cost method, imputed rent is estimated for homeowners only. For a description of imputed rent methods, see Eurostat (2010b).

(41) The concept of imputed rent can also be applied to tenants paying a rent below market values.

Chart 31: Change in inequality due to three different designs for the imputed rent reform



Source: Own elaboration based on data from Figari et al. (2012)

Notes: Figari et al. (2012) is based on Euromod simulations using 2006 EU-SILC data for Belgium, 2002 Socio-economic Panel for Germany, 2004/5 Household Budget Survey for Greece, 2004 IT-SILC for Italy, 2001 Socio-economic Panel for the Netherlands, and 2003/4 Family Resource Survey for the United Kingdom. Blue borders indicate that the reform is associated with an increase in METRs. Inequality is measured with the Gini coefficient and refers to equivalised disposable income including imputed rent. Reforms 1 to 3 are explained in the text.

gif excel file

the reform clearly benefits poorer quintiles and penalizes richer ones (Figari et al. (2012)). In Greece the social impact of this reform is limited. From an efficiency point of view, this reform is associated with a reduction in marginal effective tax rates, except in the Netherlands.

In the context of fiscal consolidation it is worth analysing the social effects of taxing imputed rent (and of abolishing mortgage interest tax relief and current taxation of cadastral income) without lowering the burden on the personal income tax base. Additional tax revenues would be considerable, ranging from 5 percentage points in Germany to 30 points in the Netherlands.

Taxing imputed rent without reducing personal income taxation results in losers in each quintile. Indeed, imputed rent is distributed less unequally than tax liabilities. However, this reform is inequality-reducing in all countries as top quintiles suffer greater losses (Chart 31, Reform 3).

The smallest inequality-reduction impact of this reform is found for the United Kingdom and Italy, where the top quintiles do not lose more than immediately poorer quintiles (Figari et al. (2012)). On the other hand, this reform increases marginal effective tax rates in all countries considered.

In Member States in which imputed rent increases poverty, taxing imputed rent in a revenue-raising set-up would be expected to enhance the redistributive effects of taxing imputed rent.

3.2.5. Property tax reforms: housing as an asset

Housing is also an asset and, as such, can be taxed for its financial returns in the form of capital gains or as wealth. In this light Mirrlees et al. (2011a) propose to tax housing both as consumption and as an asset for its capital gains although, in the Mirrlees proposal (specific to the UK) the tax on capital gains should be only paid on the part that exceeds the returns that the money used to buy the property would normally be expected to finance.

However, the social effects of this tax have not been studied. An alternative proposal (specific to France) would involve replacing the current property tax with a solidarity tax on wealth (Landais et al. (2011)). The social effect of this tax would be expected to be fairer than the current French property tax since it would be based on net wealth (with homeowners with outstanding mortgages paying less tax than outright homeowners (Landais et al. (2011)). A more detailed analysis is left for other studies, as the distribution of wealth goes beyond the scope of this chapter.

4. The effects of taxation: employment aspects

This section focuses on the employment (or efficiency) effects of (labour) taxation in relation to the Europe 2020 employment target. EU-27 governments have committed themselves to employ 75 % of their active population by 2020. As a result, Member States have been advised to shift taxes away from labour to taxes which are less detrimental to employment and GDP growth. This section focuses on the employment effects of such tax shifts.

It starts with an overview of the existing theoretical and empirical analysis of the impact of labour taxation on labour market outcomes (labour supply, labour demand, unemployment and labour cost). As the analysis will point to the key role of labour taxes for the labour market outcomes of people at the margins of the labour market (low-income workers, older workers, single parents, second-income earners), the joint role of taxes and benefits is analysed next.

Afterwards attention goes to some equity aspects of direct taxation, with a focus on the progressivity of direct taxation and tax expenditures. Next, an original outside analysis, linking directly past labour tax reforms to subsequent labour market outcomes, is presented.

Sub-section 4.4 starts with a presentation of a widely accepted growth ranking of the different types of taxation. It analyses the pros and cons of property and environmental taxation as possible destinations of a tax shift away from labour.

The section concludes with simulations with the Labour Market Model of DG Employment of the effects of a tax shift from employers' social security contributions to value-added taxes, paying attention to the different impacts for specific groups by Member State.

A final remark is that, while the focus of this section will be on direct taxation, indirect taxation is also likely to affect labour market outcomes. Taxpayers can be considered to work for the consumption they can obtain from the net income they receive. As a result, a consumption tax acts as an equivalent to a labour tax (OECD (2011)). Picos-Sánchez (2011) attempted to calculate a tax wedge which includes consumption taxes and listed the many methodological issues when doing so.

4.1. Impact of direct taxation on employment

4.1.1. Theory

While taxes on capital income, as well as corporate taxes, can affect labour market outcomes [42], the focus of this section is on labour taxation and, specifically, its effects on labour demand and supply [43].

The effects of labour taxation on labour market outcomes can be viewed from many angles, with different forms of labour taxation, and differing effects. Similarly, the notion of labour market outcomes is wide and the effects on different groups need to be considered.

An important starting point is the recognition that labour taxes affect labour supply decisions – from whether or not to participate in the labour market at all to the choice of number of hours worked [44], in so far as that choice is available.

In considering how taxes affect labour supply, the economic literature distinguishes the substitution effect and income effect. Take the example of a labour tax increase. The substitution effect will make the worker work less, as free time allocated to work is remunerated at a lower net income. On the other hand, the income effect will make the worker work more, to maintain the level of total income. In other words, the overall effect on labour supply is uncertain or ambiguous (see also OECD (2011), p. 29).

The exact extent of the effect depends on the relative bargaining power of employees and employers. Consequently, labour-market institutions (wage bargaining, union density, minimum wages, etc.) influence the impact of taxes on labour market performance.

A similar influence comes from the labour demand elasticity and the characteristics of the unemployment benefit system. However, some economists claim that, while the above may be true in situations of full employment or full capacity utilisation, labour tax changes do not work in that way when unemployment is high, the output gap [45] is large and negative and nominal interest rates are close to zero, as at present.

According to Eggertsson (2009), a reduction in labour taxes in these circumstances will deepen a recession in the short run because it increases deflationary pressures (since it stimulates supply instead of demand), boosting real interest rates as a result.

In a perfectly competitive labour market with flexible wages, only the size of the total tax wedge matters since different components of the tax wedge exert identical effects on employment. However, when the labour market is imperfectly competitive, the composition of the tax wedge does become relevant (Econpubblica (2011)). For example, the existence of a minimum wage limits the room for an employer to shift an increase in labour taxes onto its workers.

The analysis of the effects of labour taxes on labour supply can also be extended [46] to other, less obvious, dimensions of labour supply such as long-term decisions on the take-up and supply of training and choice of occupation. Moreover, labour taxes can also induce workers to engage in tax avoidance or evasion (see Section 5 on tax evasion).

4.1.2. Interaction with benefits

Different types [47] of workers react differently to labour tax changes. This is not only due to the sizeable variation in their marginal effective tax rates and labour supply elasticities. Another important factor determining labour supply in conjunction with taxes are benefits, which typically differ a lot between various types of workers. In fact, analysing the employment effects of taxes in isolation, without considering benefits, makes little sense for many groups of workers.

The structure and design of tax and benefit systems can create disincentives to work for several specific groups [48], especially low-income workers, single parents, and second-income earners. Such disincentives would include disincentives for the unemployed to take up a job (the so-called 'unemployment trap'); disincentives to join the labour force in the first place ('inactivity trap'); and disincentive to those who have a low-income job to increase the hours they work ('low-wage trap'). Young workers are often affected by these disincentives. Further analysis on these disincentives can be found in Chapter 3

(42) See Econpubblica (2011) and OECD (2011), p. 23.

(43) The effect on unemployment comes through demand for and/or supply of labour.

(44) These are, respectively, the so-called responses on the extensive and intensive margin.

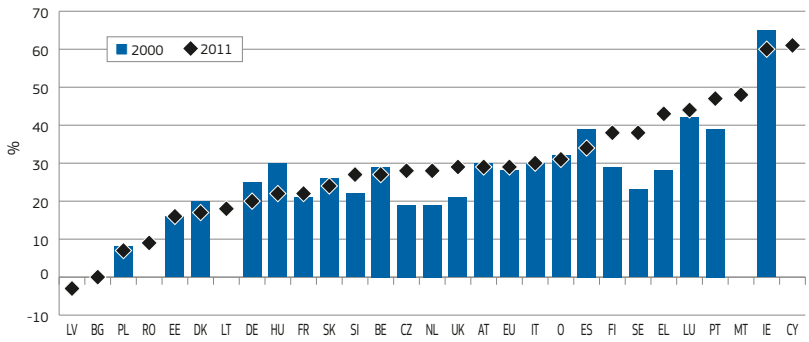
(45) A measure of slack in the economy, defined as the deviation of actual output from potential output, expressed as a percentage of potential GDP.

(46) Beyond the extensive and intensive margin.

(47) With different wage levels, family situation, etc.

(48) As well as incentives to no longer work for older workers.

Chart 32: Progressivity in the average rate of income tax and employees' social security contributions (single person, %)



Source: OECD, 'Taxing Wages' and own calculations

Notes: Progressivity is calculated as the difference between the average rate of income tax and SSCE for a single person (no child) at 67 % of average earnings and the rate for a single person at 167 %, divided by the latter. Data for Greece are for 2010. 'O' represents the OECD average. Data are available until 2010 and missing before 2005 for BG LV LT MT RO. Data until 2010 for EL; until 2007 and missing before 2005 for CY.

gif excel file

of this document, Carone et al. (2009) and OECD (2012a).

As indicated in Chapter 3, however, tax and benefit systems do not only play a role on the supply side, they also have a potentially important role on the demand side, particularly in the present situation of a large negative output gap and high unemployment.

4.1.3. Progressivity

Chart 32 shows the wide variety that exists within the EU in terms of progressivity of labour taxes, defined here as PIT and SSCE taken jointly [49]. In Chart 32, the degree of progressivity is defined by comparing the burden faced by a single person earning 167 % of the average wage compared with the burden faced by those earning two-thirds of the average wage.

While progressivity is clearly intended to contribute to equity goals, and is assumed to reduce equilibrium unemployment [50], it can be argued that it typically implies 'other costs, for example reducing labour supply, work effort, human capital accumulation and labour

[49] As SSCE is included, PIT progressivity is attenuated, since SSC are typically due only on incomes below a specific ceiling.

[50] The reason is that, by taxing wage rises, progressive taxes moderate wage gains, see also OECD (2011), Box 1.1.

Box 5: Flat taxes

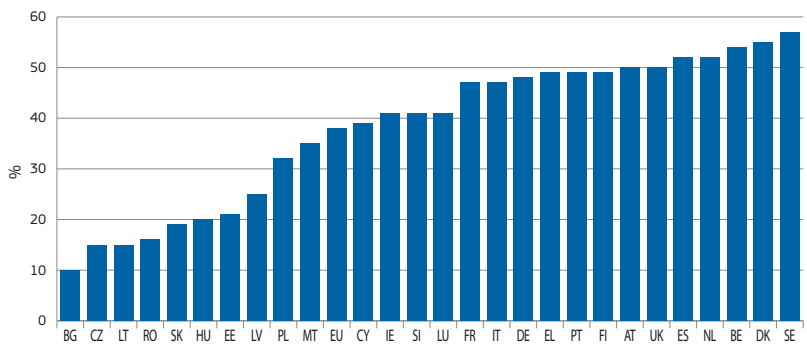
Efficiency, equity and transparency concerns regarding the traditional European tax systems have given an impetus to the consideration and implementation of systems of flat income taxes (1). A flat tax scheme typically consists of a single marginal tax rate that is applied at any income level exceeding some basic tax-free allowance (2). There are substantial differences between the various flat tax regimes proposed (specifically on the tax-free allowance and the tax rate). The main advantages of a flat tax scheme are the low levels of tax rates, increased transparency and lower administrative and compliance costs. The main disadvantages are the distributional effects of the scheme. In general, flat tax reforms tend to favour the lower-end and top-end classes of revenues whilst increasing the tax burden on the middle-income groups.

Keen at al. (2008) studied the effects of such schemes on economic performance but found very limited empirical evidence. They found no sign of Laffer-type behavioural responses (3) generating revenue increases from the tax cut elements of these reforms (4); their impact on compliance is theoretically ambiguous; the distributional effects of flat taxes are not unambiguously regressive, and in some cases, they may have increased progressivity (including through the impact on compliance).

In the EU, eight New Member States apply at present (significantly different) flat-rate systems. As a result of the flat-rate systems, these eight New Member States have the lowest top personal income tax rates in the EU, see Chart 33 below.

Paulus and Peichl (2008) analysed the distributional and efficiency effects of flat-tax scenarios for Western European countries. Their simulations (5) showed that revenue-neutral switches to flat tax rates improve labour supply incentives, but at a cost of higher inequality and polarisation. Inequality-neutral flat rates which still increase efficiency would be possible for Mediterranean Member States, where the distributional effects of a flat tax reform that burdens the middle-income groups would be less adverse. For other Western Member States, they confirmed the findings of Fuest, Peichl and Schaefer (2007) that, 'due to their limited efficiency effects and their problematic distributional impact, flat tax reforms are unlikely to spill over to the welfare states of Western Europe'.

Chart 33: Top personal income tax rates, in % (2012)



Source: European Commission (2012b), Table 1.3.

excel file

gif

(1) For an overview of the history of the flat tax idea, see Nicodème (2007). For an extensive discussion of flat taxes, see European Commission and Economic Policy Committee (2009), subsection 5.3, p. 54.

(2) Depending on the regressivity and the weight in overall taxation of the SSC, effective labour taxation is often far from being flat in practice.

(3) The Laffer curve concept states that tax rates and tax collection are linked by an inverted U-curve relationship. If one country is on the right-hand side of the peak, then reducing tax rates will increase revenues, thanks to more economic activity.

(4) Increases in tax revenues may be due to higher compliance rather than to increased labour supply.

(5) Micro-simulations with Euromod.

mobility while stimulating tax avoidance, tax evasion, jobs with substantial non-taxable non-pecuniary benefits, and the informal and black economies' (Bovenberg (2003)). On the other hand, it is possible to conceive of an optimal degree of tax progressivity, which balances the equity gain from reduced unemployment against any potential efficiency costs as indicated above (Sørensen (1999)).

The way in which family income is taxed has also to be considered since, due to progressivity, there can be large disincentives for second earners in systems of joint-income taxation (see also Bettio and Verashchagina (2009)). To tackle this, Member States are increasingly introducing or considering the possibility to either split taxation between family members or simply tax incomes individually.

4.1.4. Tax expenditures

Tax progressivity, as apparent in increasing marginal tax rates, is in reality attenuated by tax expenditures. While there is controversy over the exact definition and measure of tax expenditures [51], it is clear that tax expenditures continue to be significant in many countries. In general, exemptions, deductions, tax credits and lowered rates are seen as tax expenditures. The major tax expenditures consist of provisions for owner-occupied housing, retirement savings, children and families, social benefits, small businesses and R&D expenditures (OECD (2010a) and OECD (2010b)).

Among these tax expenditures, in-work tax credits seem to have a positive net effect on employment. However, the effect is estimated to be small and requires the country to have 'a strong tax administration based on the withholding of tax obligations' (see Box 5 in International Monetary Fund (2012)).

While there may be justifications for tax expenditures (correction of externalities, redistribution of income, etc.), they inevitably shift the tax burden elsewhere and increase the overall complexity of the tax system. This can lead to efficiency and/or equity losses, as well as administrative and compliance costs, but they may also have adverse distributional effects (see also Box 7 on the social effects of mortgage-interest deductions).

[51] See OECD (2010a).

In this context, tax reforms that consider both tax rates and tax expenditures make much sense as the latter 'often represent costly second-best options compared with the more direct and efficient ways of achieving their initial objectives, such as direct benefits for those on low incomes' (European Commission (2011d)).

One apparently simple way to reduce the complexity of a tax system is through the introduction of a flat income tax scheme, as addressed and illustrated in Box 5.

4.2. Impact of direct taxation on employment: empirical evidence

The comparatively high tax wedge in the EU has been considered by some observers as one of the main factors behind the comparatively low labour market performance of the EU, as raised by Prescott (2004). However, the effects of taxes [52] are difficult to disentangle from other labour market factors including the effect of a minimum wage, the apparent low levels of flexibility of EU labour markets, and labour market institutions, as outlined by Rogerson (2006 and 2007) and Andersen (2009).

In this sub-section, the impact of direct taxation on employment will be analysed from the supply side and from the cost-demand-unemployment angle.

Labour supply

Labour supply can again be analysed at the intensive (hours worked) or extensive (participation) margin. The following analysis, which is based on the summary of the empirical literature in OECD (2011), focuses on the wage elasticity of labour supply, defined as the percentage change in labour supply in response to a 1% increase in the net-of-tax wage [53]. Labour supply can be expressed in hours worked or participation.

The evidence indicates that male hours of work are almost completely unresponsive to changes in work incentives, as is male participation, except for low-skilled men.

[52] As in 4.1, the focus will be on labour taxation.

[53] See also Appendix 4 of International Monetary Fund (2012).

Estimates of the elasticity of weekly hours of work for women are significant [54], however, while the elasticity of female annual hours of work is sometimes estimated to be close to one (Meghir and Phillips (2010)). The hours worked by married women with children and single parents appear to be more responsive than they are for women without children. For women, the participation margin is more responsive than hours worked, with the participation of single mothers being highly responsive to changes in work incentives [55].

Labour cost, labour demand, unemployment

In a review of the empirical literature, Arpaia and Carone (2004) find some evidence of 'wage resistance' [56] and therefore of a significant and long-lasting impact of taxes on labour costs and unemployment in many European countries. They suggest that methodological issues are behind the mixed results found in the empirical literature.

Own estimations [57] by Arpaia and Carone (2004) suggest that there is probably some wage resistance in the short-term but not in the long-term. However, the transition to the long-term can be very long and the short-term impact and the dynamics of adjustment can therefore be long-lasting.

Nevertheless, other multi-country studies have found significant long-run effects of the tax wedge on labour cost (European Commission (2008), p. 180). Arpaia and Carone (2004) also conclude that the short-run effects of the different components of the tax wedge on labour costs do not differ substantially (see also Nickell (2006)).

[54] However, the variety in the results of different studies is large.

[55] Two other strands of empirical labour supply analysis focus on, respectively, taxable income elasticities and macro-economic evidence (OECD (2011)). The former estimates the change in taxable income in response to a change in the 'net-of-tax rate' (one minus the marginal tax rate) and finds relatively high elasticities, as it captures a wider range of behavioural responses than hours worked elasticities. The latter uses cross-country macro-data to investigate the impact of various labour market institutions, including the tax wedge, on average hours worked.

[56] This is a situation in which a rise in the tax wedge gives way to a rise of fairly similar size in the real labour cost, because workers manage to protect their living standards. As a result, the rise in the tax wedge falls fully on the firm.

[57] On EU Member States excluding the New Member States.

Unemployment

Recent empirical analysis concludes that labour taxes have a significant impact on unemployment, at least in the 'average' OECD country (OECD (2006a), Bassanini and Duval (2006 and 2009)). The main impact of labour taxes on unemployment comes through their interaction with various institutional features of the labour market, such as unionised bargaining and minimum wage regulations.

Many studies find that non-centralised (i.e. sector-level) unions are more likely to be successful in pushing for higher wages in response to a tax increase compared with centralised unions, who do not seem to create the same wage pressure, possibly because they take the effect of increased unemployment into account.

Specific groups

Previous sections have highlighted the significant effects of labour taxation on the labour supply of specific groups (low-skilled, single parents, second earners). In addition, however, OECD (2011) points to the evidence that the retirement decision of older workers appears to be highly responsive to the retirement incentives that result from the combined effects of taxation arrangements and pension systems (see also Duval (2003)) [58].

4.3. Impact of reforms reducing labour taxation: empirical evidence

While the previous subsection dealt with the evidence on the employment impact of direct tax levels and tax structures, evidence on the employment impact of tax reforms is limited. To analyse the impact of reforms, Econpubblica (2011) collected detailed information on labour tax reforms in EU Member States [59] over the period 1990-2008 and established a catalogue of labour tax reforms which provided the basis for an analysis directly linking labour market outcomes with tax reforms as presented below.

Econpubblica (2011) estimated a dynamic panel data model whereby individual labour market outcomes [60] depend on a mix of reform dummy variables and control variables. The reform dummy equals one in the year of the reform and in the following two years, in order to allow for a lagged effect of the reform [61]. The control variables include, amongst others, the share of highly educated people, the average age of the population, GDP per capita, as well as year-fixed effects, to control for the business cycle.

The impact was analysed in relation to the following labour market outcomes: employment, unemployment and inactivity rates, and hours worked. Labour tax reforms that reduced PIT and/or SSCE and/or SSCR were considered. Besides the effects on the total workforce, two subgroups were analysed: female and young workers (those aged below 30) using similar models.

In general, all the analyses seem to point to, at best, a very weak impact of labour tax reforms on labour market outcomes. Results show that one or two years are needed in order to be able to detect any policy impact and that, when control variables are introduced, the policy impact is even weaker [62].

As the reform dummy does not distinguish between important and marginal reforms [63], additional regressions were run, distinguishing those reforms in which social partners were involved, which seemed to be correlated with better labour market outcomes.

Among the subgroups, no evidence was found that suggested that labour tax reforms targeting the young workforce had any impact on the outcomes considered.

For female workers, however, some policies did seem to affect outcomes, with PIT reforms targeted to women being associated with increased female employment rates (of more than 1 %), longer average hours of work, and reduced inactivity rates [64].

Econpubblica (2011) did accept that the applied analytical approach might possibly suffer from problems of endogeneity [65] due to 'the dual role of taxes and social security contributions: on the one side they generate a tax wedge which, ceteris paribus, is expected to be detrimental for the labour market outcomes; on the other side, they contribute to the financing of specific types of public expenditures which could complement the labour supply' (such as child care services).

Finally, note also that the reforms considered here were labour tax reductions, which are not necessarily tax shifts. These shifts are the topic of the next sub-section.

4.4. Revenue-neutral tax shifts away from labour

The impact of high labour tax wedges on specific labour market problems in the EU has drawn attention to policies which shift the tax burden away from labour, on the grounds that non-labour taxation should be less detrimental to economic and employment growth. Economic theory indeed allows ranking the different forms of taxation according to their (economic) growth impact, with growth linked not just to the tax level, but even more to the tax structure.

The growth ranking of taxes, as derived from Johansson et al. (2008) [66], ranks taxes on corporate income, personal income, consumption and property in decreasing order in terms of their negative impact on growth. The ranking reflects, to a large extent, the degree of mobility of the different tax bases, with corporate income tax the most harmful to growth, due to the high mobility of

(58) Another chapter of OECD (2011) is devoted to mobile high-skilled workers, as estimates of taxable income elasticities suggest that high-income recipients are more responsive than most taxpayers to tax rates.

(59) As well as in Croatia, FYROM, Iceland, Serbia, Japan and United States.

(60) As well as social outcomes: poverty and inequality.

(61) Note, however, that there is a limit to the number of lags that can be introduced since an eventual causality link between reforms and market outcomes inevitably fades away over time.

(62) See tables with estimation results in Annex (Tables A3 and A4).

(63) The study did neither distinguish between reforms target the extensive and the intensive margin, and, on the intensive margin, it did not distinguish between reforms invoking a substitution effect and an income effect, which can have very different impact on labour supply.

(64) See Table A5 with estimation results in Annex.

(65) The problem of endogeneity occurs when the independent variable is correlated with the error term in a regression model. This occurs when there is a loop of causality between the independent and dependent variables of a model.

(66) See also European Commission (2011b), OECD (2010c) and Econpubblica (2011).

capital, and recurrent taxes on immovable property being the least detrimental, especially those levied on households. For additional analyses of the growth impact of different forms of taxation, see Box 6.

In the case of a revenue-neutral shift of labour taxation to consumption taxes, beneficiaries of transfers [67] lose out since they do not benefit from the reduction of labour taxes, but they do pay the higher consumption taxes. They will automatically lose out if benefits (or pensions) are not automatically adjusted to the higher consumption prices that result from the higher consumption taxes. For the unemployed, the tax shift would reduce their replacement rate and increase the incentive to take up work.

In an open-economy perspective, the shift from labour taxation to consumption taxes can be seen as having an effect similar to a devaluation, which could be important within a currency regime such as the euro-area. Imported goods become more expensive, due to higher consumption taxes, while the lower labour costs create room for lower export prices. However, as in the case of a conventional currency devaluation, its effects are likely to be short-lived [68], especially in cases of automatic wage indexation.

In terms of residential property, the political economy aspects make a shift to these taxes quite difficult. Taxpayers 'tend to consider their residence as an essential good that should not be taxed or should be taxed only at a low rate' (Econpubblica (2011), p. 182). Taxpayers typically use the 'double taxation' argument (as used regarding taxation of financial investment returns) on the grounds that such investments can only be made from the income left after first having paid personal income taxes (see also Section 5 on a shift to property taxes).

The rationale of green taxes is to discourage polluting activities and the use of polluting goods. Green taxes could bring a double dividend, both protecting the environment and increasing employment and GDP. The latter could be achieved through specific stimulation of jobs linked to a low-carbon economy or through recycling the additional revenues from environmental taxes. However, as Box 8 in Section 5 shows, the implementation of environmental taxes is fraught with difficulties.

Due to the above difficulties with shifting taxation to residential property taxes or environmental taxes, policy options generally focus on a shift away from labour taxation to broad-base general consumption taxes for which there is a larger tax base since consumption is not only financed by labour income but also by wealth [69] and transfers.

The above analysis deals with the ranking of different forms on taxation according to their impact on economic growth. As economic growth is a key precondition for employment growth, we can reasonably assume that the same ranking is likely to hold true for employment (abstracting from assumptions regarding productivity developments).

Reforms other than revenue-neutral tax shifts?

While the focus in the rest of the chapter is on revenue-neutral tax shifts from labour to consumption, three alternative or complementary reform options can be noted.

A first option questions the revenue-neutral aspect of the shift. Indeed, in view of the present fiscal consolidation challenges, revenue-raising tax shifts would be more valuable. Roeger and In 't Veld (2010), p. 33, point to the potential beneficial effects of combining fiscal consolidation with growth-enhancing tax shifts.

An alternative or complementary option is to reduce the overall complexity of the tax system in order to increase compliance and, as a result, increase tax receipts.

Finally, as the labour market impact of labour taxation is largest for people at the margins of the labour market [70], improving employment incentives through reforms of benefits is seen as a necessary complement to tax shifts.

In view of the difficulties of estimating the effects of previous tax reforms (see previous sub-section), 'simulation methods represent the key technique to assess the potential effects of (such) tax shifting reforms' [71]. This is the subject of the next sub-section.

Box 6: Ranking different forms of taxation according to their impact on economic growth

Johansson et al. (2008) based their growth ranking of taxes on panel data error-correction estimations for 21 OECD countries over 1971-2004, which link GDP per capita to its usual explanatory variables as well as to tax structure variables [1].

However, Xing (2011) challenges these results, arriving at different, mixed results by allowing the long-run coefficients of the model to take different values for each country.

Arachi and Casarico (2012), using a sample of the 27 EU Member States over 1995-2010, estimated models linking GDP and labour market outcomes to tax structure variables [2]. The results suggest that a tax shift from labour to consumption increases long-run GDP per capita. There is also some evidence that a shift of the tax burden from labour to consumption may have a beneficial effect on unemployment, while employment seems to be more influenced by a shift in taxes from capital to consumption.

In view of the short sample [3] and possible endogeneity problems, however, these results have to be interpreted with caution.

(1) See also Arnold (2008) and Arnold et al. (2011).

(2) These variables are ratios of tax revenues and of implicit tax rates for labour, capital and consumption.

(3) The sample only covers 16 years (1995-2010), against more than the double this (1971-2004) in Arnold et al. (2011).

(67) Transfers are pensions, unemployment benefits, and disability benefits.

(68) See Econpubblica (2011), p. 198.

(69) Therefore, an increase in consumption taxes can be seen as a one-off tax on wealth, see Econpubblica (2011), p. 192.

(70) These are low-income workers, older workers, single parents, second-income earners.

(71) European Commission (2008), p. 193. See also Meghir and Phillips (2010), p. 252.

4.5. Simulation results for tax shifts from labour to consumption

Most simulations focus on GDP outcomes rather than labour market outcomes. In order to address this omission, our analysis uses the DG EMPL's Labour Market Model which has a particular focus on the labour market, including the bargaining process, the decision concerning skills acquisition, and the country-specific institutional environment.

In a survey of the findings of simulations with regard to tax shifts away from labour, European Commission (2011b) [72] concludes that the results 'generally find some positive effects of shifts from labour towards property, consumption and environmental taxation. The driving force in the simulations is usually the assumed positive impact of the tax cut on labour taxation on the labour market.'

European Commission (2008) presents a QUEST III simulation of a euro-area-wide shift from labour taxation to VAT of 1% of GDP. The analysis finds positive, but limited, effects on employment and growth. Employment would increase by 0.14% in the first year and by 0.25% in the long run. The effects are seen as larger if the labour supply is more elastic, or if transfer payments are not compensated for the VAT increase [73]. The simulation results do not include the potentially positive effects of bringing undeclared work back into the official economy. Unfortunately, the QUEST III model does not allow for the consideration of more targeted tax shifts.

Evidence from the Labour Market Model: The impact of lowering labour costs

The following analysis takes into account behavioural changes. The results focus on the long-term effects (with a horizon of about 20 years), while initial effects, not presented here, can be different.

In this sub-section, DG EMPL's Labour Market Model (LMM) is used to simulate the long-term impact of a reduction in employers' social security contributions in an attempt to lower the cost of labour [74]. LMM is a dynamic computable general equilibrium model providing an in-depth description of the labour market. LMM distinguishes different age groups and skill levels so that it is possible to show what role those characteristics play in determining the long-run impact of such policy changes. While the full model covers 14 countries in total, a selection of nine [75] is included in this sub-section: Denmark, Germany, Spain, France, Italy, Poland, Slovakia, Sweden and the United Kingdom.

We consider six different scenarios for the lowering of employers' social security contributions:

1. lowering the contributions for all workers (ALL)

2. concentrating the measure on:

   a. low-skilled workers (LOW-SKILL)

   b. young workers, aged between 15 and 24 years (YOUNG)

   c. older workers, aged between 55 and 69 years (OLDER)

   d. young and older workers (YOUNG/OLDER)

   e. workers with an income less than 60% of national median income (INC<60)

For each scenario we assume that the government spends an amount equivalent to 0.1% of GDP, financed by a shift in the value-added tax rate (VAT), in an attempt to shift part of the tax burden away from labour.

However, the scenarios differ in terms of their impact on progressivity. As the reduction in labour taxation is modelled as a proportional reduction in social contribution amounts, the progressivity of the general tax system will decrease unless it is concentrated on special target groups. As high-income earners' wage-dependent social security contributions are higher, so would be a proportional change in absolute terms. On the other hand, concentrating on specific targeted groups such as low-skilled or young people would in itself make the tax system more progressive.

The following describes the general impact on employment, wages, investment, productivity and GDP of lowering employers' social contributions, using the example of France. Thereafter, the employment effect is shown and discussed for all nine countries mentioned above.

The analysis is conducted on a comparative-static basis since the simulation results represent the long-term outcomes of these policy measures. It is assumed that the economy is in a general equilibrium when the measure is being introduced and that a new equilibrium is established following the process of adaptation.

The relative changes in the magnitudes shown below compare the respective initial equilibrium to the new (long-term) equilibrium.

LMM simulation: General long-term impact of lowering employers' social contributions

The simulations show that lowering employers' social contributions would result in lower labour costs which would induce firms to offer more vacancies. In other words, higher labour demand would be the outcome. Higher gross and net wages would follow from the wage bargaining, making it more attractive to work than not to do so. Hence labour market participation would increase, effective retirement ages would shift and unemployment would be reduced. As a result, employment would also increase from the supply side.

Both the supply side and the demand side effect would be lessened to some extent due to the real wage decline caused by the VAT shift which would trigger price changes. The real wage decline would in itself result in lower incentives

(72) This paper focuses on the effect on (long-run) GDP.

(73) European Commission (2010b) found even larger effects when the shift happens over time, as a result of fiscal consolidation through an increase in consumption taxes. The gradually increasing room for fiscal manoeuvre would be used to reduce labour taxation over time.

(74) LMM was developed for the European Commission, DG EMPL, by the Institute for Advanced Studies (Vienna) and the University of St. Gallen. For a technical model description, see Berger et al. (2009), particularly Section 2 of the final report. A non-technical outline of LMM can be found in European Commission (2010a), Annex 2 to Chapter 2. Berger et al. (2012) present an outline of the latest model update and maintenance, also showing a social security reform in Section 4.3. However, the lowering of contribution rates shown is restricted to low-income earners only (unlike the approach taken here).

(75) The selection includes the largest Member States, as well as two New Member States and two Nordic Member States.

to work (lower labour supply) and higher gross wages (lowering labour demand). That is, for groups not targeted by the measure, a negative employment effect would be the outcome.

In principal, these theoretical considerations hold true across all scenarios. There are, however, certain particularities.

Chart 34 shows the proportional change in gross wages and total labour costs (which, in addition to gross wages, include workers' social security contributions).

If the government considered focussing on OLDER workers, it would have to take into account that the resulting wage shift would be more pronounced than it would be under other scenarios, for two main reasons:

1. The age composition effect: On average, older workers have higher wages. For example, within the low-skilled group in France, there is a wage spread of some 60% between the youngest and the oldest age group. Targeting older workers would encourage their greater participation in the labour market, and this would push up the average wage level.

2. The skill composition effect: The more high-skilled workers are affected (and attracted) by the measure, the more favourable will be the impact on labour productivity and hence on wage levels. Given that the share of high-skilled workers affected by the measure is the highest amongst older workers [76], the additional labour demand in the OLDER scenario would include a larger share of high-skilled workers. As a result, concentrating on older workers would be the only scenario that would lead to increased labour productivity, resulting in gross wage shifts so pronounced that the total labour cost would rise despite the initial lowering of social security costs.

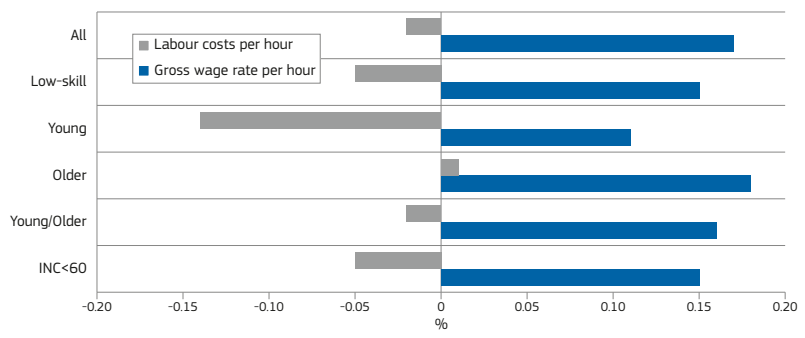
If reductions in social security contributions were concentrated on the YOUNG or the LOW-SKILLED, their employment would shift so that the skills composition effect would result in a higher share of low-skilled persons among all employed persons. This is a result of firms' higher demand for low-skilled persons, as well as to lower investment in education due to improved income prospects for the low-skilled. The shift in gross wages would be the least pronounced because of the decline in productivity and total labour costs would decline most significantly [77].

Chart 35 shows that, following the initial lowering of labour costs, the acceleration in labour demand results in employment gains under all scenarios. However, these gains are also the result of what happens on the supply side. In general, the shift in gross wages would trigger higher net wages which, in turn, would induce more people to join the labour market.

These supply-side employment gains are the most pronounced in the 'low-productivity' scenarios YOUNG and, to a lesser extent, LOW-SKILL and INC<60. As take-home pay improves, more people will wish to take up work, be it from unemployment or inactivity. This incentive effect is the strongest for young workers since their wages are the lowest. For the same reason, the subsidy will reduce firms' labour costs for the young by the largest amount – with a comparably strong push on labour demand.

Hence, the strongest employment effect would be expected if the government concentrated the measure on young people in the YOUNG scenario. In this case the pronounced employment gain would result in a slump in labour productivity since young workers' average productivity is well below average, which in turn contributes to the lowest gross wage shifts and the most pronounced decline in labour costs, as was shown in Chart 35.

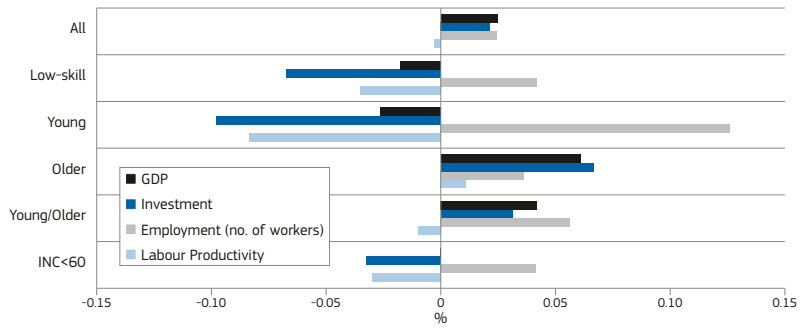
Chart 34: Lowering employers' social security contributions by 0.1% of GDP – Impact on gross wages and total labour costs, France



Source: Own calculations based on DG EMPL's Labour Market Model.

gif excel file

Chart 35: Lowering employers' social security contributions by 0.1% of GDP – Impact on GDP, investment, employment and productivity, France



Source: Own calculations based on DG EMPL's Labour Market Model.

Note: GDP for INC<60: value not visibly different from zero.

gif excel file

(76) There are three reasons for this. First, we consider the long-term results: among older workers, there will be more high-skilled workers in the future than there are today. Second, 15 to 24 year-old high-skilled are assumed to still be in education, with only the less-educated already at work in this age group. Finally, high-skilled persons retire later, increasing the overall share of high-skilled.

(77) This is also because their wages and hence their labour costs are lower, so that a given absolute decline would result in a higher proportional decrease.

Workforce skill composition also plays an important role in relation to the demand side of the economy. The LMM incorporates a skills-capital complementarity such that high-skilled labour and capital are more complementary than low-skilled labour and capital, in line with empirical evidence [78].

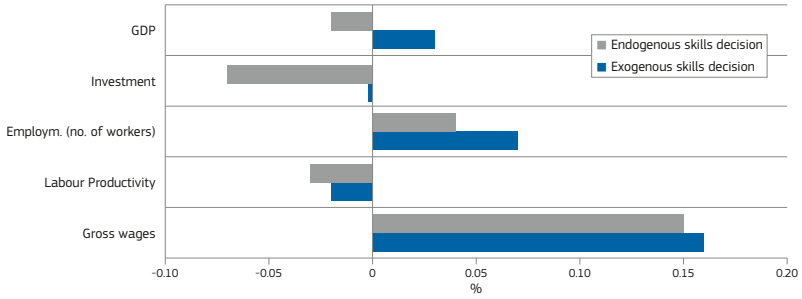
The consequence of this complementarity is that, if more (less) high-skilled workers are employed, this produces higher (lower) investment which will, in the long run, boost (curb) GDP growth. In relation to the scenarios considered here, the skills-composition effect would result in the measure having the most expansive impact on investment and GDP if it targeted OLDER workers, whereas the contraction of investment and GDP would be greatest in the YOUNG scenario, as indicated in Chart 35.

In other words, in the long run, concentrating on more vulnerable groups such as YOUNG or LOW-SKILLED people would result in higher employment gains, but at the expense of a less favourable, less productive structure of the workforce, and hence lower investment and GDP.

One crucial determinant of the outcome is the actual composition of the workforce in terms of skills. Measures affecting the wages of low-skilled people will encourage more low-skilled workers to increase their job search activity or their work intensity. Likewise, reduced labour costs for low-skilled workers will encourage employers to offer more low-skilled vacancies.

The skills composition effect is actually supplemented by a skills redistribution effect implying that agents may take a different skills decision after the policy measure. Employment prospects and wage increases for the low-skilled will make being low-skilled more attractive, as a result of which more people may decide not to invest in further education or training. These considerations are being taken on board by LMM where the skills decision is endogenous [79].

Chart 36: Lowering employers' social security contributions by 0.1 % of GDP for low-skilled workers – Impact (on GDP, investment, employment, productivity and gross wages) with skills decision endogenous or exogenous, France



Source: Own calculations based on DG EMPL's Labour Market Model.

excel file
gif

Chart 36 shows the impact of the above process on the simulation results in the case of lowering employers' social contribution cost for the LOW-SKILLED. The blue bars replicate the results shown in Chart 35 whereas the red bars indicate the measure's relative impact with the skills decision being exogenous, i.e., remaining unchanged after the policy measure.

A decision not to pursue higher education or training at the beginning of a career turns a positive result on investment and GDP into a negative one, resulting in a lower productivity shift, less additional employment, and a lower wage increase in the economy, compared with the situation in which the skills decision is not changed. This skills decision effect may even be underestimated to some extent in LMM as the model does not take into account the possibility of a skill upgrade, i.e., achieving a higher education level later in one's career.

Chart 37 confirms the skills composition and skills re-distribution effect, showing that employment for the high-skilled shifts most in the OLDER scenario and that it actually decreases when the measure is concentrated on sub-groups where the share of the high-skilled is low (INC<60) or non-existent by definition (YOUNG [80] and LOW-SKILL).

On the other hand, due to the stronger incentive effect resulting from higher wages, employment gains are the most pronounced when reductions in social contributions are focused on low-skilled and young people (scenario YOUNG), given their low income levels.

However, the negative employment effect for certain groups, shown in Chart 37, is also the result of the VAT shift (via higher prices), which in itself cuts into real wages and increases pressure to bargain for higher gross wages as a partial compensation for the loss of real income. For the groups benefiting from the measure, the effect on wages and employment described above will clearly outweigh the additional consequences of higher prices, and the overall employment effect is positive in all scenarios. But looking at the non-targeted groups, employment losses would be the result, as those groups do not directly benefit from the measure but participate in its funding via higher VAT. This is evident in Chart 37, with the employment situation of medium- and high-skilled people worsening. But the phenomenon occurs in all scenarios for the respective non-targeted groups. More details of the simulation results for France can be found in Annex, Table A6.

LMM simulation: Cross-country comparison

Chart 38 shows how employment (in terms of number of workers) responds to the lowering of employers' social security costs by 0.1 % of GDP financed by higher VAT in the selected nine Member States.

There is a considerable spread across Member States. In general, the extent to which a policy measure of a certain given magnitude has an impact on a certain target group depends greatly on the size

(78) Berger et al. (2009), 2nd part of the final report, p. 3.

(79) It is assumed that agents make a discrete skills decision on what skills level to acquire in the beginning of their career (aged 15 years), with perfect foresight about what this means for their lifetime-income, and with no chance to change their skill level at older ages, see Berger et al (2009), Part II, p. 27 and following.

(80) In LMM's endogenous skills decision process, if an individual decides to invest in medium-level education, it takes place in the 15-19 year-old age range. Higher education is achieved in the 20-24 year-old age period. Hence, this assumes that there are no high-skilled persons in LMM younger than 25.

of the target group (the group size effect) in individual Member States.

For example, if a government were to spend 0.1 % of GDP subsidising employers' social contribution costs for OLDER workers, the proportionate employment shift would be stronger the lower the number of older workers in employment simply because a given amount would then be concentrated on fewer people. For example, the older worker employment rate (age group 55 to 64 years) is far below 40 % in Italy and Poland – the lowest by far of the countries studied – so that a profound shift in older people's employment due to such a labour cost subsidy comes as no surprise.

In the case of Italy, a high implicit tax on labour [81] contributes to that result. A given trigger (here: the induced wage shift) would induce a higher number of older workers to take up employment where labour taxes were previously (too) high [82]. On the other hand, the employment effect of subsidising labour costs for older workers would be moderate in the United Kingdom as the implicit labour tax there is much lower and therefore a given stimulus to further reduce labour costs would create less additional employment.

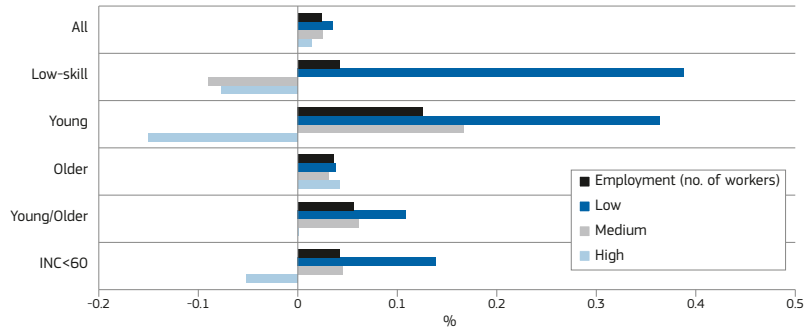
In line with the findings above, all Member States show a pronounced employment impact when money is spent lowering labour taxes for YOUNG workers. The relative impact tends to be more pronounced the lower the wage levels of the youngest (15 to 24 years) relative to other age groups. Average wage levels for young workers in Sweden, for example, are only half the level of low-skilled senior workers (55 years and older) [83]. With relative wage levels that low, a given wage shift would therefore induce more young people to actively participate in the labour market and invest less in education. The same is true, to a lesser extent, in France (60 % relative seniority premium) and Spain (70 %).

The result for Sweden is also remarkable in that a reduction in the labour costs for LOW-SKILLED workers would actually reduce total employment because of the skills re-distribution effect mentioned above. The subsidy reduces labour costs for the low-skilled and induces firms to hire more low-skilled workers. Their wages shift, so that it becomes more attractive for people not to invest in higher education and training but to stay with low skill levels. The result is a shift to low-skilled employment at the expense of high-skilled and (above all) medium-skilled employment. In Denmark and Sweden the decline in high and medium-skilled employment is the strongest in such a case; in Sweden it is even stronger than the initial intended employment gains for the low-skilled (resulting in a decrease in total employment).

One reason for this finding is that the wage distribution across skill levels is relatively even in the Scandinavian countries. Medium-skilled workers have an implicit skills premium of only around 10 % compared to their low-skilled peers in Sweden, 20 % in Denmark; but 40 % in Poland or Germany [84]. A given wage shift (resulting from the labour cost stimulus) for the low-skilled induces a relatively pronounced shift towards low skills in the Scandinavian countries where the wage premium for skills is low.

Chart 39 shows the long-run effects on GDP of lowering employers' social contribution costs. The findings confirm those discussed above for France, namely that, in general, the skills composition effect results in higher GDP in the OLDER scenario and where there is no focus on specific groups (ALL). This is because the share of the high-skilled in those scenarios is higher than if the focus is on the YOUNG, LOW-SKILLED, or INC<60, simply because higher productivity is consistent with higher investment and higher GDP. The GDP losses in the Scandinavian countries would be the most pronounced since they would have the greatest loss of high-skilled people in those lower-productivity scenarios. On

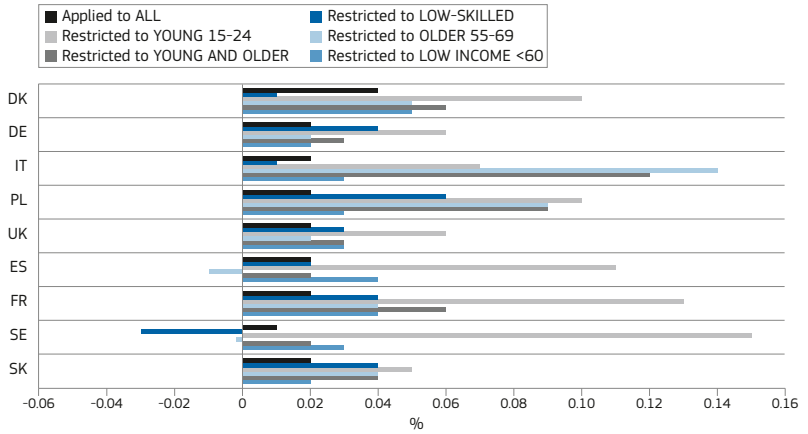
Chart 37: Lowering employers' social security contributions by 0.1 % of GDP – Impact on employment by skill level, France



Source: Own calculations based on DG EMPL's Labour Market Model.

gif excel file

Chart 38: Lowering employers' social security contributions by 0.1 % of GDP – Impact on employment, nine Member States



Source: Own calculations based on DG EMPL's Labour Market Model.

gif excel file

(81) See European Commission (2012b) and European Commission (2011a), Chapter 5, p. 228.

(82) European Commission (2011a), Chapter 5, p. 229.

(83) According to SILC data.

(84) According to SILC data.

the other hand, the positive GDP effect is most pronounced in Italy in the OLDER scenario as Italy would gain the most high-skilled people.

In contrast to the general findings, Slovakia shows a positive shift in GDP in the YOUNGER scenario. This is because the wage shift would be most pronounced in Slovakia (where wages are low), triggering an increase in household income and hence consumption, so that GDP would increase despite declines in investment. In addition, the decline in investment is moderate in Slovakia because the skills composition effect is the least pronounced with by far the largest share of the workforce (75%) being medium-skilled and remaining medium-skilled even after the low-skill wage shift, as there is a 30% wage premium to skill up from low to medium skill levels. More details of the simulation results by Member State can be found in Annex, Table A7.

Conclusion

The simulation results confirm that the outcome of this tax-shift policy measure depends very much on the skills composition of the workforce. As the different target groups' characteristics in terms of relative size, age and skills composition vary greatly across Member States, so too do the simulation results.

There is, however a general message, namely that a measure tailored to the needs of the most vulnerable groups, such as the low-skilled or young people, may prove more effective, as there would be stronger employment gains than those that would result from non-targeted policies. This is because, given their lower productivity and wage levels, a given tax stimulus will constitute a relatively strong positive incentive both from the demand side (lowering labour costs) and the supply side (raising net wages).

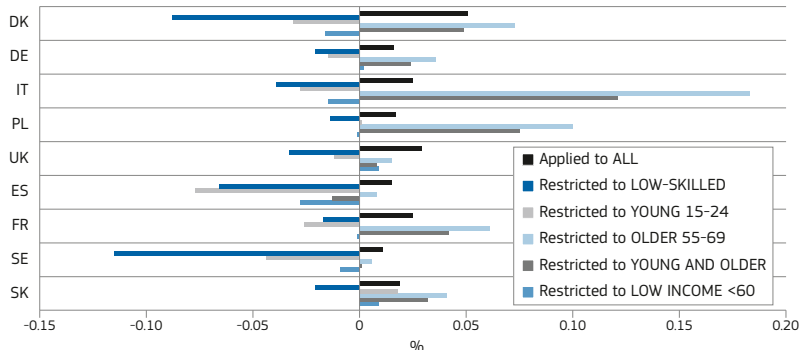
On the other hand, it is mainly low-skilled, low-productivity employment that is produced in this way. This may result in an overall reduction in average productivity owing to a shift in the skills mix of the workforce towards lower-skilled and hence less productive jobs. In addition, it must be noted that additional low-skilled employment opportunities may not only draw workers exclusively from the already existing low-skilled workforce, but may also attract other skill groups attracted by the higher wages and better job prospects in the low-skilled sector who might decide not to undertake the costly process of acquiring medium-level skills.

In these respects LMM provides evidence that labour market policy measures focused on those most in need would indeed deliver socially positive results even in the long run.

However, the price to pay could be twofold:

- Lower long-run prospects in terms of investment and economic growth, unless those measures are counter-balanced with effective tools designed to strengthen the overall skill mix of the workforce. This is particularly relevant given that there is strong evidence that future demand for high-skilled workers is likely to increase at the expense of demand for those with low qualifications [85].
- A detrimental consequence for non-targeted groups: individuals not targeted by the measure and hence not subsidized will not benefit, but will still have to pay higher taxes (VAT). This will lead to both a lower supply and demand of labour and to higher unemployment for these groups.

Chart 39: Lowering employers' social security contributions by 0.1% of GDP – Impact on GDP, nine Member States



Source: Own calculations based on DG EMPL's Labour Market Model.

excel file gif

5. Trade-offs between the employment and social effects of tax shifts

5.1. Introduction

A ranking of taxes in terms of their impact on growth would put taxes on corporate income, personal income, consumption and property in decreasing order in terms of their negative impact. As a result, policies which shift the tax burden away from labour to consumption and/or property would enhance economic and employment growth, at least in the long-run. However, raising property taxes is often politically difficult due to strong voter opposition. On the other hand, as these are often municipal taxes, the revenues are used to finance local public services.

The employment gains associated with increasing consumption taxes (including environmental taxes) and those on property are linked to the extent of the simultaneous reduction in labour taxes. Therefore, different tax reforms in a revenue-neutral or revenue-raising context lead to different results. Generally, revenue-neutral reforms have better social outcomes [86] than revenue-raising measures drawing solely on tax bases other than labour. Moreover, increases in consumption (and environmental) and property taxes can reduce or enhance other market distortions. In general, such tax shifts will always create losers among those who do not work because they are retired or unemployed and do not benefit from a reduction in labour taxes.

[85] See Cedefop, Skills Supply and Demand in Europe – Medium Term Forecast up to 2020, Luxembourg, 2010.

[86] The difference is less clear for employment effects, see Roeger and In't Veld (2010), p. 33.

Differences in the unemployment rate over time and across countries provide some indication of the size of the group that will be disadvantaged by the policy. On the other hand, the creation of new employment could benefit the unemployed. Nonetheless, the social effects of higher employment may not benefit all those hurt by the measure and the timing for the creation of positive employment effects may operate in parallel with a scarring effect for specific groups, such as the young unemployed.

An important conclusion from the above is that the fulfilment of the Europe 2020 employment rate target does not necessarily imply a positive effect in terms of achieving the poverty reduction target (Marx et al., 2011). It should be recalled that over 8 percent of the employed are at risk of poverty and can therefore be qualified as 'working poor' [87].

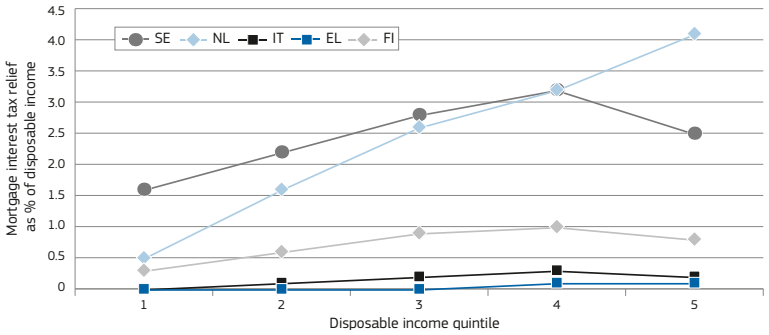
Which of the various labour taxes are reduced matters in terms of equity since, while personal income taxes are progressive in the majority of Member States, social security contributions and payroll taxes are less progressive or fall (initially [88]) on employers. Moreover, tax progressivity is in reality attenuated by tax expenditures, which may have adverse distributional effects. Box 7 illustrates the distributional effects of the most popular form of tax expenditure – mortgage interest tax relief. Accompanying reforms of tax expenditures could have beneficial distributional effects.

Box 7: The social effects of mortgage interest deductions

Tax relief on mortgage interest for owner-occupied housing is a feature of housing taxation in most Member States. In some countries relief on mortgage interest is in the form of a full (as in Belgium, the Netherlands, and the United States) or partial tax deduction from labour income or from capital income (as in Finland and Sweden). In other counties, it takes the form of a labour income tax credit (as in France, Ireland, Italy and Spain). Some Member States follow the consumption approach to housing taxation and provide no mortgage tax relief (as in Germany [1] and the United Kingdom) (European Commission (2011e), Matsaganis and Flevotomou (2007)). As with most tax expenditures, mortgage tax relief increases the tax burden elsewhere and increases the complexity of the tax system. Moreover, there are adverse distributional effects.

Chart 40 shows that the benefit from mortgage tax relief increases with income. However, this effect varies by country. The design of the mortgage tax relief, the size of this relief as a share of total tax expenditures, accessibility to the credit market, the taxation of imputed rent and the distribution of homeowners with an outstanding mortgage in relation to income distribution all influence the social impact of mortgage tax relief within the individual Member States.

Chart 40: Mortgage interest tax relief as a percentage of disposable income



Source: Own elaboration based on data from Matsaganis and Flevotomou (2007).

Notes: Matsaganis and Flevotomou (2007) is based on Euromod simulations using 1995 ECHP for Greece, 1996 Survey of Household Income and Wealth for Italy, 2000 Socio-Economic Panel Survey for the Netherlands, 2001 Income Distribution Survey for Finland and Sweden.

excel file

gif

(1) However, in Germany it is possible to deduct mortgage interest from taxable income for houses owned for investment purposes.

5.2. Tax shifts toward property

A number of Member States have recently increased property taxation. However, recent reforms and the current design of property taxes do not always have beneficial social effects due to the uneven distribution of home-ownership across income groups.

Options for reforming and/or increasing taxes depend on whether housing is addressed as a form of consumption, an asset or imputed rent. The distributional effects of taxing housing as consumption are similar to the effect of VAT, with house-rich cash-poor groups (most likely the elderly) likely to be the losers, although the Danish system of accumulating taxes to be paid once the property is sold or inherited is an interesting option (Mirrlees et al. (2011a)).

A tax rebate on housing consumption taxes for low-income households would help to reduce the adverse distributional effects. For instance, in 2012, Ireland introduced a property tax to fund local services for the first time. The design is a lump-sum tax of €100 for each household [89], with clear regressive effects.

The taxation of housing as an asset, in particular on capital gains, could have both efficiency and equity aspects. A general tax on wealth would level off differences among different types of investment and reduce net wealth inequality granting fair treatment to homeowners with an outstanding mortgage.

The taxation of imputed rent as a separate tax base would be expected to have adverse social effects in most Member States. These adverse effects would increase with the relative importance of imputed rent at the bottom of the income distribution. The taxation of imputed rent under the personal income tax base is the preferred option. However, this can be implemented in several ways, as is set out in Section 3.

(87) See also Chapter 4: 'Is working enough to avoid poverty? In-work poverty mechanisms and policies in the EU' of European Commission (2011a).

(88) Beyond the short-term, economic agents may be able to shift the initial tax burden to other economic agents.

(89) The Irish property tax reform is considered as an interim measure pending the design and implementation of a full property tax (OECD, 2012c).

Table 9 summarizes the efficiency and equity effects of the three approaches to taxing imputed rents:

- The revenue-neutral taxation of imputed rent, compensated by a proportional rebate of personal income tax rates, would increase work incentives but increase inequality (Reform 1).
- The revenue-neutral taxation of imputed rent, compensated by an equal lump-sum tax credit, would increase labour participation incentives [90] by shifting the burden of taxation from labour to housing and would reduce inequality (Reform 2).
- The revenue-raising taxation of imputed rent, with no compensating measures, would reduce inequality but also labour incentives (Reform 3).

The conclusion from the above is that the option of taxing imputed rent by introducing a lump-sum tax credit is optimal in terms of achieving beneficial employment and social results.

Table 9: Social and employment effects of three property tax reforms

Taxing imputed rent	Employment	Social (inequality)
Revenue-neutral - proportional rebate PIT	+	-
Revenue-neutral - lump-sum tax credit	+	+
Revenue-raising	-	+

Source: Based on results from Figari et al. (2012).

excel file gif

Table 10: Effects of specific tax reforms

	Shift from labour taxes to ...			Other tax reforms	
	VAT	Green taxes	Property tax	Mortgage relief	Fight tax evasion
Social effects *(static)*	☹	☹	☺ (IR with lump-sum tax credit)	☹	☺
Employment effects *(dynamic)*	☺ (if targeted)	☺ (small)	☺ (IR with lump-sum tax credit)	☺	☺
Other efficiency aspects		☹		☹	

excel file gif

5.3. Tax shifts to consumption

Several Member States report a shift from labour to consumption taxes, in particular towards VAT and more recently towards environmental taxes. Unfortunately, fiscal consolidation measures often resulted in an increase in consumption taxes not accompanied by a lower labour tax burden.

Shifting taxes from labour to consumption can result in significant trade-offs in terms of equity and efficiency. General reductions in labour taxation are seen as significantly inferior to targeted reductions in terms of efficiency effects, with the emphasis being on targeting groups at the margins of the labour market (the low-skilled, single parents, second earners and older workers) who have higher labour supply elasticities. Moreover, it is not only taxes, but tax and benefit systems jointly, that have a large impact on the labour supply of these groups, implying that any proposed tax shift needs to be accompanied by appropriate benefit reforms.

To the extent that low-income groups are major beneficiaries of existing reduced VAT rates, the form taken by any increase in VAT also matters, since any increase could cancel any benefits from lower income taxes.

A revenue-neutral shift from labour taxes to consumption taxes will also be likely to have an adverse effect on groups which do not finance their consumption out of labour income, and would not therefore gain from the reduction of labour taxes. This would affect benefit recipients unless their benefits (or pensions) were automatically adjusted to the higher consumption prices. Hence this loss has to be weighed against the reduction of the replacement rate of the unemployed and the consequent increased incentive to take up work.

The extent to which a tax shift increases employment depends to a large extent on country-specific factors such as labour market institutions. The existence of a minimum wage or automatic adjustments of wages or benefits to price changes will attenuate the beneficial employment effect. Other country-specific factors concern the tax system itself, including such factors as tax levels, the degree of progressivity, the importance of tax expenditures, the efficiency of the VAT collection system, etc.

Our simulations show that tax shifts targeted at the most vulnerable groups, such as low-skilled, may prove effective in terms of employment gains in the long-run. However, the increased employment of these groups will come at the price of lower average productivity. This might curb long-run prospects in terms of investment and economic growth unless accompanying measures are taken to strengthen the skill mix of the workforce.

From a social perspective, the income-regressive effect of VAT varies widely across Member States. However, increases in the standard VAT rates are expected to bring milder regressive effects than the introduction of VAT on previously exempt goods and services, or increases in reduced VAT rates.

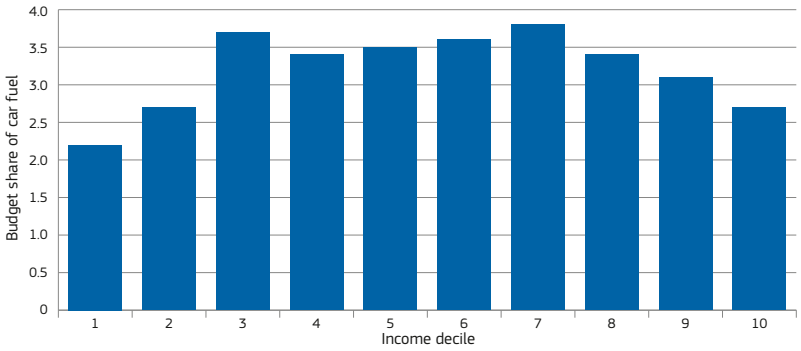
Such changes would have a particularly negative impact on poorer households. Moreover, the adverse distributional effects of an increase in VAT are linked to differential saving possibilities among different income groups. Therefore, the regressive effect of an increase in VAT rates is linked to the absolute (real) income of poorer individuals. In countries where poorer households are able to save relatively more (with respect to other countries), the adverse distributional effect of

(90) However, this tax shift may also imply an income effect reducing the supply of working hours of the already employed.

Box 8: Green taxes

The rationale of green taxes is to discourage polluting activities and the use of polluting goods. Green or environmental taxes are 'generally excise duties levied on environmentally harmful tax bases such as energy products, transport, polluting activities and resource use' (European Commission (2011c)). They include energy, transport, pollution and resource taxes. Green taxes could bring a double dividend, protecting the environment and increasing employment and GDP, although this effect is debated [1]. A shift of labour costs towards green taxes provides, among other effects, incentives to develop environment-friendly goods and for the creation of employment in the green sector, consistent with the Europe 2020 initiative on 'a resource-efficient Europe'. Although the primary aim of green taxes is to discourage pollution, it is worth considering the distributional impact they have on households. From a social point of view, a shift from labour taxation to green taxes may have mixed effects. The goods target of green taxes (mainly fossil fuels) can represent differing shares of the spending of rich and poor households. In the case of rich households, the shift to green taxes may reduce the consumption value of their net labour income and as a result, curb their labour supply. In the case of poor households, the introduction or increase of green taxes has adverse redistributive effects given the higher share of household spending devoted to fuel consumption (Econpubblica (2011)).

Chart 42: Budget share of car fuel expenditures, by income decile – Belgium



Source: Own elaboration based on data from Decoster et al. (2010).

Notes: Decoster et al. (2010) data on car fuel expenditures are based on 2003 Belgian Household Budget Survey.

gif excel file

The distributional impact of green taxes is dependent on the tax base on which it is applied. Nevertheless, the empirical evidence suggests that green taxes are often regressive, as they normally tax necessities and often take the form of excise duties which tend to be regressive even when evaluated as a percentage of expenditure (O'Donoghue et al. (2004)). The regressivity of those environmental taxes is attenuated or exacerbated depending on the consumption elasticity for different income groups and is linked to substitution possibilities (such as the availability and cost of public transport) [2].

As said above, the distributional impact of the shift to green taxes is closely tied to the combination of tax bases to which the reform is applied [3]. Taxes on electricity and heating tend to be particularly regressive, while the impact of green taxes on transport fuel and vehicles is less clear, with considerable differences among Member States. Differences in car ownership among different income groups explain why transport-related taxes tend to be less regressive than other green taxes. Chart 42 shows that the budget share of car fuel expenditure does not increase linearly with income. However, taxes or charges on transports should take into account that when they target commuter trips to work they can have similar effects to labour taxes unless public transport alternatives are provided, possibly financed by those taxes and charges. Taxes or charges on commuting may have a higher incidence on low income workers [4]. Low income workers living in poorly connected suburbs can be more dependent on the use of the car than high income workers and are likely to have older and less energy-efficient vehicles.

The use made of the revenues from green taxes also affects the distributional equation. Simulation results in European Commission (2011c) suggest that both economic efficiency and a distributionally neutral tax reform can be achieved if green tax revenues are recycled in the form of cuts in employers' social security contributions.

From an efficiency point of view, excise duties are not optimal as they tax intermediate goods (such as oil) and, consequently, generate distortions (Mankiw et al. (2009)). Nevertheless, the receipts of green taxes can be used to reduce labour costs, to stimulate overall (or targeted) employment and to stimulate the transition to a low-carbon economy, which has a large job potential. European Commission (2011c) shows that the above recycling can have small but positive effects on employment and GDP.

(1) For a discussion on the 'double dividend' of environmental taxes see, for instance, Fullerton et al. (2010).

(2) For a study on a proper assessment of the distributional effects of environmental taxes, see OECD (2006b).

(3) See European Commission (2012a), Fullerton et al. (2010) and OECD (2006b).

(4) The unemployed and retired people are often over-represented in bottom income deciles. Low income workers can be represented by middle-low income deciles in Chart 42.

An assessment of the scope for and impact of, further increasing green taxes is not straightforward. On the one hand, in the EU in 2010, green taxes only represented 6% to 7% of total taxation [5] and 2½% of GDP (European Commission (2012b)). On the other hand, they are largely concentrated on energy products, which are already quite heavily taxed (6). In particular, the mobile uses of energy are taxed much more (through excise on energy and vehicles) than the stationary uses of it. The starting level of environmental taxation between mobile and stationary uses of energy is an element to be taken into account when proposing tax shifts. Finally, in a longer-term perspective, a tax aimed at correcting externalities is self-defeating if it is successful (by reducing its tax base). However, this is only a medium- to long-term concern as consumption of environmental goods and services seems to have a low elasticity.

Whether green taxes can be used to stimulate (green) employment without overburdening lower income groups will depend on many factors, which differ substantially by Member State. These factors include the pattern and the elasticity of the consumption of the goods and services subject to green taxes for different income groups and the focus of the tax base (electricity and heating versus fuel and vehicles).

Options to increase green taxes while limiting possible adverse redistributive effects include properly targeted energy tax exemptions and reconsidering the taxation of company cars, which often enjoy a favourable tax treatment. The social effects of a larger use of Emission Trading Schemes versus green taxes should be also explored. From an economy-wide perspective, a shift from 'ownership' to 'actual use' environmental taxes would be welcomed. Increasing taxes on the actual polluting activities (such as energy tax, pay-as-you-drive insurance, congestion charges) while lowering or eliminating the fixed costs of ownership (registration tax, annual circulation tax, fixed insurance) would allow greater savings for those who reduce the use of their vehicle, without discouraging the purchase of vehicles.

(5) This is 6.2% as a weighted average, 7.4% non-weighted, ranging from below 5% in Belgium and France to above 10% in the Netherlands and Bulgaria.

(6) Even more so, once the overall charges (taxes and fees) are taken into account, see European Commission (2011b).

higher VAT rates is reduced. However, the regressive effect of an increase in VAT rates can be compensated by increasing the size and progressivity of other taxes/benefits.

The employment and social effects of green taxes are discussed in Box 8.

The employment and social effects of tax evasion and undeclared work are presented in the next subsection.

Table 10 summarises the social, employment and efficiency effects of shifts from labour to other tax bases. The last column adds the effect of a reduction in tax evasion.

- For a labour tax shift towards VAT there seems to be a trade-off between equity and employment aspects.
- Green taxes in many Member States seem to have negative equity and efficiency aspects, although they purse a very specific and different aim.
- A shift from labour to property taxation is optimal from a social and employment perspective if implemented by taxing imputed rent under personal income accompanied by a lump-sum tax credit.
- Mortgage relief has adverse social effects associated with various characteristics of the Member States, but may increase the labour supply. Moreover, contrary to other tax measures that can be adopted in a fiscal consolidation context, mortgage tax reliefs represent a considerable loss in tax revenues.
- The reduction of tax evasion, for the Member States in which it represents a considerable issue, is also optimal from an employment and social point of view.

Finally, there are concerns regarding the timing of the impact of tax shifts away from labour. While the long-run results are beneficial in terms of employment and GDP [91], the negative impact of any VAT or property tax increases will be felt immediately, while it may take time for the positive employment effects to materialise. Moreover, these positive effects are likely to be even slower to materialise in a period of recession or very low growth (as now).

5.4. Tax evasion

The shadow economy includes legal activities on which taxes are not being paid and illegal activities on which taxes cannot be paid. Taxes on legal activities can be evaded or avoided by legal means. Undeclared work refers to legal activities and, in particular, to 'the wages that workers and business do not declare to avoid taxes or documentation' (European Commission (2012d)).

(91) In simulation results, a period of at least 20 years is taken as long-run.

However, taxes can also be evaded or avoided on other tax bases, such as consumption and capital. By reducing the tax base, tax evasion will both limit the scope for fiscal consolidation and the effective financing of social transfers while increasing the burden of taxation on those who do comply.

The transformation of undeclared work into formal work is an important issue for the current employment policy of the European Commission, and represents an important goal in working towards the fulfilment of the employment targets of the Europe 2020 strategy.

Tax evasion and social aspects are closely connected. Higher levels of inequality are associated with a higher probability of tax evasion while tax evasion affects the level of inequality and poverty, as reviewed in Salverda (ed. 2011). Indeed, the probability of tax evasion is seen to vary between different income groups, with those at the bottom and the top of the income distribution having greater opportunities to evade or avoid taxes than those in the middle.

Chart 41 shows the increase in inequality and poverty due to income tax evasion in three Member States that are

considered to have high levels of tax evasion. The bottom and top income deciles in Greece and Hungary are found to under-report income more than the middle deciles, while in Italy under-reporting is higher for the two top deciles. However, in all three countries, under-reporting is disproportionately higher for the top 10, 1 and 0.1 percentiles (Matsaganis et al., 2010 and Salverda (ed. 2011)).

Undeclared work is, by definition, unobservable. Estimates suggest it to be comparatively more widespread in Southern and Eastern Europe [92] than elsewhere in the Union, and to be most prevalent in sectors such as construction and household and care services. This shadow economy is estimated to amount to around one fifth of formally recorded GDP on average across the Union (a value of €2 trillion per year). Undeclared work is cyclical, increasing in times of scarce formal employment opportunities and rising poverty.

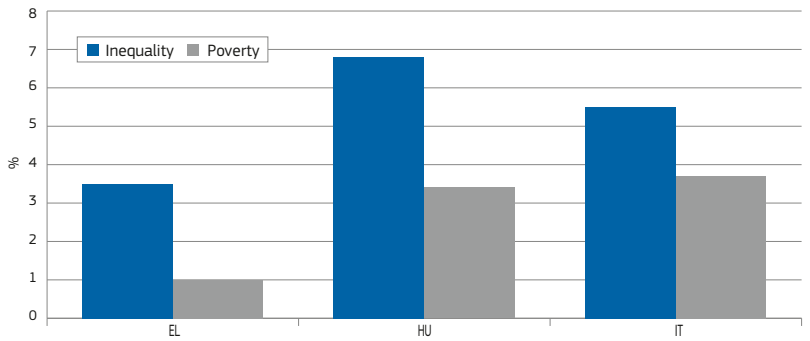
Authors of the empirical literature on the effects of labour taxes on informal employment tend to agree that, while tax rates are important in explaining informal work, the extent to which tax rates are enforced, and the quality of governance, play a crucial role (OECD (2008b), Jensen and Wöhlbier (2012) and Schneider (2012)).

Hazans (2011) finds that the share of non-contracted employees in the labour force across all European countries is associated with higher rates of minimum-to-average wages, greater trade union density, more first and second generation immigrants and higher levels of income inequality.

Moreover, in terms of taxes, it is not only the level of the tax wedge that affects the extent of informal employment. Other aspects of the tax and benefit systems also play a role, such as the marginal effective tax rate for low-wage earners, the relative tax rate on capital compared to labour, and the tax system applied to the self-employed.

(92) See European Commission (2012d). However, one should also note that Eurostat, IMF, OECD, UN and World Bank have jointly cautioned against the use of unofficial estimates of the underground economy, see Inter-secretariat Working Group on National Accounts (2006).

Chart 41: The effect of income tax evasion on inequality and poverty



Source: Own elaboration based on data from Matsaganis et al. (2010).

Notes: Matsaganis et al. (2010) is based on Euromod elaborations using 2004 and 2005 income from the Household Budget Survey, respectively, for Greece and Hungary and 2002 income from the Survey of Household Income and Wealth for Italy.

gif excel file

Undeclared work has significant economic and social consequences. It tends to distort fair competition among firms and to inhibit the creation of regular employment with full social protection. It also causes productive inefficiencies, as informal businesses typically steer clear of formal agencies such as banks and business services, which tends to severely limit their growth potential.

The efficiency and equity gains of shifting taxation from one base to another also depend on the relative level and ease of tax evasion and avoidance of different tax bases. Capital taxes are the easiest to avoid given the high mobility of their tax base, while property taxes seem the most difficult to evade. More generally, the extent and growth of the shadow economy is explained by the 'increasing burden of taxation and social security payments, combined with rising state regulatory activities and labour market restrictions (e.g. forced reductions of working hours)' (Schneider and Enste (2000)) and by high levels of inequality (Salverda, ed. (2011)).

As shown in Tables 2 and 3, certain Southern and New Member States recently introduced additional measures to address the issues of tax evasion. The employment and social benefits of reducing tax evasion in countries where levels of tax evasion are high could be considerable, especially compared to tax shifts and this without the trade-offs in gains of equity and efficiency implied by tax shifts (see Table 10).

6. Conclusions

This chapter has explored the effects of tax shifts from the point of view of two targets of Europe 2020: increase in the employment rate and reduction of poverty and social exclusion.

The effect of labour taxes on employment depends on a host of country-specific factors. Labour-market institutions (wage bargaining, union density, minimum wages, etc.), the labour demand elasticity and the characteristics of the unemployment benefit system all influence the impact of taxes on labour market performance.

Empirical evidence shows that a high level of labour taxation (as well as its design) hampers the labour supply of several groups of workers at the margin of the labour market. Benefits play a crucial role here, as the structure and design of tax and benefit systems can create disincentives to work for these specific groups. These include low-income workers, single parents, second-income earners and, by extension (through pensions), older workers. There is a clear overlap between young workers and some of these groups.

As a result, a shift of taxation away from labour to other tax bases might be an effective instrument to push up the employment rate (of specific groups of workers) towards the Europe 2020 goal.

The employment effects of a tax shift from employers' social security contributions to value added taxes were analysed through simulations with the Labour Market Model of DG Employment. These show that tax

shifts targeted to the most vulnerable groups may give stronger employment gains than horizontal tax reductions. To the extent that these groups have lower productivity and wage levels, the tax reduction translates into a relatively strong positive incentive both from the demand side (lowering labour cost) and the supply side (raising net wages).

On the other hand, it is mainly low-skilled, low-productivity employment that is produced in this way. The outcome of the tax shift depends very much on the skills composition of the workforce and the inactive (those outside that can be drawn into employment). As the different target groups' characteristics in terms of relative size, age and skill composition vary greatly across Member States, so do the simulation results.

One must be aware that although individual productivity might be strengthened through policy measures tailored to lower skilled target groups, overall productivity may well decline. If being low-skilled becomes more attractive after such measures, more people than before will decide not to invest in higher skills but to remain in the low-skilled section. The economy might end up with an unintended skills distribution effect. Another side-effect is the impact on the (real) income distribution: targeting a certain circle of people means excluding other groups. Those not targeted – who might be at risk of labour market exclusion themselves – will not take profit in the measure lowering labour taxes but will have to pay for it anyway through higher VAT.

However, our analysis also shows that distributional concerns urge policy makers to take a cautious approach, to avoid hampering the poverty reduction goal of Europe 2020. For a starter, the fulfilment of the Europe 2020 employment rate target does not, in itself, imply necessarily a positive effect in terms of achieving the poverty and social exclusion reduction target, as seen in the high share of working poor, specifically among the low skilled.

It is also crucial to consider which taxes are augmented and in which way. VAT, green taxes and property taxes are seen as the most obvious candidates to shift taxes to, in view of their less detrimental growth impact (compared to labour taxation). However, increasing those taxes can have unfavourable distributional effects:

- a revenue-neutral shift from labour to consumption taxation has undesirable social effects for the non-working poor (unemployed, retired);
- a revenue-raising shift towards consumption taxation generates undesirable social effects;
- a uniform VAT rate disproportionately penalises poorer households.

Indeed, consumption expenditures represent a larger share of poorer households' income. As a consequence, payments of VAT are a heavier burden for households at the bottom of the income distribution. A tax shift from labour to consumption would adversely affect poorer households, as specific groups of income-poor (retired, unemployed) would not benefit from lower labour taxes. Poorer households are partially shielded from the regressive effect of VAT by the application of reduced VAT rates and exemptions to specific goods, as they spend a larger share of their income for these goods. However, the negative distributional effects of VAT can be compensated by additional income support measures for low-income groups.

Nonetheless, the regressive effect of VAT varies by country and is linked to the dissimilarity in saving rates between richer and poorer households. Therefore, increases in VAT rates are expected to have more socially undesirable effects in those countries where different income deciles have very different saving rates and where the VAT structure is already more regressive.

In an open-economy perspective, the shift from labour taxation to consumption taxes can be seen as having a similar effect to a devaluation, which could be important within a currency regime such as the euro area. Imported goods become more expensive, due to higher consumption taxes, while the lower labour costs create room for lower export prices. However, as in the case of a conventional currency devaluation, its effects can be short-lived, especially in cases of automatic wage indexation.

A shift of labour costs towards green taxes provides incentives to develop environment-friendly goods and create employment in green occupations and sectors, consistent with the Europe 2020 initiative on 'a resource-efficient Europe'. Green taxes are often found to be regressive, as they may be applied on necessity goods and are generally designed as excise duties. However, the primary aim of green taxes is to provide "green" incentives more than to redistribute income. Moreover, the regressivity of green taxes depends on the consumption elasticity of different income groups, substitution possibilities and the complementary with other goods.

Green taxes may also raise efficiency concerns. Excise duties are not optimal as they tax intermediate goods and, consequently, generate distortions.

Notwithstanding these distributional and efficiency concerns, green taxation mechanisms should be designed having in mind a correct application of the polluter pay principle (internalization of externalities) and the user pay principle (financing of construction and maintenance). Possible adverse redistributive effects can be limited by the introduction of properly designed energy tax exemptions and by other alternative measures (ETS, shift from 'ownership' to 'actual use' taxes and charges).

Although widely discussed, the current design of property taxes in several Member States is not a proper tool to redistribute income. The empirical evidence is consistent with the fact that property taxes are generally local taxes used to finance local services. The limited redistributive effect of property taxes depends on the design of the tax rates, the calculation of the tax base (cadastral versus market values) and the distribution of homeownership. Indeed, for poorer households (in particular, the retired), homeownership has traditionally represented an important source of (in-kind) income, although recent data point to a changing pattern.

From an efficiency point of view, housing investment for homeownership is tax-favoured in most European countries. Proposals of property tax reforms include taxing housing as consumption, as imputed income and/or as an asset. Taxing housing as consumption yields more progressive results with respect to the current regressive system in the United Kingdom, if the possibility for low-income households to deduct this tax is preserved. For Member States in which current forms of property taxation are more progressive, a housing service tax is expected to have worse social effects. A

tax on imputed rent may have favourable or unfavourable social effects, depending on how it is designed. The advantage of taxing imputed rent under taxable income is that it allows for consideration of the wider economic situation of individuals (income and in-kind returns from capital). The distributional effects of taxing housing as an asset (capital gains, net wealth tax) are not analysed in the chapter as they are related to the distribution of wealth rather than to the distribution of income (that is the focus of this chapter).

The chapter underlines that simple shifts of taxation away from labour to respectively, VAT, green taxes and most property taxes may not necessarily achieve employment and social targets at the same time. However, appropriate designs of reforms and accompanying measures might increase the social desirability of such shifts:

- increasing standard VAT rates has less socially detrimental effects than curtailing VAT reduced rates and exemptions;
- increasing targeted income support measures and benefits is necessary in order to compensate the loss poor would suffer with a uniform VAT rate;
- increasing taxes on transport and vehicles affects the poor less than increasing taxes on heating and electricity, however transport taxes can have negative employment and social effects on low-income commuter workers;
- updating outdated cadastral values would make property taxation socially fairer and more efficient;
- taxing imputed rent while introducing a lump-sum tax credit would have beneficial social and employment effects.

The first point is explained by the fact that reduced VAT rates and exemptions mostly affect poorer households. The additional measures designed to compensate for increases in VAT should be targeted to the groups that would not benefit from a parallel reduction in labour taxes (unemployed, retired). However, this could have negative effects on the labour supply.

For green taxes, the distributional effects depend on which products are taxed, as green taxes on electricity and heating have a more detrimental effect on the poor than taxes on transport and vehicles, because the latter are linked to car ownership.

As for property, some Member States already have some form of imputed rent taxation. However, even in these countries imputed rent is often based on outdated cadastral values or only a small fraction is subject to personal income taxation or it benefits from large exemptions. Replacing outdated cadastral values with market values would grant existing forms of property taxation a greater redistributive power while at the same time improving the efficiency of the tax system. The inclusion of imputed rent in the personal income tax base accompanied by a lump-sum tax credit, holding tax revenues constant, would achieve both employment and social goals. In fact, such a tax reform results in a lower tax burden on labour and lower inequality.

The taxation of homeownership encounters strong opposition from voters. As a consequence, reforms to the favourable tax treatment of housing are often difficult to implement. Moreover, income-poor house-rich households may have difficulties in paying property taxes, as their housing is illiquid. A feasible solution to the latter problem is the possibility to accumulate a property tax liability and pay it back once the house is sold or inherited, as has already been experimented with in Denmark for pensioners.

A general concern regarding the impact of tax shifts away from labour is timing. The negative impact of any VAT or property tax increases will be felt immediately, while it may take time for the positive employment effects of lower labour taxation to materialise. Moreover, these positive effects are likely to be even slower to materialise in a period of recession or very low growth (as now).

The simultaneous achievement of employment and poverty goals of Europe 2020 could also be pursued through alternative tax reforms, such as the simplification of the tax system and the fight of tax evasion. In particular:

- limiting tax expenditures such as mortgage interest tax reliefs would allow to lower the tax burden on labour and reduce inequality;
- fighting tax evasion would allow the tax burden on labour, productive inefficiency and inequality to be reduced.

A logical avenue for tax simplification would be the reform of tax expenditures. Such reforms, whether standalone or accompanying tax shifts, could have beneficial efficiency and equity effects. In terms of efficiency, they would reduce the overall complexity of the tax system, with likely favourable effects on compliance and, as a result, higher tax receipts. As tax expenditures shift the tax burden elsewhere, a reduction of tax expenditures would create room to lower tax rates, specifically on labour.

Tax expenditures weaken the overall progressivity of taxation and may have, as a result, unfavourable distributional effects. There are certainly cases where direct benefits for low-income earners are simpler and fairer ways to achieve certain social objectives. In case of the most important form of tax expenditure, mortgage interest tax relief, a host of country-specific factors all influence its social impact.

The reduction of tax evasion, specifically for the Member States in which it represents a considerable issue, is also optimal from an employment and social point of view. It increases the tax burden on those who do comply. It distorts fair competition among firms and tends to inhibit the creation of regular employment with full social protection. It also causes productive inefficiencies, as informal businesses limit their growth potential by steering clear of formal agencies such as banks and business services.

Tax evasion and social aspects are closely connected. Higher levels of inequality are associated with a higher probability of tax evasion. Moreover, tax evasion increases income inequality with respect to a situation of full-tax compliance. The efficiency and equity gains of shifting taxation from one base to another also depend on the relative level and ease of tax evasion and avoidance on different tax bases (e.g. labour versus consumption).

Beyond the Europe 2020 primary focus on income and work, other tax options such as on financial transactions, capital gains and wealth could prove to be fair while at the same time efficient in reducing macroeconomic instability.

Annexes

Additional tables on developments in taxation

Table A1: Composition of labour taxes at Member State level (in %)

	SSCR 1995	SSCR 2007	SSCR 2009	SSCR 2010	SSCE 1995	SSCE 2007	SSCE 2009	SSCE 2010	PITC 1995	PITC 2007	PITC 2009	PITC 2010
BE	35.3	35.8	36.5	36.1	18.3	18.3	18.4	18.1	38.0	38.2	37.1	37.7
BG	70.0	53.4	47.5	50.1	0.0	20.5	26.8	22.1	29.3	25.1	24.9	26.8
CZ	54.1	53.6	54.9	55.1	20.2	18.8	17.6	17.5	20.8	20.6	19.9	19.5
DK	0.0	0.1	0.0	0.2	3.9	3.9	3.6	3.9	71.8	75.1	71.1	72.9
DE	31.2	31.3	30.8	31.7	28.1	29.3	28.8	29.5	29.3	26.9	28.2	27.7
EE	59.1	63.7	66.5	66.2	0.0	1.1	2.9	4.4	39.7	33.0	27.2	26.2
IE	21.2	28.4	28.1	27.2	13.8	15.8	19.8	21.2	63.8	55.2	51.5	51.1
EL	40.5	40.2	39.0	40.7	36.6	32.9	31.4	32.9	16.4	19.0	20.4	17.7
ES	50.8	52.9	52.5	51.7	11.7	11.6	11.8	11.6	31.2	31.9	31.1	32.1
FR	50.1	48.9	48.8	49.1	25.6	18.0	17.6	17.6	15.3	24.9	24.8	24.3
IT	46.0	42.5	42.6	41.9	13.3	11.0	11.3	11.1	29.2	27.4	27.5	28.2
CY	43.1	47.3	47.9	48.0	18.4	19.1	19.4	19.4	34.2	24.6	24.0	24.1
LV	67.5	43.0	44.5	42.4	1.8	16.1	16.6	15.8	30.7	40.4	36.8	38.7
LT	53.5	52.4	57.4	57.2	1.7	5.6	17.2	17.4	44.5	40.0	23.2	23.4
LU	29.7	28.7	29.4	29.1	25.7	30.5	31.1	30.8	34.7	32.2	31.0	31.8
HU	58.2	48.7	46.4	42.7	11.2	16.6	16.1	19.9	26.2	29.5	31.4	30.3
MT	31.1	25.5	25.7	25.4	25.8	25.5	25.7	25.4	36.2	40.0	39.4	39.6
NL	9.1	22.9	23.4	23.2	46.2	30.7	27.8	28.3	25.5	34.4	36.8	36.5
AT	31.0	28.8	28.8	28.7	26.6	24.9	25.0	24.9	22.7	25.2	24.2	24.4
PL	34.5	37.0	38.1	41.0	27.5	36.7	34.7	35.4	24.0	18.1	18.5	18.9
PT	34.3	38.4	38.8	40.0	31.1	28.1	28.0	27.3	29.4	26.6	25.9	25.5
RO	64.5	52.5	50.5	50.0	0.0	28.0	27.7	26.3	35.3	18.9	20.4	22.0
SI	36.5	28.3	29.6	29.7	36.9	38.1	39.8	40.0	24.5	24.5	26.5	25.8
SK	62.2	55.8	56.6	56.3	18.5	24.6	24.7	25.9	19.1	19.6	18.7	17.8
FI	39.1	39.8	40.0	39.5	10.5	10.3	10.2	11.6	37.2	39.3	39.1	38.4
SE	34.9	33.4	28.7	31.2	5.4	0.0	0.0	0.0	39.2	41.3	40.7	40.8
UK	23.9	26.4	26.9	26.9	18.4	17.9	18.4	18.4	56.5	54.4	53.4	51.7

Source: European Commission (2012b) and own calculations.

excel file

gif

Table A2: Changes in composition of labour taxes at Member State level (in pps.)

	SSCR 95 to 07	SSCR 07 to 09	SSCR 09 to 10	SSCE 95 to 07	SSCE 07 to 09	SSCE 09 to 10	PITC 95 to 07	PITC 07 to 09	PITC 09 to 10
BE	0.5	0.7	-0.4	-0.1	0.1	-0.3	0.2	-1.1	0.6
BG	-16.5	-6.0	2.6	20.5	6.2	-4.6	-4.2	-0.2	1.9
CZ	-0.5	1.3	0.2	-1.4	-1.2	-0.1	-0.2	-0.7	-0.4
DK	0.1	0.0	0.2	0.0	-0.3	0.3	3.3	-4.1	1.8
DE	0.1	-0.5	1.0	1.2	-0.5	0.7	-2.4	1.3	-0.5
EE	4.6	2.8	-0.3	1.1	1.8	1.5	-6.7	-5.8	-1.0
IE	7.2	-0.3	-1.0	2.0	4.0	1.5	-8.6	-3.7	-0.5
EL	-0.3	-1.2	1.7	-3.7	-1.5	1.5	2.6	1.3	-2.6
ES	2.2	-0.4	-0.9	-0.2	0.3	-0.2	0.7	-0.8	1.0
FR	-1.3	0.0	0.2	-7.6	-0.4	0.0	9.6	-0.1	-0.5
IT	-3.5	0.1	-0.7	-2.3	0.3	-0.2	-1.8	0.1	0.7
CY	4.1	0.6	0.1	0.7	0.3	0.0	-9.7	-0.6	0.1
LV	-24.5	1.5	-2.1	14.2	0.6	-0.8	9.8	-3.6	1.9
LT	-1.1	5.0	-0.2	3.9	11.6	0.2	-4.5	-16.8	0.2
LU	-1.0	0.7	-0.3	4.8	0.7	-0.3	-2.5	-1.2	0.8
HU	-9.6	-2.3	-3.7	5.5	-0.6	3.8	3.3	2.0	-1.1
MT	-5.6	0.2	-0.3	-0.3	0.2	-0.3	3.9	-0.7	0.2
NL	13.9	0.5	-0.2	-15.5	-2.9	0.5	8.9	2.5	-0.3
AT	-2.1	-0.1	-0.1	-1.8	0.1	-0.1	2.5	-1.0	0.2
PL	2.4	1.2	2.8	9.2	-2.1	0.7	-5.9	0.4	0.4
PT	4.1	0.4	1.2	-2.9	-0.1	-0.7	-2.8	-0.8	-0.4
RO	-12.0	-2.0	-0.5	28.0	-0.3	-1.4	-16.4	1.5	1.5
SI	-8.2	1.3	0.2	1.2	1.7	0.2	0.0	2.0	-0.7
SK	-6.3	0.7	-0.3	6.1	0.1	1.2	0.4	-0.8	-0.9
FI	0.7	0.1	-0.5	-0.2	-0.1	1.4	2.1	-0.2	-0.7
SE	-1.5	-4.7	2.5	-5.4	0.0	0.0	2.1	-0.6	0.2
UK	2.5	0.6	0.0	-0.5	0.5	0.0	-2.1	-1.0	-1.7

Source: European Commission (2012b) and own calculations.

excel file

gif

Additional information on studies used for VAT (Section 3.1)

O'Donoghue et al. (2004)

Expenditure imputations are based on 1995 Household Budget Survey (HBS) data for France, Greece, Ireland, Luxemburg, Portugal; on 1995 HBS for Italy, Netherlands, United Kingdom; 1994-96 HBS for Finland; 1995-96 HBS for Belgium; 1990 HBS for Spain. Tax rules refer to 1998 for all countries, apart for Luxembourg and Portugal for which 1995 tax rules were used.

In order to simulate indirect taxes, first total expenditure is simulated and then the budget shares for specific groups.

Total expenditure is estimated as a function of disposable income and a set of socio-demographic characteristics (marital status, gender, occupation, employment status, age, region, education, tenure, family composition, number of earners), based on national household budget surveys. The estimated coefficients are used to impute total consumption in the input data of the tax microsimulation model (EUROMOD).

Consumption of particular goods is estimated as budget shares of total consumption based on income and socio-demographic characteristics (as above). The consumption function is estimated separately for car owners and non-car owners. Goods are grouped into 17 Eurostat expenditure definitions (Classification of Individual Consumption by Purpose – COICOP).

VAT payments are calculated as follows:

$$\text{VAT payments} = P * \text{VAT}/(1+\text{VAT})$$

where P are post-tax prices and VAT the corresponding VAT rate for each COICOP category.

Saving rates are estimated as the difference between income and estimated expenditures, divided by income.

VAT payments simulated by EUROMOD correspond to 70% to 85% of VAT revenues as reported in official statistics in Finland, France, Greece, Italy, Luxembourg, Portugal, Spain and the United Kingdom, between 60% and 70% in the Netherlands and Sweden, and between 50% and 60% in Belgium and Ireland.

Decoster et al. (2010)

Decoster et al. (2010) is based on 2003 Household Budget Survey and 2004 EU-SILC for Belgium, 2005 Household Budget Survey for Greece, 2005 Household Budget Survey and 2005 EU-SILC for Hungary, 1999 Household Budget Survey and 2000 Living in Ireland for Ireland, 2003/2004 Family Expenditure Survey and 2003/2004 Family Resource Survey for the United Kingdom.

Given the quasi absence of micro-simulation models that combine direct and indirect taxation, Decoster et al. (2010) start by using the input data (EU-SILC and FRS) of the European (direct) tax and benefits micro-simulation model Euromod. However, Euromod input data do not include information on household expenditures. Expenditures per aggregate category are estimated using income and socio-demographic variables common to both the expenditure surveys (HBS and FES) and Euromod input data. Furthermore, they calculate the indirect tax liabilities. The selection of countries is constrained by data availability.

The C-efficiency factors provided in Decoster et al. (2010) are the total VAT received relative to the total VAT that could be raised by applying the standard VAT rate uniformly under constant quantities and producer prices, expressed as a percentage. The C-efficiency factors calculated in Decoster et al. (2010) can differ from official estimates as Decoster et al. (2010) assume no fiscal evasion, with their model only accounting for household expenditures and not official national aggregates.

Decoster et al. (2010) simulate the distributional effects due to a tax shift from social security contributions to VAT. The decrease in the social insurance contributions of the employee by 25% corresponds to an increase in the standard VAT rate of 4 to 5 percentage points in Belgium, Ireland and the United Kingdom and up to 9 percentage points for Hungary.

The assumptions made for the simulation are that the rise in disposable income falls entirely on (non-durable) expenditures, while savings and durable expenditures are kept constant. The simulation is a static micro-simulation and does not consider changes in labour market behaviour.

Crawford et al. (2010)

Crawford et al. (2010) simulate the distributional effect of the application of the standard VAT rate to all commodities except housing and items currently exempt from VAT. This reform entails the application of the standard VAT rate to zero-rated goods, such as food in the United Kingdom. The standard VAT rate considered is the one put in place in the United Kingdom in 2004 (17.5%).

The simulation of the distributional effects of the VAT reform is accompanied by compensating measures. These measures consist of:

- 15% increase in all income support;
- 15% increase in income-based jobseeker's allowance;
- 15% increase in tax credit rates;
- 15% increase in associated housing benefit and council tax benefit thresholds.

The distributional effects of the reform packages are assessed as absolute (£) tax losses and relative (in% of disposable income) tax losses. The first measure departs from the concept of progressivity and corresponds to absolute greater losses for richer households. The second measures correspond to a larger relative (to disposable income) loss for poorer households.

The tax reform is simulated in a revenue-raising set-up (£11 billion) for the United Kingdom. The simulation of the reform package is static and does not take into account potential impacts on the labour supply.

Econpubblica estimations of the impact of reforms

Table A3: Estimation results for the effects of tax reforms on the unemployment rate

Dependent variable ->	urate	urate	urate	urate	urate	urate	urate	urate	urate	urate
	1	2	3	4	5	6	7	8	9	10
urate t-1	0.852	0.848	0.856	0.859	0.859	0.811	0.814	0.814	0.812	0.81
	(20.12)**	(20.96)**	(20.94)**	(19.86)**	(20.63)**	(13.58)**	(14.22)**	(13.40)**	(13.08)**	(13.03)**
dreform_ssceyer	-0.001					0.001				
	(0.48)					(0.24)				
L	-0.001					0.000				
	(1.07)					(0.11)				
L2	-0.004					-0.002				
	(3.18)**					(1.14)				
dreform_ssceyee		-0.003					-0.002			
		(1.71)					(1.15)			
L.		-0.001					-0.001			
		(0.75)					(0.65)			
L2		-0.004					-0.002			
		(3.01)**					(1.27)			
dreform_ssc			-0.001		-0.001			0.000		0.000
			(0.65)		(0.76)			(0.06)		(0.01)
L			-0.001		-0.001			0.000		-0.001
			(0.96)		(1.11)			(0.20)		(0.40)
L2			-0.003		-0.003			-0.002		-0.001
			(3.57)**		(3.35)**			(1.31)		(1.02)
dreform_tax				0.000	0.000				-0.001	-0.001
				(0.36)	(0.36)				(0.41)	(0.57)
L.				0.001	0.001				0.003	0.002
				(1.05)	(1.17)				(1.84)	(1.84)
L2				-0.003	-0.002				-0.001	-0.001
				(1.90)	(1.70)				(0.84)	(0.76)
age						-0.002	-0.002	-0.002	-0.002	-0.002
						(1.31)	(1.37)	(1.29)	(1.38)	(1.35)
sex						0.039	0.064	0.048	0.046	0.068
						(0.27)	(0.41)	(0.33)	(0.33)	(0.48)
highedrate						-0.066	-0.060	-0.063	-0.070	-0.065
						(2.20)*	(1.84)	(2.15)*	(2.19)*	(2.41)*
tenurerate						0.122	0.120	0.121	0.121	0.116
						(1.95)	(2.00)*	(1.94)	(1.92)	(1.87)
immrate						-0.017	-0.022	-0.018	-0.027	-0.030
						(0.40)	(0.54)	(0.42)	(0.63)	(0.73)
GDP						0.000	0.000	0.000	0.000	0.000
						(1.38)	(1.08)	(1.30)	(1.43)	(1.27)
Public						0.001	0.001	0.001	0.001	0.001
						(2.19)*	(1.81)	(2.09)*	(1.99)*	(1.78)
industry						0.000	0.000	0.000	0.000	0.000
						(2.77)**	(2.80)**	(2.75)**	(2.53)*	(2.53)*
Constant	0.017	0.014	0.015	-0.014	0.010	-0.032	-0.028	-0.035	-0.036	-0.036
	(0.24)	(0.17)	(0.21)	(0.18)	(0.14)	(0.49)	(0.39)	(0.49)	(0.48)	(0.47)
Observations	336	336	336	336	336	247	247	247	247	247

Source: Econpubblica (2011)

Notes: Robust z-statistics in parentheses; * significant at 5% level; ** significant at 1% level;

Explanatory Variable Description:

dreform_tax =1 if a tax-reduction reform has been introduced in country j and year t;
dreform_ssceyer =1 if a SSC-employer reduction reform has been introduced in country j and year t;
dreform_ssceyee =1 if a SSC-employee reduction reform has been introduced in country j and year t;
dreform_ssc =1 if a SSC (employer+employee) reduction reform has been introduced in country j and year t;

age: average age in country j and year t; highedrate: proportion of people with high education in country j and year t;

highedrate: proportion of people with high education in country j and year t;

tenurerate: proportion of employed with a permanent position, in country j and year t;

immrate: proportion of immigrants, in country j and year t;

GDP: real Gross Domestic Product per capita, in country j at year t, Euro per inhabitant, 2002 prices;

Public: total general Government expenditure as a percentage of GDP, in country j at year t;

industry: measures real production output (including manufacturing, mining, and utilities) as a percentage of real GDP.

excel file

gif

Table A4: Estimation results for the effects of tax reforms on the employment rate

Dependent variable ->	erate	erate	erate	erate	erate	erate	erate	erate	erate	erate
	1	2	3	4	5	6	7	8	9	10
erate t-1	0.869	0.866	0.867	0.873	0.866	0.751	0.722	0.74	0.746	0.741
	(24.87)**	(24.24)**	(24.44)**	(24.16)**	(24.99)**	(10.48)**	(9.57)**	(9.94)**	(10.27)**	(10.14)**
dreform_ssceyer	0					-0.001				
	(0.28)					(0.49)				
L	-0.001					-0.002				
	(0.51)					(0.77)				
L2	0.004					0.003				
	(3.11)**					(1.53)				
dreform_ssceyee		0.003					0.001			
		(1.62)					(0.65)			
L.		0.002					0.001			
		(1.02)					(0.59)			
L2		0.001					-0.001			
		(0.61)					(0.34)			
dreform_ssc			0.001		0.002			0.000		0.000
			(0.84)		(1.14)			(0.15)		(0.39)
L			0.000		0.000			-0.001		0.000
			(0.04)		(0.18)			(0.33)		(0.24)
L2			0.003		0.002			0.002		0.001
			(2.75)**		(2.03)*			(1.31)		(0.83)
dreform_tax				-0.002	-0.002				-0.001	-0.001
				(1.34)	(1.39)				(0.95)	(0.72)
L.				-0.002	-0.002				-0.003	-0.003
				(1.12)	(1.10)				(2.18)*	(1.99)*
L2				0.003	0.002				0.003	0.003
				(1.75)	(1.74)				(1.88)	(1.93)
age						-0.001	-0.001	-0.001	-0.001	-0.001
						(0.58)	(0.59)	(0.48)	(0.61)	(0.73)
sex						-0.128	-0.117	-0.14	-0.114	-0.156
						(0.91)	(0.79)	(1.00)	(0.72)	(1.07)
highedrate						0.052	0.049	0.050	0.065	0.060
						(2.13)*	(1.99)*	(1.95)	(2.74)**	(2.41)*
tenurerate						0.022	0.028	0.021	-0.011	0.013
						(0.39)	(0.51)	(0.36)	(0.21)	(0.23)
immrate						-0.026	-0.010	-0.017	0.008	-0.011
						(0.69)	(0.26)	(0.44)	(0.18)	(0.30)
GDP						0.000	0.000	0.000	0.000	0.000
						(3.68)**	(2.44)*	(3.35)**	(3.05)**	(3.11)**
Public						0.000	-0.001	0.000	-0.001	0.000
						(1.11)	(1.25)	(1.23)	(1.31)	(1.05)
industry						0.000	0.000	0.000	0.000	0.000
						(3.26)**	(3.08)**	(3.17)**	(2.83)**	(2.91)**
Constant	0.213	0.204	0.214	0.208	0.205	0.234	0.25	0.245	0.262	0.266
	(2.73)**	(2.66)**	(2.67)**	(2.73)**	(2.67)**	(2.63)**	(2.56)*	(2.78)**	(2.72)**	(2.84)**
Observations	336	336	336	336	336	247	247	247	247	247

Source: Econpubblica (2011)

Notes: Robust z-statistics in parentheses; * significant at 5% level; ** significant at 1% level;

Explanatory Variable Description:

dreform_tax =1 if a tax-reduction reform has been introduced in country j and year t;
dreform_ssceyer =1 if a SSC-employer reduction reform has been introduced in country j and year t;
dreform_ssceyee =1 if a SSC-employee reduction reform has been introduced in country j and year t;
dreform_ssc =1 if a SSC (employer+employee) reduction reform has been introduced in country j and year t;

age: average age in country j and year t;

highedrate: proportion of people with high education in country j and year t;

tenurerate: proportion of employed with a permanent position, in country j and year t;

immrate: proportion of immigrants, in country j and year t;

GDP: real Gross Domestic Product per capita, in country j at year t, Euro per inhabitant, 2002 prices;

Public: total general Government expenditure as a percentage of GDP, in country j at year t;

industry: measures real production output (including manufacturing, mining, and utilities) as a percentage of real GDP.

excel file

gif

Table A5: Estimation results for the impact of PIT reforms on female labour market outcomes

	urate	urate	erate	erate	inrate	inrate	HOURS	HOURS
dep t-1	0.811	0.768	0.762	0.600	0.808	0.678	0.785	0.644
	(19.38)**	(13.16)**	(10.23)**	(6.30)**	(15.78)**	(7.59)**	(12.79)**	(7.75)**
dwomen_tax	-0.007	-0.002	0.010	0.007	-0.008	-0.004	0.089	-0.140
	(1.82)	(0.66)	(1.19)	(0.76)	(1.17)	(0.56)	(0.48)	(0.88)
L.	-0.004	-0.001	0.014	0.010	-0.016	-0.010	0.352	0.184
	(0.93)	(0.23)	(2.38)*	(2.62)**	(3.23)**	(2.29)*	(1.97)*	(0.92)
L2.	-0.007	-0.007	0.008	0.012	-0.012	-0.009	-0.125	-0.296
	(0.67)	(0.72)	(1.18)	(1.47)	(2.34)*	(1.95)	(0.45)	(0.98)
age		-0.002		0.000		0.002		0.068
		(1.23)		(0.16)		(0.68)		(1.02)
highedrate		-0.100		0.140		-0.091		-1.146
		(2.91)**		(2.83)**		(1.72)		(1.01)
immrate		-0.022		0.017		0.023		-2.189
		(0.46)		(0.33)		(0.54)		(1.18)
tenurerate		0.078		-0.016		-0.017		3.152
		(1.35)		(0.23)		(0.32)		(2.01)*
GDP		0.000		0.000		0.000		0.000
		(3.08)**		(1.72)		(0.54)		(1.40)
Public		0.001		-0.001		0.000		0.046
		(2.62)**		(1.25)		(0.09)		(3.26)**
industry		0.000		0.000		0.000		0.004
		(1.91)		(1.78)		(0.11)		(0.73)
Constant	0.005	0.008	0.151	0.219	0.065	0.071	7.221	4.664
	(1.19)	(0.10)	(3.24)**	(1.74)	(3.15)**	(0.59)	(3.36)**	(2.17)*
Observations	336	248	336	248	336	248	333	245

Source: Econpubblica (2011)

Notes: Robust z-statistics in parentheses; * significant at 5 % level; ** significant at 1 % level;

Explanatory variable description:

dep t-1: lagged dependent variable;

dwomen_tax =1 if tax-reduction specifically targeting female employment has been introduced in country j and year t;

age: average age in country j and year t;

highedrate: proportion of people with high education in country j and year t;

tenurerate: proportion of employed with a permanent position, in country j and year t;

immrate: proportion of immigrants, in country j and year t;

GDP: real Gross Domestic Product per capita, in country j at year t, Euro per inhabitant, 2002 prices;

Public: total general Government expenditure as a percentage of GDP, in country j at year t;

industry: measures real production output (including manufacturing, mining, and utilities) as a percentage of real GDP.

excel file

gif

Simulation results of tax shifts with the Labour Market Model

Table A6: Effects for France of lowering employers' social security contributions (by 0.1 % of GDP) in different scenarios

Long-term (steady state) impact on selected variables (change in % of initial values)						
	Scenario					
	ALL	LOW-SKILL	YOUNG	OLDER	YOUNG / OLDER	INC<60
GDP	0.02 %	-0.02 %	-0.03 %	0.06 %	0.04 %	0.00 %
Investment	0.02 %	-0.07 %	-0.10 %	0.07 %	0.03 %	-0.03 %
Consumption	0.04 %	0.01 %	0.04 %	0.06 %	0.06 %	0.03 %
Average nr. of hours worked per worker	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
- low-skilled	0.01 %	0.04 %	0.01 %	0.00 %	0.00 %	0.01 %
- medium-skilled	0.00 %	-0.01 %	0.01 %	0.00 %	0.00 %	0.00 %
- high-skilled	0.01 %	0.00 %	0.01 %	0.00 %	0.00 %	0.00 %
- age 15-24	0.01 %	0.01 %	0.48 %	-0.01 %	0.10 %	0.06 %
- age 25-39	0.01 %	0.00 %	-0.02 %	-0.01 %	-0.01 %	0.01 %
- age 40-54	0.01 %	0.00 %	-0.02 %	-0.01 %	-0.01 %	0.00 %
- age 55-69	0.01 %	0.00 %	-0.01 %	0.07 %	0.05 %	0.00 %
Employment (no. of workers)	0.02 %	0.04 %	0.13 %	0.04 %	0.06 %	0.04 %
- low-skilled	0.04 %	0.39 %	0.36 %	0.04 %	0.11 %	0.14 %
- medium-skilled	0.02 %	-0.09 %	0.17 %	0.03 %	0.06 %	0.05 %
- high-skilled	0.01 %	-0.08 %	-0.15 %	0.04 %	0.00 %	-0.05 %
- age 15-24	0.05 %	0.20 %	2.02 %	-0.05 %	0.41 %	0.31 %
- age 25-39	0.03 %	0.03 %	-0.07 %	-0.02 %	-0.03 %	0.04 %
- age 40-54	0.02 %	0.02 %	-0.05 %	-0.02 %	-0.02 %	0.00 %
- age 55-69	0.03 %	0.03 %	-0.13 %	0.40 %	0.29 %	-0.02 %
Gross wage rate per hour	0.17 %	0.15 %	0.11 %	0.18 %	0.16 %	0.15 %
- low-skilled	0.16 %	0.57 %	0.18 %	0.13 %	0.14 %	0.24 %
- medium-skilled	0.16 %	0.07 %	0.06 %	0.17 %	0.14 %	0.14 %
- high-skilled	0.18 %	0.08 %	0.24 %	0.22 %	0.22 %	0.15 %
- age 15-24	0.18 %	0.31 %	3.49 %	0.02 %	0.77 %	0.56 %
- age 25-39	0.17 %	0.16 %	-0.03 %	0.01 %	0.00 %	0.21 %
- age 40-54	0.16 %	0.15 %	-0.04 %	0.02 %	0.01 %	0.10 %
- age 55-69	0.17 %	0.11 %	0.03 %	0.90 %	0.70 %	0.09 %
Labour costs per hour	-0.02 %	-0.05 %	-0.14 %	0.01 %	-0.02 %	-0.05 %
- low-skilled	-0.03 %	-0.42 %	-0.37 %	0.01 %	-0.07 %	-0.15 %
- medium-skilled	-0.02 %	0.07 %	-0.29 %	0.02 %	-0.05 %	-0.10 %
- high-skilled	0.00 %	0.08 %	0.24 %	-0.01 %	0.05 %	0.10 %
- age 15-24	-0.02 %	-0.16 %	-0.62 %	0.02 %	-0.12 %	-0.16 %
- age 25-39	-0.02 %	-0.04 %	-0.03 %	0.01 %	0.00 %	-0.04 %
- age 40-54	-0.01 %	-0.04 %	-0.03 %	0.02 %	0.01 %	-0.02 %
- age 55-69	-0.01 %	-0.02 %	0.03 %	-0.13 %	-0.09 %	0.00 %
Labour Productivity	0.00 %	-0.03 %	-0.08 %	0.01 %	-0.01 %	-0.03 %
- low-skilled	-0.01 %	-0.34 %	-0.22 %	0.01 %	-0.04 %	-0.10 %
- medium-skilled	-0.01 %	0.07 %	-0.23 %	0.02 %	-0.03 %	-0.08 %
- high-skilled	0.01 %	0.08 %	0.26 %	0.00 %	0.05 %	0.11 %
- age 15-24	-0.01 %	-0.12 %	-0.21 %	0.01 %	-0.04 %	-0.09 %
- age 25-39	0.00 %	-0.03 %	-0.07 %	0.01 %	-0.01 %	-0.03 %
- age 40-54	0.00 %	-0.03 %	-0.08 %	0.01 %	-0.01 %	-0.03 %
- age 55-69	0.00 %	-0.01 %	-0.03 %	0.01 %	0.00 %	-0.01 %
Increase of value added tax rate in % of previous tax rate	0.63 %	0.82 %	0.83 %	0.56 %	0.61 %	0.71 %

Source: Simulations LMM.

excel file

gif

Table A7: Cross-country comparison of the effects of lowering employers' social security contributions (by 0.1 % of GDP) for the low-skilled

Long-term (steady state) impact on selected variables (change in % of initial values)									
	Country								
	DK	DE	IT	PL	UK	ES	FR	SE	SK
GDP	-0.09 %	-0.02 %	-0.04 %	-0.01 %	-0.03 %	-0.07 %	-0.02 %	-0.12 %	-0.02 %
Investment	-0.19 %	-0.07 %	-0.09 %	-0.07 %	-0.09 %	-0.13 %	-0.07 %	-0.22 %	-0.06 %
Consumption	-0.07 %	0.00 %	-0.02 %	0.01 %	-0.01 %	-0.03 %	0.01 %	-0.12 %	0.01 %
Average nr. of hours worked per worker	-0.01 %	0.00 %	0.01 %	0.01 %	0.00 %	0.00 %	0.00 %	-0.01 %	0.00 %
- low-skilled	0.01 %	0.12 %	0.01 %	0.13 %	0.04 %	0.01 %	0.04 %	0.00 %	0.40 %
- medium-skilled	0.00 %	-0.01 %	0.00 %	-0.01 %	0.00 %	-0.01 %	-0.01 %	0.00 %	-0.01 %
- high-skilled	0.00 %	-0.01 %	0.00 %	0.00 %	-0.01 %	-0.01 %	0.00 %	-0.01 %	-0.01 %
- age 15-24	-0.02 %	-0.01 %	0.01 %	0.02 %	0.00 %	0.01 %	0.01 %	-0.02 %	0.01 %
- age 25-39	0.00 %	0.00 %	0.01 %	0.01 %	0.00 %	0.01 %	0.00 %	0.00 %	0.00 %
- age 40-54	-0.01 %	0.00 %	0.01 %	0.01 %	-0.01 %	0.00 %	0.00 %	-0.01 %	0.01 %
- age 55-69	-0.01 %	-0.01 %	0.01 %	-0.01 %	-0.01 %	0.00 %	0.00 %	-0.01 %	0.00 %
Employment (no. of workers)	0.01 %	0.04 %	0.01 %	0.06 %	0.03 %	0.02 %	0.04 %	-0.03 %	0.04 %
- low-skilled	0.86 %	0.90 %	0.24 %	1.40 %	0.50 %	0.22 %	0.39 %	1.09 %	2.70 %
- medium-skilled	-0.25 %	-0.07 %	-0.15 %	-0.07 %	-0.13 %	-0.18 %	-0.09 %	-0.29 %	-0.08 %
- high-skilled	-0.21 %	-0.07 %	-0.13 %	-0.08 %	-0.10 %	-0.15 %	-0.08 %	-0.24 %	-0.07 %
- age 15-24	0.30 %	0.21 %	0.09 %	0.21 %	0.20 %	0.17 %	0.20 %	0.23 %	0.15 %
- age 25-39	-0.01 %	0.03 %	0.01 %	0.03 %	0.01 %	0.01 %	0.03 %	-0.06 %	0.01 %
- age 40-54	-0.02 %	0.02 %	-0.01 %	0.03 %	0.01 %	0.00 %	0.02 %	-0.04 %	0.04 %
- age 55-69	-0.05 %	0.01 %	-0.02 %	0.14 %	0.00 %	-0.04 %	0.03 %	-0.07 %	0.04 %
Gross wage rate per hour	0.12 %	0.13 %	0.14 %	0.12 %	0.13 %	0.17 %	0.15 %	0.13 %	0.17 %
- low-skilled	0.30 %	1.40 %	0.28 %	1.77 %	0.52 %	0.33 %	0.57 %	0.23 %	4.29 %
- medium-skilled	0.15 %	0.06 %	0.12 %	0.06 %	0.10 %	0.13 %	0.07 %	0.18 %	0.07 %
- high-skilled	0.13 %	0.07 %	0.12 %	0.10 %	0.08 %	0.14 %	0.08 %	0.13 %	0.10 %
- age 15-24	0.20 %	0.25 %	0.20 %	0.25 %	0.27 %	0.30 %	0.31 %	0.24 %	0.24 %
- age 25-39	0.14 %	0.14 %	0.16 %	0.14 %	0.14 %	0.19 %	0.16 %	0.16 %	0.16 %
- age 40-54	0.13 %	0.14 %	0.14 %	0.12 %	0.12 %	0.17 %	0.15 %	0.13 %	0.20 %
- age 55-69	0.12 %	0.10 %	0.12 %	0.04 %	0.12 %	0.15 %	0.11 %	0.12 %	0.10 %
Labour costs per hour	-0.07 %	-0.06 %	-0.03 %	-0.06 %	-0.05 %	-0.05 %	-0.05 %	-0.05 %	-0.05 %
- low-skilled	-0.77 %	-1.04 %	-0.24 %	-1.45 %	-0.49 %	-0.27 %	-0.42 %	-0.96 %	-3.11 %
- medium-skilled	0.15 %	0.06 %	0.12 %	0.06 %	0.10 %	0.13 %	0.07 %	0.18 %	0.07 %
- high-skilled	0.13 %	0.07 %	0.12 %	0.10 %	0.08 %	0.14 %	0.08 %	0.13 %	0.10 %
- age 15-24	-0.30 %	-0.18 %	-0.11 %	-0.19 %	-0.19 %	-0.18 %	-0.16 %	-0.24 %	-0.13 %
- age 25-39	-0.05 %	-0.05 %	-0.03 %	-0.04 %	-0.03 %	-0.04 %	-0.04 %	-0.02 %	-0.02 %
- age 40-54	-0.05 %	-0.05 %	-0.02 %	-0.04 %	-0.03 %	-0.03 %	-0.04 %	-0.04 %	-0.07 %
- age 55-69	-0.01 %	-0.02 %	0.02 %	-0.09 %	-0.03 %	0.01 %	-0.02 %	-0.01 %	-0.01 %
Labour Productivity	-0.04 %	-0.04 %	-0.02 %	-0.04 %	-0.04 %	-0.03 %	-0.03 %	-0.03 %	-0.03 %
- low-skilled	-0.73 %	-0.77 %	-0.22 %	-1.16 %	-0.43 %	-0.23 %	-0.34 %	-0.91 %	-2.32 %
- medium-skilled	0.17 %	0.05 %	0.11 %	0.06 %	0.10 %	0.13 %	0.07 %	0.18 %	0.06 %
- high-skilled	0.14 %	0.07 %	0.12 %	0.09 %	0.07 %	0.13 %	0.08 %	0.13 %	0.10 %
- age 15-24	-0.27 %	-0.12 %	-0.10 %	-0.14 %	-0.16 %	-0.15 %	-0.12 %	-0.21 %	-0.08 %
- age 25-39	-0.02 %	-0.03 %	-0.03 %	-0.04 %	-0.02 %	-0.03 %	-0.03 %	-0.01 %	-0.01 %
- age 40-54	-0.03 %	-0.03 %	-0.02 %	-0.04 %	-0.02 %	-0.02 %	-0.03 %	-0.02 %	-0.05 %
- age 55-69	0.02 %	-0.01 %	0.03 %	-0.02 %	-0.03 %	0.01 %	-0.01 %	0.00 %	0.02 %
Increase of value added tax rate in % of previous tax rate	0.77 %	0.93 %	1.01 %	0.85 %	1.07 %	1.35 %	0.82 %	1.13 %	1.07 %

Source: Simulations LMM.

excel file

gif

References

Andersen, T. M. (2009), 'Taxes and employment – is there a Scandinavia puzzle?', *European Economy Economic Papers*, No. 359.

Andrews, D., A. Caldera Sánchez and Å. Johansson (2011), 'Towards a Better Understanding of the Informal Economy', *OECD Economics Department Working Papers*, No. 873, OECD Publishing, http://dx.doi.org/10.1787/5kgb1mf88x28-en

Arachi, G. and A. Casarico (2012), 'Tax shifting', study commissioned by European Commission, DG Employment.

Arnold, J. (2008), 'Do Tax Structures Affect Aggregate Economic Growth? Empirical Evidence from a Panel of OECD countries', *OECD Economics Department Working Papers*, No. 643, OECD Publishing.

Arnold, J., B. Brys, C. Heady, Å. Johansson, C. Schwellnus and L. Vartia (2011), 'Tax Policy for Economic Recovery and Growth', *The Economic Journal*, 121 (February), pp. 59-80.

Arpaia, A. and G. Carone (2004), 'Do labour taxes (and their composition) affect wages in the short and the long run?', *European Economy Economic Papers*, No. 216.

Atkinson A. and J. E. Stiglitz (1976), 'The design of tax structure: direct versus indirect taxation', *Journal of Public Economics* 6.

Bach, S., Haan, P., Hoffmeister, O., Steiner, V. (2006) 'Increasing the Value-Added Tax to re-finance a reduction of social security contributions? A behavioural microsimulation analysis for Germany'.

Bassanini, A. and R. Duval (2006), 'Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions', *OECD Social, Employment and Migration Working Papers*, No. 35; and *OECD Economics Department Working Papers*, No. 486.

Bassanini, A. and R. Duval (2009), 'Unemployment, Institutions, and Reform Complementarities: Re- Assessing the Aggregate Evidence for OECD Countries', *Oxford Review of Economic Policy,* Vol. 25, pp. 40-59.

Berger, J., M. Gstrein, C. Keuschnitgg, M. Miess, S. Müllbacher, L. Strohner, and R. Winter-Ebmer (2012), 'Development/Maintenance of the Labour Market Model', Final report of the research study carried out for DG EMPL (*forthcoming*).

Berger, J., C. Keuschnigg, M. Keuschnigg, M. Miess, L. Strohner, and R. Winter-Ebmer (2009), 'Modelling of Labour Markets in the European Union – Final Report', http://ec.europa.eu/social/BlobServlet?docId=4275&langId=en

Bettio, F. and A. Verashchagina (2009), 'Fiscal systems and female employment in Europe', report of EU Expert Group on Gender and Employment (EGGE), http://ec.europa.eu/social/BlobServlet?docId=5545&langId=en

Borge, L. and Nyhus, O.H. (2012), 'Distributional implications of municipal property tax', Norwegian University of Science and Technology – Department of Economics (preliminary draft).

Bovenberg, A. L. (2003), 'Tax policy and labor market performance', paper prepared for the CESifo Workshop on Tax Policy and Labour Market Performance, 21-23 July 2003.

Callan T., C. Leventi, H. Levy, M. Matsaganis, A. Paulus and Sutherland H. (2011), 'The distributional effects of austerity measures: a comparison of six EU countries', *Euromod Working Paper* N° WM6/11.

Carone G., K. Stovicek, F. Pierini and E. Sail (2009), 'Recent reforms of the tax and benefit systems in the framework of flexicurity', European Economy Occasional Papers, No 43.

Crawford, I., M. Keen and S. Smith (2010), 'Value added tax and excises', Chapter 4 in Mirrlees J. et al. (eds.) *Dimensions of Tax Design: the Mirrlees Review*, Oxford University Press.

Daveri, F. and G. Tabellini (2000), 'Unemployment, growth and taxation in industrial countries', *Economic Policy* 30, 49-90.

Decoster A., J. Loughrey, G. O'Donoghue and D. Verwerft (2010), 'How regressive are indirect taxes? A microsimulation analysis for five European countries', *Journal of Policy Analysis and Management,* 29 (2).

Diamond P. A. and J.A. Mirrlees (1971) 'Optimal taxation and public production: I – production efficiency', *American Economic Review* 61 (1).

Duval, R. (2003), 'The Retirement Effects of Old Age Pension and Early Retirement Schemes in OECD Countries', *OECD Economics Department Working Papers*, No. 370.

Econpubblica (2011), 'The role and impact of labour taxation policies', Study for the European Commission.

Eggertsson, G. (2009), 'What fiscal policy is effective at zero interest rates?', Federal Reserve Bank of New York Staff Report, No. 402, http://www.newyorkfed.org/research/staff_reports/sr402.html

European Commission (2006), 'Macroeconomic effects of a shift from direct to indirect taxation: a simulation for 15 EU Member States', note presented at the 72nd meeting of the OECD Working Party No. 2 on Tax Policy Analysis and Tax Statistics.

European Commission (2008), 'Public finances in EMU – 2008', *European Economy*, No. 4, Luxembourg: Publications Office of the European Union.

European Commission (2010a), *Employment in Europe 2010*, Luxembourg: Publications Office of the European Union, http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=593&type=2&furtherPubs=no

European Commission (2010b), 'Public Finances in the EMU 2010, *European Economy*, 4/2010', Luxembourg: Publications Office of the European Union.

European Commission (2011a), *Employment and Social Developments in Europe 2011*, Luxembourg: Publications Office of the European Union, http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=1137&furtherNews=yes

European Commission (2011b), 'Quality of taxation and the crisis: tax shifts from a growth perspective', Taxation paper No. 29, Luxembourg: Publications Office of the European Union.

European Commission (2011c), 'Staff Working Paper – Impact Assessment – Accompanying document to the

Proposal for a Council Directive amending Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity – SEC(2011) 409', http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2011/sec_2011_0409_en.pdf

European Commission (2011d), 'Tax reforms in EU Member States 2011', *European Economy* No. 5, http://ec.europa.eu/economy_finance/publications/european_economy/2011/ee5_en.htm

European Commission (2011e), 'The role of housing tax provisions in the 2008 financial crisis', Taxation paper No. 27, Luxembourg: Publications Office of the European Union.

European Commission (2012a), 'Regressivity of environmental taxation: myth or reality?', Taxation paper No. 32, Luxembourg: Publications Office of the European Union.

European Commission (2012b), 'Taxation trends in the European Union, 2012 edition', Luxembourg: Publications Office of the European Union, http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/index_en.htm

European Commission (2012c), 'Tax reforms in EU Member States, 2012 edition', Luxembourg: Publications Office of the European Union.

European Commission (2012d), 'Thematic fiche No.6: Shadow Economy', http://ec.europa.eu/europe2020/pdf/themes/06_shadow_economy.pdf

European Commission (2012e), 'Possible reforms for real estate taxation: Criteria for successful policies', Occasional Paper 119.

European Commission and Economic Policy Committee (2009), 'Monitoring revenue trends and tax reforms in Member States – Joint EC-EPC 2008 Report', *European Economy*, No. 4.

Eurostat (2008), *2008 EU-SILC Comparative EU Intermediate Quality Report*.

Eurostat (2010a), 'The distributional impact of imputed rent in EU-SILC', Methodologies and Working Papers.

Eurostat (2010b), "The comparability of imputed rent", Methodologies and Working Papers.

Eurostat (2010c), 'Impact study of inclusion/exclusion of non-monetary income components and extreme values', Working Group meeting statistics on living conditions.

Figari F. and A. Paulus (2012), 'The redistributive impact of indirect taxes and imputed rent on inequality: a comparison with cash transfers and direct taxes in five EU countries', *GINI Discussion Paper* N° 28.

Figari F., A. Paulus, H. Sutherland, P. Tsakloglou, G. Verbist and F. Zantomio (2012) 'Taxing home-ownership: distributional effects of including net imputed rent in taxable income', *Athens University of Economics and Business Working Paper* N° 1208.

Fuest, C., A. Peichl and T. Schaefer (2007), 'Is a Flat Tax Feasible in a Grown-up Welfare State?', *IZA Discussion Paper* No. 3142.

Fullerton, D., A. Leicester, and S. Smith (2010), 'Environmental Taxes', in Mirrlees J. et al. (eds.) *Dimensions of Tax Design: the Mirrlees Review*, Oxford University Press.

Grueber J. (2011), 'Commentary on value added tax and excise' in Mirrlees J. et al. (eds.) *Dimensions of tax design: the Mirrlees Review*, Oxford University press.

Hazans, M. (2011), 'What Explains Prevalence of Informal Employment in European Countries: The Role of Labor Institutions, Governance, Immigrants, and Growth', *IZA Discussion Paper* No. 5872.

Hemmelgarn T., G. Nicodeme G. and E. Zangari (2012), 'The role of housing tax provisions in the 2008 financial crisis', in Alworth J.S. and Arachi G. (eds.), 'Taxation and the Financial Crisis'. Oxford University Press. p. 61-87.International Monetary Fund (2009), 'Debt bias and other distortions: crisis-related issues in tax policy'.

International Monetary Fund (2012), 'Fiscal Policy and Employment in Advanced and Emerging Economies', Policy Paper.

Inter-secretariat Working Group on National Accounts (2006), 'Estimates of the unrecorded economy and national accounts', http://www.oecd.org/tax/36333066.pdf

Jensen J. and F. Wöhlbier (2012), 'Improving tax governance in EU Member States: Criteria for successful policies', *European Economy Occasional Papers*, N° 114.

Johansson, Å., C. Heady, J. Arnold, B. Brys and L. Vartia (2008), 'Tax and Economic Growth', *OECD Economics Department Working Papers*, No. 620, OECD Publishing.

Keen, M., Y. Kim and R. Varsano (2008), 'The 'flat tax(es)': principles and experience', *International Tax and Public Finance*, Vol. 15 No. 6,712-751.

Landais, C., T. Picketty and E. Saez, (2011), *Pour une révolution fiscale*, Edition du Seuil et la Republique des idées.

Maestri, V. (2012), 'Economic well-being and distributional effects of housing-related policies in 3 European countries', *GINI DP* N° 31.

Mankiw N. G., M. Weinzierl and D. Yagan (2009), 'Optimal taxation in theory and practice', *NBER Working paper* N° 15071.

Marx I., P. Vandenbrouke and G. Verbist (2011), 'Can higher employment levels bring down poverty in the EU?' *GINI Discussion Papers*, N° 15.

Meghir, C. and D. Phillips (2010), 'Labour supply and taxes', in Mirrlees J. et al. (eds.) *Dimensions of Tax Design: the Mirrlees Review*, Oxford University Press.

Mendoza, E., G.-M. Milesi-Ferretti, and P. Asea (1997), 'On the ineffectiveness of tax policy in altering long-run growth: Harberger's superneutrality conjecture', *Journal of Public Economics* 66: 99-126.

Mirrlees J. et al. (2011a), 'The taxation of land and property', Chapter 16 in *Tax by Design: the Mirrlees Review*, Oxford University Press.

Mirrlees J. et al. (2011b), 'The taxation of labour earnings', Chapter 3 in *Tax by Design: the Mirrlees Review*, Oxford University Press.

Myles, G. D. (2009a), 'Economic Growth and the Role of Taxation – Theory', *OECD Economics Department Working Papers*, No. 713, OECD Publishing.

Myles, G. D. (2009b), 'Economic Growth and the Role of Taxation – Aggregate Data', OECD Economics *Department Working Papers*, No. 714, OECD Publishing.

Myles, G. D. (2009c), 'Economic Growth and the Role of Taxation – Disaggregate Data', *OECD Economics Department Working Papers*, No. 715, OECD Publishing.

Nickell, S. (2006), 'Work and taxes' in: Agell, J. and P. B. Sorensen (eds.), *Tax policy and labor market performance*, Cambridge, MA: MIT Press.

Nicodème, G. (2007), 'Flat Tax: Does One Rate Fit All?', *Intereconomics*, May/June, pp. 138-142.

O'Donoghue, C., M. Baldini and D. Mantovani (2004), 'Modelling the Redistributive Impact of Indirect Taxes in Europe: An Application of EUROMOD', *EUROMOD Working Paper* No. EM7/01.

OECD (2006a), *OECD Employment Outlook 2006*, OECD Publishing, http://dx.doi.org/10.1787/empl_outlook-2006-en

OECD (2006b), *The distributional effects of environmental policy*, Edward Elgar Publishing.

OECD (2008a), *Growing unequal*, OECD Publishing.

OECD (2008b), *OECD Employment Outlook 2008*, OECD Publishing, http://dx.doi.org/10.1787/empl_outlook-2008-en

OECD (2010a), 'Choosing a Broad Base – Low Rate Approach to Taxation', *OECD Tax Policy Studies*, No. 19, OECD Publishing, http://dx.doi.org/10.1787/9789264091320-en

OECD (2010b), *Tax Expenditures in OECD Countries*, OECD Publishing, http://dx.doi.org/10.1787/9789264076907-en

OECD (2010c),'Tax Policy Reform and Economic Growth', *OECD Tax Policy Studies*, No. 20, OECD Publishing, http://dx.doi.org/10.1787/9789264091085-en

OECD (2011), 'Taxation and Employment', *OECD Tax Policy Studies*, No. 21, OECD Publishing, http://dx.doi.org/10.1787/9789264120808-en

OECD (2012a), *Taxing Wages*, OECD Publishing.

OECD (2012b), *Going for Growth*, OECD Publishing.

OECD (2012c), 'Responses of tax policy makers to the challenges of a slow-down in growth, high unemployment and large budget deficits', Working Party No.2 on Tax Policy Analysis and Tax Statistics.

Paulus, A. and A. Peichl (2008), 'Effects of flat tax reforms in Western Europe on income distribution and work incentives', *IZA Discussion Paper*, No. 3721.

Pellegrino S., M. Piacenza and G. Turati (2011), 'Assessing the distributional effects of housing taxation in Italy: from the actual tax code to imputed rent', *CESifo Working Paper* N° 3368.

Picos-Sánchez, F. (2011), 'Consumption Taxation as an Additional Burden on Labour Income', *OECD Taxation Working Papers*, No. 7, OECD Publishing, http://dx.doi.org/10.1787/5kg3h0t4xlq4-en

Pissarides, C. A. (1998), 'The impact of employment tax cuts on unemployment and wages; The role of unemployment benefits and tax structure', *European Economic Review*, Vol. 42 (1), pp. 155-183.

Prescott, E. (2004), 'Why Do Americans Work So Much More Than Europeans?', *Federal Reserve Bank of Minneapolis Quarterly Review,* Vol. 28, No. 1.

Roeger W., and J. in 't Veld (2010), 'Fiscal stimulus and exit strategies in the EU: a model-based analysis', *European Economy Economic Papers*, No. 426.

Rogerson, R. (2006), 'Understanding differences in hours worked', *Review of Economic Dynamics*, Vol. No. 9, Issue 3, *Review of Economic Dynamics*, http://dx.doi.org/10.1016/j.red.2006.05.002

Rogerson, R. (2007), 'Taxation and Market Work: Is Scandinavia an Outlier?', *NBER Working Paper* No. 12890, http://www.nber.org/papers/w12890

Salverda, W. (editor) (2011), 'Inequalities' impacts', *GINI State of the Art Review.*

Schneider, F. (2012), 'The Shadow Economy and Work in the Shadow: What Do We (Not) Know?', *IZA Discussion Paper* No. 6423.

Schneider, F. and D. H. Enste (2000), 'Shadow economies: size, causes and consequences', *Journal of Economic Literature*, vol. 38.

Sørensen, P. B. (1999), 'Optimal tax progressivity in imperfect labour markets', *Labour Economics* Vol. 6, pp. 435–452, http://dx.doi.org/10.1016/S0927-5371(99)00021-4

Thomas, A., and F. Picos-Sanchez (2012), 'Shifting from social security contributions to consumption taxes: the impact on low-income earner work incentives', *OECD Taxation Working Papers*, No. 11.

Warren N. (2008), 'A review of studies on the distributional impacts of consumption taxes in OECD countries', *OECD Social, Employment and Migration Working Paper*, N° 64.

Xing, J. (2011), *Does tax structure affect economic growth? Empirical evidence from OECD countries*, Oxford University Centre for Business Taxation, WP11/20.