

# Public Economics for the European Union

1

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INTRODUCTION

# Public Economics: introduction

2

- P.E. is the study of economic policy, with emphasis on taxation
- Originally it had much to do with collection and disbursement of government revenues
- Now it includes basically all aspects of government economic intervention
- Long tradition of PE: Ricardo (1817): debt; Cournot (1838) incidence of taxation in imperfectly competitive markets; Edgeworth (1925): taxation on multi-product firms; Pareto (1909): foundations of social decisions; Ramsey (1927): optimal taxation.

# Public Economics: introduction

3

- PE uses both positive and normative approaches;
  - 1) **Positive** issues: determining the effects of alternative policies (Equilibrium changes due to the introduction of a policy);
  - 2) **Normative**: determining optimal policies (Evaluating the welfare changes of a policy).
    - 1) Needs a theory that describes agents' choices and how these choices compose a (general) equilibrium
    - 2) Needs an objective function for the policy-maker providing a measure of the performance of a policy on society's welfare

# Public Economics: introduction

4

- Although PE has a long tradition, many subjects presented in this course date back to the 1970s, when micro-macro-GE and game theory were used in PE.
- Diamond and Mirrlees (1971) contribution on duality and the use of GE are pivotal.
- Also numerical methods are increasing in PE: simulations and empirical estimations

# Public Economics: introduction

5

- Summarizing PE method: MIXED ECONOMY where individual decisions are respected and gov't may intervene to affect their choices.
- The policy-maker chooses policy parameters so as to change individual choices in order to achieve a “preferred” equilibrium.
- Benchmark is the assumption of an omniscient planner

# Motivation

6

- 1) Organization of economic activity must generate a revenue requirement. E.g. law enforcement, criminal laws and means of defense in general. These are costly activities=>need of collecting revenue to provide required finance by the State.
- Hence, PE studies how this revenue can be collected at the least cost to the economy (either in a positive or normative sense): efficient and feasible set of taxes
- 2) Other cases for State intervention:
  - a) Market failures (externalities, public goods, imperfect competition or information);
  - b) Other cases: poverty and income redistribution; education, social security and pension systems; here the efficiency issue is compelling. The State must improve upon the market.

# Efficiency vs equity

7

- Typical trade-off in PE: efficiency and equity
  - 1) A policy will generate a loss to society (due to the resources used and economic distortions).  
Minimizing these losses is the efficiency aspect of policy design
  - 2) The State can also aim at reducing inequality, even at the cost of reduced economic activity

Example: optimal taxation of commodities.

Counter-fact: uncertainty and pensions

# Some Figures on Complementary Social Security (from Corsini and Spataro 2014, JPET)

**Table 1: Complementary social security around the world: some examples of pension systems entailing freedom of choice and mandatory contribution**

	Fixed amount of mandatory savings with some degree of choice (share of total earnings)	Workers' options	Presence of further mandatory savings with no degree of choice	Notes
Argentina	11%	DB plan run by the state or DC private pension funds.	Yes	The possibility to choose ended in 2009.
Australia	9%	Several pension plans run by private pension funds.	No	
Hungary	33.5%	Choice between old DB* system and new mixed DB/DC system.	No	The choice had to be done in 1998 and it applied only to individuals that were already working at the time.
Mexico	11.5% plus extra savings depending on wage bracket.	Several pension plans run by private pension funds.	No	
Netherlands	Usually around 16%	Several pension plans run by occupational pension funds.	Yes	Contribution to occupational plans is quasi-mandatory being compulsory for 90% of workers.
New Zealand	4% or 8%	Several pension plans run by private pension funds.	No	Can choose to opt out from mandatory contribution.
Norway	Depends on employer, but minimum is 2%	Several pension plans run by occupational pension funds.	Yes	
Peru	13%	Choice between a public pension and private pension funds.	No	
Poland	19.52%	Choice between old DB system and new NDC system.	No	The choice had to be done in 1999 and it only applied to individuals born between 1949 and 1968
Sweden	2.5%	Several pension plans run by private and public pension funds.	Yes	
UK**	Usually around 6%	DB plan run by the state or occupational pension funds.	Yes	
United States	No fixed amount (but has absolute upper thresholds)	Employers offer several pension plans run by private pension funds.	Yes	
Uruguay	7.5%	Several pension plans run by private and public pension funds.	Yes	

\*DB: defined benefit; DC: defined contribution, NDC: notionally defined contribution \*\*The British pension system is currently undergoing some changes following the introduction of the 2011 Pension Bill. Since all the details have not been fully established at the time of the writing, we decided to report in the table only the mandatory components that were already present.

Sources: The information provided in the table was obtained from SSA (2010a), SSA (2010b) and OECD (2011).



## Share of GDP and (Total Assets, billion USD) held by Pension Funds, OECD (source: Thomas, Spataro & Mathew, 2014, JFinStab)



Country	2001	2005	2008	2010
Australia	75.29 (47.19)	80.38 (50.48)	93.00 (52.82)	90.94 (56.91)
Canada	52.48 (42.19)	58.15 (40.62)	51.43 (39.96)	64.65 (39.49)
Chile	- (60.80)	59.35 (63.52)	52.76 (59.04)	66.97 (61.46)
Denmark	27.18 (34.80)	33.70 (29.49)	47.54 (32.96)	49.71 (31.58)
Germany	3.44 (52.04)	4.03 (51.99)	4.73 (52.51)	5.14 (49.26)
Iceland	83.96 (78.39)	119.57 (70.13)	114.05 (82.71)	123.91 (81.89)
Israel	25.10 (-)	34.01 (25.64)	42.80 (36.89)	48.94 (34.53)
Italy	2.24 (1.73)	2.79 (1.60)	3.41 (2.08)	4.57 (2.48)
Netherlands	102.61 (55.11)	121.72 (59.43)	112.72 (59.65)	128.51 (50.41)
Switzerland	102.45 (44.75)	117.02 (42.90)	101.15 (39.17)	113.72 (37.92)
United Kingdom	72.00 (35.82)	78.63 (36.89)	64.29 (34.97)	88.68 (37.59)
United States	71.51 (39.67)	74.84 (38.64)	57.92 (33.91)	72.67 (35.97)

Source: OECD Global Pension Statistics, Institutional Investor Statistics.

# Comments & Questions

10

- Differences among countries!
- Where do these differences come from?
- What are the effects of social security on individuals' choices (savings, retirement, economic activity)
- What is the “optimal level of social security”?

# European Union issues

11

- Many economic policies now are influenced by the European Union legislation

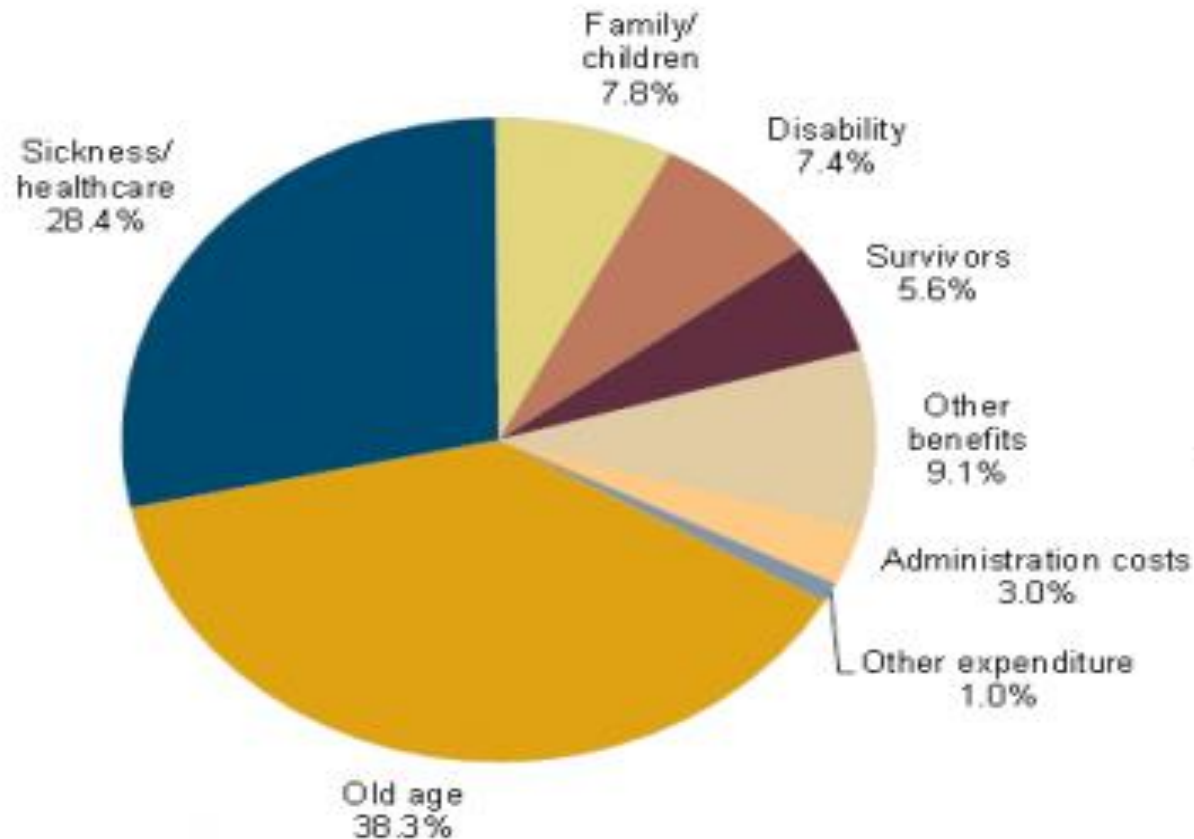
# European Union issues

12

- If one aims at understanding the current policies on deficits, debt, pensions and taxation the EU must be properly taken into account. In this respect, the aim of the course is twofold
  - A) Provide information about the economic content of the agreements at the European level
  - B) Provide insights into the efficiency of the European processes and rules

# The social protection expenditure divided by functions in the European union in 2011 (% of GDP)

13



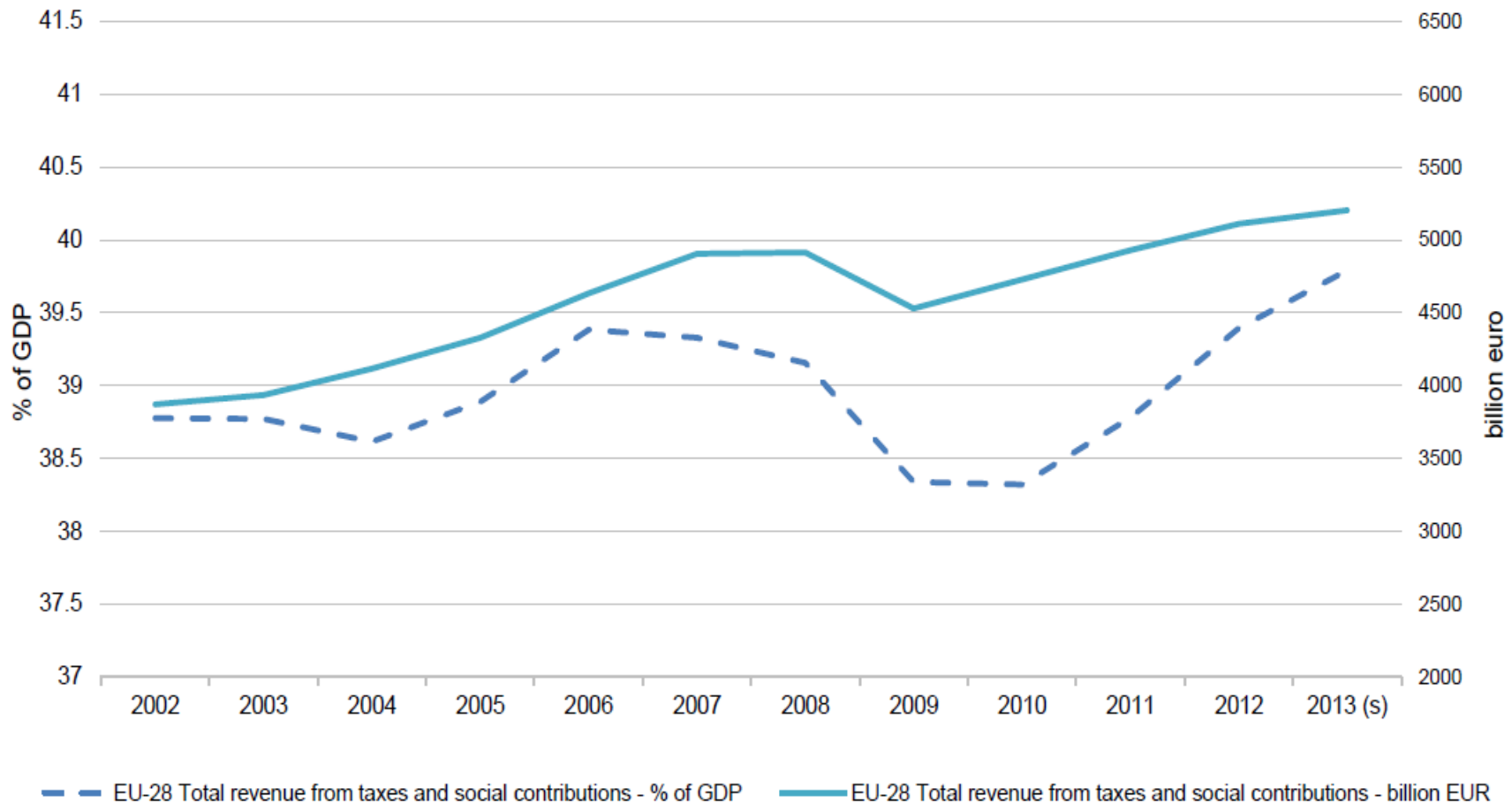
# Data on social protection and pensions in Europe

COUNTRIES	Pensions as a share of GDP YEAR 2011			Total pension expenditure as a % of GDP. Year 2011	Social expenditure (% of GDP). Year 2011	Payroll taxes to the first (second) pillar as a % of gross wage	Assets managed by Pension funds (% of GDP). Year 2012
	Disability Pensions	Old Age	Survivals				
European Union (28)	2,1	11,1	1,6	14,8	27,8		
Belgium	2,2	9,5	2,1	13,8	29	16,36 (4,25)	4,6
Bulgaria	1,4	7,7	0,9	10	17,2	16	7,4
Czech Republic	1,5	8,9	0,7	11,1	19,8	28 (1,4+ 0,3 state subsidy)	7,1
Denmark	4,1	14,2	0,0	18,3	32,8	General tax revenues (10,8)	50,1
Germany	2,2	9,4	2,0	13,6	28,3	19,9	6,3
Estonia	1,8	6,9	0,1	8,8	15,9	16-20 (4-6)	8,7
Ireland	1,2	5,6	1,1	7,9	28,3	40	49,2
Greece	1,4	12,7	2,3	16,4	28,9	20	0,0
Spain	1,8	8,9	2,3	13	25,6	26,6	8,4
France	2,0	12,6	1,9	16,5	31,9	16,6 up to 37k euro and 1,7 on the remainder (rates for income brackets)	0,3
Croatia	3,5	5,6	2,1	11,2	20,2	15-20 (5-0)	16,2
Italy	1,6	14,8	2,6	19	28,4	33 (6,91)	5,6
Cyprus	0,7	9,4	1,3	11,4	22,2	17,9	.
Latvia	1,3	7,9	0,3	9,5	14,8	18 (2)	0,9
Lithuania	1,6	6,7	0,5	8,8	16,4	24,4 (2)	4
Luxembourg	2,6	6,3	2,0	10,9	22,2	24	1,8
Hungary	1,7	9,3	1,3	12,3	22,8	25,5 (8-9,5)	3,3
Malta	0,8	8,4	1,8	11	18,7	30	8,4
Netherlands	2,4	10,8	1,2	14,4	30,5	17,9 (20)	160,2
Austria	2,2	12,6	1,9	16,7	28,7	22,8	5,3
Poland	1,7	9,0	1,9	12,6	18,7	17,2 (2,3)	17,2
Portugal	2,1	11,9	1,8	15,8	25	34,75 (4,87)	8,8
Romania	1,5	7,9	0,7	10,1	16,1	31,3	1,7
Slovenia	1,7	9,8	1,7	13,2	24,6	24,35	3,7
Slovakia	1,6	6,8	0,9	9,3	17,7	28,75	9,5
Finland	3,5	10,8	0,9	15,2	29,3	21,6	79,3
Sweden	3,8	12,0	0,5	16,3	29	16 (2,5-30)	9,2
United Kingdom	2,4	11,3	0,1	13,8	26,3	23,8 (8)	95,7

Source: Eurostat, Esspros database 2014 (updated at year 2011) e ISG-EC-SPC report (2012): Pension Adequacy in the European Union 2010-2050. OECD (2013): Pension markets in focus

# Taxes (source: European Commission)

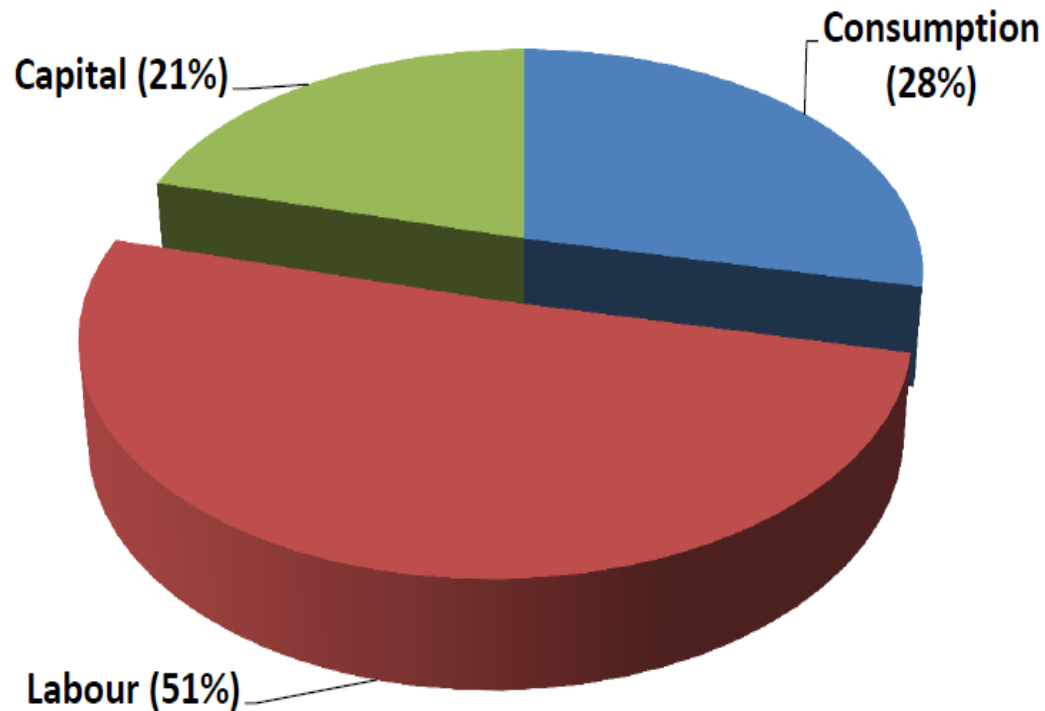
## Tax revenues are increasing



Source: EU Commission

## Labour taxes are the largest source of tax revenue

*Tax revenue by economic function - EU-28, 2012*

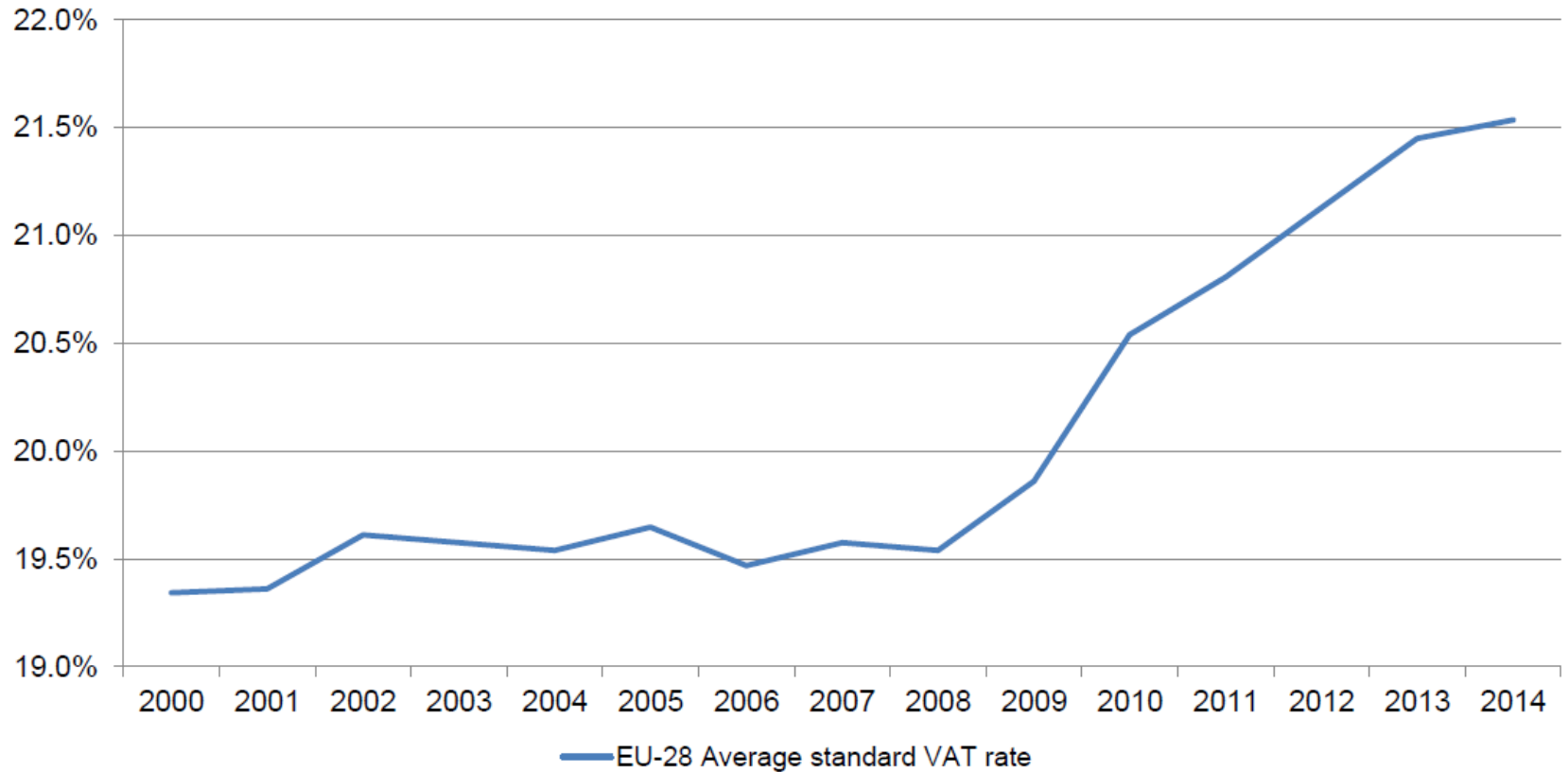




Source : EU



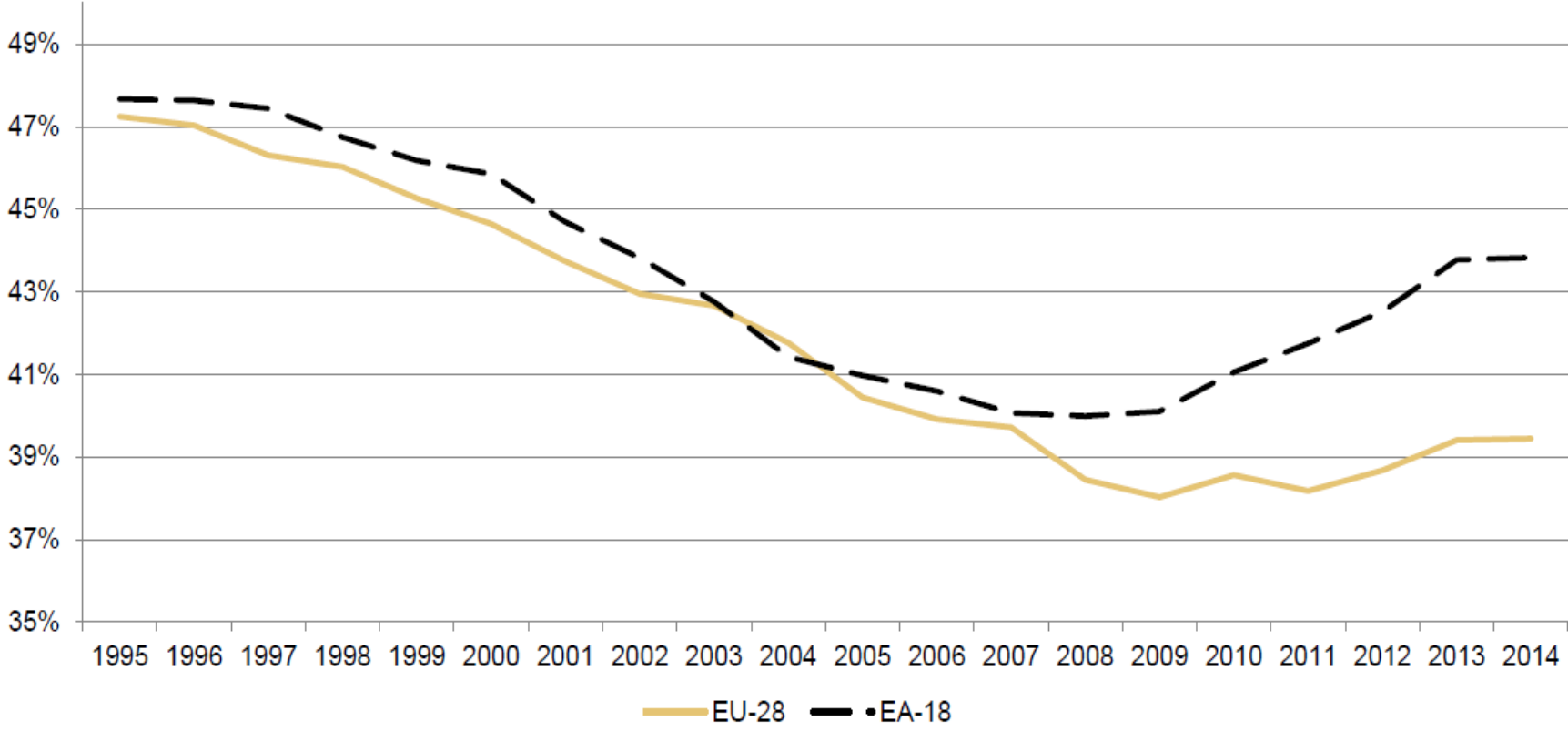
## VAT standard rates continue to rise



Source: EU

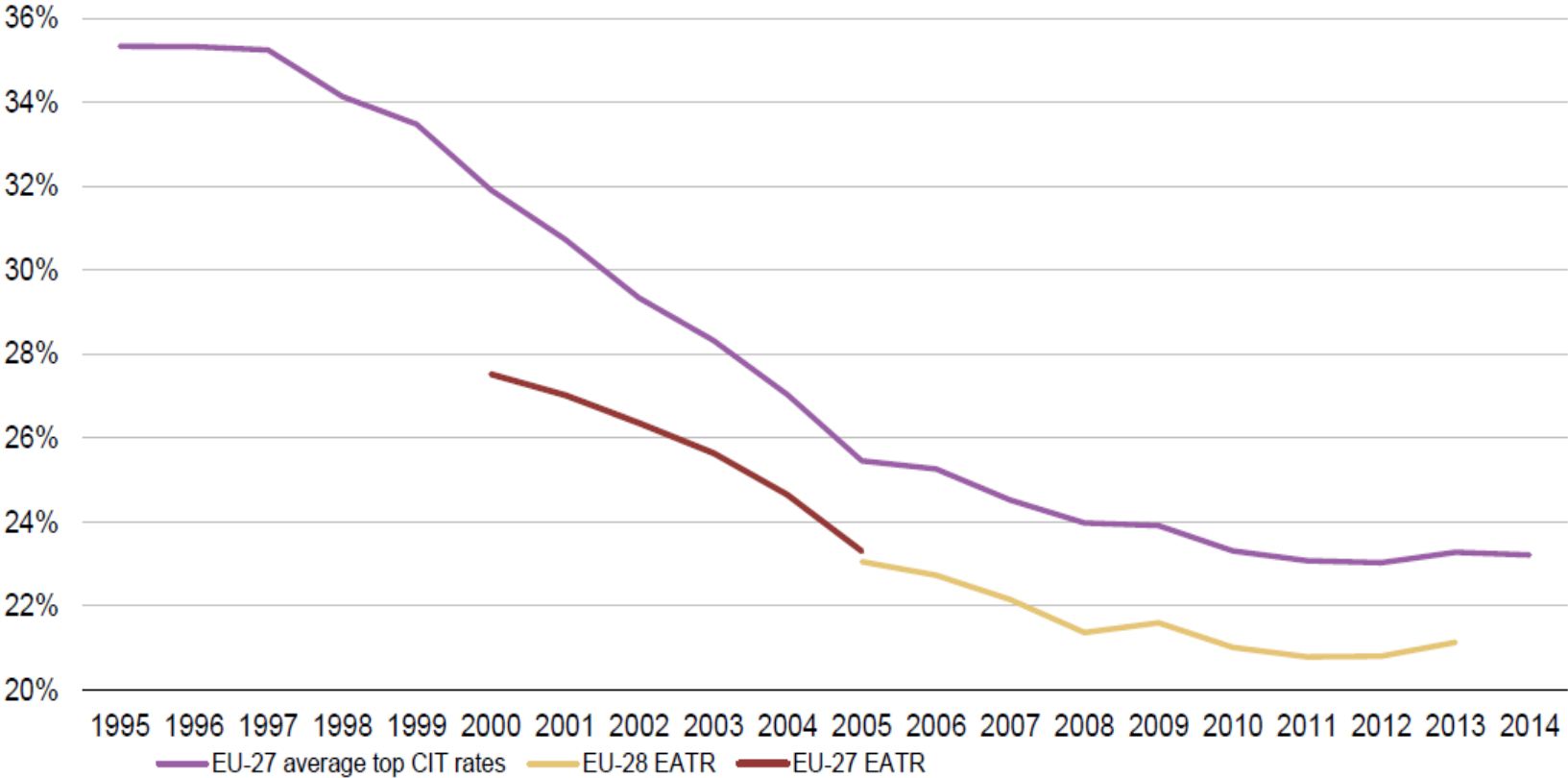
18

# Top PIT rates level off in 2014



Source: EU

# Top corporate income tax rates remain level

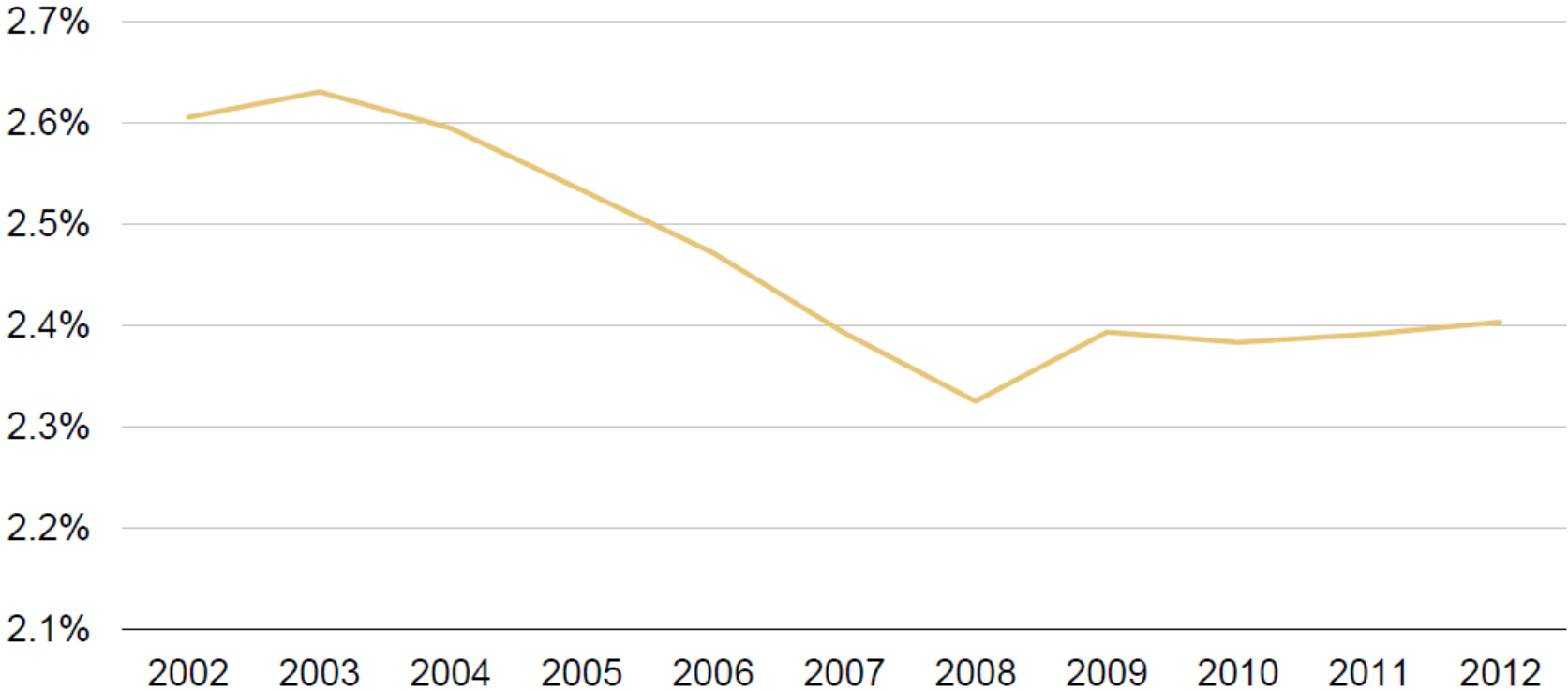


Source: EU



**Environmental taxes: little movement since 2009**

**EU-28 (% of GDP)**



# Taxes

- Labour taxes the largest source of tax revenue in nearly all Member States
- The largest source of tax revenue in the EU28 is labour taxes, representing more than half of total tax receipts in 2012 (51.0%), followed by consumption taxes (28.5%) and taxes on capital (20.8%).
- Labour taxes were the largest source of tax revenue in 2012 in twenty four Member States, and in thirteen Member States they accounted for more than half of total tax revenue.
- The highest shares of taxation from labour were observed in Sweden (58.6%), the Netherlands (57.5%), Austria (57.4%) and Germany (56.6%). Only in Bulgaria (32.9%), Malta (34.6%), Cyprus (37.1%) and the United Kingdom (38.9%) was the share below 40%.
- Consumption taxes were the largest source of tax revenue in 2012 in four Member States: Bulgaria, Croatia, Malta and Romania. The highest shares of taxation from consumption were recorded in Bulgaria (53.3%), Croatia (49.1%) and Romania (45.1%), and the lowest in Belgium (23.7%), France and Italy (both 24.7%).
- Taxes on capital accounted for the smallest share of tax revenue in all Member States in 2012. Shares of more than 25% were registered in Luxembourg (27.5%), the United Kingdom (27.4%), Malta (26.6%) and Cyprus (26.1%), and of less than 10% in Estonia (7.1%) and Slovenia (9.8%).

# Main messages

22

## Revenues

- EU tax revenues continued to recover in 2012, and estimates for 2013 suggest revenues will continue to rise

## Rates :

- Upward trend in VAT rates since 2009 continued in 2014
- 3-4 year trend of rising top PIT rates levelled off in 2014
- Top corporate rates remained little changed across the EU
- Tax shift •
- Growth-friendly taxation: increase in consumption taxes, little change in labour taxes

# Issues

23

- What is the rationale behind these trends?
- Is this process moving towards efficiency?
- These are some of the topics that will be covered in this course

# Tax revenue in EU

## Tax revenue

	Tax revenue, % of GDP			Tax revenue by type of tax base as a % of total tax revenue <sup>*</sup> :								
				Labour			Consumption			Capital		
	2002	2011	2012	2002	2011	2012	2002	2011	2012	2002	2011	2012
<b>EU28**</b>	38.8	38.8	39.4	50.8	50.9	51.0	28.8	28.9	28.5	20.7	20.4	20.8
<b>EA18**</b>	39.5	39.5	40.4	53.0	53.3	53.3	27.4	27.3	26.8	19.8	19.8	20.2
<b>Belgium</b>	45.2	44.2	45.4	54.9	54.6	53.9	24.2	24.1	23.7	20.6	20.8	22.0
<b>Bulgaria</b>	28.5	27.3	27.9	41.8	33.8	32.9	41.6	51.9	53.3	16.6	14.3	13.8
<b>Czech Republic</b>	34.6	34.6	35.0	52.9	51.9	51.7	27.9	32.9	33.4	19.3	15.2	14.9
<b>Denmark</b>	47.9	47.7	48.1	54.5	51.3	51.0	33.0	31.5	31.0	12.8	17.6	18.4
<b>Germany</b>	38.9	38.5	39.1	60.7	56.0	56.6	26.8	28.2	27.6	12.5	15.8	15.9
<b>Estonia</b>	31.0	32.3	32.5	54.5	52.1	51.0	38.4	41.3	41.9	7.1	6.6	7.1
<b>Ireland</b>	28.3	28.2	28.7	35.3	43.0	42.7	38.8	34.8	34.8	26.0	22.2	22.5
<b>Greece</b>	33.7	32.4	33.7	38.3	36.5	41.9	36.7	38.6	36.3	25.0	25.0	21.8
<b>Spain</b>	34.1	31.8	32.5	48.1	55.0	53.0	27.7	26.8	26.5	25.7	20.9	22.9
<b>France</b>	43.3	43.7	45.0	51.5	52.3	52.3	26.2	25.2	24.7	22.9	23.2	23.6
<b>Croatia</b>	37.9	35.3	35.7	38.9	41.4	40.7	50.5	47.3	49.1	10.7	11.3	10.3
<b>Italy</b>	40.5	42.4	44.0	49.9	52.0	51.1	26.1	25.3	24.7	23.9	22.7	24.2
<b>Cyprus</b>	30.9	35.3	35.3	32.5	35.7	37.1	38.5	36.2	36.8	29.0	28.1	26.1
<b>Latvia</b>	28.6	27.6	27.9	51.7	50.0	49.0	36.7	38.3	38.4	11.6	11.7	12.6
<b>Lithuania</b>	29.1	27.4	27.2	50.8	46.4	46.5	40.1	41.1	39.8	9.7	12.7	13.9
<b>Luxembourg</b>	39.3	38.2	39.3	38.5	44.2	44.3	27.3	27.8	28.1	34.2	28.0	27.5
<b>Hungary</b>	38.0	37.3	39.2	50.3	47.3	46.4	37.0	39.1	40.0	12.6	13.6	13.5
<b>Malta</b>	30.0	33.0	33.6	36.9	33.5	34.6	39.3	40.2	38.8	23.8	26.3	26.6
<b>Netherlands</b>	37.7	38.6	39.0	49.7	56.3	57.5	30.2	28.8	28.3	20.1	14.9	14.2
<b>Austria</b>	43.6	42.2	43.1	55.2	56.7	57.4	28.5	27.9	27.6	16.5	15.6	15.2
<b>Poland</b>	32.7	32.3	32.5	41.1	38.4	40.4	36.3	39.1	36.3	23.7	22.9	23.7
<b>Portugal</b>	31.4	33.2	32.4	37.7	41.7	41.4	38.1	36.6	37.4	24.2	21.6	21.1
<b>Romania</b>	28.1	28.4	28.3	43.9	39.3	40.0	38.9	44.2	45.1	17.2	16.4	15.0
<b>Slovenia</b>	37.8	37.2	37.6	54.3	52.2	52.5	36.1	37.3	37.9	9.7	10.6	9.8
<b>Slovakia</b>	33.0	28.6	28.3	45.8	44.1	45.4	32.7	36.2	33.4	21.4	19.7	21.2
<b>Finland</b>	44.7	43.7	44.1	52.2	52.3	53.2	29.9	32.3	32.4	17.9	15.4	14.3
<b>Sweden</b>	47.5	44.4	44.2	62.5	57.5	58.6	26.7	28.9	28.4	10.8	13.7	13.0
<b>United Kingdom</b>	34.8	35.8	35.4	38.6	39.1	38.9	33.0	33.2	33.8	28.4	27.7	27.4
<b>Iceland</b>	35.2	35.9	36.8	:	:	:	37.6	34.6	35.0	:	:	:
<b>Norway</b>	43.1	42.7	42.2	43.2	40.7	41.5	29.7	25.8	25.7	27.1	33.5	32.8

<sup>\*</sup> Shares may be more than 100% for Member States, where a recording of amounts assessed but not collected is chosen to approximate accrual. Please refer additionally to methodological notes in Annex B of the Taxation trends publication.

<sup>\*\*</sup> EU28 and EA18 aggregates are calculated as GDP-weighted averages of the Member States.

: Data not available



### Implicit tax rates\*

	Labour			Consumption		
	2002	2011	2012	2002	2011	2012
<b>EU28**</b>	35.5	35.8	36.1	19.7	19.9	19.9
<b>EA18**</b>	37.8	37.7	38.5	19.4	19.3	19.3
<b>Belgium</b>	43.3	42.9	42.8	21.4	21.0	21.1
<b>Bulgaria</b>	33.4	24.2	24.5	16.6	21.1	21.5
<b>Czech Republic</b>	41.3	39.0	38.8	18.4	21.8	22.5
<b>Denmark</b>	38.8	34.3	34.4	33.7	31.4	30.9
<b>Germany</b>	38.7	37.3	37.8	18.9	20.0	19.8
<b>Estonia</b>	37.8	35.7	35.0	19.9	25.8	26.0
<b>Ireland</b>	26.0	28.2	28.7	24.4	21.4	21.9
<b>Greece</b>	34.0	30.9	38.0	16.1	16.3	16.2
<b>Spain</b>	32.1	32.9	33.5	15.5	14.1	14.0
<b>France</b>	38.7	38.8	39.5	20.5	19.7	19.8
<b>Croatia</b>	29.5	29.7	29.2	30.1	27.9	29.1
<b>Italy</b>	41.9	42.3	42.8	17.8	17.4	17.7
<b>Cyprus</b>	22.3	26.8	28.8	15.0	17.6	17.6
<b>Latvia</b>	37.8	33.3	33.0	17.0	17.2	17.4
<b>Lithuania</b>	38.1	31.5	31.9	17.9	18.2	17.4
<b>Luxembourg</b>	28.4	32.5	32.9	22.6	28.0	28.9
<b>Hungary</b>	41.2	38.2	39.8	25.0	26.8	28.1
<b>Malta</b>	22.4	22.5	23.3	16.3	18.9	18.7
<b>Netherlands</b>	31.5	37.5	38.5	23.3	24.8	24.5
<b>Austria</b>	40.8	40.8	41.5	22.5	21.2	21.3
<b>Poland</b>	32.4	32.0	33.9	17.9	20.8	19.3
<b>Portugal</b>	22.8	25.4	25.4	18.8	18.2	18.1
<b>Romania</b>	31.2	33.0	30.4	16.2	20.3	20.9
<b>Slovenia</b>	37.7	35.3	35.6	23.7	22.9	23.4
<b>Slovakia</b>	36.7	31.6	32.3	18.7	18.3	16.7
<b>Finland</b>	43.8	39.5	40.1	27.7	26.4	26.4
<b>Sweden</b>	43.8	38.9	38.6	27.0	27.3	26.5
<b>United Kingdom</b>	24.4	25.8	25.2	18.4	19.3	19.0
<b>Iceland</b>	:	:	:	25.8	24.8	24.5
<b>Norway</b>	37.5	36.4	36.4	29.7	29.2	29.4

\* Implicit tax rates (ITR) express aggregate tax revenues as a percentage of the potential tax base for each field (see footnote 4).

\*\* EU28 and EA18 aggregates are calculated as GDP-weighted averages of the Member States.

: Data not available

# Tax evasion in Europe



Country	Tax Lost as a Proportion of Tax Income (%)	Tax Lost as a Result of Shadow Economy (billion euro)
Italy	27	180.257
Germany	16	158.736
France	15	120.619
United Kingdom	12.5	74.032
Spain	22.5	72.709
Belgium	21.9	33.629
Netherlands	13.2	29.801
<b>Total</b>		<b>864.282</b>

*Source:* Tax Research LLP

# Further data

27

- <http://ec.europa.eu/taxtrends>
- [http://ec.europa.eu/taxation\\_customs/index\\_en.htm](http://ec.europa.eu/taxation_customs/index_en.htm)