



# The redistributive effect and progressivity of taxes revisited

An international comparison across the EU  
with EUROMOD

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*GINI Final Conference*  
Amsterdam, 4-5 June 2013



## Motivation

- Over the last three decades income inequality increased in most of the OECD countries
- Over the 1998-2008 period income inequality increased in half of the EU countries
- Which is the role played by taxation?
  - According to the changes in the statutory rules we expect the PIT to be less progressive
  - SICs increased in some countries (with minimum and maximum caps)
  - From 1990 to 2008, EU-27 + Japan and US: 1,331 PIT reforms, 474 SIC reforms (Artoni et al., 2011)



# Changes in the Personal Income Tax structure in EU-15 over 1998 - 2008

- Number of bands
  - Decreased in 7 countries, increased in 4 countries
  - Average: 5.8 → 5.2
- Lowest band
  - Decreased in 5 countries, increased in 4 countries
  - Average: 9.2% → 9.4%
- Highest band
  - Decreased in 10 countries, increased in 1 country
  - Average: 45.5% → 40.3%
- However, the effects on overall progressivity are less obvious than they may at first appear
  - Exemptions, deductions, allowances, credits
  - Changes in the underlying income distribution (due to socio-demographic and labour market changes) and fiscal drag

# Research questions

- Taxes are part of the redistributive process and reduce inequality when they are progressive.
- Degree of progressivity differs across countries and tax categories
- Here:
  1. To what extent do direct taxes reduce income inequality?
  2. How do personal income taxes (PIT) compare to social insurance contributions (SIC) in this field?
  3. What is the contribution of different components of personal income tax system to progressivity?
  4. Have there been changes over the past decade (1998-2008) in the EU-15? (i.e. revisit Verbist, 2004)

*ongoing work ... preliminary results*

# Data and methodology

- EUROMOD: EU-wide tax-benefit microsimulation model (Sutherland and Figari, 2013).
- Simulation of direct taxes, social insurance contributions and (non-contributory) cash benefits: here focus on tax measures
- Overall Redistributive & Progressivity effect
  - Combination of **tax policy** and **pre-tax** income distribution (market income & transfers)
- No (distributionally neutral) counterfactual scenarios
  - Detailed info on tax components
- Focus on EU-15 (comparison over time 1998-2008)
- Household micro-data
  - 1998: various national surveys and ECHP
  - 2008: mainly SILC data (2007 income – pre crisis)

# Caveats

- Static and descriptive analysis
  - Cross-country (Wagstaff et al. 1999) and over time analysis (Piketty and Saez, 2007)
  
- Potential criticisms
  - In theory, (cash and in-kind) benefits should be included (as a negative) in the tax rates to estimate the overall redistributive effect of the government intervention
  - SICs should not be treated as a pure tax because they finance social benefits (we include employee and self-employed SICs)
  - Focus on annual income which is not a perfect measure of permanent income over the lifetime (income taxes appear less progressive from a lifetime perspective, Bengtsson, Bertil and Waldenström, 2012).
  - No calculation of the excess burden created by behavioural responses due to taxes

# Measuring the redistributive effect of taxes

## ■ Redistributive effect

$$RE = G_X - G_X - T = \Pi^{RS} - R$$

$$\Pi^{RS} = G_X - C_X - T = \frac{t}{1-t} \Pi_T^K$$

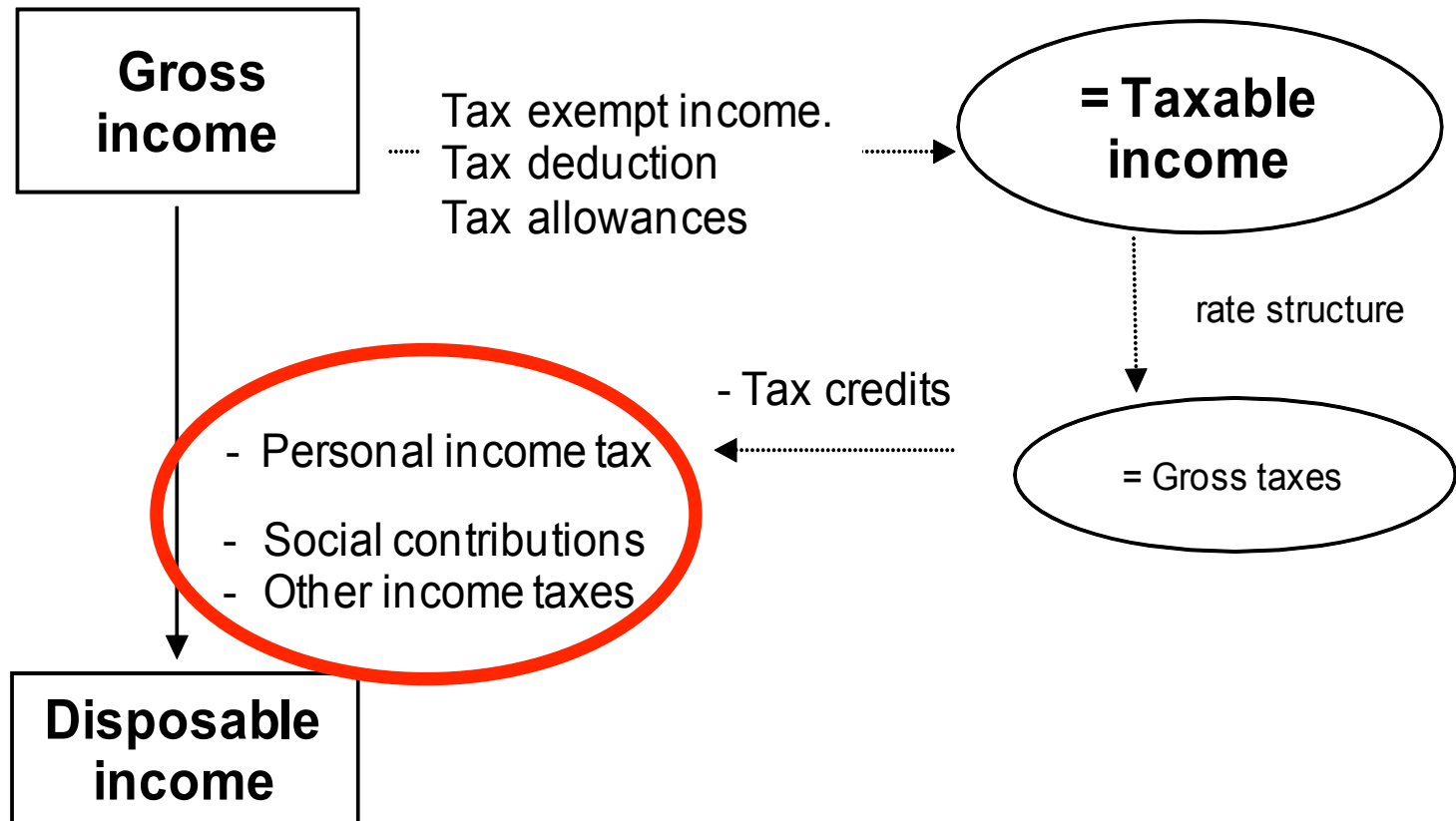
- RE is the result of a vertical equity effect (RS) and a reranking effect (R)
- RS is a function of progressivity and of the tax level

## ■ Progressivity (and its decomposition over PIT components)

$$\Pi_T^K = C_T - G_X$$

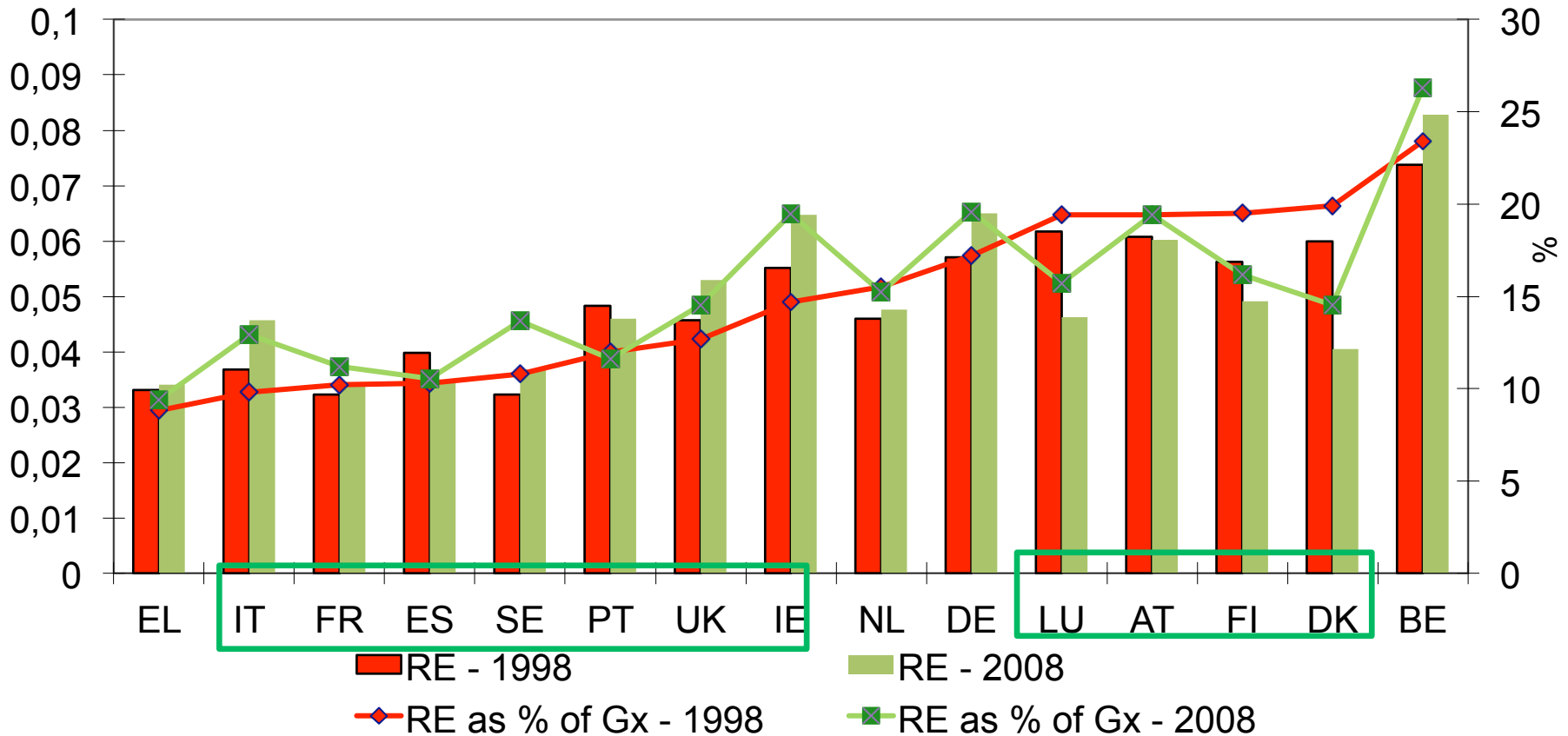
# Inequality reduction through direct taxes in EU-15

From gross to disposable income





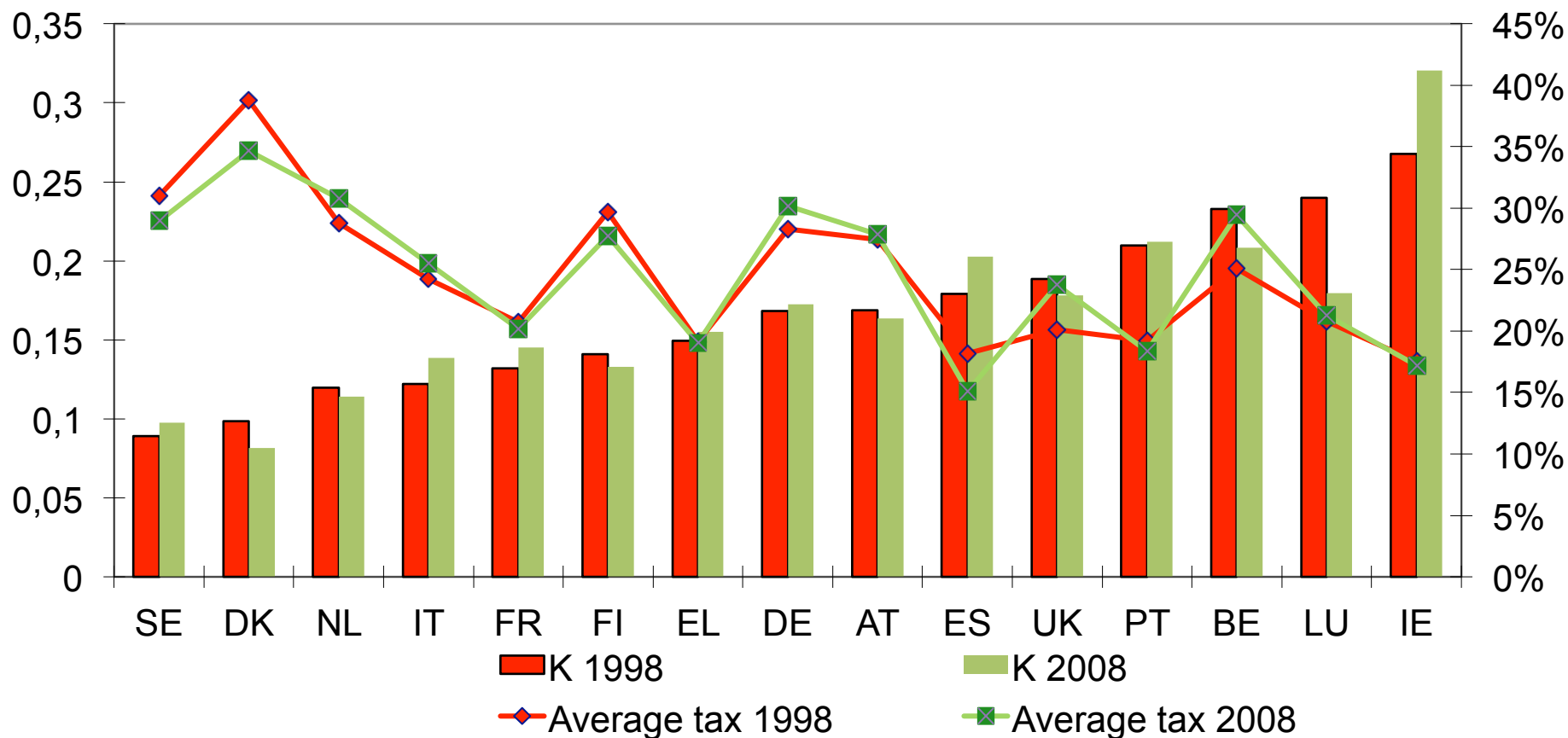
# Redistribution (RE) through taxes in EU-15, 1998-2008



Note: Countries are ranked according to % redistribution in 1998

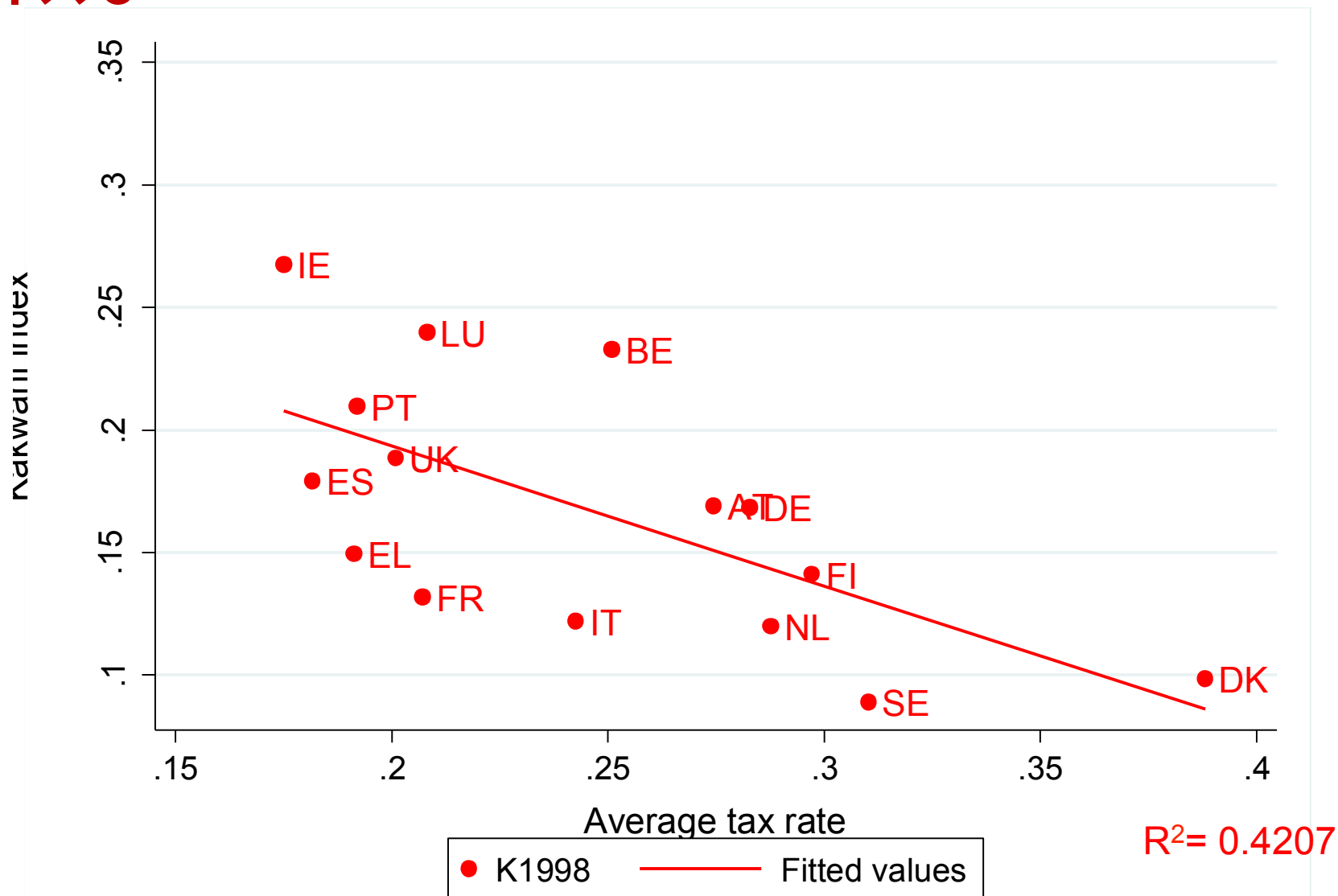
Re-ranking: on average less than 6% of RE

# Progressivity and average tax rate in EU-15, 1998 - 2008

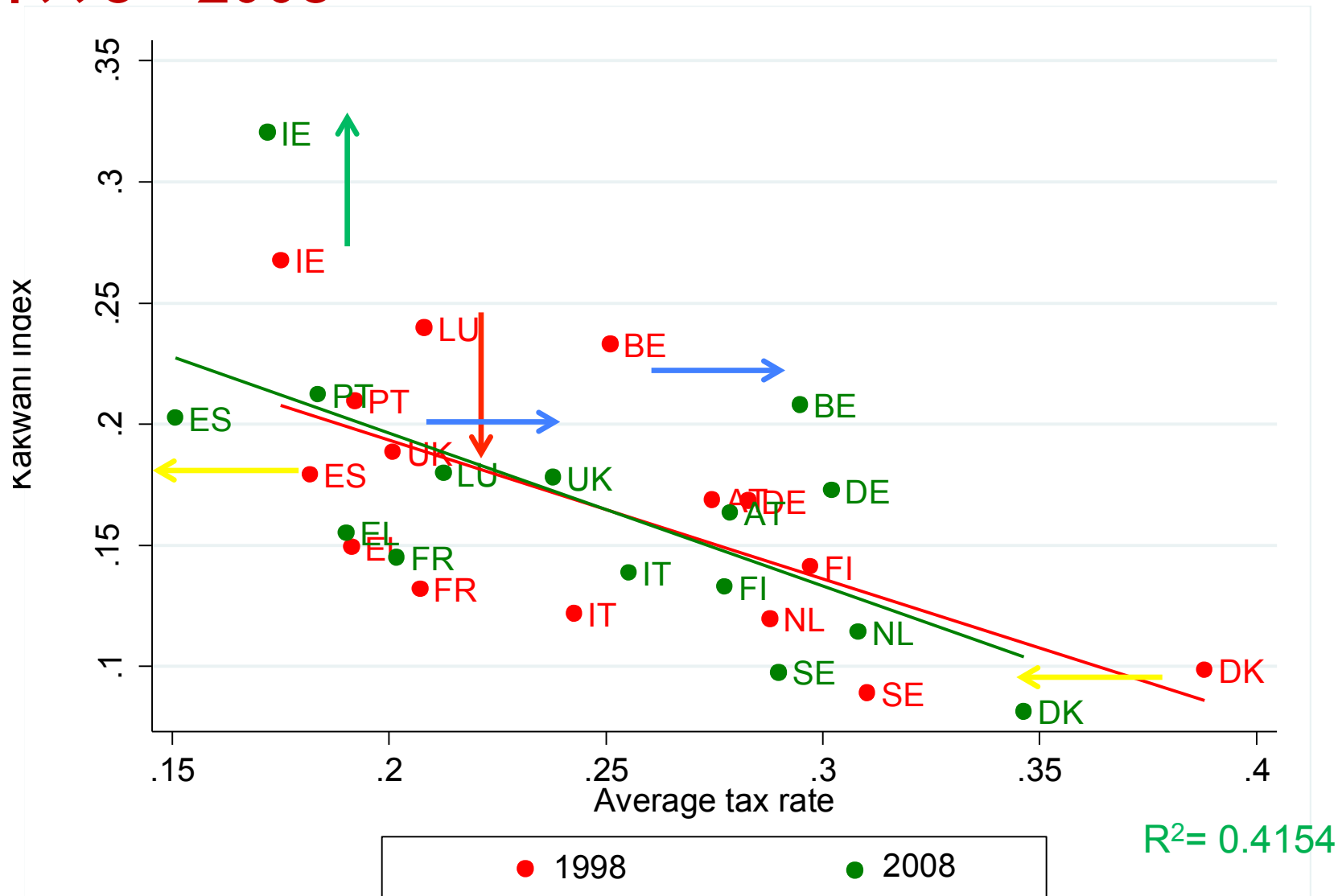


Note: Countries are ranked according to Kakwani in 1998

# Trade-off progressivity – average tax rate, 1998



# Trade-off progressivity – average tax rate, 1998 - 2008



# Vertical redistribution: Progressivity and Average Rate effect - 2008

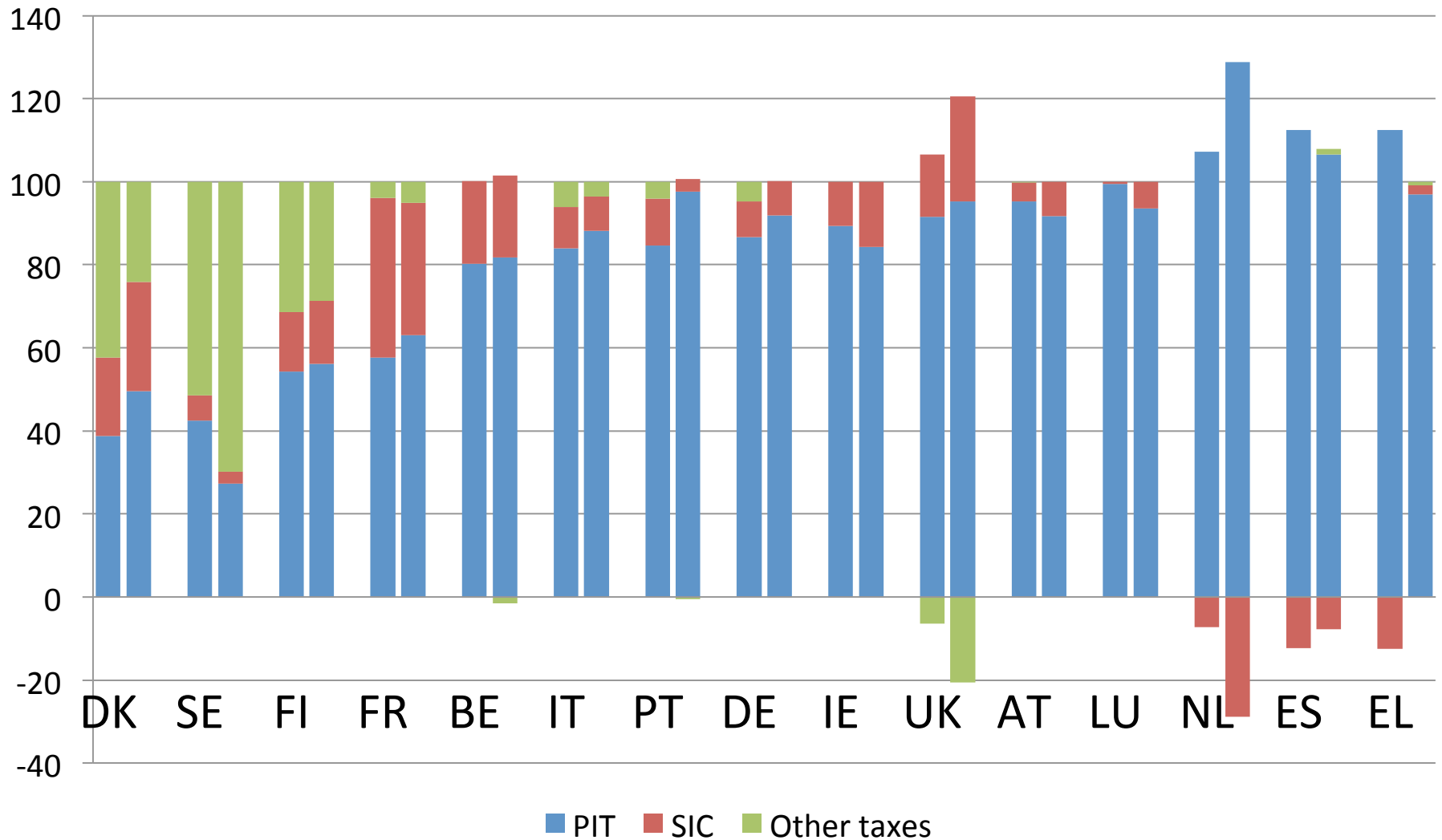
	RE	RE as % of $G_x$	K	t
Greece	0.03	9.40	0.16	19%
Spain	0.03	10.53	0.20	15%
Denmark	0.04	14.55	0.08	35%
Italy	0.05	12.95	0.14	26%
UK	0.05	14.55	0.18	24%
Germany	0.06	19.57	0.17	30%
Ireland	0.06	19.47	0.32	17%



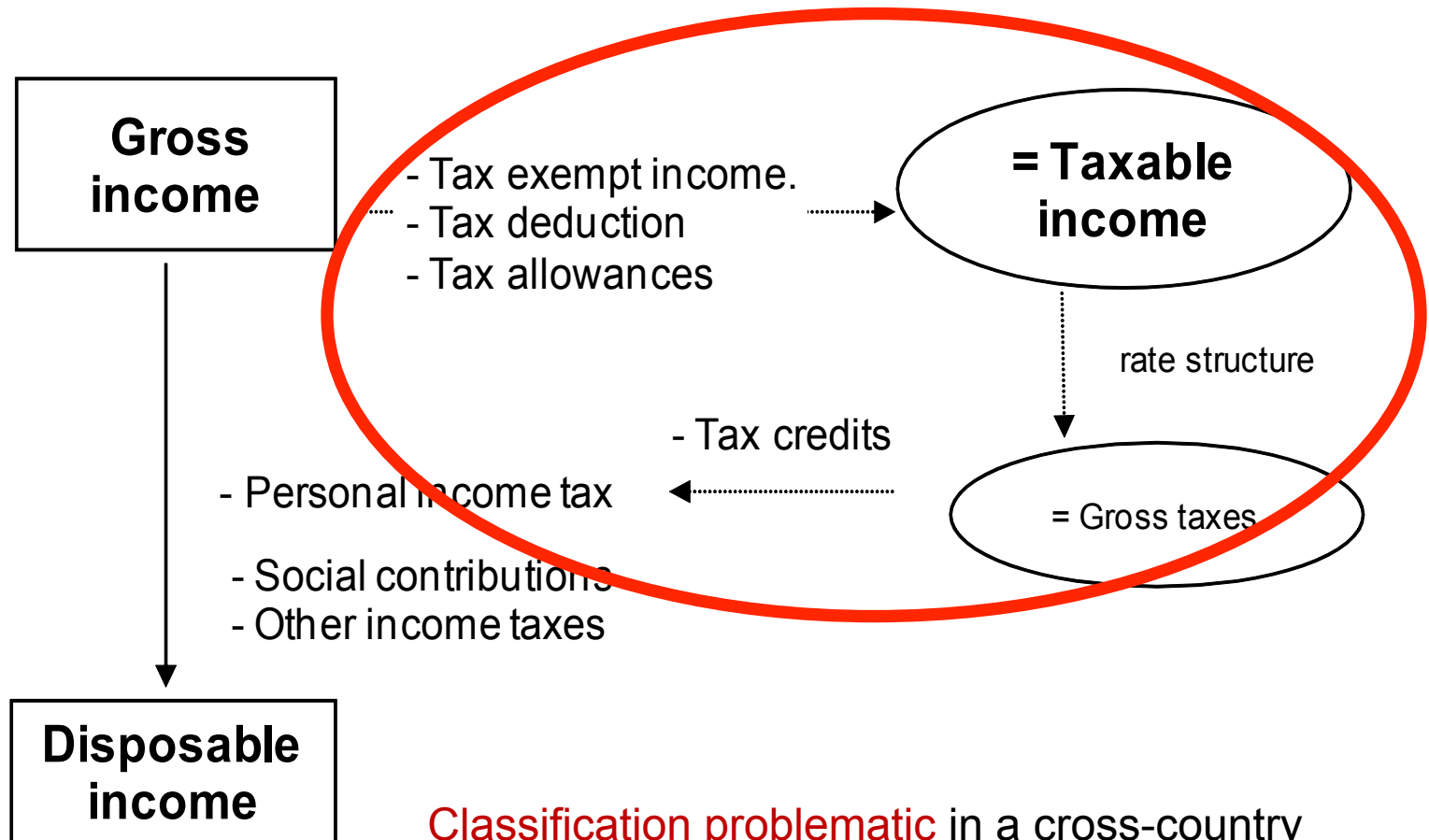
# Share of type of taxes in inequality reduction

- Personal income taxes:
  - in all countries positive contribution to redistribution
  - in most countries major contribution to redistribution: more than 80%. except: Nordics, France
- Other taxes: local income taxes
  - Important in Nordics
  - Regressive in UK (Council Tax)
- Social insurance contributions:
  - Important in France, somewhat in BE, DK, FI, UK
  - Regressive in Spain, Greece and Netherlands

# Share of type of taxes in inequality reduction, 1998-2008



# Progressivity of Personal Income taxes: the contribution of different components



**Classification problematic** in a cross-country perspective due to potential equivalence between zero-rate bracket, basic allowance and tax credit

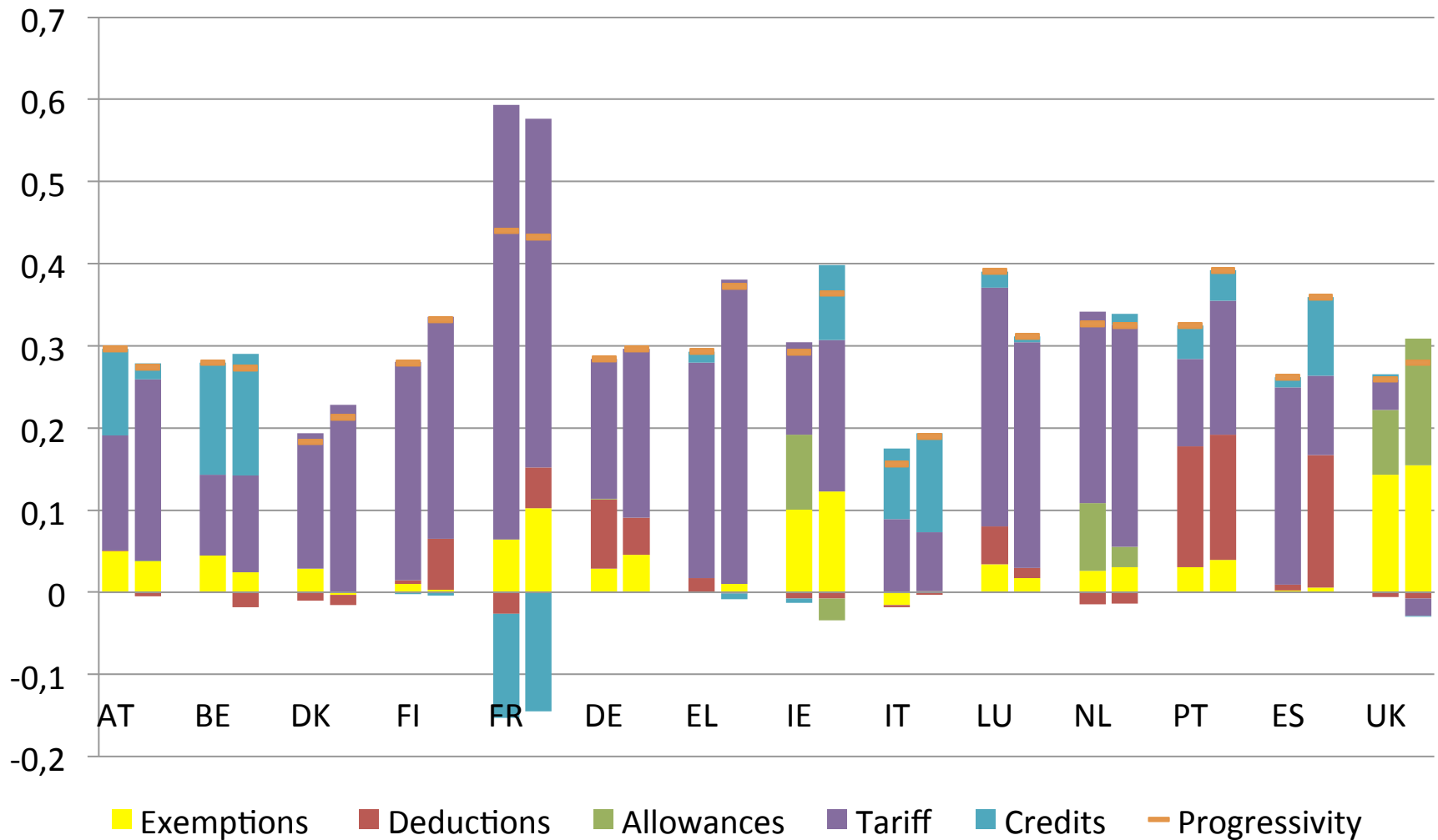




# Examples of tax components in EU-15

- **Tariff structure**
  - Rates and bands
- **Exemptions**
  - Means-tested benefits, Child benefits, Study allowances
- **Allowances**
  - Personal, Family and age related tax-relief
- **Deductions**
  - SICs, medical expenses, pension contributions, Mortgage interest tax relief, childcare costs
- **Credits (wastable or non-wastable)**
  - Family tax-relief, replacement incomes
  - Tax credit not integrated in the tax system (e.g UK) are considered part of the benefit system

# Share of components of personal income taxes in progressivity, 1998 - 2008



## 3 groups of countries

	1998 - 2008
Tariff structure	Austria, Denmark, Finland, France, Germany, Greece, Luxembourg, Netherlands
Composition taxable income (= effect of tax exemptiona, allowances and deductions)	UK, Ireland, Portugal, Spain
Mixed structure	Belgium, Italy

# Conclusions

- Wide variety of level of  $RE$  in EU-15
- No relationship between  $G_x$  and  $RE$
- Trade-off between progressivity and tax level
- Differences in the way different countries achieve the same level of  $RE$  (progressivity vs tax level)
- PIT far more important than SIC
- PIT components play a different role across countries which needs to be considered in the evaluation of marginal tax reforms
- In most of the countries, no large differences over time (1998-2008) despite the number of tax reforms



## Further developments

- Refine the analysis to summarise the contribution of tax structure on cross-country variation (regression based analysis)
- Extend to Eastern European countries (flat-tax countries)
- Focus on specific tax reform occurred in the 1998-2008 period