

# Income inequality in the EU: Decomposition by income sources

Stefano Filauro\*<sup>°</sup> & Alessia Fulvimari\*

\*European Commission – DG EMPL

<sup>°</sup> Sapienza University of Rome

*6<sup>°</sup> European User Conference for EU-Microdata  
Mannheim, Germany, March 7-8 2019*



SAPIENZA  
UNIVERSITÀ DI ROMA



EUROPEAN COMMISSION

*The views expressed in this presentation are solely those of the authors and do not necessarily reflect the views of the European Commission*

# Outline

- Motivation
- Alternative methods and limits
- Shorrocks' decomposition
- Income sources
- EU-SILC: data and problems
- Empirical evidence
- Conclusion

# Motivation

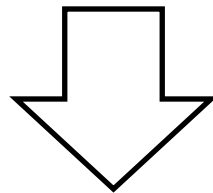
- Income inequality in EU relatively stable after 2008, *but* at higher level than before 2008

*WHY?*

- Need to understand underlying mechanisms:
  - Market vs. welfare redistribution
  - Role of taxes and transfers

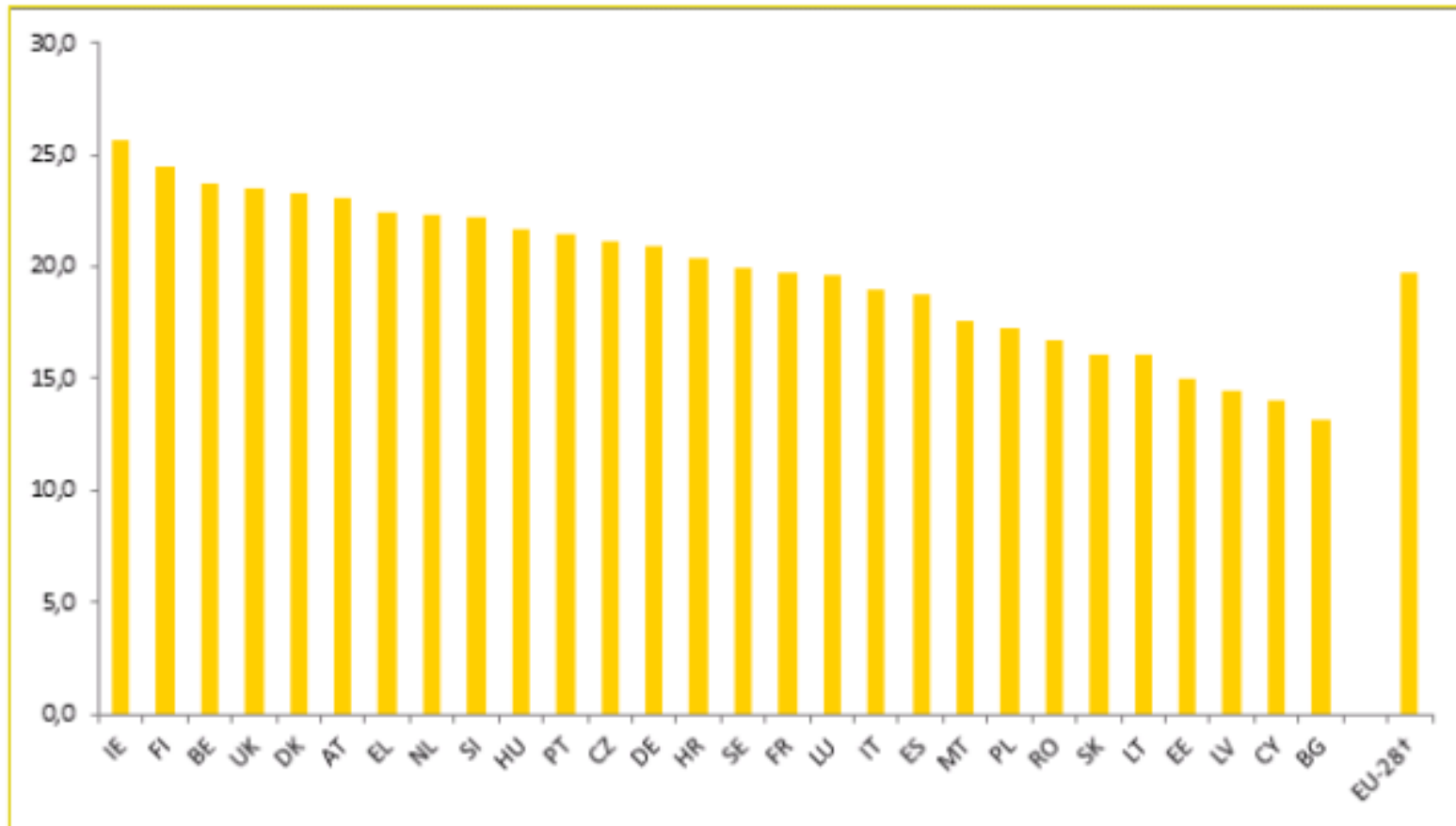
# Commonly used methods in policy-making contexts (1)

- Comparison of pre and post tax and transfers income inequality (JERs, ESDEs)
- EUROMOD simulations (Callan et al. 2018)



Key definition of counterfactual distribution

# Commonly used methods in policy-making contexts (2)



# Decomposition method: Shorrocks (1982)

*Natural decomposition of the variance –  
proportionate contributions to income inequality*

$$s_k(\sigma^2) = \frac{S_k(\sigma^2)}{\sigma^2(Y)} = \frac{\text{cov}(Y^k, Y)}{\sigma^2(Y)}$$

- Independence of the ineq. measure chosen
- $s_k$  is the proportionate contribution of income source  $k$  to inequality
  - $\sum_k s_k = 1$

# Interpretation

- Ineq. which would be observed if component  $k$  was the only source of income inequality
- Amount by which ineq. would fall if ineq. in component  $k$  were eliminated



# Decomposition method: drawbacks

1. Sensitivity to top outliers
2. No account of feedback effects → strenght and weakness at the same time

Contributions depend on the rule selected  
(arbitrary)

# Income components

## Total disposable household income

- + Labour income
  - + Self-employment income
  - + Capital income
  - + Private pensions\*
  - + Public pensions\*
  - + Unemployment benefits
  - + Other individual benefits
  - + Household benefits
  - Taxes and social security contributions
- Market income**
- Welfare components**

# Data source: EU-SILC

## Total disposable household income

- + gross employee cash or near cash income
- + company car
- + gross cash benefits or losses from self-employment
- + income from rental of a property or land
- + interests, dividends, profit from capital investments
- + pensions received from individual private plans \*
- + old-age benefits \*
- + survivor' benefits \*
- + unemployment benefits
- + sickness benefits
- + disability benefits
- + education-related allowances
- + family/children related allowances
- + social exclusion not elsewhere classified
- + housing allowances
- regular taxes on wealth
- tax on income and social insurance contributions
- + regular inter-household cash transfers received
- regular inter-household cash transfer paid
- + income received by people aged under 16

# Problems (1)

- Shorrocks ineq. decomposition would require:
  - ✓ Net income components

*But*

- ✓ Only gross components available in most MS in EU-SILC

(See Goedemé & Zardo-Trinidad forthcoming)

# Problems (2)

- Capital income more reliable with administrative data than surveys

*but*

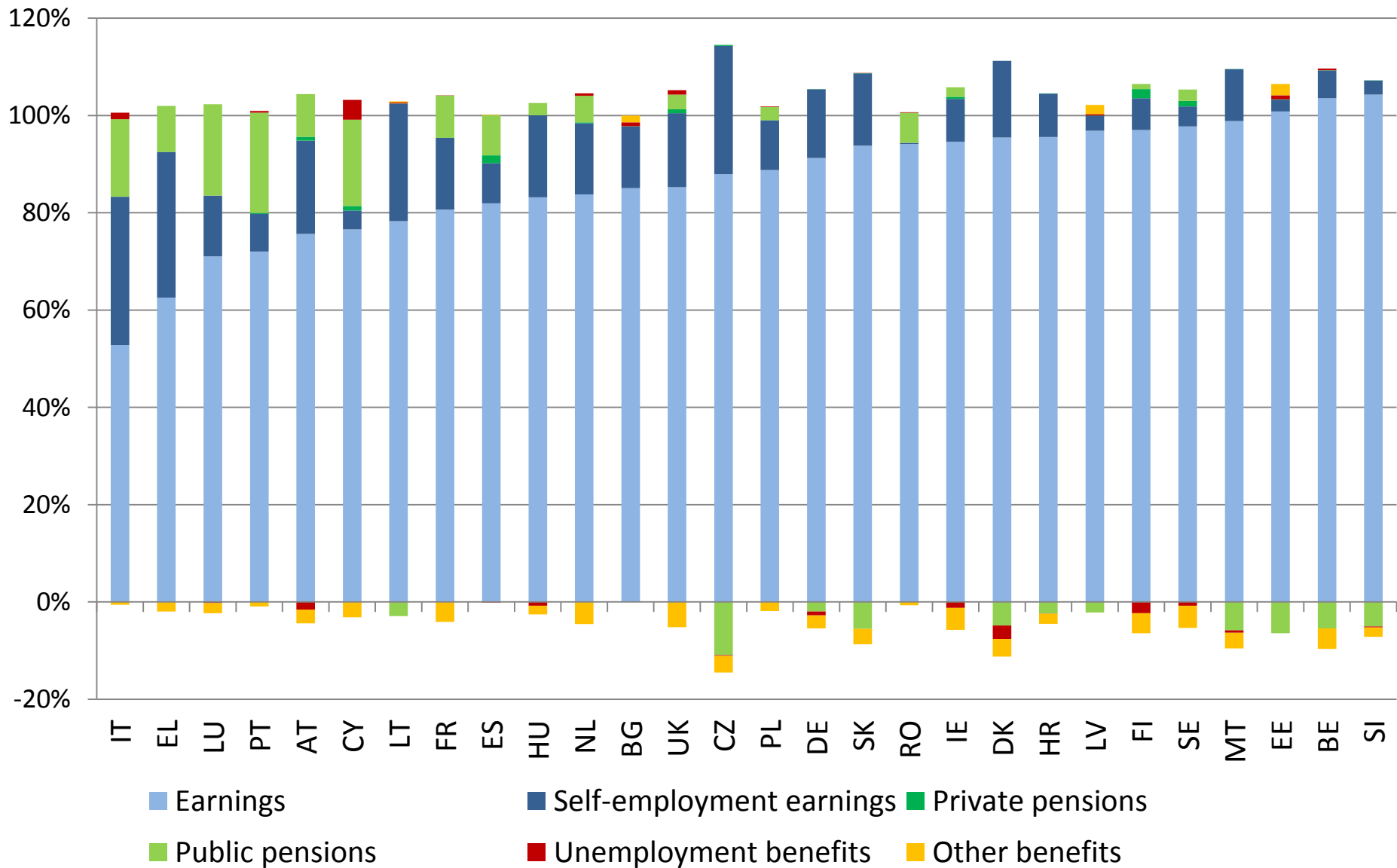
- ✓ Register data used only by few MS in EU-SILC

(See Goedemé & Zardo-Trinidad forthcoming)

# Empirical challenge

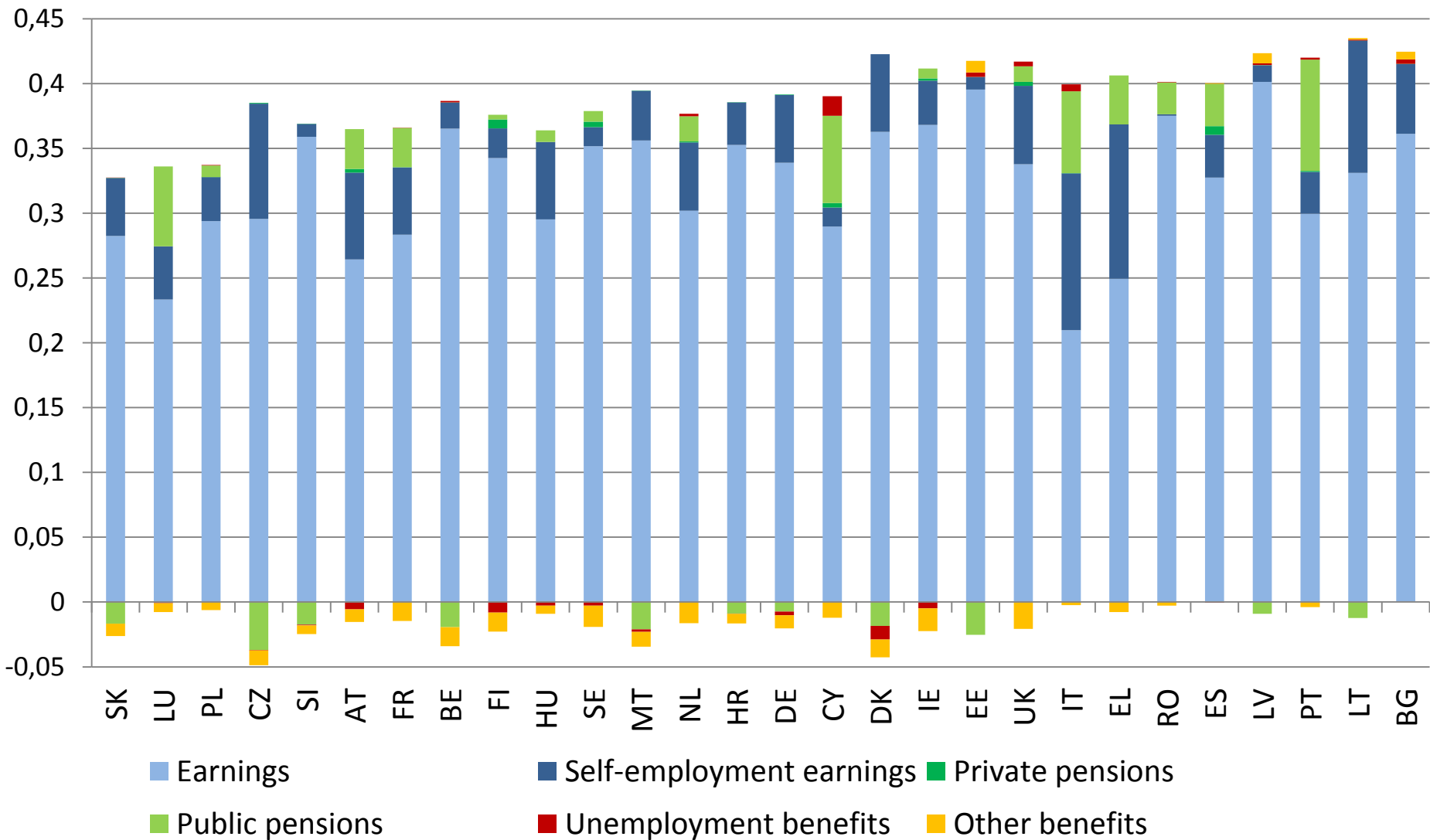
- In absence of net income components...
  - Only contributions of market sources and benefits
    - Contribution of taxes cannot be detected
- Decomposition of the variable HY010  
*and*
- Preliminary results for MS that record net income components

## Gross income sources - contribution to inequality (%). 2016



Source: EU-SILC UDB

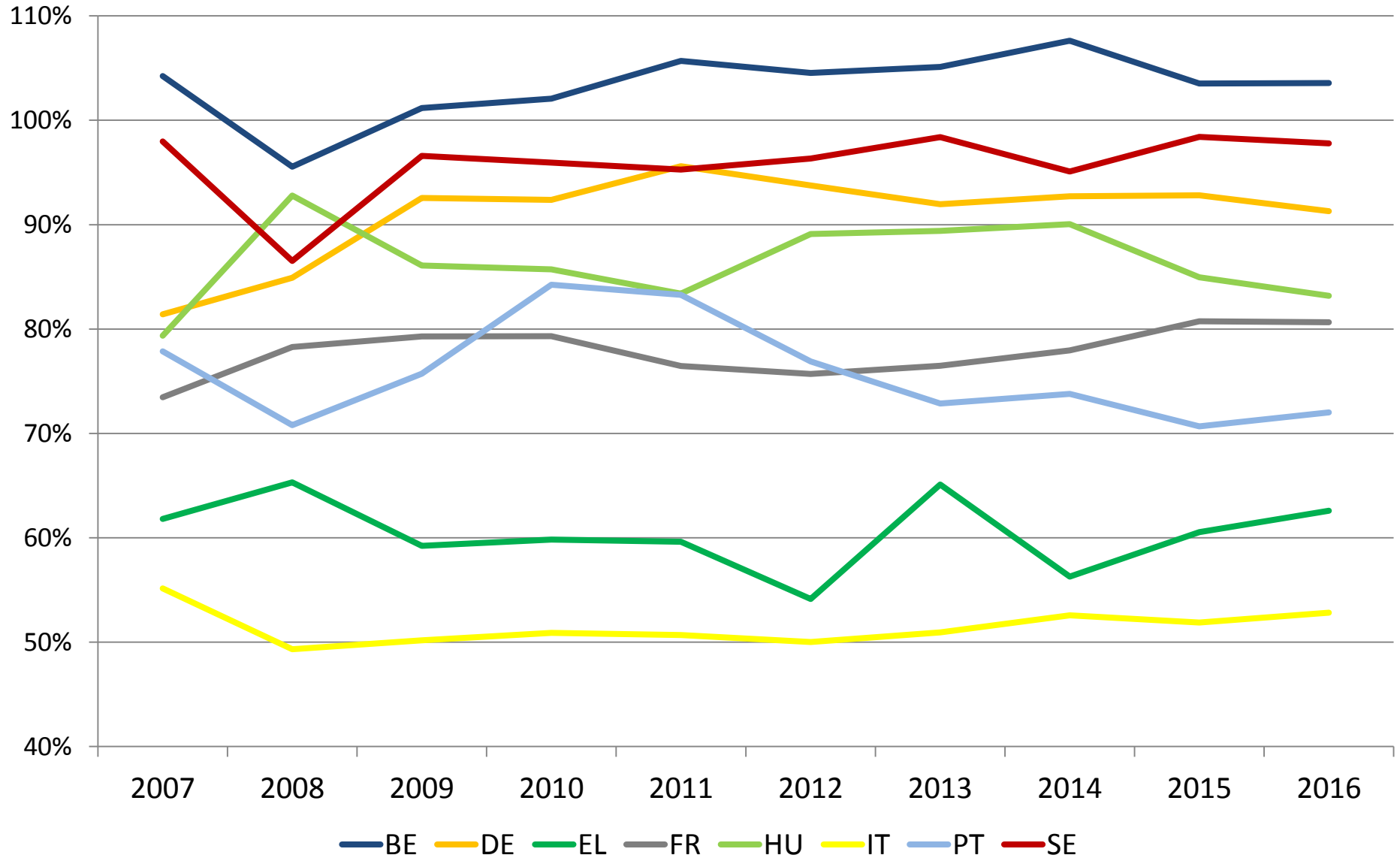
## Gross income sources - contribution to inequality as a proportion of Gini (%)



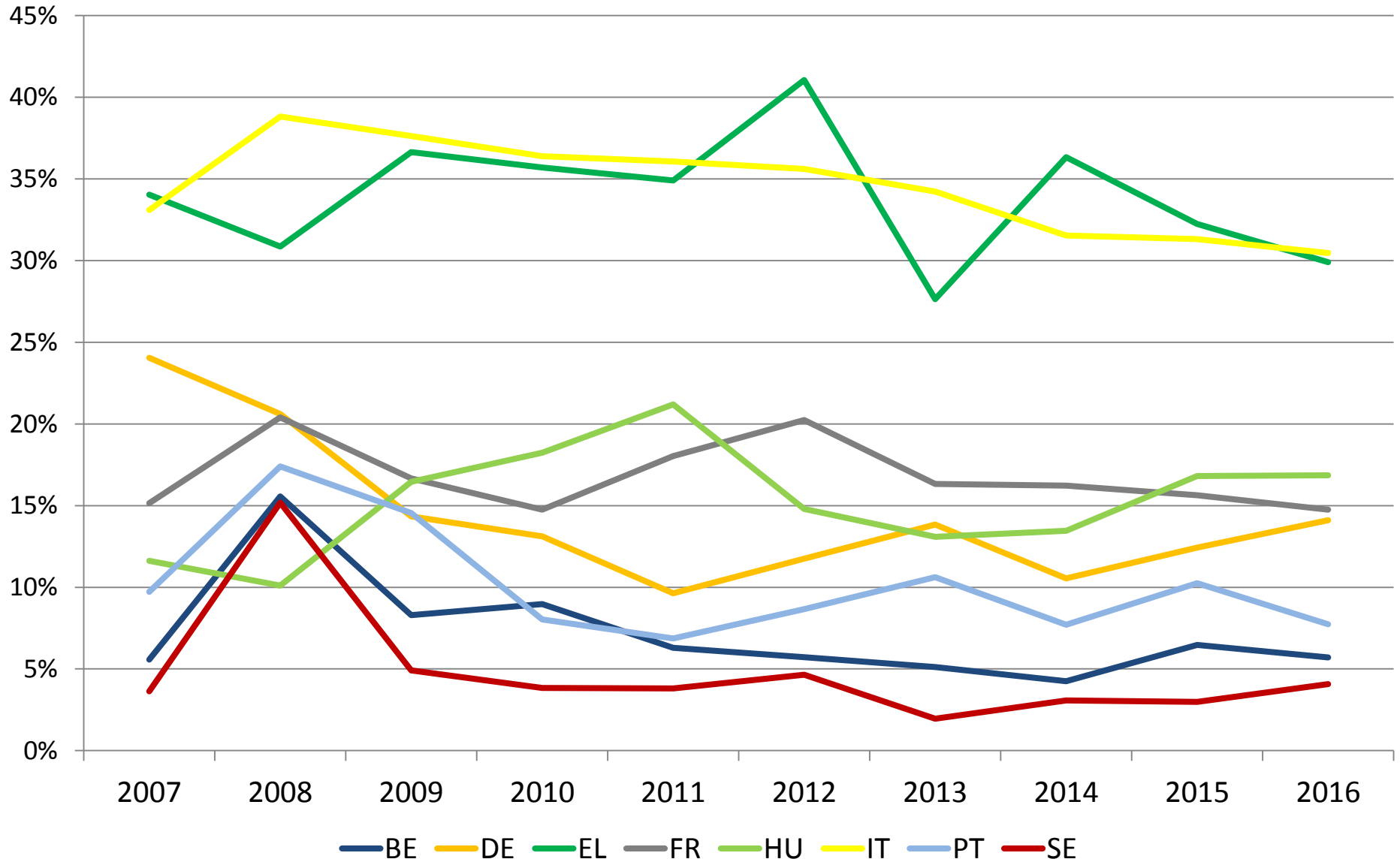
Source: EU-SILC UDB



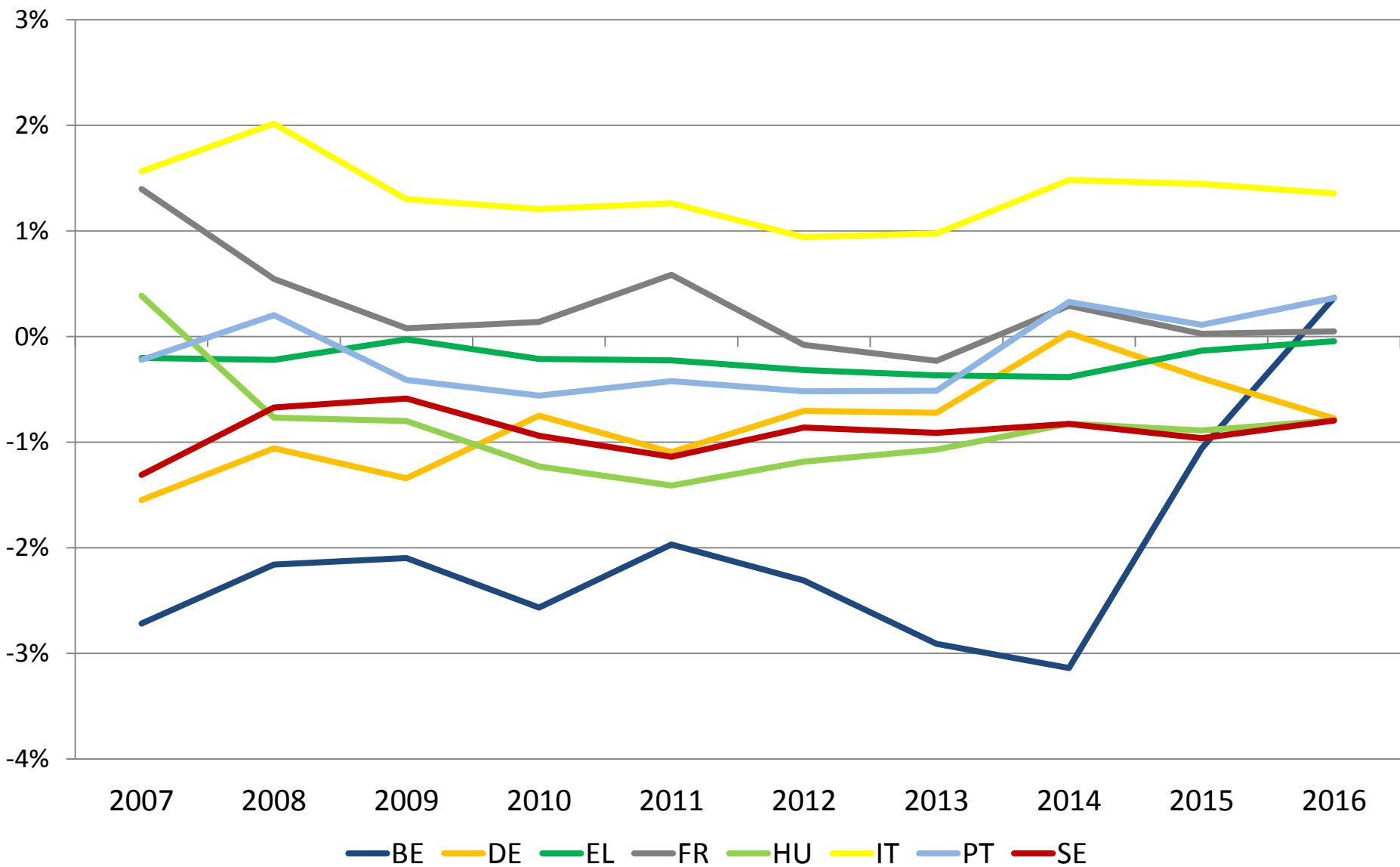
## Earnings - contribution to inequality (%)



## Self-employment income - contribution to inequality (%)

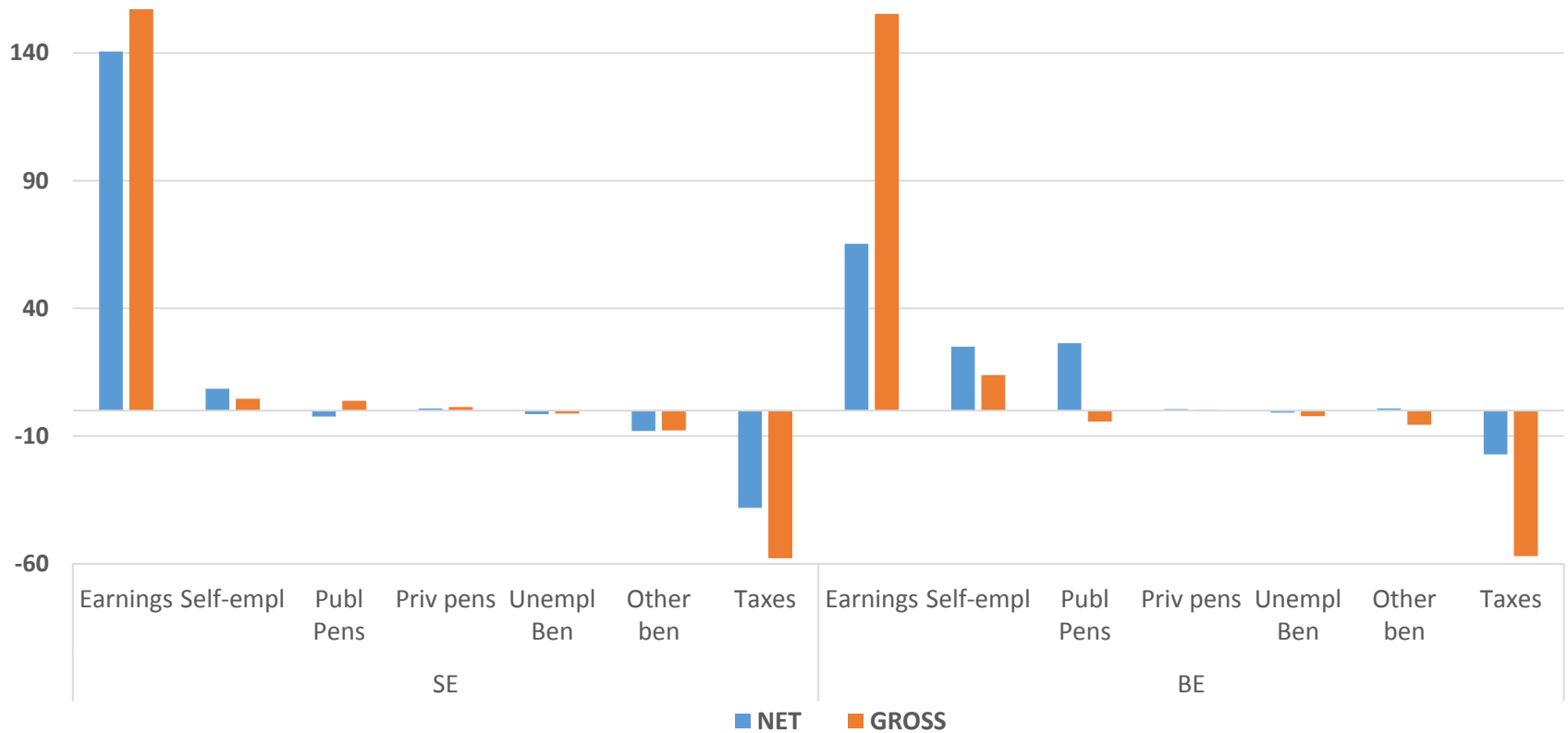


## Unemployment benefits - contribution to inequality (%)



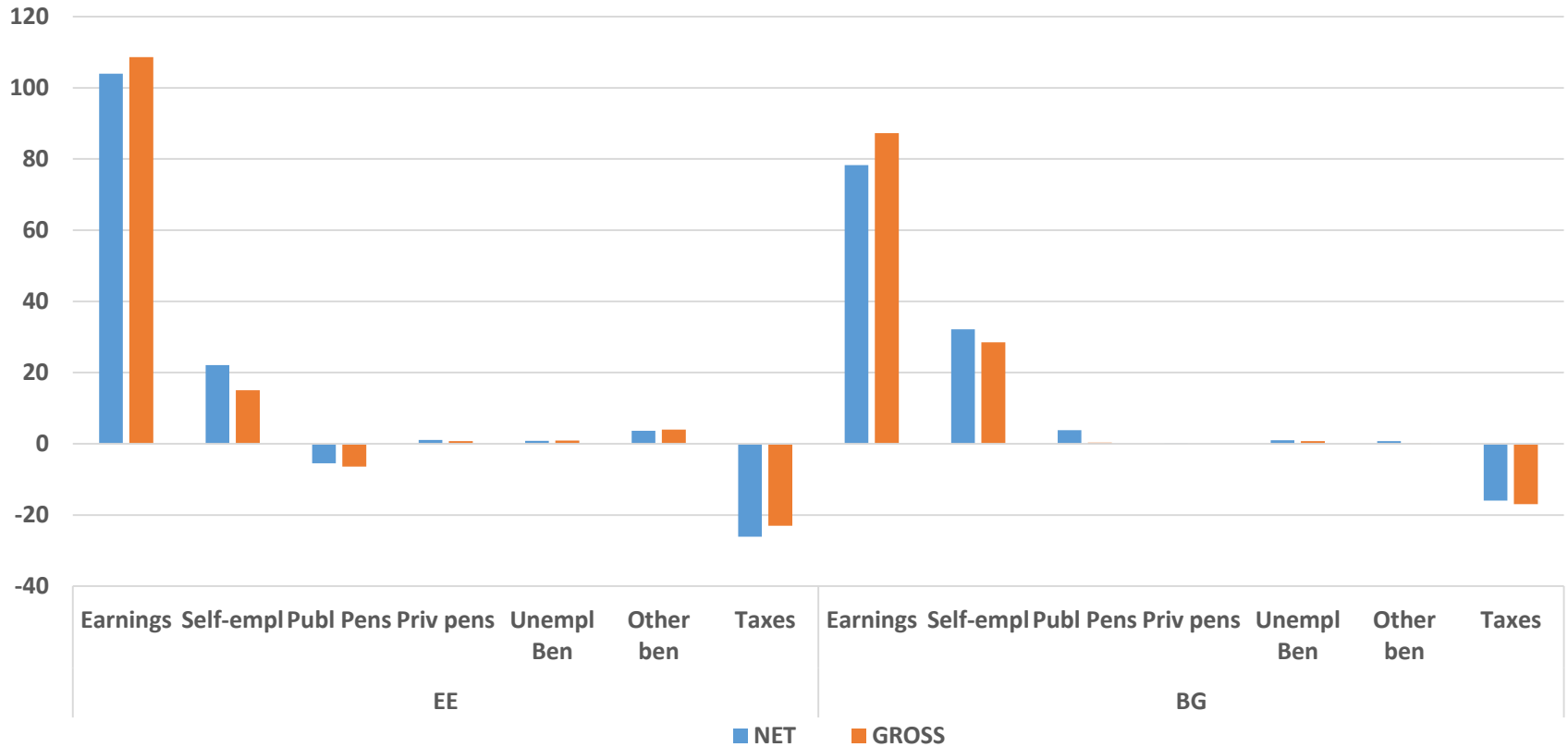
# Preliminary results: net incomes (1)

Disposable income sources - contribution to inequality (%). 2017



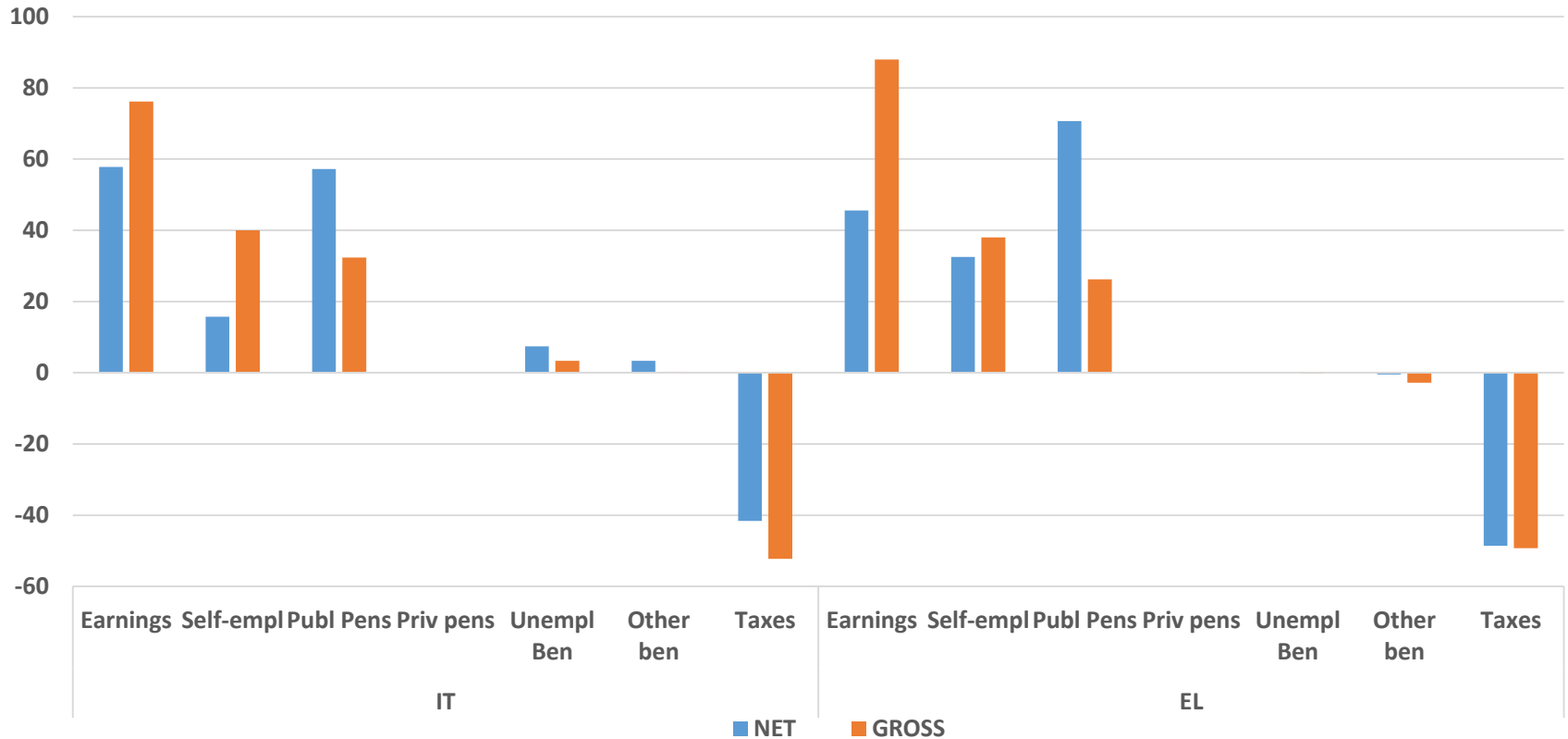
# Preliminary results: net incomes (2)

Disposable income sources - contribution to inequality (%). 2017



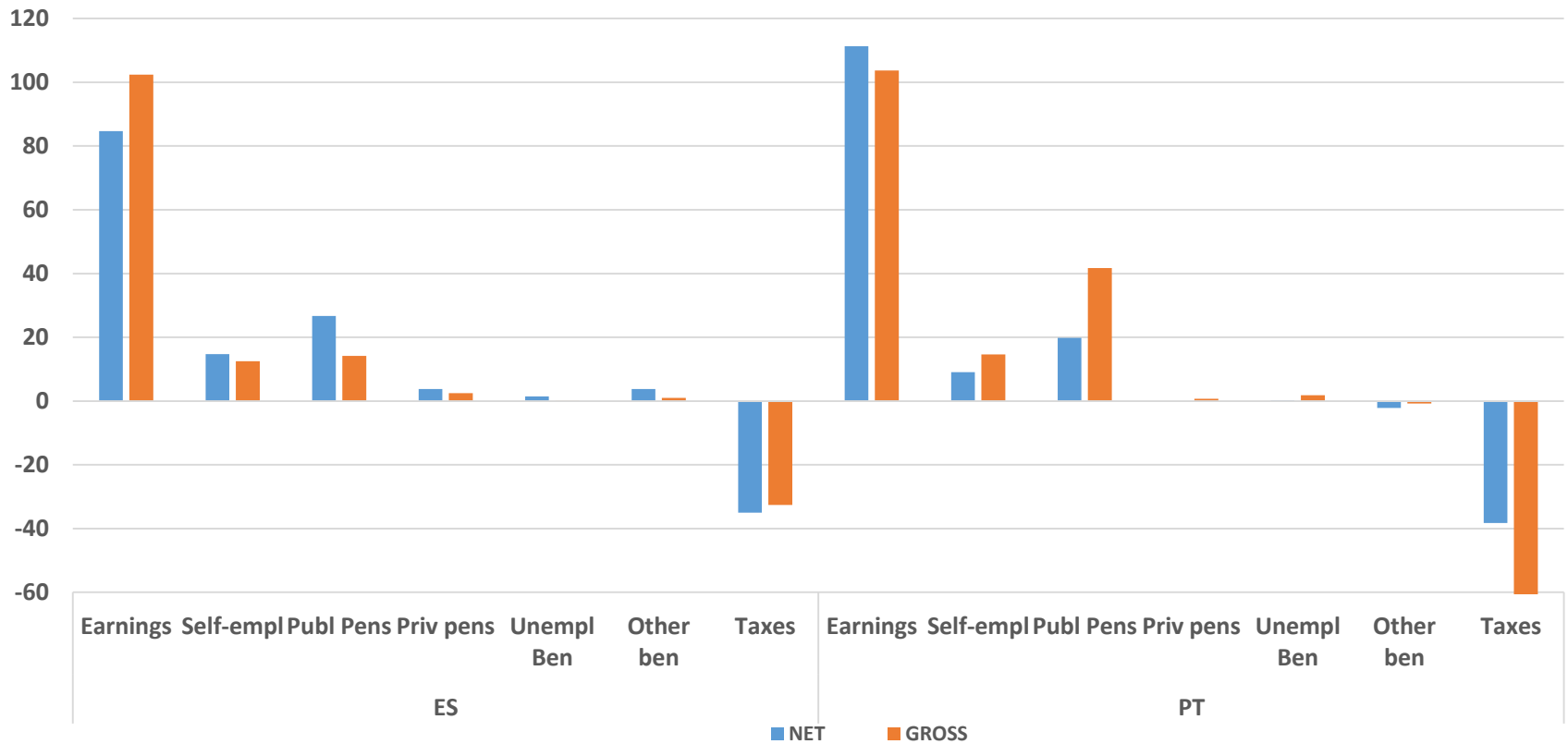
# Preliminary results: net incomes (3)

Disposable income sources - contribution to inequality (%). 2017



# Preliminary results: net incomes (4)

Disposable income sources - contribution to inequality (%). 2017



# Open questions

- Net income components, reliable?
  - Pensions in IT, EL?
  - Earnings in BE?
- Is the decomposition informative in light of its pitfalls?
  - More reliable results for register MS (SE) and simple welfare state MS (BG, EE)
- Is the decomposition more useful within country over time or across countries at a point in time?



# Conclusions

- Data gaps
- Method still in its infancy  
*but*
- New angle to assess redistributive impact of welfare component