



# An integrated database to measure economic wellbeing

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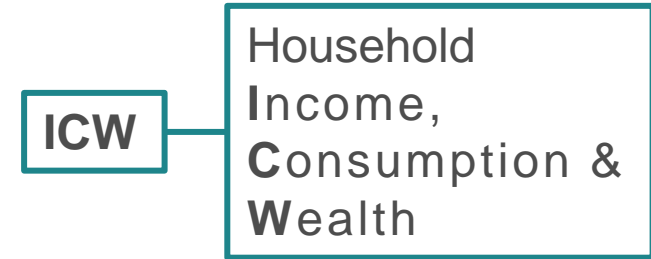
7<sup>th</sup> European User Conference for EU-Microdata  
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# Outline

- 1 Background
- 2 Joint income-consumption-wealth distribution
- 3 ICW indicators
- 4 Final remarks

# 1. Background

# Background



## Statistics on ICW – Why?

2016 Conference of DGINS

- Reinforced role of social indicators
- Need to develop a harmonised statistical framework for ICW

## International cooperation

- Eurostat/OECD EG ICW (2017-2020)
- OECD/Eurostat EG DNA (2017-2020)
- ECB EG LMM (2015-2019)
- ECB EG DFA (since 2019)

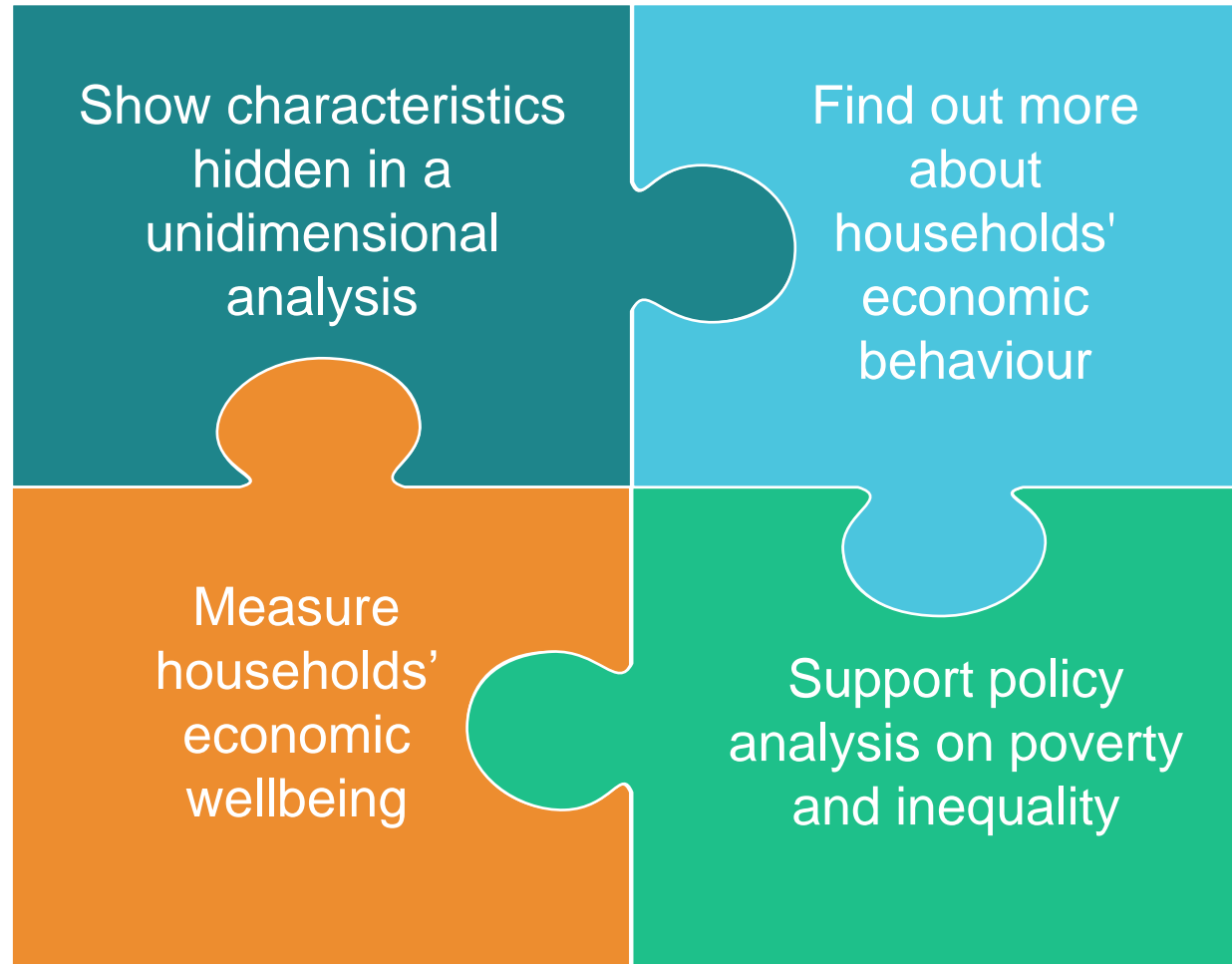


## Eurostat ICW project

- Joint micro data set of household income, consumption and wealth data
- Micro–macro data comparison and reconciliation for households' income and consumption

## 2. Joint ICW distribution

# Relevance of ICW statistics



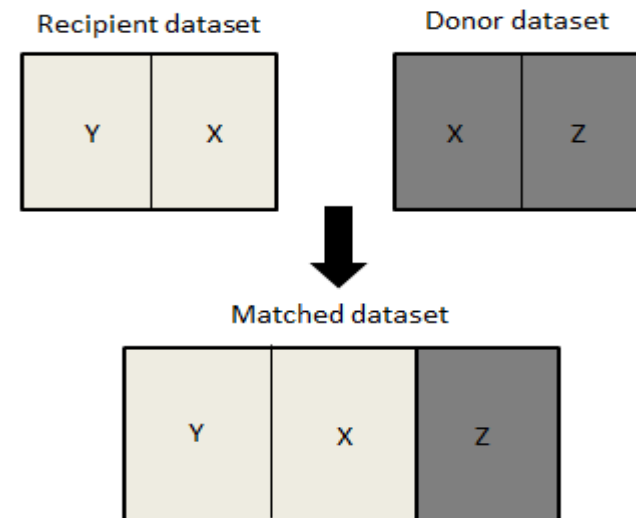
# Methodological alternatives

Different methods:

- Integrated survey
- Record linking
- **Statistical matching (SM)**
- Modular approach



Integration of specific variables from several independent data sources (referring to the same target population), using information shared between them as a link



# Sources



## Income

EU-SILC - Statistics on Income and Living Conditions  
(NSIs, Eurostat)



## Consumption

HBS – Household Budget Survey  
(NSIs, Eurostat)



## Wealth

HFCS - Household Finance and Consumption Survey  
(HFCN, ECB)



# Main steps in statistical matching

- Total disposal income, EU-SILC
- Total consumption expenditure, HBS
- Net wealth, HFCS

Common variables with the highest explanatory power of targets

Recalibration of EU-SILC weights to fit a number of consumption margins from HBS

Target variables

Common variables

Matching variables

Matching I-C

Weights recalibration

Matching I-C-W

Conceptual and statistical consistency

- Stratification by matching variables
- Random hot-deck method

- Stratification by household type, food consumption quintile, tenure status
- Rank hot-deck method

scrutinised and improved in 2020

# Methodological limitations

## Conditional Independence Assumption (CIA)

The relationship between Y and Z is completely explained by X:

**Income and consumption are independent once conditioning on the matching variables.**



A very strong assumption that:

1. does not seem plausible
2. cannot be tested on the fused data set SILC-HBS

# Overcoming limitations

1. **Make the CIA a more justifiable** and plausible assumption by including in the set of matching variables a proxy of one of the target variables

SILC-HBS	• Income ventiles as proxy of total disposable income
SILC-HBS-HFCS	• Gross income as proxy of total disposable income

2. **Test the CIA** using auxiliary information: Over-indebtedness, Consumption and Wealth (OCW) testing module for EU-SILC 2017

Consumption and wealth	BE, CZ, FI (sub-sampling), IS, IT, LV (sub-sampling), LT, NL, AT (partially and sub-sampling), PT (sub-sampling), SE, UK
------------------------	--------------------------------------------------------------------------------------------------------------------------

Can we assume independence between income and consumption while controlled by the ordered income class?

... Yes, we can

And between income and wealth while controlled by gross income?

... Yes, we can

country	correlation	partial correlation
AT	0.34	0.04
BE	0.21	0.05
FI	0.49	0.12
LT	0.45	0.14
LV	0.64	0.15
NL	0.33	0.06
PT	0.32	-0.02
SE	0.21	0.02

country	correlation	partial correlation
BE	0.28	0.08
FI	0.56	0.18
NL	0.51	-0.09
PT	0.37	-0.12
SE	0.17	-0.06

Therefore, we can assume that CIA holds

# An example of I-C matching for Latvia

## Matching variables

Household type, age, income ventiles

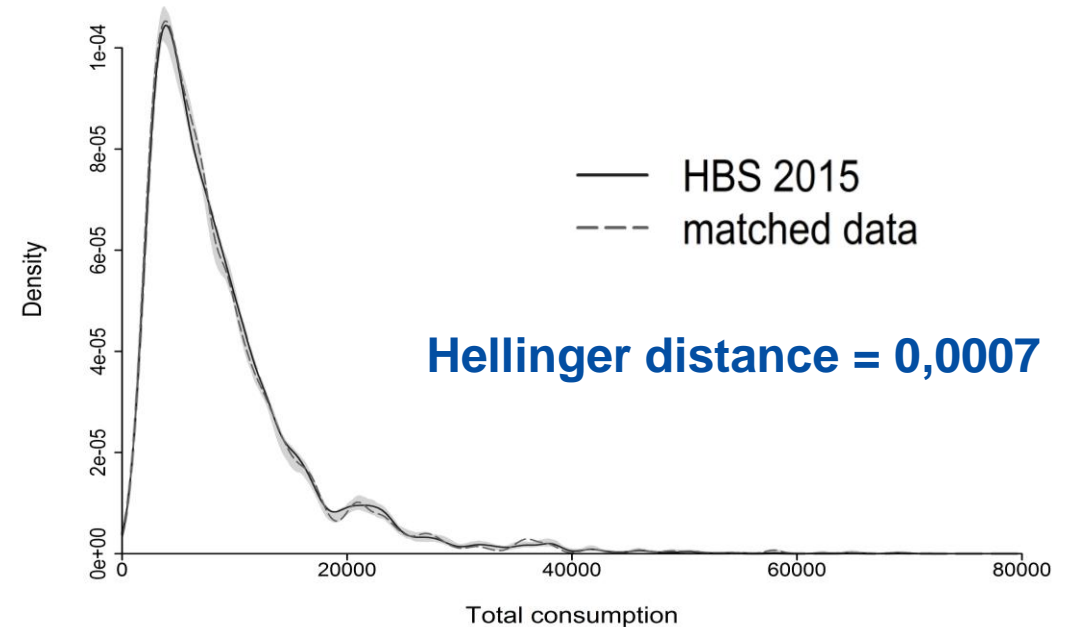
## Explanatory power

R2 income	R2 consumption
0,884	0,533

## Fréchet bounds

Deciles income-consumption	Lower	Upper
01-01	0,03667	0,03719
10-10	0,05416	0,05417

## Original vs matched distributions



# 3. ICW indicators

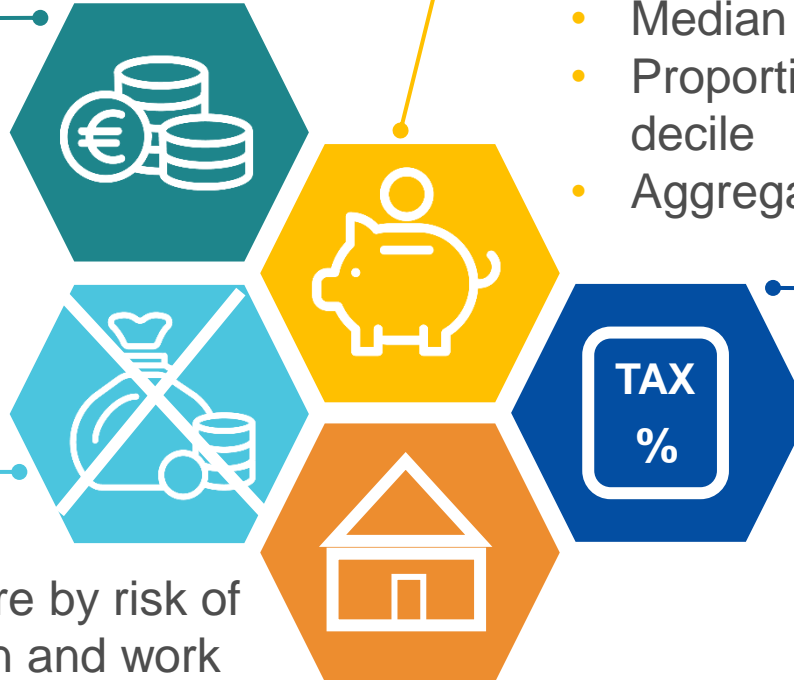
## Topics

### Economic resources

- Share of households and economic resources by icw quantiles
- Mean and median economic resources by icw quantiles

### Poverty

- Persons with low level of expenditure by risk of income poverty, material deprivation and work intensity
- Persons at two-fold risk of poverty
- Households at risk of asset-based vulnerability
- Proportion of dissaving households



### Saving rates

- Median saving rates
- Gini coefficient
- Median consumption by income decile
- Proportion of consumption decile by income decile
- Aggregate propensity to consume

### Taxation

- Distribution of direct and indirect taxes paid by households as a percentage of their gross income
- VAT rate by COICOP consumption purpose

### Household characteristics

- Structure of household population by: household type, age, educational attainment level, activity status

# Economic resources

## Eurobase, experimental statistics:

**icw\_res\_01:** Share of households and economic resources by income, consumption and wealth quantiles (%)

**icw\_res\_02:** Mean and median economic resources of households by income, consumption and wealth quantiles (Euro)

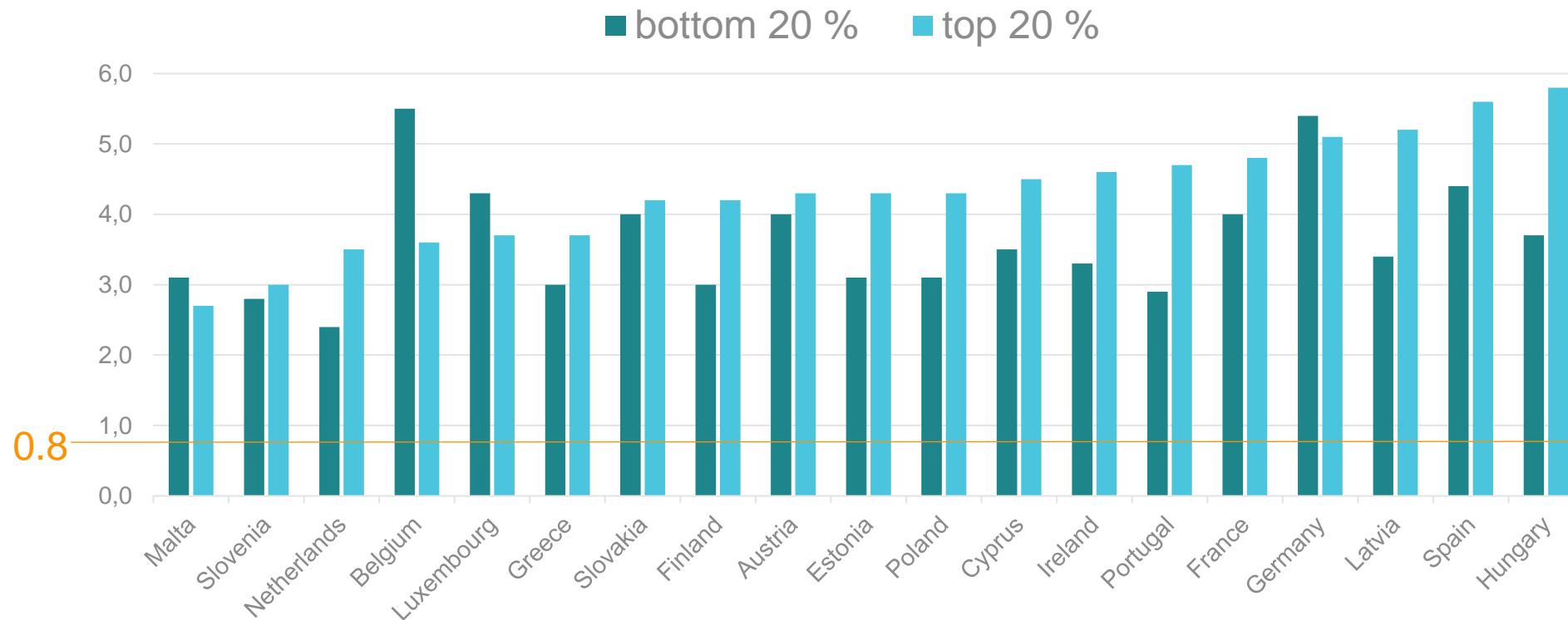
Income quantile	Consumption quantile	Wealth quantile	Measure	Indicator
Total population	Total population	Total population	mean	disposable income
Income Q1	Consumption Q1	Wealth Q1	median	consumption expenditure
Income Q2	Consumption Q2	Wealth Q2	share	net wealth
Income Q3	Consumption Q3	Wealth Q3		
Income Q4	Consumption Q4	Wealth Q4		
Income Q5	Consumption Q5	Wealth Q5		
Income Top 10%	Consumption Top 10%	Wealth Top 10%		
Income Bottom 10%	Consumption Bottom 10%	Wealth Bottom 10%		

**Full cross-over of all income, consumption and wealth quantiles, plus the top and bottom deciles**



# Sticky floors and sticky ceilings

Share of households in the top 20% and bottom 20% of the income, consumption and wealth distribution

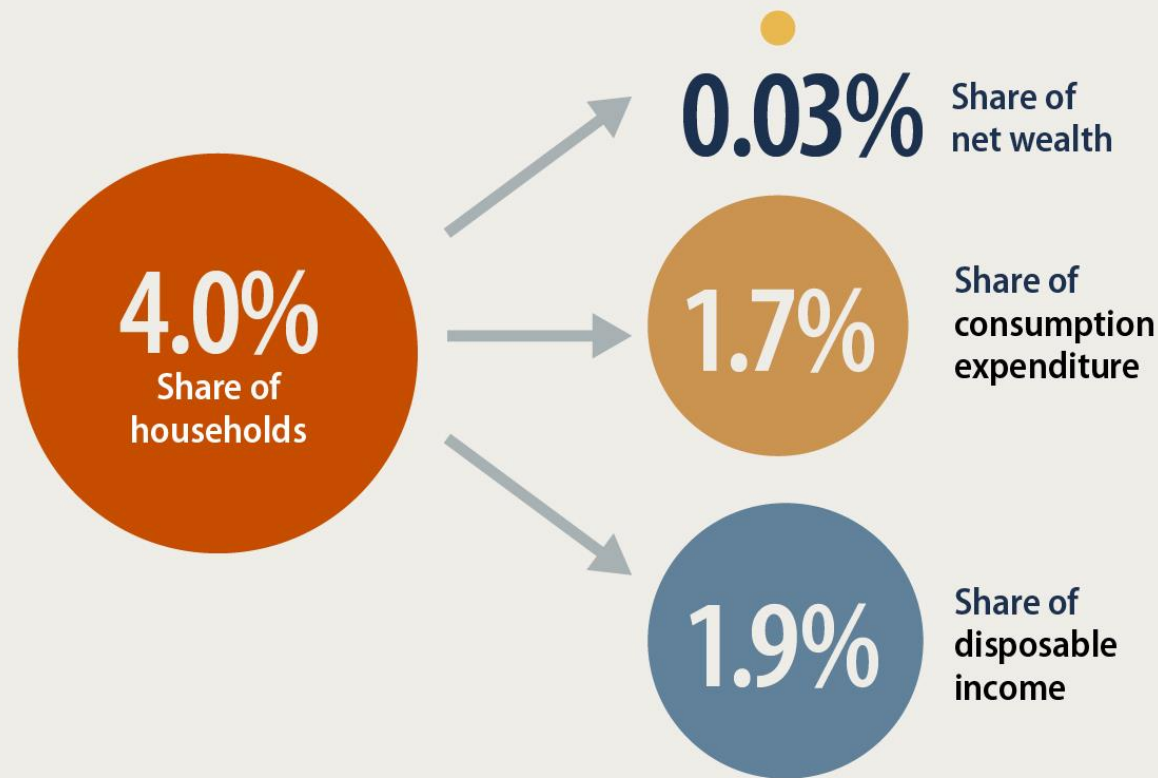


# Share of resources at IW bottom quintile

Share of households belonging to the 20% most vulnerable in terms of income, expenditure and net wealth, and the share of resources held by these households (%)

**FRANCE 2017**

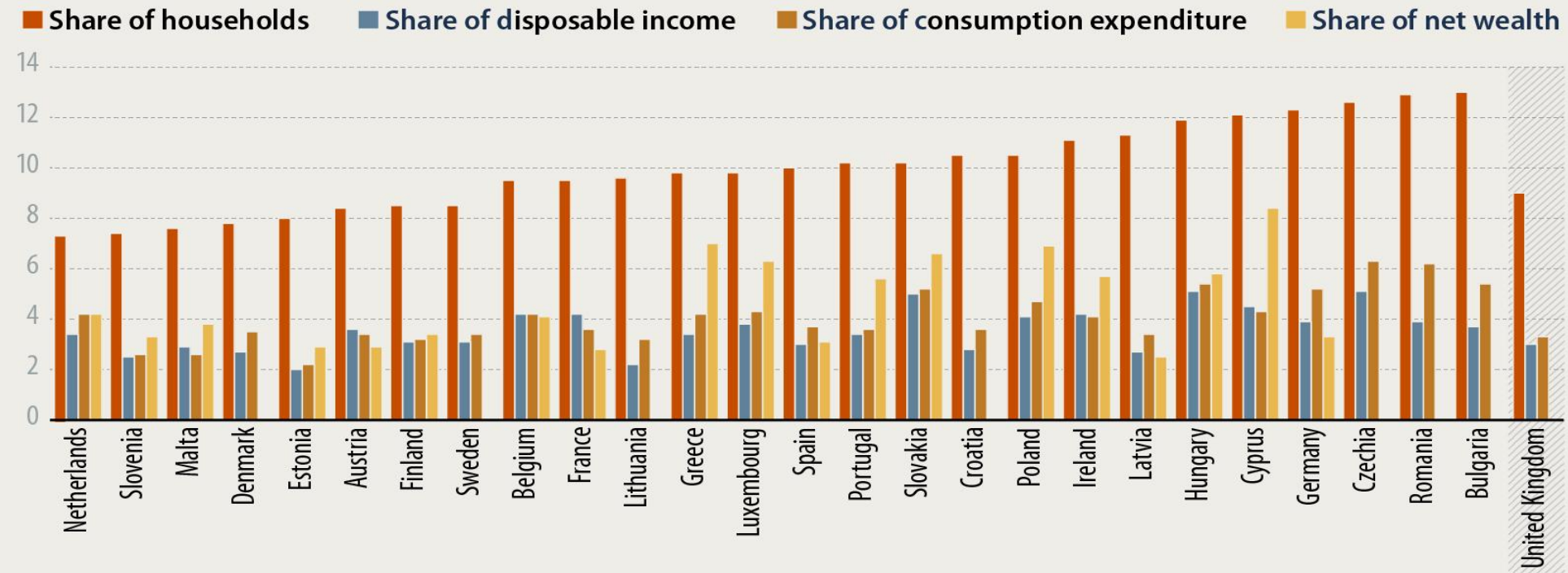
*Note: Wealth data are from the Eurosystem Household Finance and Consumption Survey. The results published and related observations/analysis may not correspond to results/analysis of the data producers.*



4% of French households fall into the bottom 20% of all three of the expenditure, income and wealth distributions. On average, their income is €19 000 per year, with average net wealth of €3 000. They spend €11 000.

# Share of resources at IC bottom quintile

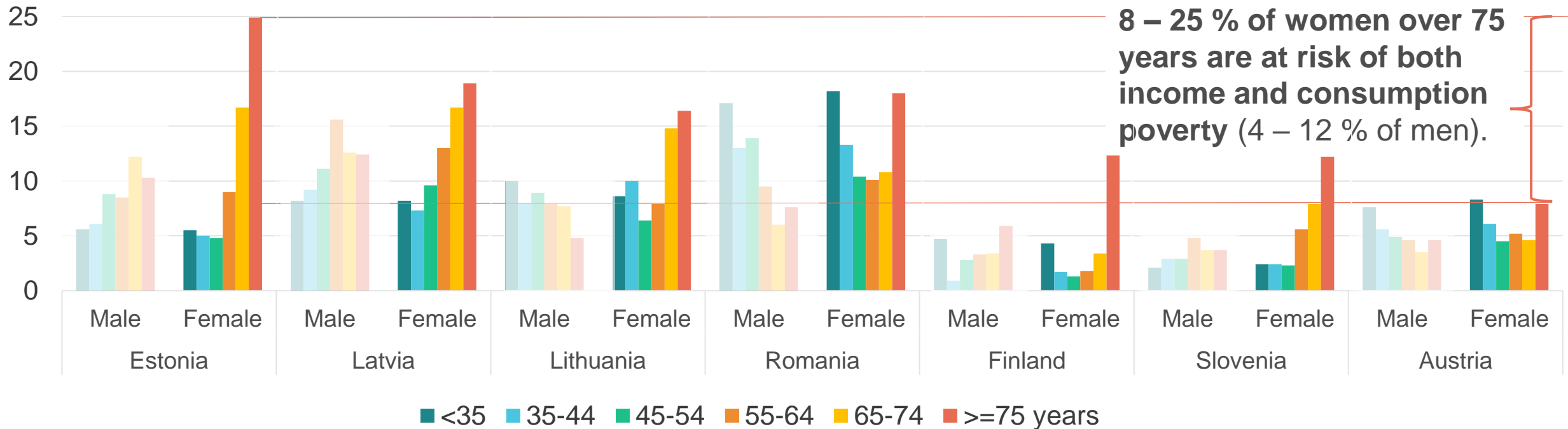
Share of households belonging to the 20% most vulnerable in terms of both income and expenditure and the share of disposable income, consumption expenditure and net wealth held by these households, "around 2015"



Note: Reference years for consumption and income: Sweden - 2012; Germany - 2013; Belgium, Croatia - 2014; Lithuania, Finland - 2016; France - 2017; all other countries 2015. Wealth data are from the Euro system Household Finance and Consumption Survey, with reference years: Estonia, Ireland, Malta, Netherlands, Portugal - 2013; France, Finland - 2017; all other countries 2014. The HFCS is run by National Central Banks and coordinated by the European Central Bank. The results published in this article and the related observations/analysis may not correspond to results/analysis of the data producers.

Source dataset: icw\_res\_01

# Persons at risk of income & consumption poverty



## Eurobase, experimental statistics:

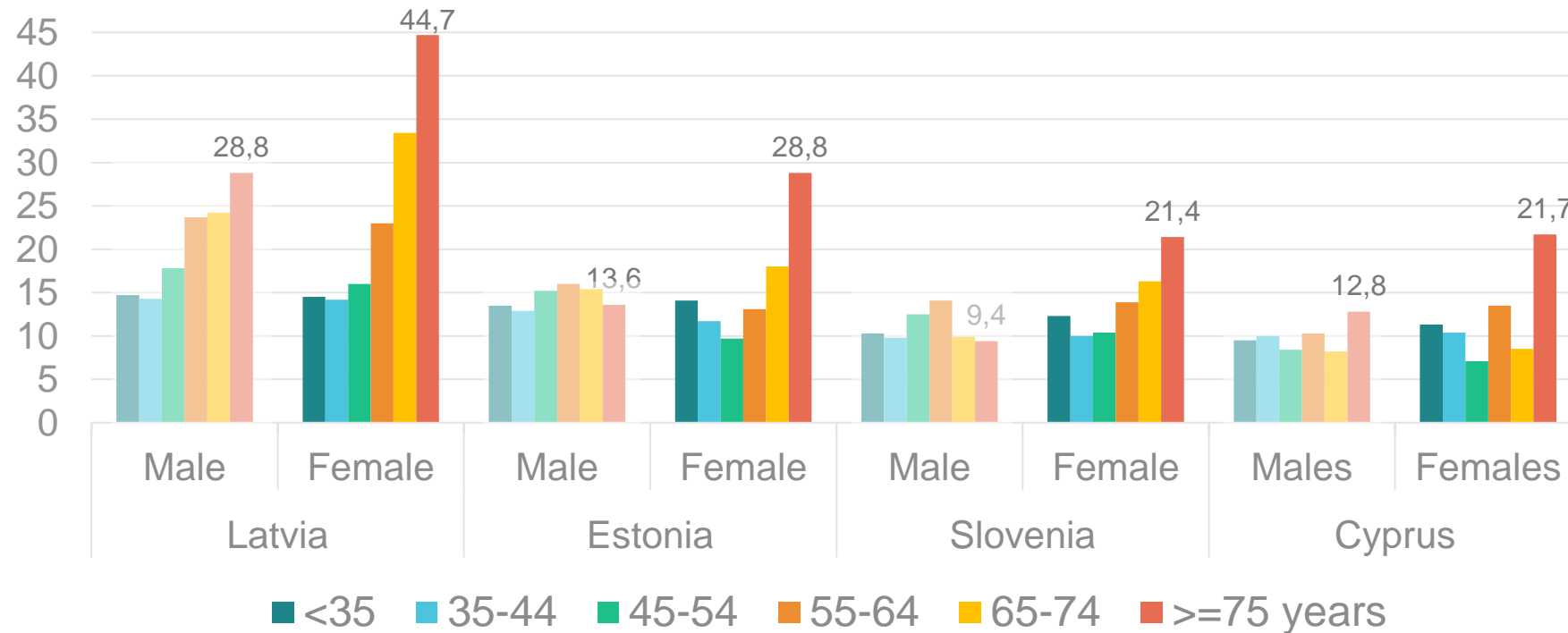
**icw\_pov\_10: Persons at two-fold risk of poverty by age and sex**

**icw\_pov\_11: Persons at two-fold risk of poverty by household type**

**icw\_pov\_12: Persons at two-fold risk of poverty by activity status**

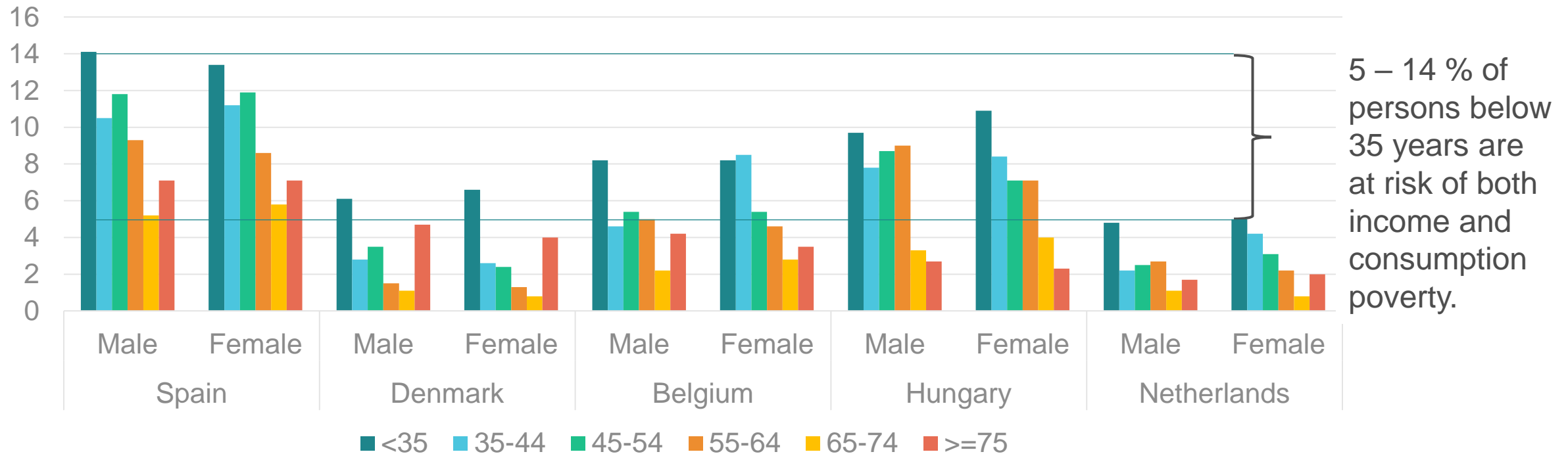
- income & consumption poverty
- income & liquid financial wealth poverty
- consumption & liquid financial wealth poverty

# Persons at risk of income & liquid financial wealth poverty

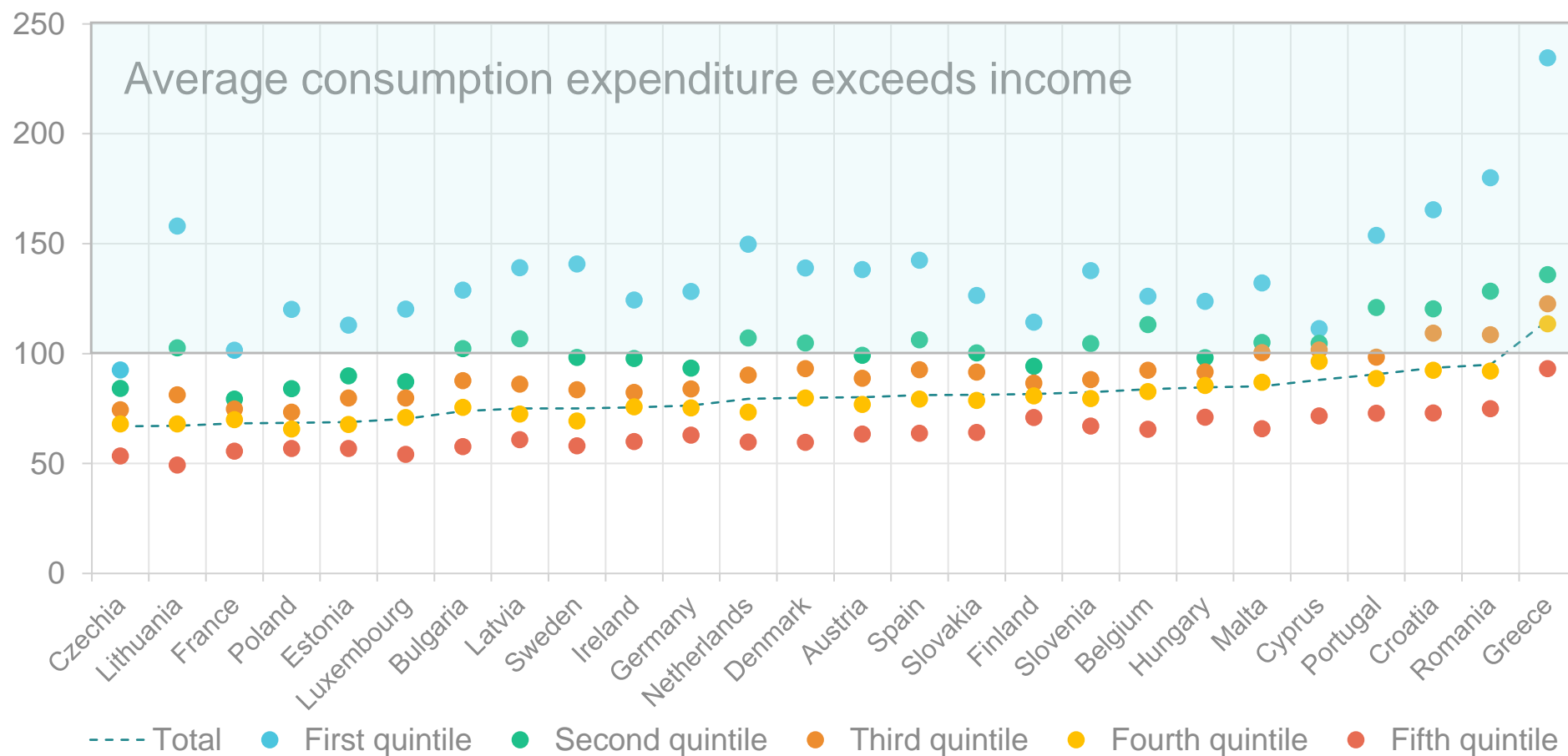


20 – 45 % of women over 75 years are at risk of both income and liquid financial wealth poverty.

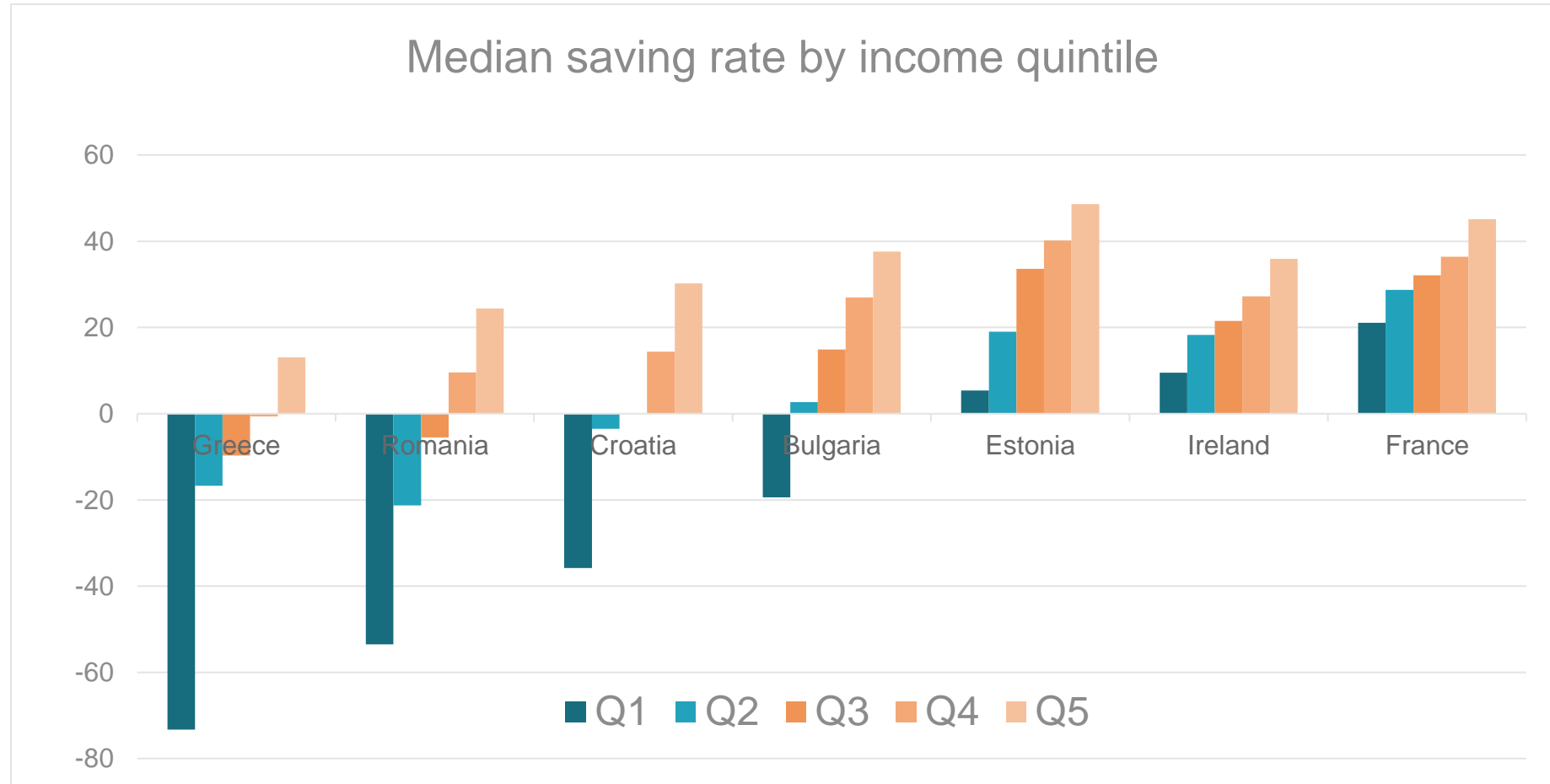
# Persons at risk of income & consumption poverty



# Aggregate propensity to consume by income quintile

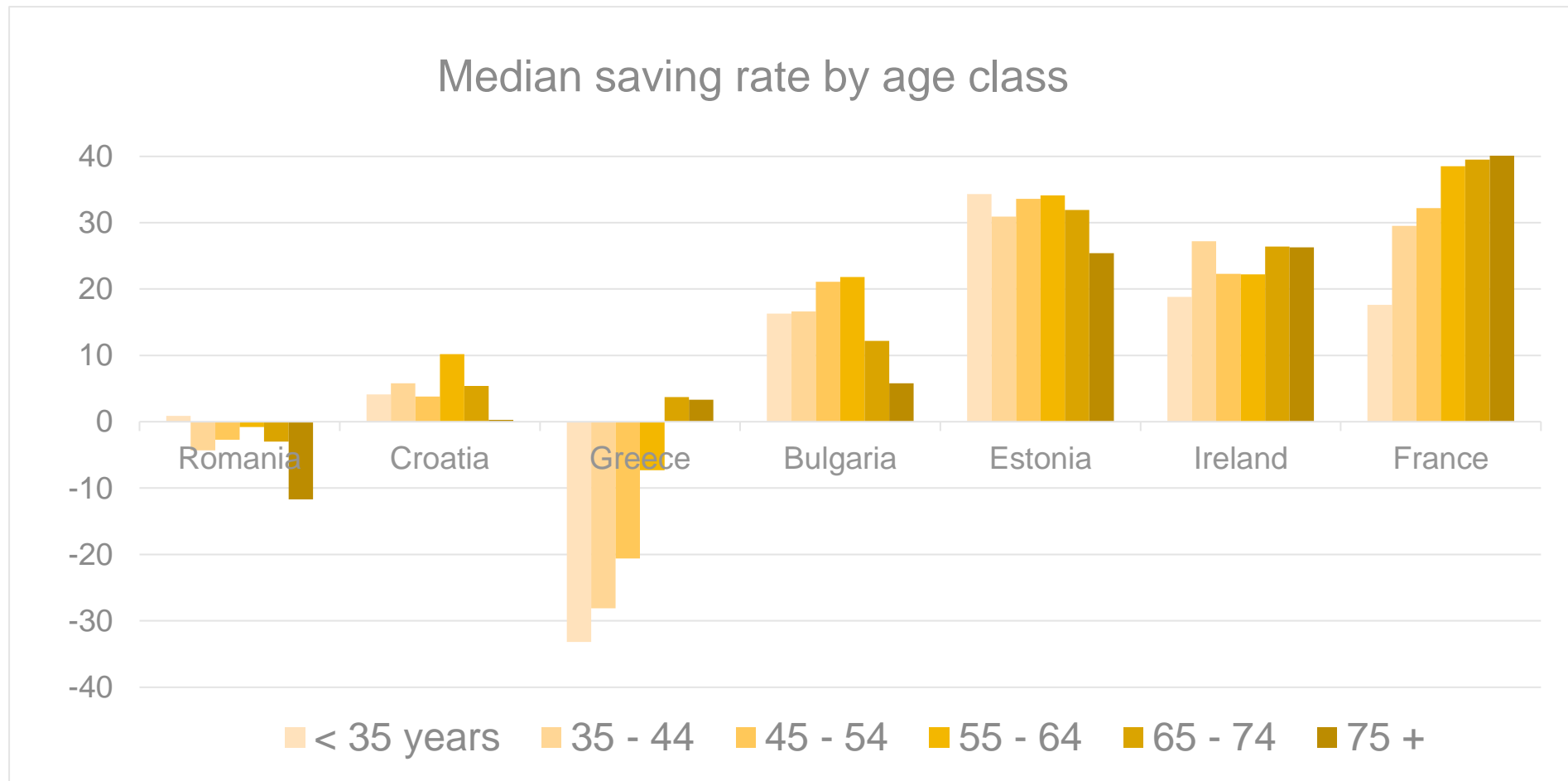


# The saving rates puzzle



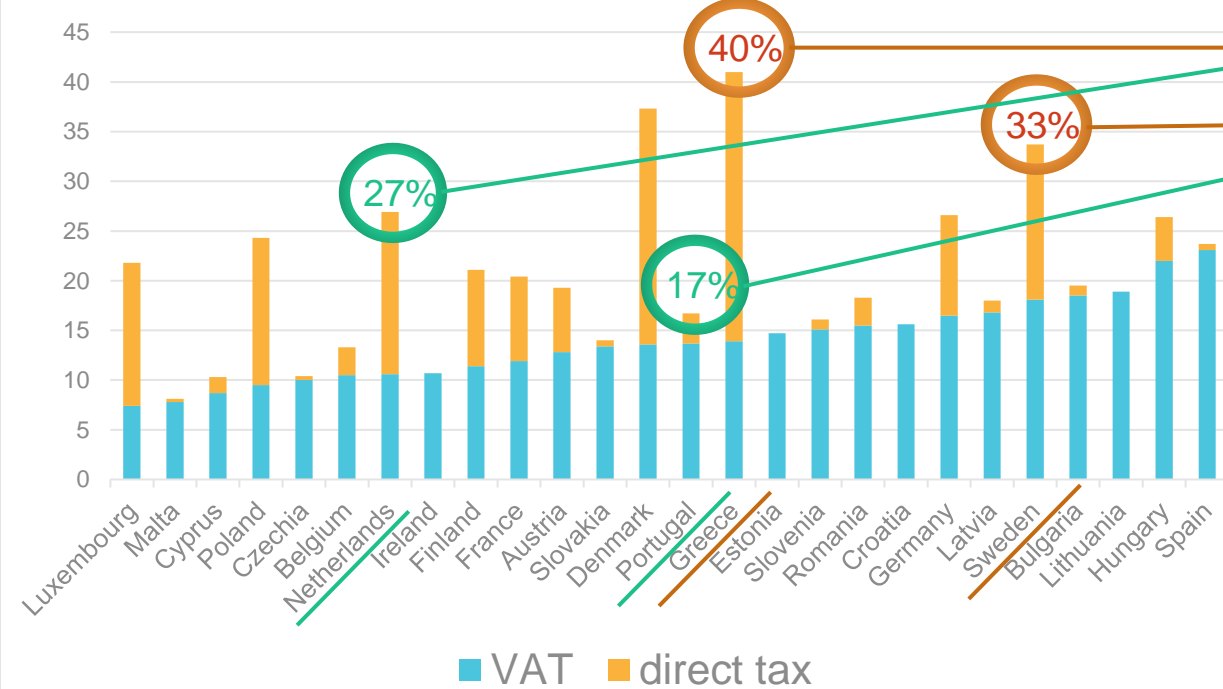


# The saving rates puzzle

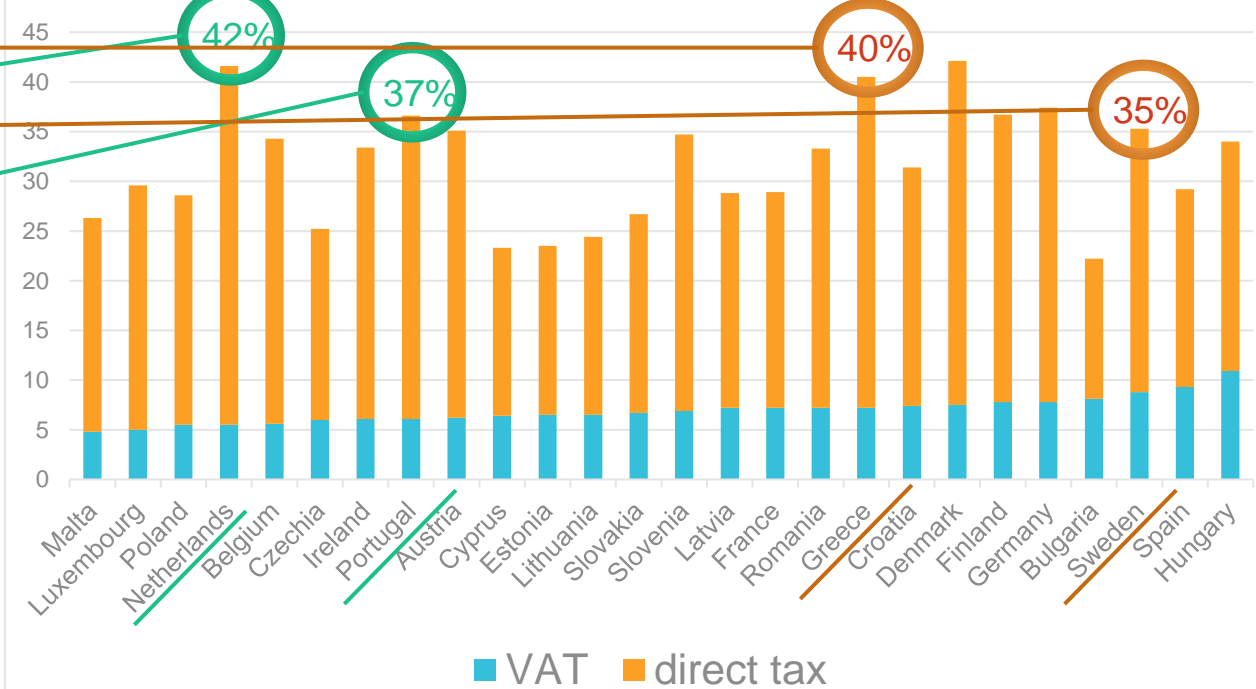


# Impact of taxes

Share of disposable income paid in direct and indirect taxes by the median household in the **first income quintile**



Share of disposable income paid in direct and indirect taxes by the median household in the **fifth income quintile**



## INTRODUCTION

Experimental statistics use **new data sources and methods** in an effort to better respond to our users' needs.

For example, for the first time Eurostat is estimating **price changes in the food supply chain**, from farm to consumer. Another example is the use of Wikipedia as a new source to produce statistics on the **visits to UNESCO World Heritage Sites**. This is to measure not only the popularity of the sites but also the public's 'cultural consumption'.



As these statistics have not reached full maturity in terms of harmonisation, coverage or methodology, they are always marked with a clearly visible **logo** and accompanied by detailed methodological notes.

We are interested in receiving your **feedback** on our experimental statistics in order to further improve their robustness. Join the discussions launched on the **European Statistics User Forum** to share your views and ideas!

All topics covered in this page are summarised in a table under '**Published statistics**'. They are also available via the 'topics' section below.



## TOPICS



FIGARO



Food price monitoring tool



Income & consumption:  
social surveys and national accounts



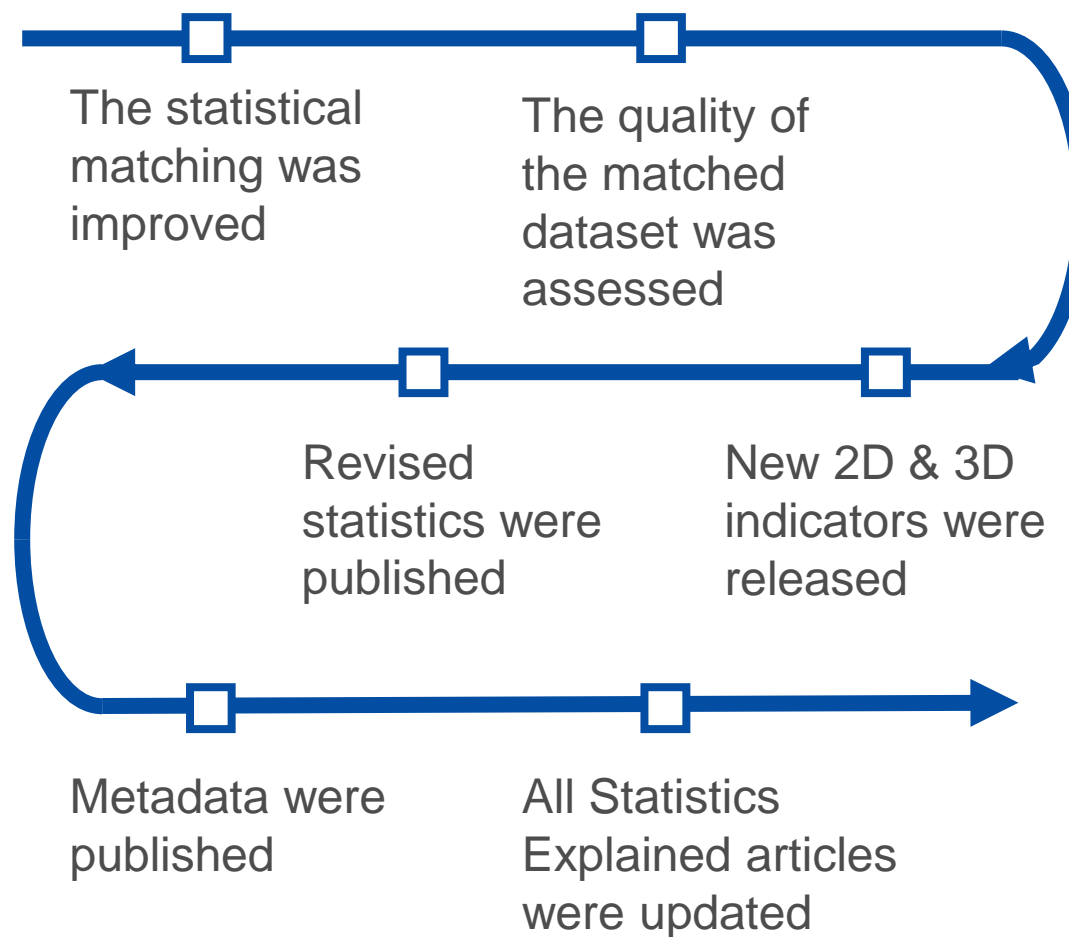
Income, consumption and wealth



Income inequality and poverty indicators

# 4. Final remarks

# Recent steps



# Thank you