

# **Economic and personal security as part of quality of life of EU member states**

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# Introduction

A variety of risks of different natures may threaten the material conditions of individuals and households in unforeseeable ways. Examples are losing one's job, impaired health, problems related to aging, or even events at the global level.

On the other hand, non-economic risks such as violence and crime may endanger physical safety. Even when risks do not actually materialize, however, the subjective perception of a threat and the ensuing feelings of insecurity effectively undermine quality of life.



# The aim

The aim of the article is to compare the status of the relevant indicators chosen in the EU countries, their variability and the changes that took place between 2010 and 2015.

In order to compare the overall situation, one composite indicator is constructed consisting of two subsets of basic indicators from the field of economic and personal security.



To fulfill the objectives of the EU is certainly important not only wealth creation, but also reducing disparities in the region, which is known as the economic and personal security, and that is increasingly on the agenda of academic and professional discussions and political negotiations.

It is precisely in this area that the focus of research, which aims to:

- a) compare the position of EU countries using the composite indicator on economic and personal security;
- b) to determine the evolution of the variability of the indicators selected for assessing economic and personal security within the EU member states.



# Hypothesis

- a. The position of all EU countries between 2010 and 2015 in the aggregate in the economic and personal security has improved;
- b. Variability indicators of both groups of indicators decreased in 2015 compared to 2010, while the average coefficient of variation for both areas are at the similar level.



# Methods

*Tab. 1: Overview of the basal (baseline) indicators and their acronyms*

Akronym	Description
RIPT	at risk of poverty rate after social transfers
MADE	material deprivation rate
DEMD	depth of material deprivation
INHO	intentional homicide
ASSA	assault
ROBB	robbery
UADR	unlawful acts involving controlled drugs or precursors
YOUN	youth unemployment rate
RIEP	median relative income of elderly people (60+)

All indicators - except RIEP - are minimizing, i.e. in order to improve the quality of life, it is desirable to minimize them.



$$y_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)} \quad (1)$$

where:  $y$  – the standardized value;  $x$  – the variable;  $i$  - the country;  $j$  – the pointer

$$y_{EPS} = \sum [y_{RIPT} + y_{MD} + y_{CR} + y_{YOUN} + (1 - y_{RIEP})] \quad (2)$$

where  $y_{EPS}$  = the composite indicator of economic and personal security as the sum of the standardized values RIPT, YOUN and if RIEP its recalculation into one, given that it is a maximization indicator, further sum of  $y_{MD}$  and  $y_{CR}$ ;

$y_{MD}$  is the standardized MD value, i.e. the square root of the product of the indicators of the MADE and DEMD indicators;

$y_{CR}$  is the sum of the standardized values of the various indicators of personal security.

$$y_{MD} = \sqrt{MADE * DEMD} \quad (3)$$

$$y_{CR} = \sum y_{INHO} + y_{ASSA} + y_{ROBB} + y_{UADR} \quad (4)$$



	Akronym	Description
Y <sub>MD</sub>	RIPT	at risk of poverty rate after social transfers
	MADE	material deprivation rate
	DEMD	depth of material deprivation
	INHO	intentional homicide
Y <sub>CR</sub>	ASSA	assault
	ROBB	robbery
	UADR	unlawful acts involving controlled drugs or precursors
	YOUN	youth unemployment rate
	RIEP	median relative income of elderly people (60+)





The hypothesis  $\alpha$  will be confirmed if the value of the composite indicator for all member countries for the year 2015 compared to 2010 is lower.

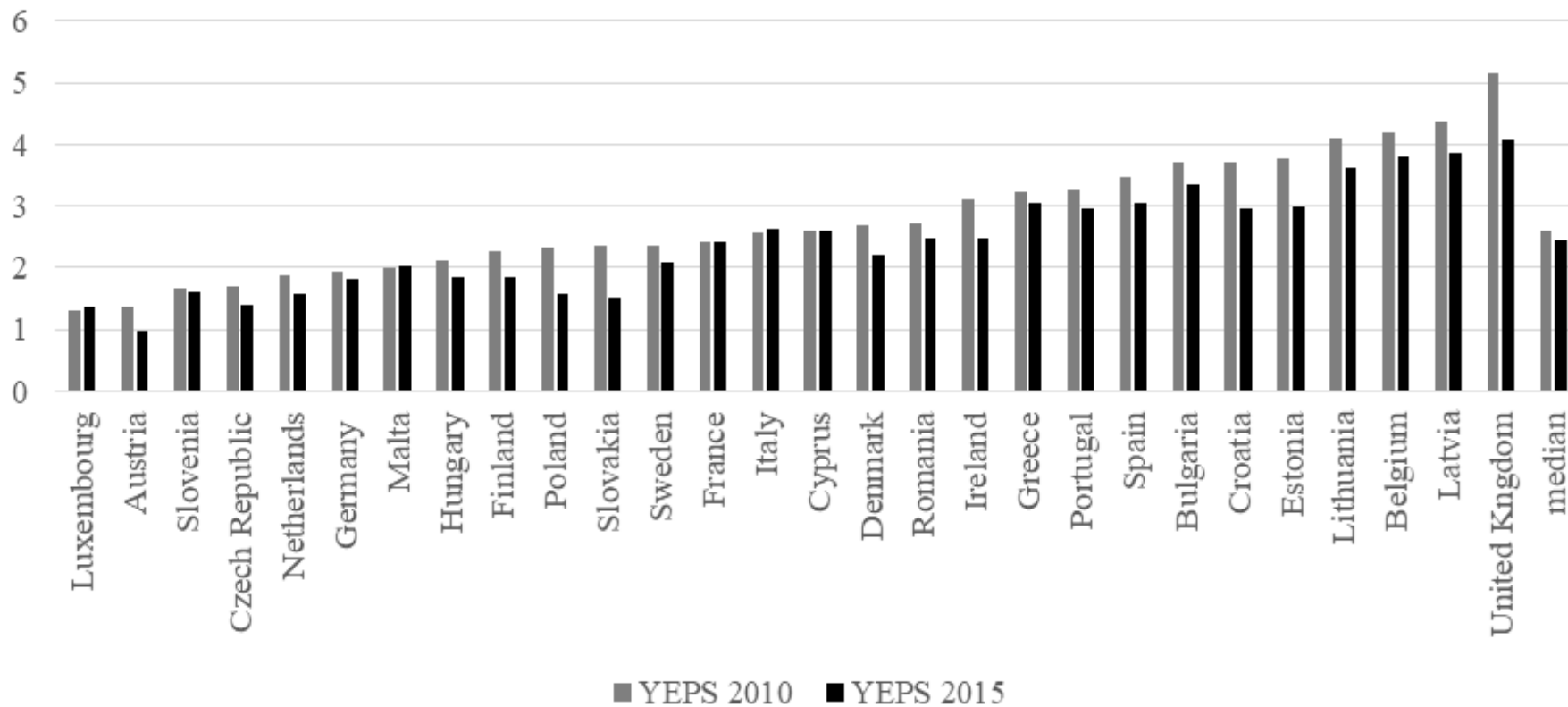
The  $\beta$  hypothesis will be confirmed if the value of the variation coefficient for indicators in each of the economic and personal security areas is reduced by 2015 compared to 2010 and, at the same time, if the difference in the average of all measured values of the variation coefficient will not exceed 50%.



# Results

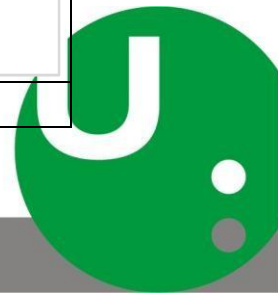
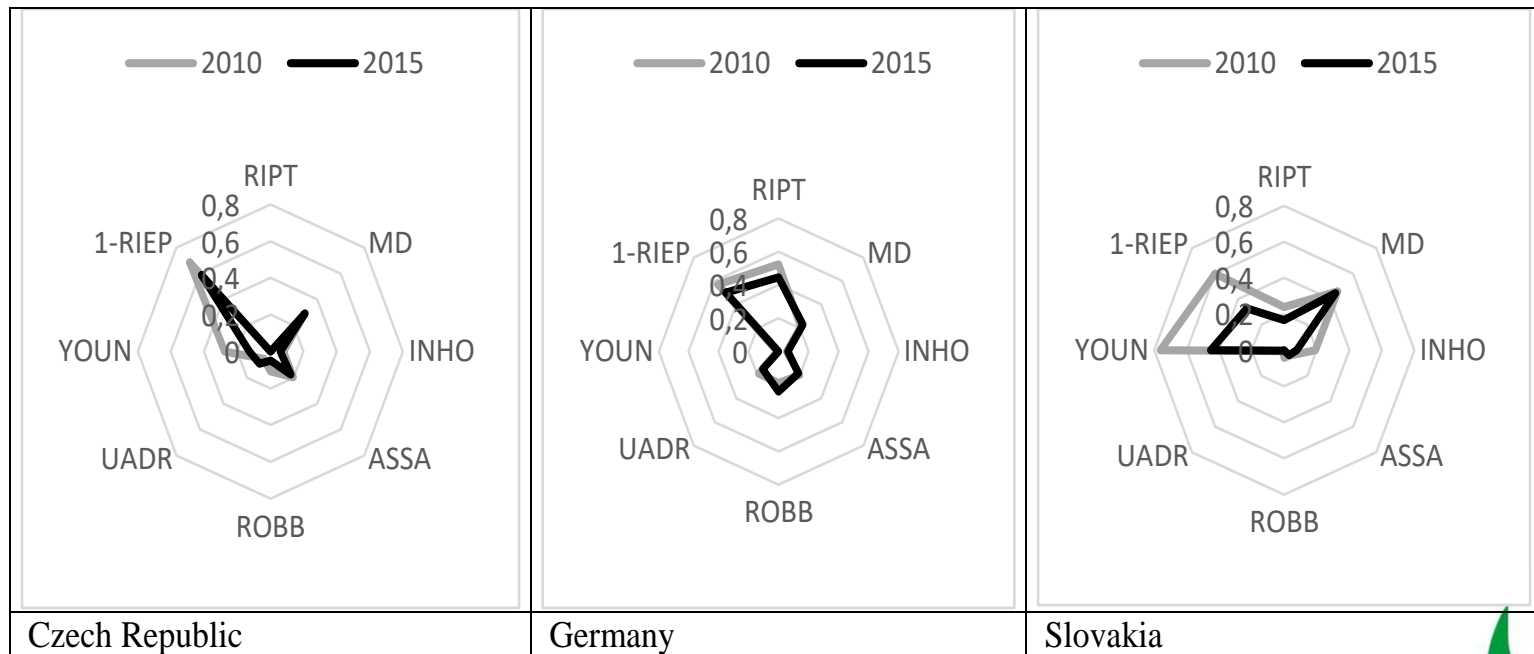
The hypothesis  $\alpha$  is not confirmed, in four countries there was a slight deterioration in 2015, i.e. YEPS increase.

*Fig. 1: Development of economic and personal security of the EU between 2010 and 2015*



Designed composite indicator  $Y_{EPS}$  can be hierarchically decomposed for each country. As an example, for the eight indicators it is used graphical comparison of the three countries in Figure 2.

Fig. 2: Representation of the state and changes in economic and personal security in selected countries



**Tab. 2: Variability evaluated indicators of economic security**

indicator	RIPT		MD		YOUN		RIEP*	
year	2010	2015	2010	2015	2010	2015	2010	2015
min	9,00	9,70	3,62	3,63	9,50	7,20	0,73	0,64
country (min)	CZ	CZ	LU	SE	AT	DE	CY	EE
max	21,60	25,40	16,53	14,86	41,50	49,80	1,08	1,10
country (max)	RO	RO	BG	BG	ES	EL	LU	LU
variation coefficient	0,21	0,23	0,37	0,34	0,36	0,51	0,10	0,13

\* Min and max values must be considered the opposite, in terms of maximizing indicator.

**Tab. 3: Variability evaluated indicators of personal security**

indicator	INHO		ASSA		ROBB		UADR	
year	2010	2015	2010	2015	2010	2015	2010	2015
min	0,54	0,49	7,73	1,50	11,57	9,94	9,08	11,25
country (min)	SI	AT	EE	RO	RO	SK	FR	FR
max	6,33	5,75	846,82	838,96	261,10	196,68	353,89	438,41
country (max)	LT	LT	UK	UK	UK	BE	DK	DK
variation coefficient	0,78	0,79	1,42	1,51	0,82	0,86	0,88	0,97

Tables 2 and 3 also show that hypothesis b has not been confirmed: excluding the MD index, all variables have been increased, as measured by the coefficient of variation.

Average variation coefficient of economic security = 0,28

Average variation coefficient of personal security = 1,00



# Conclusions

Research did not confirm the hypothesis to improve the value of the composite economic and personal safety indicator in 2015 against 2010, in four Member States the situation worsened.

Neither the assumption of a reduction in the variability of the individual indicators has been confirmed; except of the material deprivation indicator, the variation coefficient has increased in all cases. It has also been demonstrated that the variability of personal safety indicators significantly outstrips the variability of the economic indicators of EU Member States.



Thank you for attention.

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