THE USE OF LONGITUDINAL DATA FROM THE EU SILC IN MONITORING THE EMPLOYMENT STRATEGY

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Abstract

The National Employment Strategy for the period until 2020, approved by the Government of the Slovak Republic late last year, focuses essentially on 8 key areas. Of these, in particular supports of the creation of new jobs, solutions for long-term unemployment and the implementation of the social economy have a specific social impact. The monitoring process is part of the strategy in terms of its implementation. This paper focuses on the development of a model to monitor the selected elements of the strategy on the basis of impacts on household income. We start from the analysis of cross-sectional data from the EU SILC by type of household and from the EU SILC longitudinal database where we focus on households with unemployed members.

Key words: employment strategy, data EU SILC, longitudinal data

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Introduction

Employment issues and related assumptions of the socio-economic growth and quality of life are treated by a number of national and international strategies. Of the international practices, it is necessary to mention the Europe 2020 strategy focused on the specific employment issues – unemployment, regional disparities in employment and unemployment, employment of young people and its relation with education. In December 2014 (17 December 2014), the Government of the Slovak Republic approved the *National Employment Strategy of the Slovak Republic until 2020.*

1 The basis of the national employment strategy

The strategy can be considered to be a tool of an active state intervention in employment policy. *´Its purpose is mainly to systematically cover and coordinate the existing activities related to the development of employment policies and activities of stakeholders in the job-creation process.´* (The draft strategy, submission report, 2014). The subordination of the

social policy to the demand of labour market flexibility can be identified as one of the general characteristics of changes in welfare systems (Radičová and Navrátilová, 2014). The Employment Strategy in Slovakia deals with the specific issues, such as the regional dimension of employment, unemployment, wage levels, employment of young people, education and the labour market, innovation, promotion of employment of the Romany population, the green economy, the culture of work, gender equality, the reconciliation of work and family life, and employment of older people. A comprehensive program to promote employment, as elaborated in the Employment Strategy, includes the following 8 areas: the promotion of the job creation process, innovation, the implementation of social economy, the flexibility of labour relations, the effective solution to the long-term unemployment, the public employment services – their development, capacity and networking, the support to the labour market and the supra-sectorial coordination of relevant policies. For each area, specific strategies for change are defined. The selected employment indicators in Table 1 statistically document the initial status in the area of employment for Slovakia.

Tab. 1: The selected employment indicators

Indicator	2010	2011	2012	2013	2014
Number of employed persons	2 317,5	2 315,3	2 329,0	2 329,3	2363,0
Employment rate aged 20-64 (%)	64,7	65,0	65,0	65,0	65,9
of which: women	57,5	57,4	57,3	57,8	58,6
Unemployment rate (%)	14,4	13,6	14,0	14,2	13,2
of which: women	14,6	13,6	14,5	14,5	13,6

Source: Statistical Office of the Slovak Republic, LFS

The unemployment rate of young people aged below 25was in the Slovak Republic in 2014 at 29.8%. It was the 7thhighest figure in the EU (after Greece, Spain, Portugal, Italy, Cyprus and Croatia), and it was 8.5 percentage points higher than the EU average.

As for the assessment of social impacts of the Employment Strategy, the documents of the strategy include the requirement to quantify the increase or decrease of income / expenditure for the average person, for each affected group and for households. The document states that such impacts cannot be quantified, and it only expects a medium-term increase of the income and expenditure for households with long-term unemployed persons, older persons (aged 50+), young persons (aged under 29),or for household members who are otherwise disadvantaged in the labour market.

2 The longitudinal component of EU SILC

In order to monitor and evaluate the implementation of the Employment Strategy, it is necessary to take a close look at capabilities of the existing potential sources within the national or European statistical system. We have identified the harmonized EU SILC, particularly its longitudinal component, to be a possible source to quantify the Employment Strategy´s impact on the income of individuals, households or population groups. In addition to poverty indicators, EU SILC gives data on the income structure and income distribution in Slovakia and in the EU. The income is defined in accordance with the Canberra Manual, and its components are as follows: the income from employment (wages and salaries), income from business, capital income, social benefits, taxes and compulsory social contributions.

The EU SILC survey carried out in Slovakia since 2004, is the source of two types of data, or two types of databases, i.e., the cross-sectional and the longitudinal. The cross-sectional data are the source for the calculation of poverty indicators, material deprivation and social inclusion. The longitudinal component of EU SILC allows the selection of time series that we can use to apply the methods and calculation of relevant indicators to the same households in the long term. More details on the longitudinal component of EU-SILC can be found, e. g., in Ivančíková and Vlačuha, 2012.

For the purposes of our work, we started from the longitudinal EU SILC database for the years 2010 – 2013. We analysed individuals (households) who occurred in the survey repeatedly – at least for two years in a row. The most commonly analysed variable was the change of the individual´s economic activity status, where the respondent could select from 12 possible changes of status.[1]We took into consideration 3 options for moving into the status ´employed´, as follows: the change from ´unemployed´ into ´employed´, from ´retired´ into ´employed´ and from ´other inactive´ into ´employed´. In the longitudinal dataset, we identified the total of 721 persons who changed year-on-year their economic activity status into the status ´employed´ in the period surveyed. We assumed that the change of employment status had an impact on the income of the person. We compared the years 2010 – 2011, 2011 – 2012 and 2012 – 2013.

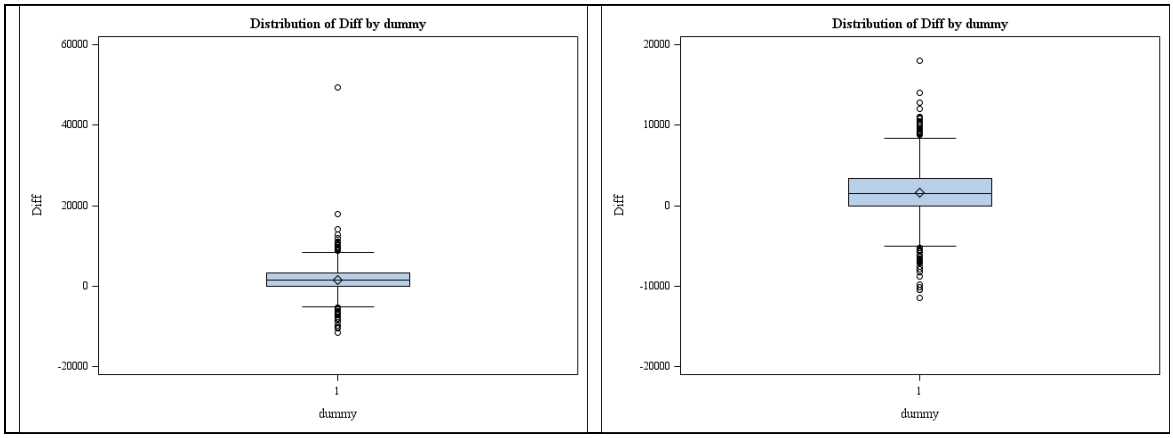
For the purposes of the analysis we focused on the verification of the hypothesis of significant differences in the overall personal income (PY_ALL) at present and the income of a given person a year ago (PZ_ALL_p). To capture this difference we created a variable in the

[1]employed – unemployed, employed – retired, employed– other inactive, unemployed – employed, unemployed – retired, unemployed – other inactive, retired – employed, retired – unemployed, retired – other inactive, other inactive – employed, other inactive – unemployed, other inactive – retired

following way: Diff = PY_ALL – PZ_ALL_p. Looking at the box plots (Fig. 1) it is obvious that one statistical unit is an outlier (Diff > 40000). We excluded it from our data set used for the analysis.

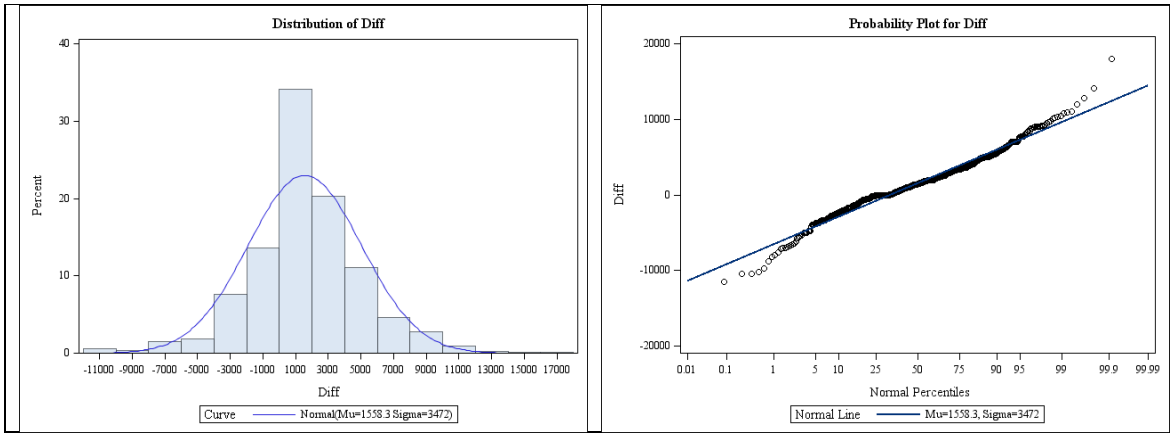
The distribution of differences in income (variable Diff) in the data set consisting of 720 persons or rather households is relatively symmetrical, but pointier than the normal distribution (Fig. 2). The point estimate of the mean value of difference is positive, more precisely 1558.3 EUR and the 95% confidence interval does not contain 0 (Tab. 2). The paired samples t-test (t = 12.4 and p-value < 0.001) confirmed a significant increase in annual income in the sample of the monitored persons. According to the results, the income of these persons had increased in total by 65.6%.

Fig. 1: Box plots for variable Diff: 1. all data (n=721) and 2. without outlier (n=720)



Source: EU SILC, own construction in SAS

Fig. 2: Distribution for variable Diff (n=720)



Source: EU SILC, own construction in SAS

Tab. 2: Results of paired t-test for variables PY_ALL and PY_ALL_p

N	Mean	Std Dev	Std Err	Minimum	Maximum
720	1558.3	3472.0	129.4	-11479.2	17979.5

Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1558.3	1304.2	1812.3	3472.0	3301.5	3661.3

DF	t Value	Pr > |t|
719	12.04	<.0001

Source: EU SILC, own calculations in SAS

3 The impact of demographical factors

According to Bartošová and Bártová (2014), the value of the equivalent household income has no significant impact on the ability of households to meet their basic needs, unlike, e.g., the type of accommodation and educational attainment. Moreover, in the article on the income poverty in the Czech Republic Bartošová and Forbelská (2013) identified age, sex and education as significant factors.

In terms of sex and age group in the parameters set by us, we can say that the moving into employment had a greater impact on the income increase for women than for men (Tab. 3). Parametric as well as non-parametric tests did not confirm the significance of this influence on the difference between the income of men and women (Fig. 3). The values of both test statistics are very low ($F = 0.10$, $\chi^2 = 0.0473$) and their p-values ($p = 0.7536$ (Fig. 3) and $p = 0.8279$ (Tab.5)) are significantly higher than the chosen significance level ($\alpha = 0.05$).

Tab. 3: Income increase by sex (PB150)

Gender (PB150)	Income increase (%)	Number of persons
Men (1)	57.6%	345
Women (2)	82.9%	375

Source: EU SILC, own calculations

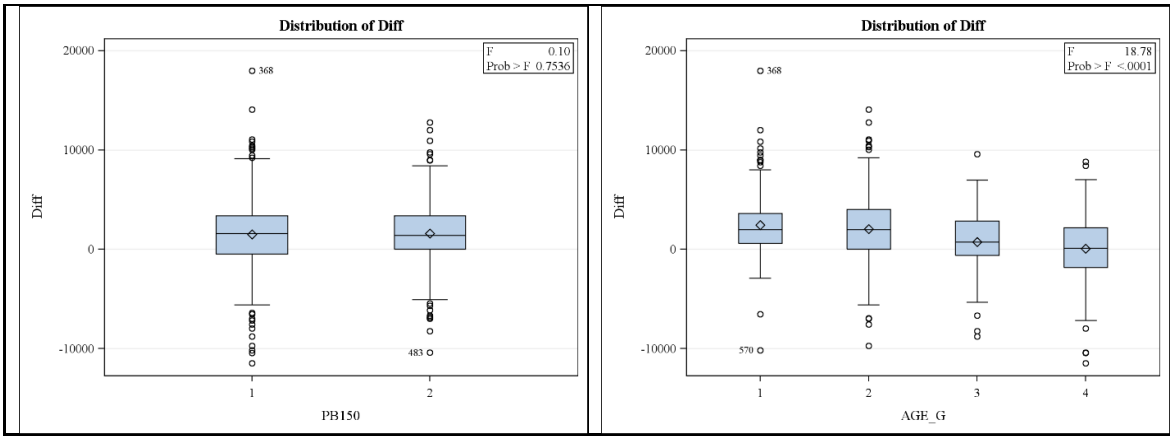
As for age groups, the moving into employment had the greatest impact on the income increase for younger persons and gradually with age, this impact had declined. The significance of differences was also confirmed by statistical tests (F test: $F = 18.78$, p-value < 0.0001 (Fig. 4) and χ^2-test: $\chi^2 = 51.8$, p-value < 0.0001 (Tab. 5)). The gradual decline in the income growth with increasing age is obvious also from the box plots below (Fig. 4).

Tab. 4: Income increase by age group

Age categories (AGE_G)	Income increase (%)	Number of persons
18 – 24 years (1)	277.2%	227
25 – 34 years (2)	106.6%	232
35 – 44 years (3)	36.5%	108
45 + years (4)	1.8%	153

Source: EU SILC, own calculations

Fig. 3: Box plots for variable Diff by gender (PB150) and age categories (AGE_G)



Source: EU SILC, own construction in SAS

Tab. 5: Nonparametric ANOVA method –results for variable Diff by AGE_G and PB150

Wilcoxon Scores (Rank Sums) for Variable Diff Classified by Variables: AGE_G and PB150					
AGE_G	N	Mean Score	PB150	N	Mean Score
1	227	416.1	**1**	345	358.7
2	232	385.5	**2**	375	362.1
3	108	312.9			
4	153	273.8			
Average scores were used for ties.					

Kruskal-Wallis Test		
	AGE_G	PB150
Chi-Square	51.8142	0.0473
DF	3	1
Pr > Chi-Square	<.0001	0.8279

Source: EU SILC, own calculations in SAS

4 The impact of components of the 'poverty and social exclusion' indicator

In the next section, we have analysed the increase of income in relation to 3 components of the social inclusion indicator for EU 2020 strategy, namely, the *'poverty and social exclusion'*

indicator. This indicator consists of the following components: *´low work intensity´*, *´material deprivation´* and *´at-risk-of-poverty´*. In the case of the 720 persons that represent the longitudinal panel we examine, we compared their income for two consecutive years, where in the first year they were ´threatened´ by every component – particularly, by the low work intensity, material deprivation and risk of poverty. In the subsequent year, they escaped from the threat. For these individuals, we focused on what was the impact on their income in consequence of their escape from some of the above-mentioned ´threats´. Similarly as in the first part of the article, we worked with non-weighted data. The results are reported in next tree tables (Tab. 6, Tab. 7 and Tab. 8).

Tab. 6: Income increase by change of the *´low work intensity´* indicator (WI) between 2 consecutive years

Indicator WI	Income increase (%)	Number of persons
Without change of indicator (0)	62.4%	673
With a positive change of indicator (1)	225.5%	47

Source: EU SILC, own calculations

Tab. 7: Income increase by change of the *´material deprivation´* indicator (DEP) between 2 consecutive years

Indicator DEP	Income increase (%)	Number of persons
Without change of indicator (0)	69.1%	675
With a positive change of indicator.(1)	53.8%	45

Source: EU SILC, own calculations

Tab. 8: Income increase by change of the *´at-risk-of-poverty´* indicator (POV) between 2 consecutive years

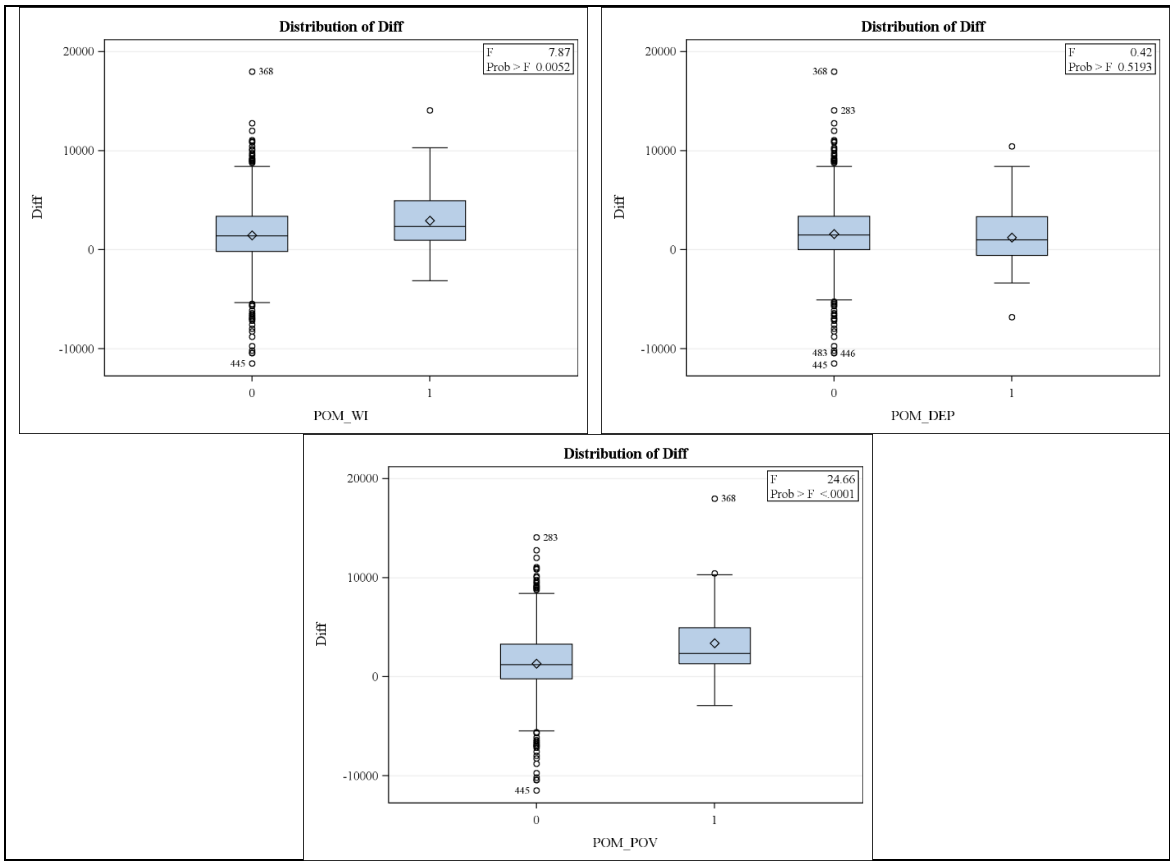
Indicator POV	Income increase (%)	Number of persons
Without change of indicator (0)	55.9%	643
With a positive change of indicator (1)	296.9%	77

Source: EU SILC, own calculations

From the results presented in this paper, it is obvious that along with the change in employment status, both extricating oneself from a household with low work intensity of its members (WI = 1) or the endangerment by poverty (POV = 1) had an impact on the increase in income. Extrication from material deprivation (DEP=1) logically did not have almost any impact on the increase in income. Results from tables 5 to 7 were confirmed also by parametric and non-parametric statistical tests. On the figure below (Fig. 4) we present box

plots and F-tests for the variable Diff by individual indicators. A significant difference in incomes was confirmed for households which extricated themselves from low work intensity ($F = 7.87$, $p = 0.0052$) and especially for households removing themselves from the endangerment by poverty ($F = 24.66$, $p < 0.0001$). Extrication of households from material deprivation did not have a significant influence on income growth ($F = 0.42$, $p = 0.5193$). These results were confirmed as well by non-parametric ANOVA method, specifically the Kruskal-Wallis test (Tab. 9).

Fig. 4: Box plots for variable Diff by social indicators (WI, DEP, POV)



Source: EU SILC, own construction in SAS

Tab. 9: Nonparametric ANOVA – results for variable Diff by social indicators: WI, DEP and POV

11								
WI	N	Mean Score	DEP	N	Mean Score	POV	N	Mean Score
0	673	354.4	0	675	362.5	0	643	348.2
1	47	448.5	1	45	331.1	1	77	463.1
Average scores were used for ties.								

Kruskal-Wallis Test			
	WI	DEP	POV
Chi-Square	9.0043	0.9572	20.9873
DF	1	1	1
Pr > Chi-Square	0.0027	0.3279	<.0001

Conclusion

Using this article we want to point out the possible uses of longitudinal databases. Their hidden potential should be a source of a more intensive analytical use and resulting recommendations, especially in the context of current legislative and content changes in EU SILC. One of multiple discussed innovations is the potential extension of longitudinal panel from 4 to 6 years. The main argument is its more exact use. Generally, the existing longitudinal databases are currently not sufficiently used, minimally at the national level.

The results of the analysis document, that EU SILC data can be used for the investigation of the impact of employment strategies on household income. Especially, the longitudinal component of this database contains necessary data which can capture the changes in income in a given time frame. This database also provides possibilities for various analyses by demographic or other factors.

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