



# **Personal Earnings Inequality and Polarization: The Czech Republic in a Comparison with Austria and Poland**

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# **Personal Earnings Inequality and Polarization: The Czech Republic in a Comparison with Austria and Poland**

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**PRELIMINARY AND INCOMPLETE**

**(ENGLISH PROOFREADING MISSING)**

## **Abstract:**

This study analyses personal earnings distribution in the Czech Republic (CR) and two neighbouring countries, Austria and Poland, using the EU-SILC longitudinal data. It captures two four-year periods, a before-crisis period 2004-2007 and a period involving the effects of the crisis, 2007-2010. It focuses on earnings distribution from three perspectives. First, we apply a relative distribution method to show aggregate changes of the shape of earnings distribution and to verify a hypothesis that the crisis might have spurred “hollowing of the middle”. Second, we focus on factors that influenced movements of individuals along the earnings distribution. And, third, we reveal the structure of earnings inequality by regression-based decomposition. We do not conclude that the crises spurred earnings polarization. The ongoing gender-based earnings polarization weakened during the crisis. The impact of education on individual movements along earnings distribution reduced during the crisis period in Austria and Poland while it intensified in the CR. The factors that contributed the most to the earnings inequality were type of occupation, gender and education. Both the size of the effects and the direction of their change between the two analysed periods differed among the countries: the contribution of gender weakened and the contribution of education strengthened in the CR and Poland while the opposite held in Austria.

**Keywords:** earnings distribution, polarization, inequality, crisis.

**JEL classification:** D31, J39, O15.

## **1. Introduction**

The communist Czechoslovakia had one of the lowest levels of earnings inequality in Europe, even compared to other communist countries (Večerník, 2009). After 1989, wages started to reflect education and skills and earnings inequality began to grow. Widening of earnings distribution at both tails had occurred mainly in the first years of the transition period and had slowed down in the late 1990s in Central and Eastern Europe (e.g., Rutkowski, 2001; Milanovic, 1999).

With expanding disparities of earnings, the problem of income polarization has also appeared in post-communist countries. This phenomenon has already been observed in other countries and has already attracted the attention of many researchers across the world (e.g., Massari, Pittau and Zelli, 2009, for Italy in the 2000s; Hussain, 2009, for Denmark in 1984-2002; Gasparini et al., 2008, for Latin America; Beach and Chaykowski, 1997, for the U.S. male in 1968-1990).

Study by Mysíková (forthcoming) focused on the development of personal earnings starting from just before the collapse of communism. The “hollowing of the middle” regarding personal earnings distribution in the Czech Republic (CR) in the early stage of economic transition was confirmed. Earnings polarization could be still observed between the mid-1990s and mid-2000s though in a slower pace with an apparent movement toward the bottom while the movement in the upper part of distribution occurred somewhat below the very top. Her study also compared the CR with Austria and Poland using cross-sectional files of EU-SILC 2005 and 2013. Earnings polarization ceased over the whole period 2005-2013 in the CR. As opposed to the stability in the CR, the middle has been hollowing out in Austria between 2005 and 2013 while earnings in Poland have become more homogeneous.

Despite a general stability of earnings inequality in the CR some subgroups might have been more prone to the crisis while others less, with an overall balancing effect. Following these three countries with considerably contrasting development of earnings distributions, we shall analyse shorter periods before and during the crisis after 2007 using the four-year EU-SILC longitudinal data. The aim of this study is: (i) to verify a hypothesis that the crisis might have spurred hollowing of the middle, predominantly towards the bottom, (ii) to examine factors that contributed to individual movements along the earnings distribution, and (iii) to stress the structural differences of earnings inequality between countries and over time.

The study starts with short data description and then it proceeds to the relative distribution method which allows us to compare the shape shifts of earning distributions over time. Next, we follow the individuals in two four-year periods to reveal factors that contributed to their movements along the earnings distribution. Finally, we shall compare the composition of earnings inequality factors to reveal if the structure of earnings inequality changed after the effects of the crisis emerged.

## **2. Data**

For the purpose of this analysis, panel data Statistics on Income and Living Conditions (EU-SILC) 2008 (EUSILC LONGITUDINAL UDB 2008 – version-4 of March 2012) and 2011 (EUSILC LONGITUDINAL UDB 2011 – version-4 of March 2015) are utilized. This is a uniform survey all EU Member States are required to carry out, and it thus provides data suitable for cross-country comparisons. Each longitudinal file covers a four-year period preceding the year of survey where we compare distributions of annual earnings in the first and the fourth years. The sample is limited to individuals who participated in all four consecutive years.

This analysis focuses on individuals aged initially 25 to 54 who worked at least six months in the first observed year and reported positive annual earnings from (self-)employment both in the first (at least 1000 EUR) and last year (at least 150 EUR).<sup>1</sup> The (unweighted) sample sizes after excluding missing values of applied variables are presented along with the results in Section 4.

A potential drawback of the data could be the annual nature of earnings. Information on monthly variation in earnings or working hours each month is not available. A period of a crisis is typically accompanied by reductions of working hours or hourly wages which thus cannot be distinguished in our sample; instead, both would be jointly reflected in earnings decrease. Our purpose is to analyse annual earnings and we control for number of months worked (with a distinction between full-time and part-time employment) in sections 4 and 5.

### **3. Relative distribution**

The effect of a crisis on earnings inequality and polarization is ambiguous both theoretically and empirically. De Beer (2012) argued that changes of wages and workforce might have contradictory effects on wage inequality. First, if earnings of low-paid workers decrease more than earnings of high-paid workers, earnings disparity would increase. Second, if employment of low-paid workers declines more their lower number in the workforce would result in lower earnings disparity. The effect of the crisis on earnings inequality might thus differ across countries depending on whether the effect on earnings or employment prevails.<sup>2</sup>

In our study, we follow the same workers with positive earnings in four-year periods (more precisely, with positive earnings in the first and fourth year of the panel data, see Section 2),

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<sup>1</sup> About 5% of individuals working the prevailing part of the first year had no earnings in the last year. These individuals would move to the bottom of earnings distribution with an obvious reason of losing a job. Hence, these are not of our interest.

<sup>2</sup> We include both income from employment and self-employment, thus, the argumentation on wages is not precise.

hence, the change of workforce cannot lower earnings disparity by definition. According to Flek et al. (2015a), Austrian labour market was more fluid compared to the CR and Poland in years 2008-2011. Our selection rule only could underestimate overall earnings inequality more in Austria, while the analysed changes of earnings distribution cannot be assigned to the change of workforce. Being aware of the distinction between inequality and polarization (Foster and Wolfson, 2010), we rather expect that *the crisis spurred earnings polarization, predominantly towards the bottom.*

### **3.1 Methodology**

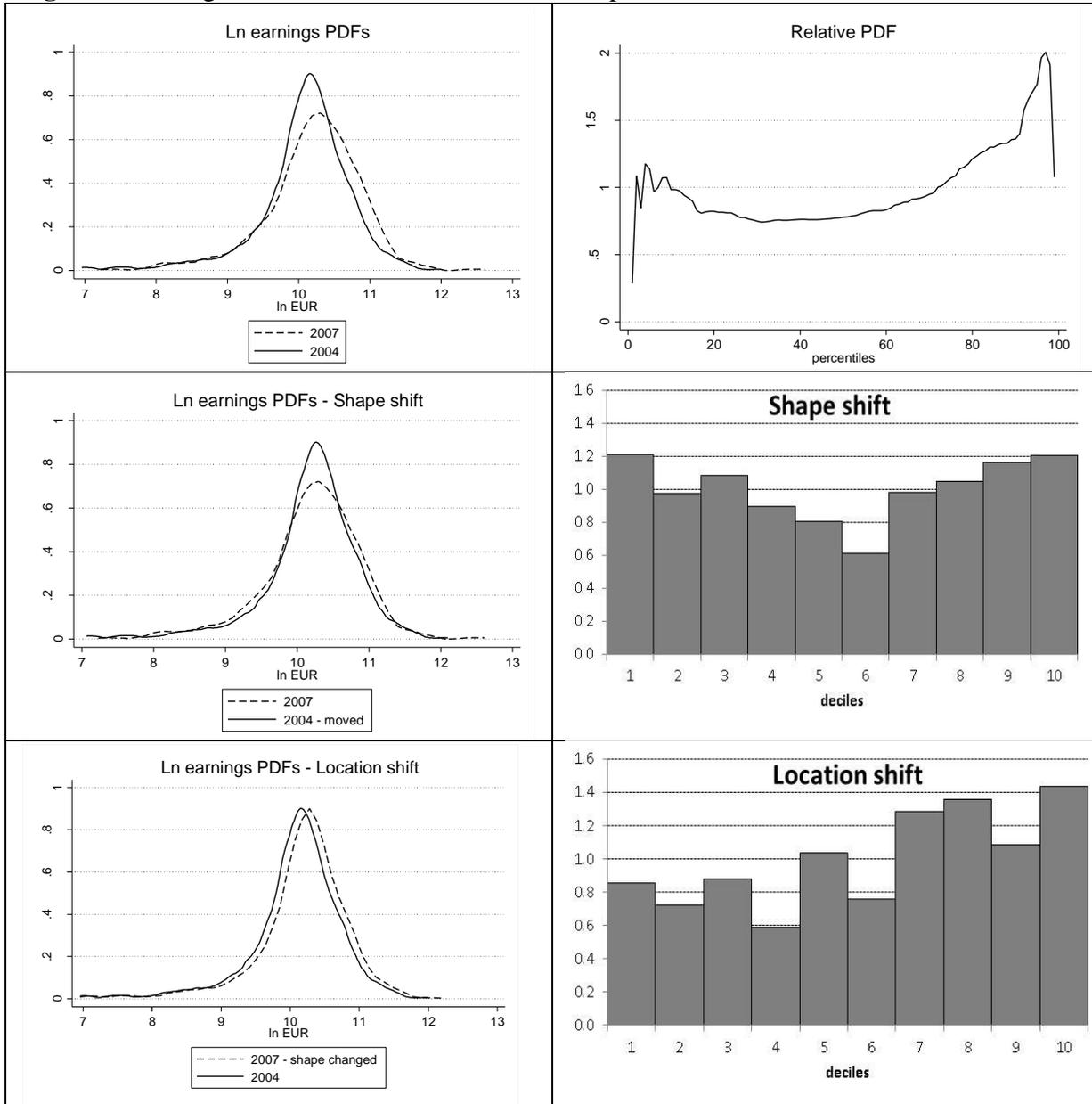
We apply the relative distribution method developed by Handcock and Morris (1999), used, among others, by Alderson and Doran (2013) and followed by Mysíková (forthcoming). This method offers a useful illustration of its results by following the changes along the whole earnings distribution.

The relative distribution method is based on a comparison of income distributions in periods  $t$  and  $t+1$ , where the values of period  $t+1$  are expressed as positions in the distribution of period  $t$ . The relative probability distribution function is simply the density ratio at each quantile. If distributions in the two periods were the same, the relative distribution would be uniform.

To illustrate this, an example of Austria in period 2004-2007, where the phenomenon of hollowing of the middle is the most apparent (Figure 1, see upper left and right panels), is provided. The density at the median of individual earnings was 0.902 in 2004 (period  $t$ ). The median value of the earnings logarithm corresponds to 10.158. The 2007 earnings distribution density (period  $t+1$ ) at the same point (i.e. at the median of 2004, period  $t$ , distribution) equals 0.702. The density ratio is  $0.702/0.902 = 0.778$ , which means that the number of individuals at

this point of distribution, i.e. at the median value of 2004, was in 2007 less than four-fifths of what it was in 2004. As the nominal values of earnings shift to the right over time, the two compared distributions differ in two ways: in shape and in location. This method allows us to separate these two shifts in the following way.

**Figure 1** Earnings distribution functions and decomposition, AT 2004 vs. 2007



Source: longitudinal EU-SILC 2008. Own computations.  
 Note: PDF – probability density function.

First, the shape shift can be isolated by cancelling differences in location. To put it simply, we adjust the  $t$  distribution by the difference in the medians of  $t+1$  and the  $t$  distributions, where both distributions retain their shape with the medians located at the same point (for an illustration, see the middle-left panel in Figure 1). Cancelling the shift in location and fitting the  $t+1$  data in the  $t$  quantile cut points allows us to easily compare the densities at each quantile (for an illustration, see the middle-right panel in Figure 1). If the relative density is less than 1, this means that there are fewer individuals at a particular quantile in  $t+1$  than there were in  $t$ . The U shape of the relative density function suggests that the middle is hollowing out or, in other words, that the distribution in  $t+1$  is more polarized. This means that individuals move towards both far tails of the distribution, relative to period  $t$ . Conversely, an inverted U shape suggests that individuals are more concentrated in the middle that they were in the past.

Second, we can separate the location shift. The  $t+1$  distribution adopts the shape of the  $t$  distribution and both distributions remain in their locations (for an illustration, see the bottom left panel in Figure 1). In this case, when comparing distributions over two time periods, it is obvious that the relative distribution function would be increasing, since the distributions capture nominal absolute values of earnings rising over time. For this reason we focus on the shape shift.

The decomposition into location and shape effect can be expressed as follows (Jann, 2008):

$$\frac{f_{t+1}(y)}{f_t(y)} = \frac{f_{t+1}(y)}{f_A(y)} \times \frac{f_A(y)}{f_t(y)}$$

$$\text{overall} = \text{shape} \times \text{location} \tag{1}$$

where  $f_t(y)$  and  $f_{t+1}(y)$  are the density functions in periods  $t$  and  $t+1$ , respectively, and  $f_A(y)$  is the location-adjusted density function, where  $F_A(y) = F_t(y+\rho)$ , and  $\rho = \text{median}(Y_{t+1}) - \text{median}(Y_t)$ .

### 3.2 Results

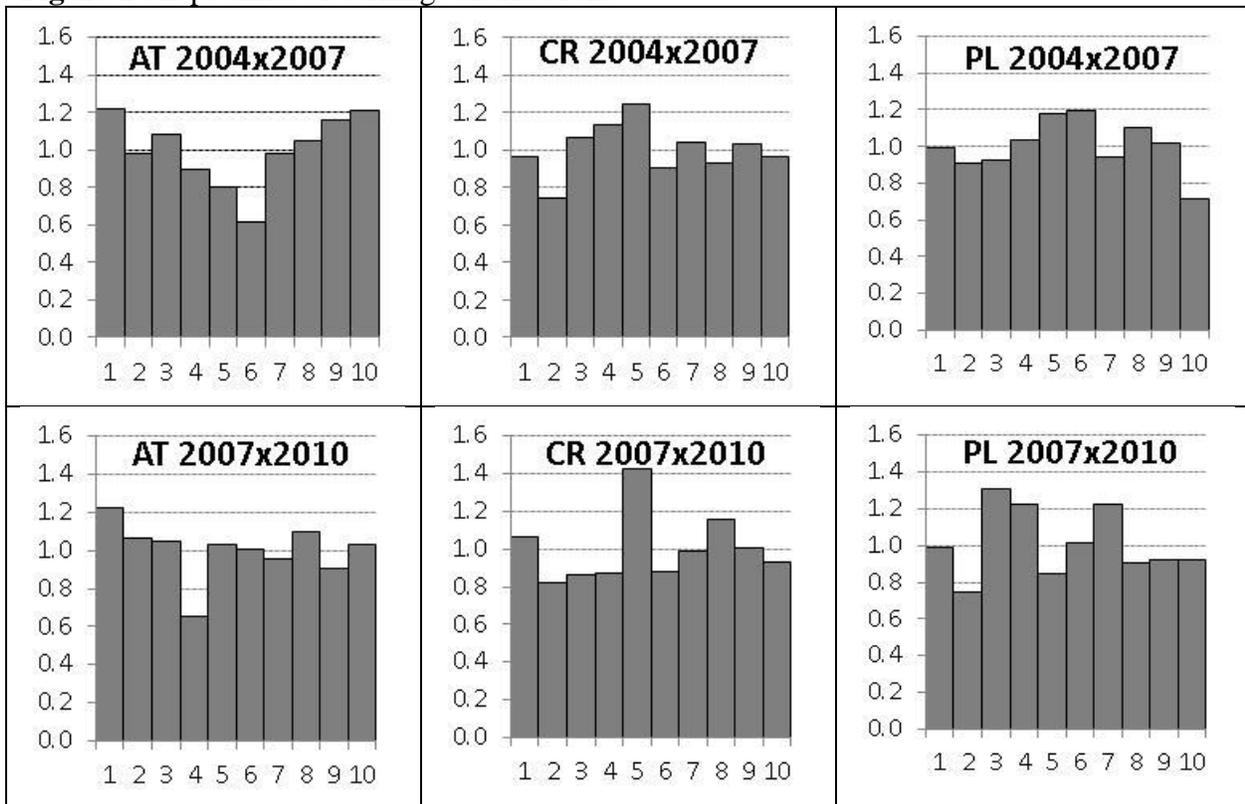
Figure 2 shows the shape shifts of earnings distributions in the two analysed periods. According to Mysíková (forthcoming) earnings polarized between 2005 and 2013 in Austria, were relatively stable in the CR and became more homogeneous in Poland. Similar results can be found in the period preceding the crisis (2004-2007). Polarization in Austria was considerable: there were about 20% more individuals in the bottom decile and more individuals joined the ranks of top three deciles in 2007 compared to 2004.<sup>3</sup> In the Czech Republic, individuals moved below the half of the distribution, mostly on behalf of the second decile. And in Poland, and opposite movement, from the top to the middle can be observed. Therefore, before the crises, the middle was hollowing out only in Austria, while it was strengthening both in the CR and Poland, though from different directions.

The second analysed period starts just before the crisis and lasts till the beginning of recovery in all three countries (2007-2010). Austrian results conform to our expectations: individuals were moving from the middle to the bottom but the movement to the top wore off. However, the polarization effect is weaker than in the before-crisis period. Earnings polarization occurred during the crisis period neither in the CR nor in Poland. Though the first decile strengthened by 7% in the CR, much more individuals moved from the bottom half of the distribution to the fifth decile. The top deciles weakened in Poland but there was no movement to the very bottom at all. We cannot conclude that the crises spurred earnings polarization.

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<sup>3</sup> The proper interpretation is that e.g. in 2007 in Austria, 20% more individuals had earnings below the first-decile cut point of the 2004 median-adjusted earnings distribution than in 2004. Note that we simplify the statement to reporting 20% more individuals in the first decile.

**Figure 2** Shape shifts of earnings distributions



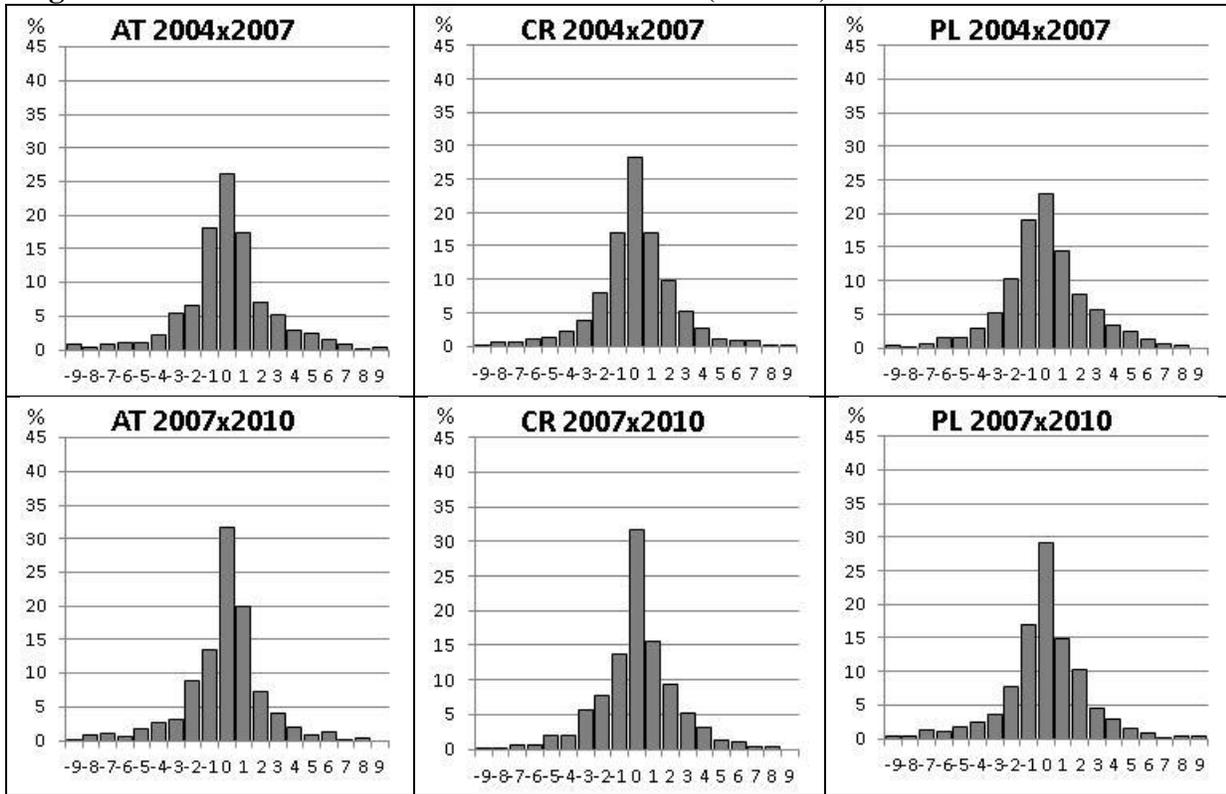
Source: longitudinal EU-SILC 2008, 2011. Own computations.

#### 4. Individual movements analysis

The previous section showed that overall trends in earnings distribution changed over time. Now we turn our attention to the volatility of individual earnings and movements of individuals between deciles. The “deciles” are defined as in the previous section, i.e. by the cut points of the first-year median-adjusted distribution. Figure 3 indicates that the share of individuals whose earnings were relatively stable, i.e. who remained in the same decile in the first and fourth year of an analysed period, is increasing. This is apparent especially in Austria where about 26% of individuals remained in the same decile within the first analysed period while this share was 31% within the second period. Moreover, a slightly higher share of individuals moved upwards than downwards and this difference strengthened over time. The same holds for the CR though in a

lesser extent. In Poland, movements down were more frequent than movements up in the first period but about the same in the later period.

**Figure 3** Distribution of movements between deciles (increase)



Source: longitudinal EU-SILC 2008, 2011. Own computations.

Though we follow individuals who worked during the first and last fourth year of the analysed periods, they could experience an unemployment spell or change a job for various reasons. An unemployment experience, especially a long one, can worsen individual prospects on employment and job quality (e.g., Flek et al., 2015b), moreover, it can affect gender, educational or age groups differently across countries (e.g., Flek and Mysíková, 2015).

Perugini and Selezneva (2015) argued that wages and employment were affected by the crisis with asymmetries across social and economic groups in Central and Eastern Europe. Regarding gender, the gap decreased during the crisis as the slowdown of wages growth or wage decreases

occurred more proportionally to men. One of the reasons was gender labour market segregation with female over-representation in sectors (e.g., services) less hit by the crisis and their under-representation in male-dominated sectors (manufacturing, construction, financial sector) that were hit more. We expect that *male upwards movements along the earnings distribution slowed down during the crisis compared to the period before the crisis.*

Literature on the crisis mostly suggests that education increased earnings inequality and polarization. According to Masso and Krillo (2011), working hours were reduced more often among workers with basic education and wage cuts were less probable for workers with higher education in Estonia as well as returns to higher education increased substantially between 2008 and 2009. González et al. (2014) confirm that education contributed to wage polarization in Spain during the crisis. Earnings of highly educated individuals are generally expected to be less affected by the crisis. Therefore, we expect that *education had stronger positive effect on movements along the distribution during the crisis than before the crisis.*

#### **4.1 Methodology and variables**

The analysis is based on annual earnings. The reasons why an individual shifts to different (higher/lower) decile within a four-year period are severalfold. She/he might have changed work intensity, i.e. number of months worked or a work load, or a job, voluntarily for a better one or involuntarily. Finally, her/his hourly earnings might have changed as well. We use various characteristics in the first year and their change between the first and fourth analysed years of the panel data to estimate their impact on individuals' movements between deciles. OLS regression where the dependent variable ranges from -9 to +9 is applied.

The following explanatory variables were included. We control for the initial decile. Gender, years of work experience and its square, and medium (ISCED 3-4) and high (ISCED 5-6) education are included in order to capture standard earnings profiles. Initial number of months worked and its change is controlled for. In order to distinguish part-time and full-time work, months worked part-time are given a half weight.<sup>4</sup>

Three dummy variables capturing change of job and its reason (a reference group consists of individuals who have not changed a job between the first and fourth year) deserve a more detailed explanation. Each year of the survey, respondents are asked whether they changed job since last interview and if so, what the reason was. The first category is a change for a better job. This variable equals one if an individual stated this reason at least once during the panel survey, and zero otherwise. Similarly, a forced change of a job includes an end of a temporary contract, situation when respondent was obliged by employer (business closure, redundancy, early retirement, dismissal etc.), and sale or closure of own/family business, though the latter category might not always be negative. And, finally, family reasons joint child care and care for other dependent, situations when partner's job required her/him to move to another area or marriage, and the residual category of other reasons.

Another dummy variable indicates whether an individual experienced an unemployment spell between the first and fourth year. Type of occupation is included (dummies for ISCO codes) as well as two dummies for a change of occupation as an individual might have switched an occupation up or down on the classification scale. And finally, we control for living in big and medium cities (measured by density and minimum population).

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<sup>4</sup> EU-SILC data does not provide the information of hours worked each month. The simplifying assumption that part-time work means a half number of hours stems from the modal values in the data: majority of full-time workers report 40 hours per week while it is 20 hours for part-time workers.

## 4.2 Results

Before the crisis, men had better prospects than women in all the countries (see Table 1). Compared to women, men moved up the distribution (or dropped less) by almost one decile in the pre-crisis period (2004-2007). During the crisis (2007-2010), men's advantage lowered almost to a half and gender played a less important role. This finding is in accordance with our expectations of indirect effect of the crisis on gender inequality.

Education had a significant positive impact on movements along the distribution before the crisis while its effect weakened substantially or lost significance during the crisis in Austria and Poland. However, the CR represents an opposite development: the impact of tertiary education gained significance and strongly influenced movements along distribution only during the crisis.

Different reasons for a change of job had significant impact on movements along the distributions. In Austria, individuals who changed a job due to family reasons dropped (or moved up less) by almost two deciles before the crisis, however, this effect wore off. A change of a job due to family reasons did not have any significant effect in the other two countries either before or during the crisis. This suggests that such individuals were either able to find a similarly paid job perhaps with more suitable conditions or it was accompanied by a relatively small decrease of earnings.<sup>5</sup>

The CR is the only country where a change of a job for a better one helped individuals to move up (or drop less) along the distribution (and only in the first period). In the other countries, a "better job" might not have been related to a better paid job but to non-monetary aspects of the job, or the increase of earnings was only moderate.

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<sup>5</sup> Note that the analysis is provided only for individuals with positive earnings, thus, individuals who quitted the job are not considered here.

**Table 1** Movement to a higher decile (OLS regression)

	AT		CR		PL	
	2004x2007	2007x2010	2004x2007	2007x2010	2004x2007	2007x2010
Original decile	-0.59***	-0.51***	-0.49***	-0.44***	-0.56***	-0.50***
Male	0.94***	0.58***	0.95***	0.55***	0.79***	0.39***
Work experience	0.07	0.05	-0.02	0.02	0.06**	-0.02
Work experience <sup>2</sup>	0.00	0.00	0.00	0.00	0.00**	0.00
Medium education	1.07***	0.17	-0.04	0.61	0.42**	-0.14
High education	1.20**	0.92***	0.34	1.62***	1.06***	0.40
Months worked originally	0.23***	0.23***	0.34***	0.11*	0.16***	0.20***
Change of months worked	0.34***	0.29***	0.35***	0.32***	0.31***	0.32***
Changed job for better	-0.06	-0.49	0.53***	0.33	0.21	0.22
Changed job – forced to	0.39	-0.23	0.01	0.02	-0.32	-0.79**
Changed job – bc. of family	-1.91***	-0.64	0.09	-0.50	0.05	-0.24
Experienced unemployment	-0.08	-0.42	-0.36	-0.67**	-1.22***	-0.73*
ISCO 1	1.31**	1.57***	1.57***	1.35***	1.36***	1.53***
ISCO 2	2.15***	1.21***	1.51***	0.98**	1.59***	1.18***
ISCO 3	1.49***	1.10***	1.33***	0.72**	1.65***	1.42***
ISCO 4	1.24***	0.93***	0.96***	0.78**	0.99***	0.75***
ISCO 5	0.66*	0.36	0.36*	0.34	0.38	0.53**
ISCO 6	-0.37	-0.55	0.25	0.39	0.19	-0.09
ISCO 7	0.51	0.46	0.56***	0.53	0.96***	0.32
ISCO 8	0.33	0.91**	0.58***	0.51	0.89***	0.63**
ISCO – up	0.40	-0.10	0.41***	0.28	0.57***	0.10
ISCO – down	-0.43*	-0.29	-0.24*	-0.04	-0.40*	-0.55**
Densely pop. area	0.53**	-0.13	0.26**	0.17	0.25**	0.27**
Medium pop. area	0.60***	-0.15	0.08	-0.26	0.15	0.01
Constant	-2.92***	-1.35**	-2.45***	-0.74	-1.40**	-0.58
R <sup>2</sup>	0.36	0.38	0.31	0.31	0.37	0.32
N (unweighted)	702	768	2377	1100	1682	1677

Source: longitudinal EU-SILC 2008, 2011. Own computations.

Notes: \* statistically significant at the 10% level, \*\* statistically significant at the 5% level, \*\*\* statistically significant at the 1% level.

And finally, the involuntary change of a job is expected to be the most related to the effect of crisis. Indeed, its negative impact on movements along the distribution proved significant only in the period of the crisis, however, only in Poland. The negative effect in the other two countries did not prove significant which means that individuals who were forced to change a job coped

with the loss of a job by finding a different one accompanied by insignificant decrease of earnings, even during the crisis.

The experience of unemployment reflected in movements along the distribution diversely in the three countries. This negative effect was insignificant in both the periods in Austria, where according to Eurostat database the unemployment rate did not changed dramatically after 2006 and remained at values about 4%.<sup>6</sup> A significant negative impact appeared during the period of the crisis in the CR, accompanied by an increase of unemployment rate after 2008. Poland was hit by a high unemployment rate before the crisis (12% in 2006) with more convenient values of 8% or less during the period of crisis, hence, the negative effect weakened.

## **5. Earnings inequality decomposition**

After all, the fact that factors of our interest significantly caused upward or downward movements of individuals along the earnings distribution over time might not reflect in its contribution to earnings inequality in the same way. In this section, we provide a different view on earnings inequality by looking at the structure of factors that contributed to the earnings inequality at the end of the before-crisis (2007) and the crisis (2010) periods.

### **5.1 Methodology**

We apply regression-based inequality decomposition, following Fields (2003), to see which factors contributed the most to the earnings inequality in the periods before and during the crisis.

The procedure was described by Fiorio and Jenkins (2007). The standard OLS regression model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_K X_K + \varepsilon \tag{2}$$

can be rewritten as:

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<sup>6</sup> Unemployment rate (for age 25-54) according to Eurostat based on Labour Force Survey data (Ifsa\_urgaed).

$$Y = \beta_0 + Z_1 + Z_2 + \dots + Z_K + \varepsilon \quad (3)$$

where  $Z_K$  is a “composite” variable. We use a decomposition of predicted earnings:

$$\hat{Y} = \beta_0 + \hat{Z}_1 + \hat{Z}_2 + \dots + \hat{Z}_K \quad (4)$$

in which case there is no residual term.

We estimate the earnings function for the last year of the periods before and during the crisis and include similar regressors as in the previous section: gender, work experience, education, type of occupation (ISCO) and whether it changed (up or down) during the period, change of a job for a better one, forced change of a job, or a change of a job due to family reasons, experience of unemployment, and city size. The preliminary results showed that number of months worked comprised a large share of earnings inequality (up to 50%), therefore, monthly earnings derived according to the number of months worked are used here simply for illustrative reasons and better visibility of other factors.

## 5.2 Results

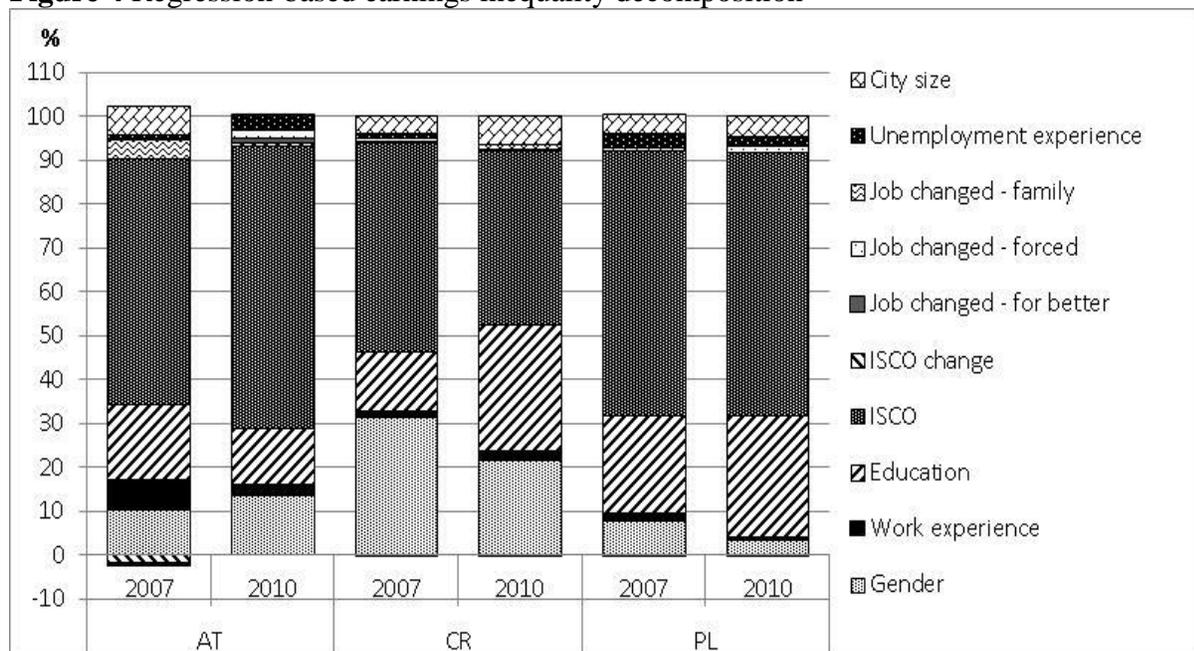
Not surprisingly, the highest share of earnings inequality is caused by the type of occupation, as shown by Figure 4. The second and third most important factors are gender and education. However, the size of their effects is not as straightforward as we would expect from the previous section.

Austria and the CR belong to countries with one of the highest gender wage gaps in Europe while rather the opposite holds for Poland (Mysíková, 2012). In accordance with that, we can see that gender contributes the least to earnings inequality in Poland. Gender earnings gap causes the highest share of overall earnings inequality in the CR – more than 30% in 2007 and more than 20% in 2010 (a decreasing share conformable to results in previous section).

Austria exhibits somewhat lower contribution by gender – 10% in 2007 – than expected and overshadowed by education. Seemingly contradicting the results from the previous section, the contribution of gender to overall earnings inequality increased to 14% in 2010 in Austria, which could be explained by the increased effect of education.

Education, rather unexpectedly compared to previous section, gained on importance in Poland. The most substantial change of the effect of education on the structure of earnings inequality occurred in the CR: while education contributed by 13% to earnings inequality in 2007, it was 29% in 2010.

**Figure 4** Regression-based earnings inequality decomposition



Source: longitudinal EU-SILC 2008, 2011. Own computations.

Note: Regression results are available upon request.

The other factors contribute markedly less to the overall earnings inequality. The change of a job for a family reasons formed nearly 5% of earnings inequality in 2007 in Austria while its effect wore off later, when an involuntary change of job rather came forth with its 2% contribution (as

well as in Poland with 1% contribution). The experience of unemployment contributed the most (by more than 3%) to earnings inequality in Poland before the crisis when unemployment was high to have weaker effect later with lower unemployment figures. On the other hand, the contribution of experienced unemployment strengthened in Austria to almost 3% in 2010 where the unemployment did not underwent any substantial increase.

## **6. Conclusion**

This study analyses personal earnings distribution in the Czech Republic (CR) in comparison with Austria and Poland. It captures two four-year periods, a before-crisis period 2004-2007 and a period involving the effects of the crisis, 2007-2010, using the EU-SILC longitudinal data. It focuses on earnings distributions from three perspectives. First, we apply a relative distribution method to show aggregate changes of the shape of earnings distribution and to verify a hypothesis that the crisis might have spurred “hollowing of the middle”.

Before the crises, the middle was hollowing out only in Austria, while it was strengthening both in the CR and Poland, though from different directions. Austrian results conform to our expectations: individuals were moving from the middle to the bottom but the movement to the top wore off during the crisis. However, the polarization effect was weaker than in the before-crisis period. Earnings polarization occurred during the crisis period neither in the CR nor in Poland. We do not conclude that the crises spurred earnings polarization in these three countries.

Second, we focus on factors that influenced movements of individuals along the earnings distribution. Rather surprisingly, the share of individuals whose earnings were relatively stable increased between the before-crisis and crisis period. Moreover, more workers moved upwards during the crisis than before in Austria and the CR.

Before the crisis, men had better prospects than women in all the countries. During the crisis period, men's advantage lowered almost to a half and gender played a less important role. This finding is in accordance with our expectations, though they are not based directly on gender equalisation but rather indirectly through gender segregation effects. The impact of education on individual movements along the distribution developed differently in the three countries: while its impact weakened in Austria and Poland, it strengthened in the CR.

Change of a job for various reasons moves workers along the earnings distribution during an analysed period. In Austria, it was family reasons which disadvantaged workers the most, however, only before the crisis. In the CR, only a change of a job for a better one helped workers to higher positions in the distribution, and again, this effect wore off during the crisis. In Poland workers who were forced to change a job dropped to lower positions at earnings distribution during the crisis.

And, third, we reveal the structure of earnings inequality by regression-based decomposition in the last years of analysed periods (2007 and 2010). The highest share of earnings inequality is caused by the type of occupation. Another two strongest factors were gender and education. Though the gender gap in upward movements along the distribution weakened in all the countries, it was not strong enough in Austria where the contribution of gender to overall earnings inequality even increased between 2007 and 2010. This was overbalanced by lower contribution of education, the size of the city of residence, and the impact of changed job due to family reasons. In the CR, the contribution of education to earnings inequality more than doubled between 2007 and 2010. The structure of earnings inequality remained the most stable in Poland, where only the contribution of education and gender changed in an opposite direction.

Earnings distribution in the three analysed countries developed in a different way. Though earnings polarization was growing in Austria during the crisis, it did so in a slower pace than before. The other two countries experienced a relative stability or even the opposite. In terms of policy recommendations, it seems educational differences are the most responsible for structural changes of earnings inequality in the CR, while Poland outstands by a negative impact of involuntary change of job.

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