

Within-firm and between-firm drivers of wage inequality in Central and Eastern Europe¹

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November 2017

work in progress, please do not quote

Introduction

The present paper contributes to the ongoing economic and policy debate on income inequalities, by analysing changes in wage dispersion and their determinants in CEE countries in the 2000s. While existing studies mostly looked at the US and countries from Western Europe (see Lazear, 2009 for a review), this region is an interesting case to look at, when it comes to wage inequality. Until the launch of the economic transition, the Socialist model of administrative wage setting artificially maintained a compressed wage distribution, and ensured full employment in the economy. In this way, a perfect competitive labour market was implemented, where wages were at their reservation level, which would not be compatible with any form of wage inequality (see Basu et al. 2004, 2005). The launch of transition was associated with a trend towards greater inequality, particularly in the early phase, so that at the beginning of the 2000s most CEE countries presented earnings inequality levels in line with OECD and European standards (Rutkowski, 2001; Zaidi, 2009). Within the CEE group, Central European countries featured lower inequality levels than Eastern countries from the Commonwealth of Independent States (World Bank, 2000).

The paper has three main objectives. First, it analyses the role of establishments in determining wage inequality in CEE countries, and investigates how much of this inequality – at the macro level - is due to wage differentials arising between firms, and how much from changes in within firm inequality. Second, it investigating the evolution of wage inequality during the period of 2002-2010 we aim at pointing to the external institutional and economic factors that may motivate the observed changes in wage dispersion. Third, we tackle the microeconomic determinants of changes in wage dispersion in the CEE countries, disentangling the role of individual, job and firm level characteristics.

We use three consecutive waves for years 2002, 2006, and 2010 from the European Structure of Earnings Survey (ESES), a unique cross sectional linked employer-employee data set. The highly detailed information at the level of the individual allows us to compute precise measures of wage inequality, distinguishing between a within-firm component and a between-firms component (see Barth et al. 2014). Also, the availability of data for several CEE countries, together with a high

¹ This paper was financially supported by the Network for Jobs and Development initiative under the auspices of the World Bank. Usual disclaimers apply. All errors are ours

degree of cross-country comparability enables us to conduct a detailed comparative analysis of the developments of wage inequality for these countries during the 2000s.

[THE ANALYSIS WILL BE UPDATED WITH 2014 DATA, RECENTRY MADE AVAILABLE]

Wage dispersion in Central and Eastern Europe in 2000s

The first decade of the 2000s was a very important one for CEE countries, which experienced important structural and institutional changes. In the first half of the 2000s, the largest institutional developments occurred, associated with the Accession to the European Union of the majority of CEEs². EU accession was then followed by the economic turmoil induced by the Great Recession in the second half of the 2000s. The Baltic countries were hit hardest, with GDP falls of 14-15% in 2009. Most other CEE countries experienced a slowdown (of 3-7%) in (otherwise) rapid economic growth. Poland was the only exception with not a single quarter of GDP decline.

We contribute to two strands of the wage literature. The first strand analyses the determinants and the evolution in wage inequalities. This literature has grown considerably in the recent decades, focussing on the US and Western European economies, but without dealing explicitly with CEE countries. The most recent works (see e.g. Autor et al., 2008; Lemieux, 2006) investigate the individual determinants of the increasing inequality in individual earnings in the US. They show that steady rise in inequality that took place in the US starting from the 1970s is highly heterogeneous across education, age, and type of occupation. Another striking feature of this trend is that, earnings increased more at higher percentiles of the earnings distribution, even for the same level of skill. This observation implies one should consider the role of non-individual determinants of wage inequalities. Building upon the early literature on inter-industry wage differentials (see e.g. Groschen 1991), some studies highlight the importance of establishment characteristics, particularly those factors associated with their pay policies. Card et al. (2013) suggest that increasing firm level heterogeneity explains a large share of the rise in inequality experienced in West Germany between 1985 and 2009. Barth et al. (2014) show that the increased variance of average earnings across the establishments can be held responsible for the rise in US wage inequality during 1970-2000. Handwerker & Spletter (2015) show this growing contribution of establishment effects in the widening distribution of wages is only partially explained by the changing distribution of occupations among workplaces. Establishment effects matters, as employers are differently affected by the various factors shaping changes in the wage distribution, such as skill biased technological change or changes in labour market institutions while workers sort among employers. These studies of determinants of changes in wage inequalities and of the role of establishments in increased wage inequality focus on Western countries, mostly the US, the UK and Germany. Much less is known about developments of wage inequality in countries from Central and Eastern Europe, and its drivers. In a very recent work World Bank report (Kelly et al 2017) the authors show that differences in wages across firms explain more than half of wage inequality in Bulgaria, Estonia, and Latvia, while differences in educational attainment or occupations across workers explain only a third or less. These difference across firms are driven by differences in the rate of adoption of digital technologies.

The second strand of literature our paper fits into investigates the institutional development that influence wage setting mechanisms in CEE countries. Basu, et al. (2004) examined rent-sharing mechanisms in the Czech Republic and Slovakia in the 1990s. They showed these mechanisms were relatively more effective in firms set up after the launch of transition compared with pre-existing state-

² All countries we consider in the analysis entered the European Union in 2004, with the exception of Romania and Bulgaria who entered in 2007.

owned enterprise. More recently, Magda et al. (2012) use data for Czech Republic, Hungary and Poland to discuss the changing characteristics of wage setting mechanisms in different cohorts of establishments. Their results reveal a union wage premium whose characteristics depend on both the level at which collective bargaining occurs (the firm or the industry) and the cohort of the establishment, with substantial cross-country variation. In a companion paper, Magda et al. (2016) analyse the evolution of the union wage premium in three CEE countries around the time of their accession to the EU. They find that despite a generalized reduction in union coverage in these countries, between 2002 and 2006 the union wage premium became bigger and statistically more significant (particularly in Poland and Hungary), due to institutional reforms, which were prompted by the EU Commission’s requirements for EU accession. These reforms increased the social partners’ ability to bargain and enforce wage agreements, and made industry-level unions more effective in guaranteeing the protections provided by labor standards. The present study instead adopts a broader perspective, by investigating the determinants of wage inequality and dispersion instead of looking at average wage outcomes ; by assessing how much of this inequality is associated with firm-specific components, rather than emphasizing the role of a specific institution -- collective bargaining; and by expanding the analysis to cover nine Central Eastern European countries rather than focussing on three of them.

Data

We use repeated cross-sectional data from The European Structure of Earnings Survey for the years 2002, 2006 and 2010 for nine countries from Central and Eastern Europe (CEE). This is a large matched employer–employee dataset which includes information on earnings, personnel, jobs, and firm characteristics in the manufacturing, construction, and trade and service sectors. We focus on the following countries, who are available for all three waves: Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia, and Bulgaria. As we are interested in describing the broad aggregate trends of each country’s economy during the period under consideration, we do not focus on any specific group of firms /workers but exploit the largest possible sample for each country. Accordingly we included firms that operate in the all the sectors covered, and of all dimensions surveyed and made available in the ESES data. To have the broader possible measurement of wages, we also include all workers surveyed in ESES, regardless of gender, age, occupation or work status.

While ESES data are characterized by a high degree of cross-country comparability, we had to carry out a number of cleaning steps to guarantee the full cross-country harmonization of the national samples and our analyses. In particular we dropped observations which referred to workers in the smallest firms (below 10 workers), which were available for some of the countries.

Our final samples includes 16 602 151 individual observations and 123 716 firm-level observations. Their distribution across countries and years is presented in Table 1.

Table 1: Summary of data samples.

| Number of observations (individuals) | | | | | | | | | |
|--------------------------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
| year | bg | cz | ee | hu | Lt | lv | pl | ro | sk |
| 2002 | 152977 | 1030982 | 78106 | 479009 | 145530 | 192551 | 647386 | 230161 | 419715 |
| 2006 | 186672 | 1970864 | 126515 | 781864 | 131201 | 299857 | 652688 | 253150 | 674408 |
| 2010 | 204968 | 1993625 | 119222 | 835207 | 38387 | 223215 | 681761 | 278270 | 773860 |
| Number of observations (firms) | | | | | | | | | |
| year | bg | cz | ee | hu | Lt | lv | pl | ro | sk |
| 2002 | 1353 | 1797 | 509 | 9441 | 2355 | 1451 | 6811 | 5864 | 1018 |

| | | | | | | | | | |
|------------------------|------|------|------|-------|------|------|------|-------|------|
| 2006 | 2616 | 5094 | 1507 | 12608 | 1827 | 2494 | 6399 | 10360 | 2032 |
| 2010 | 3184 | 4795 | 1078 | 10052 | 1629 | 5685 | 7039 | 11730 | 2988 |
| Mean hourly wage (EUR) | | | | | | | | | |
| year | bg | cz | ee | hu | lt | lv | pl | ro | sk |
| 2002 | 0,8 | 2,8 | 2,1 | 2,4 | 1,8 | 1,5 | 3,4 | 1,0 | 2,0 |
| 2006 | 1,1 | 4,2 | 3,4 | 3,5 | 2,7 | 2,5 | 4,2 | 1,9 | 3,1 |
| 2010 | 1,9 | 5,2 | 4,7 | 4,2 | 3,4 | 3,6 | 5,2 | 2,6 | 4,7 |

Our baseline measure of wage is log hourly gross earnings in the reference month, in EUR. The last panel of Table 1 summarizes the distribution and changes in average hourly gross wages in CEE countries between 2002 and 2010. Wages are the lowest in the late EU entrants, Romania and Bulgaria; and on average twice higher in Czechia and Poland, where they exceed 5 EUR per hour (in 2010). All CEE countries recorded substantial increases in earnings in the analysed period, both between 2002 and 2006 and 2006 and 2010. One must note however that in most countries (in particular those outside the Euro zone or currency board systems) these increases reflect not only changes in real wages, but also strengthening currencies.

We use variance of log hourly wages as our measure of wage inequality, as a common statistical measure of dispersion for a distribution in general. Unlike the variance of wages, the variance of log wages is a mean independent measure (Atkinson, 1970).

Methodological approach

Our analysis is carried out in two main steps. The first one is to analyse changes in the variance of (log) earnings for each country and next decompose it into a between- firms and within-firm components, following the methodology applied by Barth et al. (2014). The aim is to determine to what extent the changing level of total wage inequalities in each of the analysed countries is associated with increased variance of average earnings among the firms where they work, and to what extent it is driven by changes in within-firm inequality (wage inequality among workers within firms). In particular, we calculate the following components: $\ln w_{ij}$ which denotes $\ln(\text{wage})$ of individual i in firm j , $\underline{\ln w}_j$ denotes the mean of $\ln(\text{wage})$ for workers in firm j ; $\text{Var}(\text{within})$ as the within component of variance, and $\text{Var}(\text{between})$ as the between component. Thus, the variance decomposition of \ln earnings is:

$$\text{Var}(\ln w_{ij}) = \text{Var}(\text{within}) + \text{Var}(\text{between}) = \text{Var}(\ln w_{ij} - \underline{\ln w}_j) + \text{Var}(\underline{\ln w}_j), \quad (1)$$

We calculate $\text{Var}(\ln w_{ij})$ and $\text{Var}(\underline{\ln w}_j)$ from our data and derive $\text{Var}(\ln w_{ij} - \underline{\ln w}_j)$ as the difference.

This exercise is very useful to give a broad picture of the aggregate trends in wage dispersion over the period but gives little insight over the determinants of these trends. An established literature analyses the determinants of wage inequality, and tries to distinguish individual determinants e.g. associated with individual workers' human capital from the characteristics of the job or the occupation of the worker, and from the characteristics of the firm/employer (see e.g. Barth et al., 2014; Handwerker and Spletter, 2015). Thus, in the second part of the paper, we estimate the variance of wages as a function of (i) observable workers characteristics (gender, age, education, tenure within the firm), (ii) unobserved workers' characteristics, such as productivity and ability, which are captured by the observed characteristics of co-workers (share of co-workers with university degree, share of female co-workers, share of young workers and those over 50 years old, see, e.g., Card and de la Rica, 2006),

(iii) job characteristics (type of contract, occupation), and (iv) firm characteristics (sector, size, coverage by a collective agreement, type of financial control). Finally we exploit the time variation available in the data to analyse to what extent economic and institutional developments that occurred during the 2000s may be held responsible for changes in wage inequality. We do this by including to the baseline specification year dummies, and their interactions with sectoral dummies to account for institutional and economic developments, asymmetric across sectors.

In the final part of our paper, we try to gain more insight over the change over time in wage inequality. Our data allow to analyse the wage developments occurred during the first decade of the 2000s, and these are measured in three points in time: 2002, 2006 and 2010. These cover two interesting sub-periods that allow to examine the contribution of institutional and economic developments to wage inequality: the first sub-period corresponds with the EU entry of 7 (out of 9) countries in our sample. This is a very important occurrence, which saw important institutional development in the CEE (see Dmitrova 2010, Magda et al., 2016, Sedelmeier 2008). The second sub-period corresponds to the occurrence of the economic crisis, which severely hit some of CEE countries under consideration.

We thus estimate the following specification for each country:

$$\text{Var}(w)_{ij}^t = \mathbf{X}'_{ij}\alpha^t + \epsilon_{ij}^t, \quad t = 2002, 2006, 2010 \quad (3)$$

where, for expositional simplicity, \mathbf{X} collects all of the covariates (i.e. individual, job, firm characteristics and characteristics of coworkers) into a single vector, and $\boldsymbol{\rho}$ is a vector that collects all the corresponding coefficients. Of course, separate estimates of the wage structures of the model in (3) in 2002, 2006, 2010 do not allow us to test whether average levels of wage inequality were statistically different in 2002, 2006, 2010. Thus, we estimate equation (3) on the combined 2002-2010 sample as well as in each sub-sample 2002-2006 and 2006-2010 for each country. We then use these estimates to analyse the change in the variance of wage between 2002 and 2010 and in each of the two sub-periods. In particular, as discussed in Magda et al. (2016), the change in the variance of wages can be decomposed using the Oaxaca-Blinder technique into a part that is explained by the different composition of the wage predictors in 2002 and 2006 (i.e., the endowments), and a part that is attributable to the different returns to these predictors (i.e., the coefficients), plus a residual interaction term. We then compute the following quantities:

$$\overline{\text{Var}(w)}^0 - \overline{\text{Var}(w)}^1 = \hat{\alpha}^0(\bar{X}^1 - \bar{X}^0) + (\hat{\alpha}^1 - \hat{\alpha}^0)\bar{X}^0 + \{(\bar{X}^1 - \bar{X}^0)(\hat{\alpha}^1 - \hat{\alpha}^0)\} \quad (4)$$

Equation (4) shows that the estimated differential between the variance of wages between the beginning of each period (denoted by a superscript 0) and the end of the period (denoted by a superscript 1) can be explained in terms of differences in endowments, coefficients and their interaction attached to the vector of covariates in equation (3). This decomposes the change in the variance of wages into three terms. The first term reflects changes in the variance driven by changes in the set of covariates ($\bar{X}^1 - \bar{X}^0$), i.e., the expected change in the variance of wage if workers and firms in period 's 1 conditions experienced the same wage variance as in period 0. The second term captures the change in the coefficients ($\hat{\alpha}^1 - \hat{\alpha}^0$), thus it describes the change in the variance of workers' wages between period 0 and period 1, assuming the characteristics of workers and firms remained the same as in period 0. The third part is the residual; i.e., an interaction term accounting for the fact that differences in endowments and coefficients existed simultaneously in period 0 and period 1.

Results

Aggregate changes in wage dispersion

There were substantial changes in the level of wage disparities in CEE countries between 2002 and 2010. The beginning of that period was marked by high discrepancy in the level of wage inequalities (measured with variance of log wages in each country) between the Central European countries on the one hand, and Baltic states and Romania on the other. Czech Republic, Slovakia, and Hungary had lower wage inequalities (with variance of log from 0,209 in the Czech Republic to 0,276 in Hungary), whereas the levels observed in Romania (0,427) and Lithuania, Estonia and Latvia (between 0,388 and 0,473) were distinguishably higher (Table 2).

Table 2. Wage inequality (variance of ln wages) 2002, 2006 and 2010

| total variance of ln wages | 2002 | 2006 | 2010 |
|----------------------------|-------|-------|-------|
| cz | 0,209 | 0,231 | 0,25 |
| sk | 0,275 | 0,256 | 0,242 |
| hu | 0,276 | 0,317 | 0,308 |
| bg | 0,352 | 0,326 | 0,322 |
| pl | 0,355 | 0,367 | 0,322 |
| lt | 0,388 | 0,382 | 0,344 |
| ee | 0,423 | 0,331 | 0,301 |
| ro | 0,427 | 0,426 | 0,397 |
| lv | 0,473 | 0,495 | 0,363 |

By 2010 the differences in the level of wage dispersion among the CEE countries have narrowed. This pattern reflected both increasing wage differentials in the lowest inequality countries (Czech Republic, Hungary) and lowering wage differentials in high inequality countries (particularly the Baltic states). The two sub periods of our analysis were marked by divergent trends, with wage inequalities stable or increasing in 6 of the 9 CEE countries (with an exception of Slovakia, Bulgaria and Estonia) between 2002 and 2006, and narrowing in all but Czech Republic during the economic crisis (between 2006 and 2010).

The role of between-firm wage differentials

Total wage inequality at a country level is driven by inequality between firms and inequalities that exist within firms, and can be thus decomposed into two such components. In 2002 in low wage inequality countries (Czech Republic, Hungary, and Slovakia) the between firm inequality explained around half of the total wage disparities (Table 3), a larger component than the one found for Western European countries (see e.g. Card et al., 2013 for Germany) but smaller than the one found for the US (see Barth et al. 2014).³ At the same time, in high wage inequality countries, the share of the between-firms component was higher, exceeding 60% in Estonia, Romania and Latvia, i.e. very similar to values found

³ Card et al. (2013) shows that the between variance represents about 25% of the overall increase in the variance of wages in Germany between 1985 and 2009 (though its estimates are far below the levels we observe for CEE, as it amounts to 0.025-0.053), while Barth et al. (2014) shows it accounts for 67% of the increase in the variance of log wages in the US between 1970 and 2010 (where however the between component is high, of 0.480-0.563 in the 1992 – 2007 period).

for the US by Barth et al., (2014). The convergence in the levels of wage inequalities across the analysed countries between 2002 and 2010 was associated with a convergence of the between-firm shares of wage disparities, which have fallen over the 2002-2010 in all CEE countries but Czech Republic and Hungary. In other words, the share of the between-firm wage inequality in total wage inequality increased in those countries where it was low (and these countries had also lower wage disparities) and decreased in countries with the highest levels of between-components and total wage inequality. The decrease in the between-firm wage inequality was stronger in the 2006-2010 period in most CEE countries (compared to early 2000s).

Table 3. Between firm wage inequality (variance of ln wages)

| Between-firm wage inequality | | | |
|------------------------------|-------|-------|-------|
| between | 2002 | 2006 | 2010 |
| Cz | 0,097 | 0,111 | 0,143 |
| Sk | 0,149 | 0,130 | 0,127 |
| Hu | 0,154 | 0,186 | 0,182 |
| Bg | 0,249 | 0,240 | 0,227 |
| Pl | 0,205 | 0,209 | 0,175 |
| Lt | 0,208 | 0,212 | 0,195 |
| Ee | 0,294 | 0,199 | 0,193 |
| Ro | 0,266 | 0,269 | 0,253 |
| Lv | 0,328 | 0,300 | 0,231 |

Thus, overall higher wage inequality at a country level appears to be associated with higher between-firm inequality. Indeed, looking at simple correlation matrices (Table 4) we can see a strong level of correlation between total wage inequality and the between-firm component (exceeding 0.9 each year).

The within-firm wage inequality, experienced an increase between 2002 and 2006 in most CEE countries, which was followed by a decrease between 2006 and 2010, in most cases stronger than the increase, so that the within-firm inequality in 2010 was lower than the 2002 levels in virtually all CEE countries (with the exception of Hungary where it remained stable).

Table 4. Correlation of total wage inequalities and its between-firm and within-firm components

| Year | 2002 | 2006 | 2010 |
|--|------|------|------|
| Correlation of total var with between Var | 0,96 | 0,94 | 0,92 |
| Correlation of total var with within Var | 0,56 | 0,77 | 0,60 |
| Correlation of between Var with within var | 0,32 | 0,50 | 0,24 |

Determinants of wage dispersion in Central Eastern Europe: institutional and economic determinants of changes during the 2000s.

There are several micro-level factors that impact the degree of wage dispersion. Human capital and skills determine productivity differences, which are reflected in the pay scale, thus they shape

inequality. Job characteristics, such as type of contract held and occupation in which one works also impact wages, and increased flexibility in the use of non standard employment in CEE (Broughton et al 2016) and trends of job polarization (Lewandowski et al 2016) were very likely to lead to changes in the overall wage distribution. Finally, there are firm level characteristics that determine pay setting schemes e.g. firm size its sectoral affiliation or collective agreement coverage t (Barth et al. 2014). The cohort of an establishment may also proxy for otherwise unobserved factors that determine the productivity of an establishment, and affect wage determination within firm (see Magda et al., 2012, 2015). On the macroeconomic side, the economic cycle matters, as well as institutional developments that may determine the overtime variation in wage inequality.

We start by investigating the explanatory power of all these factors as potential determinants of the variance of wages in CEE countries. In Table 1 we report the R squared of RIF - regression of the variance of wages on individual characteristics (dummies for age, gender, education, tenure in the establishment and characteristics of coworkers) in column [1]. We include also job characteristics (dummies for occupation, and employment with a fixed term contract) in column [2]. In column [3] we add firm characteristics i.e. dummies for NACE 1 sector, establishment size, coverage by an industry or firm level agreement, an indicator for the years the firm has been operating, plus its interactions with sectoral dummies. In column [4] we further include year dummies, plus their interactions with sectoral (NACE) dummies.

The explanatory power of our empirical model varies by country. The pseudo-R squared exceeds 0.2 only in three out of nine countries (Estonia, Romania and Slovakia). This signals that in most cases there is a significant portion of wage inequality that remains unexplained. Nevertheless, comparison of the pseudo R-squared from the different specifications is suggestive of the importance of the four set of determinants described above in explaining variation in the wage inequality in CEE. Three groups of countries can be broadly distinguished. The first group includes the Visegrad countries i.e. Czech Republic, Poland, Hungary (CEE3). The variance of wages in CEE3 is predominantly explained by individual and job characteristics, which account for over the 60% of the R-squared. What is left is explained mostly by firm characteristics, particularly so in Czech Republic and Poland.

On the opposite side of the spectrum we find the “late entrants” in the European Union (i.e. Bulgaria and Romania), plus Slovakia. Here overtime sectoral variation and firm characteristics account for over the 70% of total explained variance, over 90% in Slovakia and Romania.

In between these two extremes there are the Baltic countries. The variance of wages in these countries is explained more or less evenly with by individual/job characteristics and firm plus overtime change sectoral variation. In this group Lithuania and Latvia seem relatively closer to CEE3, while Estonia seems relatively closer to the group of “late EU entrants” plus Slovakia.

Table 5: determinants of the variance of wages in CEE

| | [1] | [2] explained by (in %): | | | | [3] |
|-----------|-----------|-------------------------------|-----------------------|-------------------------|--------------------------------|--------------|
| | R squared | a) individual characteristics | b) job and occupation | c) firm characteristics | d) overtime sectoral variation | Observations |
| Czechia | 0,11 | 55% | 9% | 27% | 9% | 4983616 |
| Hungary | 0,16 | 56% | 6% | 19% | 19% | 2096080 |
| Polandd | 0,15 | 53% | 7% | 27% | 13% | 1981776 |
| Lithuania | 0,10 | 40% | 10% | 20% | 30% | 315118 |
| Latvia | 0,16 | 31% | 6% | 19% | 44% | 715623 |
| Estonia | 0,20 | 20% | 5% | 20% | 55% | 323843 |
| Bulgaria | 0,19 | 26% | 5% | 37% | 32% | 544617 |
| Romania | 0,86 | 6% | 1% | 17% | 76% | 752398 |
| Slovakia | 0,51 | 4% | 2% | 55% | 39% | 1867983 |

Notes: R-squared to measure the explanatory power of the regressions when the entire set of controls is included. In column [2a]-[2d] we report the contribution in % of each set of characteristics. Individual characteristics include dummies for age, education, gender, tenure in the establishment, and characteristics of coworkers (share of females, share with tertiary education, share of under 30 and share of over 50 years old). Job and occupation characteristics are dummies for occupation and fixed term contract. Firm characteristics are dummies for firm sector (NACE1), size, coverage by a firm or industry level agreement, an indicator for firm cohort plus its interactions with NACE1 sectoral dummies. Overtime changes are interactions between firm sector and year.

Results in Table 5 point to a significant share of the variance of wages between 2002 and 2010 being explained by overtime sectoral variation. This variation surely captures the economic and institutional developments that occurred in CEE during the period 2002-2010. Two of these are worth noticing. The first one is entry in the European Union: seven out of the nine countries we analyse entered in the European Union in 2004. Bulgaria and Romania entered in 2007. The second one is the “Great Recession”, which hit all CEE countries in 2008, and was followed by a slow recovery afterwards.

The specific timing of the ESES surveys allows us to investigate the variance of wages in the period 2002-2010 and in the two sub-periods 2002-2006 and 2006-2010.

In Table 6, we report the results of the Oaxaca decomposition described by equation (4) for each country, and the entire period i.e. set the year 2002 as period 0 and 2010 as period 1. These results confirm the general reduction in the variance of wages between 2002 and 2010 (particularly in the Baltic countries) and a slight increase in low inequality Central European countries (Hungary and Czechia).⁴

⁴ While in this baseline analysis we considered all firms in the economy. In the Appendix we report results from several robustness checks. We show the reduction in wage inequality between 2002 and 2010 becomes somewhat more evident when we exclude public sector firms, which have often very rigid pay schemes, (Table A1). Results are also confirmed when we look at firms in the industry sector only (i.e. firms in the manufacturing, construction, mining and quarrying, electricity gas and water supply. See Table A2). Results are broadly confirmed when we look at firms in the services sector only (Table A3).

It is very instructive to decompose the part of the change in predicted differentials due to endowments (that is the composition of individual, job and firm characteristics) from the part due to coefficients (i.e. returns to these characteristics). In all countries (but Slovakia and Estonia) changes in the structure of employees with respect to their individual, job and firm level characteristics increased the variance of wages, suggesting thus higher heterogeneity of individuals with respect to their individual productivity. We decompose these changes further, to observe what factors determine such “endowment-driven” inequality increase. In most countries, changes in the observed characteristics of firms appear to be the most important predictors of wage inequality. The magnitude of the impact of individual, job and co-workers characteristics was much smaller (although these also acted as inequality – increasing in most cases).

The increase in inequality was also driven by the changing returns to the observed features, although their role was smaller than that of changes in the composition. Still, again it is the firm level characteristics that played a major role, strongly contributing to increased wage dispersion in majority of countries. Interestingly, the changes in the returns to co-workers characteristics acted as inequality – decreasing in those countries where they were statistically significant (around half of the observed ones), reinforcing the conclusion of increased sorting of workers among firms, but lower sorting at the firm level. Finally, the returns to job characteristics changed in a way to narrow wage distributions in Romania and Hungary, but these widened the distribution in Poland, Estonia and Latvia,

Finally, the change in differentials due to the interaction between changing endowments and coefficients takes a negative sign, being strongly significant. This suggests that wage returns, possibly due to cyclical factors or overtime institutional and economic developments, when interacted with the change in individual and firm endowments are conducive to a lower inequality in 2010 relative to 2002. This holds true not only when we look at all firms in the economy, but also at private firms only, as well as when we distinguish between firms operating in the industry or services sector (see results in the Appendix). When we detail and distinguish the specific predictors, firm characteristics again turn out to be very relevant with a negative and significant coefficient.

All in all, results in Table 6 confirm the previously presented overall pattern of decreasing inequality in CEE in the first decade of the 2000s. Firm characteristics seem to have played a major role in this process, both in terms of change in endowments and coefficients. We now turn to the analysis of the two subperiods 2002-2006 and 2006-2010 separately.

Table 6: Oaxaca decomposition of predicted differentials in the variance of wages, 2002-2010 period

| | rifcz02 | rifhu02 | rifsk02 | rifpl02 | rifee02 | riflt02 | riflv02 | rifbg02 | rifro02 |
|------------------------------------|---------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|---------------------|----------------------|----------------------|
| Differential | | | | | | | | | |
| Predicted variance of wages (2010) | 0.250*** (0.005) | 0.308*** (0.005) | 0.243*** (0.005) | 0.323*** (0.004) | 0.301*** (0.005) | 0.345*** (0.006) | 0.363*** (0.007) | 0.322*** (0.007) | 0.397*** (0.007) |
| Predicted variance of wages (2002) | 0.210*** (0.010) | 0.277*** (0.005) | 0.275*** (0.015) | 0.355*** (0.005) | 0.486*** (0.011) | 0.389*** (0.007) | 0.474*** (0.014) | 0.352*** (0.011) | 0.430*** (0.011) |
| Difference | 0.040*** (0.011) | 0.032*** (0.007) | --0.032** (0.015) | --0.033*** (0.006) | --0.185*** (0.012) | --0.044*** (0.009) | 0.110*** (0.016) | --0.030** (0.013) | --0.033** (0.013) |
| <i>of which:</i> | | | | | | | | | |
| Endowments | | | | | | | | | |
| individual characteristics | 0.002 (0.003) | 0.027*** (0.003) | 0.012*** (0.004) | 0.039*** (0.002) | 0.002 (0.006) | 0.013*** (0.002) | 0.037*** (0.005) | 0.006** (0.002) | 0.049*** (0.005) |
| job characteristics | 0.004** (0.002) | 0.024*** (0.002) | 0.002 (0.003) | --0.001 (0.001) | 0.012*** (0.003) | 0.008*** (0.002) | 0.043*** (0.006) | --0.000 (0.003) | 0.006 (0.004) |
| firm characteristics | 0.062** (0.027) | 0.077*** (0.014) | 0.014 (0.030) | 0.125*** (0.010) | 0.001 (0.074) | 0.036** (0.014) | 0.011 (0.042) | 0.171*** (0.025) | 0.137*** (0.029) |
| coworkers' characteristics | 0.005* (0.003) | --0.004** (0.002) | --0.014** (0.007) | 0.029*** (0.005) | --0.008 (0.006) | --0.002 (0.002) | 0.007 (0.009) | 0.012*** (0.003) | --0.005 (0.009) |
| Total | 0.074*** (0.028) | 0.125*** (0.014) | 0.013 (0.030) | 0.193*** (0.010) | 0.007 (0.074) | 0.056*** (0.015) | 0.099** (0.044) | 0.164*** (0.025) | 0.187*** (0.028) |
| Coefficients | | | | | | | | | |
| individual characteristics | 0.051*** (0.015) | --0.008 (0.011) | 0.018 (0.025) | 0.032** (0.013) | --0.046** (0.022) | 0.017 (0.021) | --0.010 (0.015) | 0.061*** (0.016) | 0.003 (0.021) |
| job characteristics | 0.013 | 0.124*** | --0.012 | --0.111*** | --0.193*** | 0.019 | 0.122*** | --0.003 | 0.066*** |

| | | | | | | | | | |
|----------------------------|------------|------------|-----------|------------|------------|------------|----------|----------|----------|
| | (0.015) | (0.009) | (0.029) | (0.010) | (0.019) | (0.013) | (0.021) | (0.018) | (0.018) |
| firm characteristics | 0.079 | 0.491*** | 0.142* | 0.167*** | 0.083 | 0.180*** | --0.021 | 0.372*** | 0.278** |
| | (0.130) | (0.058) | (0.085) | (0.041) | (0.120) | (0.045) | (0.081) | (0.124) | (0.124) |
| | | | | | | | | | -- |
| coworkers' characteristics | --0.019 | --0.007 | 0.028 | --0.104*** | --0.073*** | --0.030 | --0.027 | 0.019 | 0.087*** |
| | (0.035) | (0.011) | (0.050) | (0.014) | (0.024) | (0.029) | (0.028) | (0.029) | (0.025) |
| | | | | | | | | | -- |
| constant | 0.030 | --0.479*** | --0.144 | --0.003 | 0.132 | --0.221*** | 0.089 | 0.293*** | --0.197 |
| | (0.157) | (0.054) | (0.096) | (0.048) | (0.125) | (0.057) | (0.089) | (0.112) | (0.128) |
| | | | | | | | | | -- |
| Total | 0.154*** | 0.120*** | 0.032 | --0.020** | --0.099*** | --0.036** | 0.091*** | 0.155*** | 0.062*** |
| | (0.037) | (0.028) | (0.020) | (0.010) | (0.017) | (0.017) | (0.019) | (0.053) | (0.023) |
| <hr/> | | | | | | | | | |
| Interaction | | | | | | | | | |
| | | | | | | | -- | -- | -- |
| individual characteristics | --0.001 | 0.003** | --0.002 | --0.013*** | 0.002 | 0.001 | 0.013*** | 0.008*** | 0.013*** |
| | (0.002) | (0.002) | (0.002) | (0.001) | (0.005) | (0.001) | (0.005) | (0.002) | (0.004) |
| | | | | | | | -- | | |
| job characteristics | --0.002 | --0.009*** | 0.001 | 0.004** | --0.004 | --0.001 | 0.025*** | --0.003 | 0.012*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) | (0.002) | (0.006) | (0.002) | (0.004) |
| | | | | | | | | -- | -- |
| firm characteristics | --0.184*** | --0.203*** | --0.081** | --0.168*** | --0.098 | --0.055*** | --0.080* | 0.341*** | 0.275*** |
| | (0.044) | (0.030) | (0.034) | (0.012) | (0.075) | (0.020) | (0.044) | (0.056) | (0.035) |
| coworkers' characteristics | --0.002 | --0.005 | 0.006 | --0.029*** | 0.007 | --0.009*** | --0.001 | 0.003 | --0.005 |
| | (0.002) | (0.003) | (0.007) | (0.005) | (0.006) | (0.003) | (0.009) | (0.003) | (0.010) |
| | | | | | | | -- | -- | -- |
| Total | --0.188*** | --0.213*** | --0.077** | --0.207*** | --0.093 | --0.064*** | 0.118*** | 0.350*** | 0.281*** |
| | (0.045) | (0.030) | (0.033) | (0.013) | (0.075) | (0.021) | (0.045) | (0.056) | (0.034) |
| N | 3012767 | 1314216 | 1193575 | 1329088 | 150013 | 183917 | 415766 | 354774 | 499248 |

Table 7: Oaxaca decomposition of predicted differentials in the variance of wages, 2002-2006 period

| | rifcz02 | rifhu02 | rifsk02 | rifpl02 | rifee02 | riflt02 | riflv02 | rifbg02 | rifro02 |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Differential | | | | | | | | | |
| Predicted variance of wages (2006) | 0.231*** (0.006) | 0.318*** (0.005) | 0.368*** (0.004) | 0.257*** (0.007) | 0.383*** (0.007) | 0.383*** (0.005) | 0.496*** (0.007) | 0.327*** (0.008) | 0.427*** (0.006) |
| Predicted variance of wages (2002) | 0.210*** (0.010) | 0.277*** (0.005) | 0.355*** (0.005) | 0.275*** (0.015) | 0.486*** (0.011) | 0.389*** (0.007) | 0.474*** (0.014) | 0.352*** (0.011) | 0.430*** (0.011) |
| Difference | 0.022** (0.010) | 0.041*** (0.007) | 0.012** (0.006) | -0.018 (0.017) | 0.103*** (0.013) | -0.006 (0.009) | 0.022 (0.016) | -0.026* (0.013) | -0.004 (0.013) |
| Endowments | | | | | | | | | |
| individual characteristics | -0.002 (0.002) | 0.021*** (0.002) | 0.022*** (0.002) | 0.003 (0.004) | 0.003 (0.003) | 0.003** (0.001) | 0.020*** (0.004) | 0.000 (0.002) | 0.020*** (0.004) |
| job characteristics | 0.003** (0.001) | 0.016*** (0.002) | 0.001 (0.001) | -0.003 (0.003) | 0.007*** (0.002) | 0.004*** (0.001) | 0.035*** (0.005) | 0.006** (0.003) | 0.004*** (0.001) |
| firm characteristics | 0.022*** (0.006) | 0.032*** (0.009) | 0.012*** (0.003) | -0.004 (0.013) | 0.001 (0.018) | 0.009* (0.005) | -0.034 (0.028) | 0.030*** (0.008) | 0.015 (0.011) |
| coworkers' characteristics | 0.000 (0.002) | -0.003** (0.002) | 0.019*** (0.003) | -0.011** (0.005) | -0.000 (0.003) | 0.001 (0.001) | 0.006 (0.006) | -0.002 (0.002) | -0.007* (0.004) |
| Total | 0.023** (0.009) | 0.065*** (0.009) | 0.054*** (0.004) | -0.015 (0.016) | 0.010 (0.019) | 0.017*** (0.006) | 0.027 (0.029) | 0.022*** (0.008) | 0.031*** (0.010) |
| Coefficients | | | | | | | | | |
| individual characteristics | 0.037** (0.015) | 0.009 (0.012) | 0.082*** (0.013) | 0.028 (0.026) | -0.022 (0.024) | 0.022 (0.014) | 0.010 (0.015) | 0.059*** (0.018) | 0.074*** (0.020) |
| job characteristics | 0.116*** (0.018) | 0.064*** (0.008) | 0.139*** (0.011) | 0.043 (0.029) | -0.038* (0.020) | 0.138*** (0.012) | 0.153*** (0.016) | 0.179*** (0.024) | 0.125*** (0.018) |
| firm characteristics | 0.094 (0.123) | 0.274*** (0.055) | -0.019 (0.042) | 0.005 (0.078) | -0.001 (0.137) | 0.317*** (0.081) | 0.228*** (0.084) | 0.140 (0.122) | 0.275*** (0.097) |

| | | | | | | | | | |
|----------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|
| coworkers' characteristics | --0.038 (0.035) | --0.008 (0.012) | 0.045*** (0.014) | 0.044 (0.051) | --0.012 (0.029) | 0.010 (0.018) | --0.028 (0.027) | 0.037 (0.031) | --0.046* (0.024) |
| constant | 0.026 (0.132) | 0.312*** (0.057) | 0.084* (0.048) | --0.130 (0.090) | --0.014 (0.143) | 0.127 (0.088) | 0.430*** (0.093) | --0.062 (0.126) | 0.456*** (0.103) |
| Total | 0.003 (0.008) | 0.028*** (0.006) | 0.036*** (0.006) | --0.010 (0.016) | 0.087*** (0.013) | --0.020** (0.009) | 0.032** (0.014) | --0.005 (0.015) | 0.029** (0.013) |
| Interaction | | | | | | | | | |
| individual characteristics | --0.003** (0.001) | 0.003* (0.001) | 0.003*** (0.001) | 0.007*** (0.002) | --0.004 (0.002) | --0.002* (0.001) | --0.006* (0.003) | 0.011*** (0.003) | 0.000 (0.002) |
| job characteristics | 0.001 (0.001) | 0.005*** (0.001) | 0.010*** (0.002) | 0.002 (0.002) | 0.004*** (0.001) | 0.003*** (0.001) | 0.020*** (0.005) | 0.006** (0.003) | 0.002 (0.002) |
| firm characteristics | --0.004 (0.006) | 0.047*** (0.008) | --0.002 (0.002) | 0.011 (0.013) | --0.021 (0.018) | 0.004 (0.005) | --0.013 (0.028) | 0.024*** (0.008) | --0.004 (0.007) |
| coworkers' characteristics | 0.001 (0.002) | --0.003 (0.002) | 0.011*** (0.003) | 0.002 (0.005) | 0.001 (0.003) | --0.002 (0.001) | 0.002 (0.006) | --0.002 (0.002) | --0.004 (0.004) |
| Total | --0.005 (0.007) | 0.052*** (0.008) | --0.005 (0.004) | 0.007 (0.015) | --0.027 (0.019) | --0.003 (0.005) | --0.037 (0.028) | 0.043*** (0.009) | --0.005 (0.009) |
| ----- | | | | | | | | | |
| R | | | | | | | | sq. | |
| N | 3001831 | 1260873 | 1300074 | 1094123 | 74773 | 276731 | 492408 | 339649 | 474128 |

In Table 7 we focus on the first sub-period 2002 - 2006. As mentioned earlier, this period was characterized by the entry in the European Union of all countries considered in the analysis, with the only exception of “late entrants” Bulgaria and Romania. Compared to Table 6, which featured a reduction in wage inequality in most countries, results in Table 7 display a reduction in the variance of wages only in Estonia, and to a lesser extent. In the other CEE countries wage inequality remained fairly stable between 2002 and 2006, or slightly increased as in Czech Republic, Hungary and Slovakia. Similar results hold when we concentrate on firms in the private sector only, firms in the industry or the service sectors (details in Appendix).

When it comes to the decomposition between endowments and coefficients, estimates in Table 7 confirm those in Table 6: changes in endowments increased wage inequality in most countries, and these changes were primarily driven by firm and individual characteristics. Job endowment characteristics also play a somewhat important role, while coworkers’ factors are not significant.

The picture is rather mixed when it comes to the predicted differentials due to the coefficients in the 2002-2006 period. In low inequality countries (Czechia, Hungary) and late EU entrants (Bulgaria, Romania), changes in coefficients (returns to the observed characteristics) increased inequality, while in Poland and the Baltic states, these acted as narrowing the wage dispersion. Again, are firm level and job characteristics were the most relevant. However, while the changes in firm level coefficients were always inequality – increasing (or insignificant), the changes in the returns to job characteristics were more heterogenous across the countries, likely reflecting their various patterns of labour market changes and structural reforms taking place. Compared to Table 6, the negative differential due to the interaction between endowments and coefficients becomes much less significant and smaller in size. This may suggest that focussing on the 2002-2006 period allows to minimize the interaction of cyclical factors which are not explained by the empirical regression model with endowments.

In Table 8 we focus on the second sub-period 2006 - 2010. This was characterized by the entry in the European Union of Bulgaria and Romania in 2007. More importantly, CEE countries were seriously hit by the Great Recession in 2008 and the slow recovery afterwards. These estimates show a negative differentials in the variance of wages between 2010 and 2006 i.e. a decrease in wage inequality, (a significant exception being the Czech Republic). These results are again broadly confirmed when we look at firms in specific sectors (see Appendix).

Despite an overall decrease in wage inequality in the CEE countries between 2006 and 2010, changes in the composition of factors we accounted for contributed to an increase in wage inequality. Again, firm level characteristics played a major role here, although also individual and job level features changed in a way that increased the overall inequality level. With respect to coefficient effects, their role was more heterogenous: changes in the returns to individual, job and firm level characteristics widened wage distribution in Czechia, Hungary, Slovakia, Bulgaria and Romania, but narrowed in Latvia and Poland. Again, firm level characteristics played a major inequality-increasing role here, whereby changes in the returns to individual, job and co workers characteristics were most often inequality – decreasing. Finally, we see a negative interaction between firm endowments and coefficients. We found this negative effect of the interaction term already in estimates in Table 6, and we interpreted it as noise due to cyclical factors which are not easy to capture with our regression model. Results in this Table appear consistent with this interpretation, and suggest that the noise may indeed be associated with economic turmoil of 2008 and slow recovery afterwards.

Table 8: Oaxaca decomposition of predicted differentials in the variance of wages, 2006-2010 period

| | rifcz06 | rifhu06 | rifpl06 | rifsk06 | rifee06 | riflt06 | riflv06 | rifbg06 | rifro06 |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Differential | | | | | | | | | |
| Predicted variance of wages (2010) | 0.250*** (0.005) | 0.308*** (0.005) | 0.323*** (0.004) | 0.243*** (0.005) | 0.301*** (0.005) | 0.345*** (0.006) | 0.363*** (0.007) | 0.322*** (0.007) | 0.397*** (0.007) |
| Predicted variance of wages (2006) | 0.231*** (0.006) | 0.318*** (0.005) | 0.368*** (0.004) | 0.257*** (0.007) | 0.383*** (0.007) | 0.383*** (0.005) | 0.496*** (0.007) | 0.327*** (0.008) | 0.427*** (0.006) |
| Difference | 0.019*** (0.007) | -0.009 (0.007) | 0.045*** (0.005) | -0.014 (0.008) | 0.081*** (0.009) | 0.038*** (0.008) | 0.132*** (0.010) | -0.004 (0.010) | 0.029*** (0.009) |
| <i>Endowments</i> | | | | | | | | | |
| individual characteristics | 0.005** (0.002) | 0.008*** (0.003) | 0.014*** (0.002) | 0.011*** (0.003) | -0.002 (0.003) | 0.011*** (0.002) | 0.013*** (0.002) | 0.005*** (0.002) | 0.035*** (0.005) |
| job characteristics | 0.000 (0.002) | 0.007*** (0.001) | -0.001** (0.001) | 0.003** (0.002) | 0.005** (0.002) | 0.004** (0.002) | 0.004** (0.002) | 0.008*** (0.002) | 0.005*** (0.002) |
| firm characteristics | 0.032*** (0.010) | 0.051*** (0.011) | 0.108*** (0.015) | -0.018 (0.012) | 0.014 (0.032) | 0.096*** (0.024) | 0.029** (0.014) | 0.153*** (0.041) | 0.090*** (0.019) |
| coworkers' characteristics | 0.003** (0.002) | -0.000 (0.001) | 0.004** (0.002) | -0.002 (0.002) | -0.000 (0.003) | -0.003* (0.002) | 0.003 (0.002) | 0.004*** (0.002) | -0.004 (0.003) |
| Total | 0.040*** (0.011) | 0.065*** (0.011) | 0.126*** (0.016) | -0.006 (0.012) | 0.015 (0.033) | 0.108*** (0.024) | 0.048*** (0.014) | 0.161*** (0.041) | 0.126*** (0.019) |
| <i>Coefficients</i> | | | | | | | | | |
| individual characteristics | 0.015 (0.014) | -0.018 (0.013) | 0.055*** (0.011) | -0.005 (0.015) | -0.020 (0.016) | -0.003 (0.020) | -0.022 (0.016) | 0.004 (0.014) | 0.078*** (0.018) |
| job characteristics | 0.127*** (0.016) | 0.057*** (0.007) | 0.021* (0.011) | 0.054*** (0.014) | 0.156*** (0.018) | 0.118*** (0.014) | 0.030* (0.018) | 0.177*** (0.019) | 0.055*** (0.012) |
| firm characteristics | -0.024 (0.080) | 0.201*** (0.037) | 0.146*** (0.049) | 0.143*** (0.046) | 0.096 (0.081) | 0.497*** (0.082) | 0.246*** (0.068) | 0.215 (0.142) | 0.005 (0.099) |

| | | | | | | | | | |
|----------------------------|---------------------|---------------------|---------------------------|---------------------|---------------------------|----------------------|---------------------|---------------------|---------------------------|
| coworkers' characteristics | 0.020 (0.022) | --0.000 (0.012) | -- 0.066*** (0.012) | --0.013 (0.024) | -- 0.066*** (0.024) | --0.042 (0.029) | --0.001 (0.022) | --0.018 (0.019) | --0.036* (0.020) |
| constant | 0.004 (0.113) | 0.168*** (0.035) | --0.088* (0.051) | --0.014 (0.053) | 0.146* (0.085) | 0.349*** (0.092) | 0.341*** (0.074) | --0.231* (0.137) | 0.259** (0.102) |
| Total | 0.143*** (0.035) | 0.071*** (0.021) | 0.042*** (0.009) | 0.057*** (0.016) | --0.000 (0.014) | --0.015 (0.015) | 0.088*** (0.012) | 0.148*** (0.043) | 0.094*** (0.019) |
| Interaction | | | | | | | | | |
| individual characteristics | 0.000 (0.001) | 0.000 (0.001) | -- 0.003*** (0.001) | --0.002* (0.001) | 0.003 (0.002) | --0.001 (0.001) | --0.002 (0.001) | 0.000 (0.001) | -- 0.013*** (0.003) |
| job characteristics | --0.001 (0.001) | 0.000 (0.001) | 0.000 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | --0.001 (0.001) | --0.001 (0.002) | 0.004** (0.002) |
| firm characteristics | 0.161*** (0.035) | 0.146*** (0.022) | 0.122*** (0.017) | 0.064*** (0.018) | 0.103*** (0.034) | 0.127*** (0.027) | 0.089*** (0.016) | 0.312*** (0.058) | 0.241*** (0.025) |
| coworkers' characteristics | --0.003 (0.002) | --0.000 (0.001) | --0.003** (0.001) | --0.000 (0.002) | 0.003 (0.003) | --0.005** (0.002) | --0.002 (0.002) | --0.001 (0.001) | 0.001 (0.004) |
| Total | 0.164*** (0.035) | 0.146*** (0.022) | 0.128*** (0.017) | 0.065*** (0.018) | 0.096*** (0.035) | 0.131*** (0.027) | 0.093*** (0.017) | 0.313*** (0.057) | 0.249*** (0.025) |
| R | | | | | | | | | sq. |
| N | 3952634 | 1617071 | 1334390 | 1448268 | 163204 | 169588 | 523072 | 388469 | 531420 |

Conclusions

Increased income inequalities are in the centre of public debates in all countries, and many of the questions asked relate to the role of changes in wage dispersion as one of the driving forces of income differentials. This paper contributed to this literature by investigating the wage inequality patterns in Central and Eastern European countries in the 2000s, under researched in the existing strands of literature. We paid a particular attention to the role firms played in changing the wage distribution.

We found evidence of a decrease in wage inequality in most CEE countries between 2002 and 2010, contrary to the growing evidence in rising income inequalities. Wage inequalities increased only in countries with the lowest level of wage inequalities, suggesting a “convergence” in wage inequality levels among CEE. The observed decrease in wage inequality was concentrated mostly in 2006-2010, raising the question on the role the Great Recession played.

We further found that wages in CEE countries vary more between firms than within them. This is a different pattern compared to the one observed in the US, where within firm differentials matter more. However, looking at changes over time, both in CEE and the US or Germany changes in between establishments wage inequalities mattered more for changes in total wage inequalities (than changes in within firm wage differentials).

Our micro level analysis further confirmed the observed macro trends, both with respect to changes in wage inequality, and to the role played by firms in these changes. In particular, we found that workers’ characteristics related to the firm they work in were the major driver of the observed changes in wage dispersion. Both changes in the composition of workers with respect to their firm, and the returns to these, acted as inequality increasing.

Yet, there is a heterogeneity regarding the factors explaining the variance of wages in CEE and the developments occurred in the 2002-2010. Three groups of countries can be identified, which present broadly similar developments in the variance of wages. In the Czech Republic, Hungary, Poland, the variance of wages seems associated more to Individual-specific factors relative to firm characteristics or cyclical factors. Particularly in the Czech Republic and Hungary, we observe a predicted increase in wage inequality between 2002 and 2006 i.e. the time that saw the entry of these countries in the European Unions. This predicted increase was mostly driven by a change in composition of endowments (e.g. workers’ job, and firm characteristics). In the Baltic countries (i.e. Estonia, Latvia and Lithuania), individual-specific factors are relatively less important compared with CEE3. However they still account for roughly 30%-50% of the explained variance of wages. In these countries overtime sectoral variation e.g. associated with cyclical factors seems rather important. Although a change in composition of endowments (e.g. workers’ job, and firm characteristics) would be consistent with a higher predicted variance between 2002 and 2006, the negative impact of the coefficients and the interaction induce a decrease in variance over the period. The effects of the economic cycle prevail during the 2006-2010 period, inducing a smaller variance of wages. In late entrant countries plus Slovakia, firm specific and cyclical sectoral factors are very important. Despite change in endowments during 2002-2006 would justify an increase in the variance of wages during the period, the effects on coefficients and interaction induces an overall reduction in the predicted variance between 2002 and 2006. This seems much less the case during 2006 and 2010 when Bulgaria and Romania entered the European Union: not much difference in the predicted wage differentials between 2006 and 2010 due to the counterbalancing effects of positive differentials predicted by endowments and negative differentials due to coefficients and the interaction.

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