

GENDER DIFFERENCES IN ROMANIAN EARNINGS: DETERMINANTS AND EVOLUTION

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Abstract

In this paper we investigated the earnings inequalities in Romania using a calculated Gini index. We took into consideration several personal characteristics (level of education, seniority, economic activity) as well as the major groups of occupation in order to analyse the pre and after the crisis earnings inequalities of men and women. The main conclusion was that the inequalities have deepened in the analysed period, with only one exception: the earnings inequality of men, by level of education, registered a slight improvement.

Key words: *Gini index, wage distribution, inequalities, gender differences*

JEL Classification: J31, D63

1. INTRODUCTION

One of the main areas of interest for labour economists is wage inequality: evolution; inequality at the bottom of the distribution; inequality among high wage groups; geographical inequality, including labour mobility; international differences in the wage distribution, particularly at the top; skill-biased technological change; returns to education; gender differences in wage inequality; personal characteristics explaining inequality.

All of these aspects, but most of all the increase of wage inequality over the last decades, led to a considerable amount of research in the field of labour economics. Increased wage inequality in Britain, the United States, but also in other countries has been extensively studied (Author et al., 2008; Machin, 2011). When analysing the situation in the United Kingdom, Stewart (2012) observed that since 1978 the inequality inside the 90/10 percentile suffered a continuous increase. Yet, wage inequality increase is found in both halves of the wage distribution and the author argues that an important feature of increasing inequalities in the mid-1990s was exactly the different behaviour of dispersion in the two halves of the distribution: the inequality in the upper half (measured by 90/50 percentile) continued to increase, while the lower (as measured by the 50/10 percentile) did not.

Izquierdo and Lacuesta (2007) investigated the evolution of inequality in Spain in the period 1995-2002, noticing that the inequality decreased. This evolution is more associated with a higher concentration in the middle part of the wage distribution than with a small dispersion in the lower part. The authors have also analysed the changes in labour composition (increased participation of women, increased university graduates and reduced length of seniority) in order to identify their impact on the evolution of inequality. The results suggested that changes in education and age have a strong influence on the growth of inequality, while changes in the participation of women in the labour market have an impact on the total dispersion of wages.

Newell and Socha (2007) analysed the growth of wage inequality in Poland during 1998-2002, claiming that it was associated with rapidly increasing returns to education for highly

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skilled workers in high-skill occupations and a relative decrease in the wages of workers who had only primary education. Rising within-skill group wages variability was concentrated at the upper and lower ends of the wage distribution and was associated with privatization and an increased share of young people in some low-wage occupations.

Our study investigates the gender differences of Romanian earnings by looking at the dimension and the evolution of earnings inequalities. In order to do this we use the Gini index and, for more information about the distribution, the percentile ratios. We consider the earnings inequality by level of education, seniority and economic activity.

2. DATA AND METHODOLOGY

In order to assess the earnings inequalities we used the Gini index which measures the deviation of an individual's income distribution from a perfect egalitarian distribution. It was first described and published by the Italian statistician Corrado Gini in 1912. The Gini index lies between 0 and 1, a value closer to zero meaning that the society has a more equitable income distribution, while if all income is concentrated in one income recipient the Gini index will be 1.

The Gini index calculated from a sample is a statistic and the recommendation is to report its standard error or confidence intervals, in order to have some information about the measure of bias. These can be calculated using bootstrap techniques (Karagiannis and Kovacevic, 2000).

It is known that the mean of earnings is not representative for the entire population; therefore the data can be grouped in order to obtain more homogeneity inside the groups. For the case of earnings, the criteria for grouping may be socio-economic (activity, occupation, residence, age, level of education) or statistical.

The most common statistical grouping is represented by the percentile - the value of a variable below which a certain percent of observations fall. In the analysis of earnings inequality one can study the insights of the distribution using a number of ratios between percentiles, more precisely p_{90}/p_{10} , p_{90}/p_{50} and p_{10}/p_{50} . The 90/10 ratio indicates the gap between the richest and the poorest, the 50/10 ratio indicates the gap between the poorest and the median, and so on.

As for the socio-economic criteria, we chose to analyse the inequality of earnings grouped by level of education, experience and economic activity. When using grouped data we can obtain an underestimation of the inequalities, because grouping doesn't take into consideration intra-group inequality (Wodon and Yitzhaki, 2003). This problem can be solved by using either a parametric approach, which implies the association of a distribution to fill in the missing information about intra-group inequality (Gastwirth and Glauberman, 1976; Kakwani and Podder, 1973), either a non-parametric approach, which imposes assumption on the curvature of the Lorenz curve (Ogwang and Rao, 1996).

The data used in this analysis refers to the gross annual earnings of men, as well as women, and the study focuses on the inequalities between persons with different level of education, work experience in the company and sector of activity. Two years are taken into consideration, 2006 and 2010, the source of the data being the publication of the Romanian National Institute of Statistics "Wage disparities: factors of influence", publication released every 4 years, with 2 years delay compared with the analysed period. Also, for the year 2010 we analysed the inequalities between economic activities considering each major group of occupation.

3. RESULTS

Table 1 shows that both before and after the crisis the education level (Gini index above 0.3) has the greatest influence on wage inequality, followed by the type of economic activity

(Gini index above 0.2), while the last position is held by the length of activity in the company (Gini index above 0.1). The influence of education on wage differentiation is normal since high wages remunerate especially the highly skilled employees. Similarly, wage differences between fields of activity are normal because they reflect a normal distribution of the added value in favour of the more profitable economic sectors. The low value of the Gini index based on the seniority reflects both a tendency for performance pay (regardless of age) and the result of more frequent changes of the job and therefore a shorter duration of stability at the same job.

Generally speaking, during the period 2006 - 2010 the wage inequality for both genders increased slightly.

Depending on the level of education, the wage disparities among men decreased by 4.2% in 2010 compared to 2006 while in the case of women they increased by 0.37%. Based on the ratio between those with a high-income and those with low-income (p90/p10) we notice significant differences between the ends of earnings' distribution, in terms of education. The mostly educated male employees earn 7.6 times more than those with no education, while the highly skilled women have wages 6 times higher. Also we can see that the crisis has reduced this ratio by 34% among men and by 28.8% among women. The ratio between those with a high-income and those with an average-income (p90/p50) does not have significant differences between men and women in terms of the level of education and this difference between genders remains small even after the crisis despite the fact that it was reduced by 28.7% for men and by 32.2% for women.

YEAR	VARIABLE	GENDER	GINI INDEX	STANDARD ERROR*	PERCENTILE RATIOS		
					p90/p10	p90/p50	p10/p50
2006	Education	Male	0.3506	0.0809	7.630	3.821	0.501
		Female	0.3432	0.0783	6.081	3.746	0.616
	Seniority	Male	0.1260	0.0644	2.540	1.061	0.418
		Female	0.1221	0.0546	2.259	1.064	0.471
	Economic activity	Male	0.2304	0.0581	2.487	1.763	0.709
		Female	0.2219	0.0541	2.370	1.436	0.606
2010	Education	Male	0.3356	0.0317	5.043	2.721	0.540
		Female	0.3445	0.0390	4.326	2.538	0.587
	Seniority	Male	0.1440	0.0647	2.875	1.148	0.399
		Female	0.1301	0.0585	2.646	1.193	0.451
	Economic activity	Male	0.2524	0.0453	3.200	1.995	0.623
		Female	0.2550	0.0351	3.955	2.286	0.578

* All Gini indices were calculated by authors and are statistically significant at 1% level.

Table 1. Earnings inequality by education, seniority, economic activity

Regarding the seniority, wage inequalities between men and women are not so obvious. The Gini index increased during the crisis both for men (by 14.2%) and for women (by 6.5%). The p90/p10 ratio also increased during the period 2006 - 2010, more for women (17.1%) and less for men (13.1%). The ratio between low wages and average wages (p10/p50) is higher for women than for men both before and after the crisis.

Considering the economic activities, wage inequalities increased during the period 2006 - 2010, although the differences in terms of gender are not significant. The Gini index increased among men from 0.230 to 0.252, and among women from 0.221 to 0.255. The wage differences between those with a high income and those with a low income (p90/p10)

increased during the crisis for both genders (28.6% for men, 66.8% for women). The p90/p50 ratio increased by 13.1% for men and by 59.1% for women.

VARIABLE	Major group	GINI INDEX	STANDARD ERROR*	PERCENTILE RATIOS		
				p90/p10	p90/p50	p10/p50
Economic activity	MG1	0.2116	0.0371	3.048	2.172	0.712
	MG2	0.1899	0.0292	3.057	1.801	0.594
	MG3	0.1803	0.0325	2.618	1.837	0.702
	MG4	0.1286	0.0203	1.946	1.536	0.790
	MG5	0.1962	0.0311	2.831	2.029	0.717
	MG6	0.1008	0.0337	1.383	1.227	0.887
	MG7	0.2042	0.0365	2.793	1.933	0.692
	MG8	0.1914	0.0391	3.096	2.184	0.705
	MG9	0.1611	0.0390	2.199	1.727	0.785

* All Gini indices were calculated by authors and are statistically significant at 1% level.

Table 2. Earnings inequality between economic activities by major groups of occupations⁴ in 2010

When considering the major groups of occupations, the highest wage inequalities occur in MG1 (Gini index 0.2116) and MG7 (Gini index 0.2042). This is explained by the great diversity of job specializations in these major groups of occupations and of skill gradations (Table 2).

The lowest level of wage inequality is found in MG6 – *Skilled agricultural and fishery workers* (0.1008) and this is maintained for the p90/p10 and p90/p50 ratios.

High values for p90/p10 are noticed among *Plant and machine operators and assemblers* - MG8 (3.096), *Professionals* - MG2 (3.057) and *Legislators, senior officials and managers* - MG1 (3.048).

The *Professionals* category (MG2) is the one with the lowest level of wage differences between low wages and average wages (0.594).

4. CONCLUSIONS

Researchers have long documented the rise of wage inequality, the differences between wages of college degree and high school diploma holders, as well as the increase in wage differentials measured within education and experience groups.

This paper broadens the international literature by bringing light on the situation of earnings inequality in Romania. We analysed the evolution pre and after the crisis regarding wage inequalities of men and women by level of education, seniority and sector of activity. Using Gini index, we found significant earnings inequality between different levels of education, both for males and females (Gini indices over 0.33). An important conclusion was drawn regarding the distribution of wages by level of education, the p90/p10 ratio indicating that high-skilled workers earn up to 7.6 times more than those with no education (males, 2006). These differences have diminished over time, so that the gap between the highly educated employees and those with no education dropped to 5 in 2010.

⁴ MG1 - Major group 1: legislators, senior officials and managers; MG2 - Major group 2: professionals; MG3 - Major group 3: technicians and associate professionals; MG4 - Major group 4: clerks; MG5 - Major group 5: service workers and shop and market sales workers; MG6 – Major group 6: skilled agricultural and fishery workers; MG7 –Major group 7: craft and related trades workers; MG8 –Major group 8: plant and machine operators and assemblers; MG9 –Major group 9: elementary occupations.

When grouped by economic activity, the Romanian earnings registered a moderate inequality, with Gini indices ranging from 0.22 (women, 2006) to 0.26 (women, 2010). The first thing that worth mentioning is that the inter-sectoral differences are higher for females and that the inequalities increased during the analysed period for both genders.

Regarding seniority, it seems that the number of years worked in the company doesn't give a great advantage in pay, the highest value for the calculated Gini indices was 0.14 (males, 2010). Compared to 2006, in 2010 the inequality slightly increased for males, as well as for females. The conclusion is that wages are mostly set according to performance and that seniority matters less than maybe we would expected.

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