

Gini Index in Czech Republic in 1995–2010

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Abstract

The author calculates the Gini index in Czech Republic over the period of 1995–2010 in this paper. This index is further calculated in accordance to sex and age (3 age groups: under 30, 30–50, over 50). The author compares all groups and shows that there is a significant difference between them. The Gini index is also calculated for Czech regions over the years 2000–2010 and this calculation is followed by the comparison of these regions. The values of the Czech Gini index are published in this form for the first time. At the end there is a comparison of the Czech Gini index with the values of this index in some selected countries.

Keywords

Gini index, sex, age, region

JEL code

C10, E64

INTRODUCTION

The author computes the values of the Gini index in Czech Republic over the period of 1995–2010. The Gini index is also computed over the same period separately for men and women. Author compares the value of index for both sexes and shows that there is a significant difference between values for men and women. The values for men are greater and the scissors between men and women are more and more opened over time. The Gini index is further computed for three age groups (till 30, 30–50, over 50). Very similar values are reached for two “older” groups, for the youngest group the values are dramatically smaller.

The author computes the values of the Gini index for each region in Czech Republic in the next part of the article. The time period for analysis is shorter because the new definition of regions in Czech Republic started in year 2000. The values are very similar for all of the regions except the capitol. Values for Prague are considerable and they are comparable with some developed European countries.

Data was gathered by Trexima. This company observes wages of employees (more precisely wages derived from the average hourly earnings) for the second quarter of the relevant year. The second quarter was chosen because of the stablest working time. The size of the analysed sample was constantly growing from more than 300 000 observations in 1995 to more than 2 millions in 2010. Because of the revision and update of the 2007 and 2008 data, the author worked with the new updated data. This fact is important to bear in mind when comparing with some older results. A table of Gini index values for some chosen countries is published in the last part of the article. The author compares the values of Czech Republic with values of these countries.

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The whole analysis is realized in MS Excel 2003. Earlier results from previous years can be found in the articles of authors Marek and Vrabec (see references).

1 GINI INDEX

The construction of the Gini index is based on a database around 3 million records with wage values in Czech Republic. For the analysis is used the base definition of the Lorenz curve and definition of the Gini index. There is a very detailed interval distribution of wages for the purposes of analysis. The length of intervals is 500 Czech crowns (approximately 20 Euro) and the data are in the form:

Wage interval	Frequency
...	...
9 500–10 000	38 869
10 000–10 500	40 711
10 500–11 000	42 825
11 000–11 500	43 666
11 500–12 000	45 960
...	...

This table is a small illustration of the real dataset. The wage intervals are very small and the reached results are very accurate.

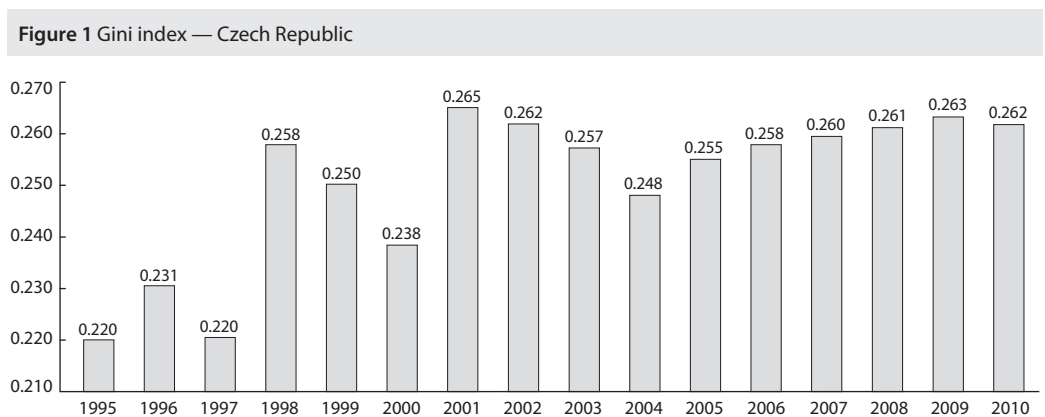
Source: Own construction

2.1 GINI INDEX IN CZECH REPUBLIC

The values of the Gini index in Czech Republic are in the Table 1 and in the Figure 1.

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Gini	0.220	0.231	0.220	0.258	0.250	0.238	0.265	0.262	0.257	0.248	0.255	0.258	0.260	0.261	0.263	0.262

Source: Own construction



Source: Own construction

From the Table 1 and from the Figure 1 we can see that maximum of the Gini index is in year 2001 (0.265). Then the values are decreasing to value 0.248 in year 2004, and in the next years the values are increasing to value 0.263 in year 2009.

2.2 Gini index in accordance to sex

The values of the Gini index in accordance to sex are in the Table 2.

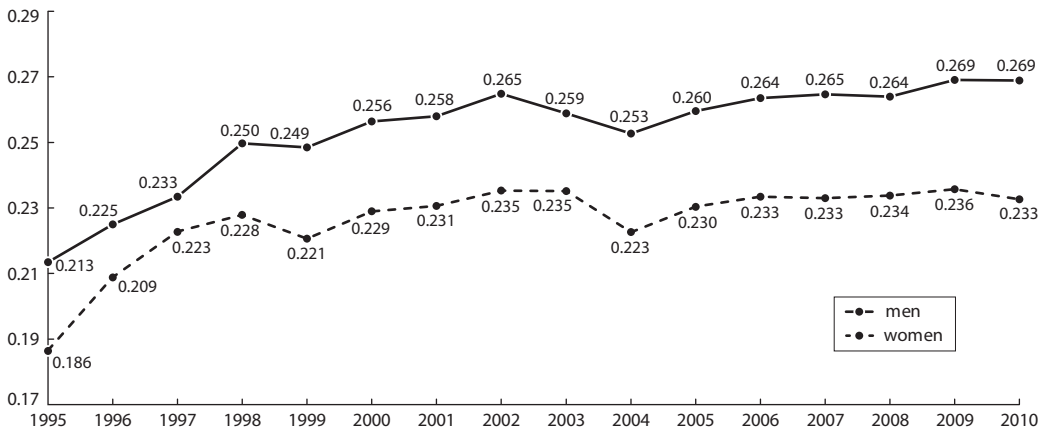
Table 2 Gini index in accordance to sex

Sex \ Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Men	0.213	0.225	0.233	0.250	0.249	0.256	0.258	0.265	0.259	0.253	0.260	0.264	0.265	0.264	0.269	0.269
Women	0.186	0.209	0.223	0.228	0.221	0.229	0.231	0.235	0.235	0.223	0.230	0.233	0.233	0.234	0.236	0.233
Diff.	0.027	0.017	0.011	0.022	0.028	0.028	0.027	0.030	0.024	0.030	0.029	0.030	0.032	0.030	0.034	0.036

Source: Own construction

We can see at the first look that the values of the Gini index are greater for men than for women. It signs that the measure of inequality is smaller for women than for men.

Figure 2 Gini index in accordance to sex



Source: Own construction

The values of the Gini index for women copy the trend for men. The difference is in the level. The average of the Gini index (we used geometric mean) is equal:

- men: 0.253,
- women: 0.226.

2.3 Gini index in accordance to age

The values of the Gini index for three age groups are in the Table 3 and in the Figure 3.

Table 3 Gini index in accordance to age

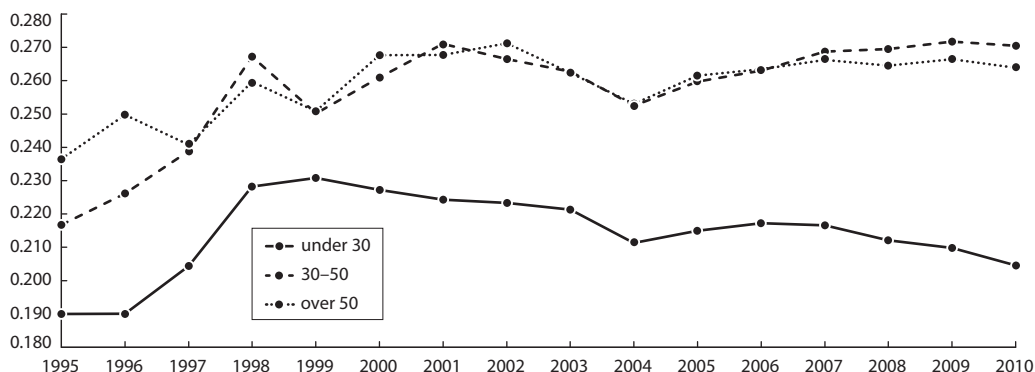
Age \ Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
under 30	0.190	0.190	0.204	0.228	0.231	0.227	0.224	0.223	0.222	0.211	0.215	0.217	0.217	0.212	0.210	0.204
30–50	0.217	0.226	0.239	0.267	0.250	0.261	0.271	0.267	0.263	0.253	0.260	0.263	0.269	0.269	0.272	0.270
over 50	0.236	0.250	0.241	0.260	0.251	0.268	0.268	0.271	0.262	0.253	0.262	0.263	0.266	0.265	0.266	0.264

Source: Own construction

From the table and the graph we do some conclusions for three age groups:

- The age groups 30–50 and over 50 are very similar.
- The age group under 30 is quite different — not only in the level but in the trend, too.
- The average value of the Gini index (geometric mean) is:
 - under 30: 0.214,
 - 30–50: 0.257,
 - over 50: 0.259.
- For the better quality of results it will be more suitable to use the detailed age classification, but we have no available data.

Figure 3 Gini index for age groups



Source: Own construction

2.4 Gini index for regions in CR

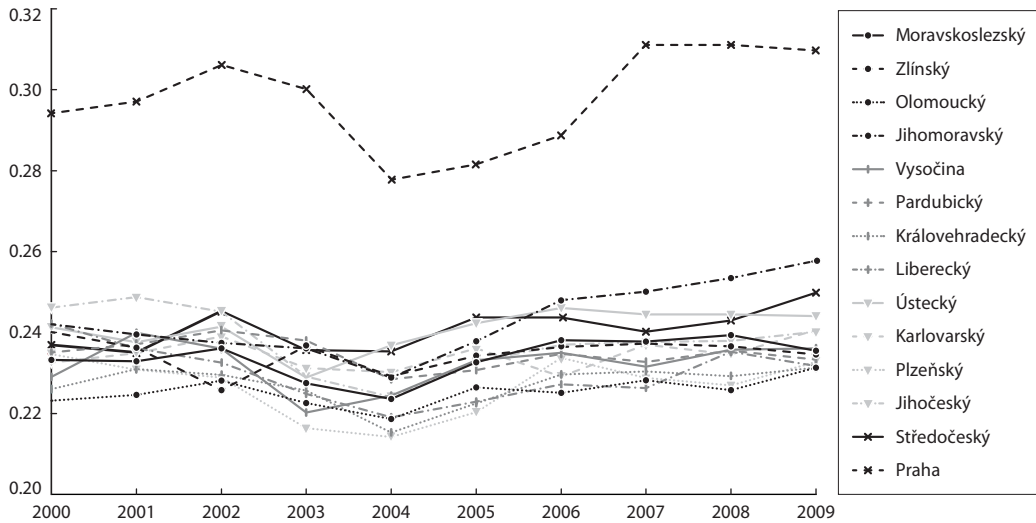
The values of the Gini index for 14 regions of CR are in the Table 4 and in the Figure 4.

Table 4 Gini index for Czech Republic regions

Region \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Praha	0.294	0.297	0.306	0.300	0.278	0.281	0.289	0.311	0.311	0.310	0.304
Středočeský	0.237	0.235	0.245	0.236	0.235	0.244	0.244	0.240	0.243	0.250	0.247
Jihočeský	0.246	0.249	0.245	0.229	0.224	0.233	0.237	0.238	0.238	0.240	0.242
Plzeňský	0.235	0.231	0.229	0.216	0.214	0.220	0.234	0.229	0.227	0.233	0.232
Karlovarský	0.233	0.235	0.239	0.231	0.230	0.236	0.229	0.237	0.235	0.241	0.238
Ústecký	0.241	0.238	0.241	0.229	0.237	0.242	0.246	0.245	0.245	0.244	0.246
Liberecký	0.242	0.236	0.233	0.225	0.219	0.223	0.227	0.226	0.235	0.232	0.233
Královehradecký	0.226	0.231	0.230	0.226	0.215	0.222	0.230	0.230	0.229	0.231	0.229
Pardubický	0.235	0.237	0.240	0.238	0.228	0.231	0.235	0.233	0.236	0.233	0.235
Vysočina	0.229	0.240	0.236	0.220	0.224	0.233	0.235	0.232	0.236	0.236	0.236
Jihomoravský	0.242	0.240	0.237	0.236	0.229	0.238	0.248	0.250	0.253	0.258	0.256
Olomoucký	0.223	0.225	0.228	0.223	0.219	0.226	0.225	0.228	0.226	0.231	0.230
Zlínský	0.240	0.236	0.226	0.237	0.229	0.234	0.236	0.237	0.237	0.235	0.236
Moravskoslezský	0.233	0.233	0.236	0.227	0.224	0.233	0.238	0.238	0.239	0.235	0.238

Source: Own construction

Figure 4 Gini index for Czech Republic regions



Source: Own construction

From the computations, table and graph we can make some conclusions:

- Quite different from the other regions is Prague. The Gini index in year 2010 in Prague reaches the value 0.304. None from the other regions is near this value.
- The Gini index is decreasing in most of the regions in year 2010.
- The highest growth is in the region Jihomoravský and Středočeský in the last years (excepting 2010).

Table 5 Average values of the Gini index for Czech Republic regions

Region \ Year	Average
Praha	0.298
Jihomoravský	0.244
Středočeský	0.241
Ústecký	0.241
Jihočeský	0.238
Karlovarský	0.235
Zlínský	0.235
Pardubický	0.235
Moravskoslezský	0.234
Vysočina	0.232
Liberecký	0.230
Královehradecký	0.227
Plzeňský	0.227
Olomoucký	0.226

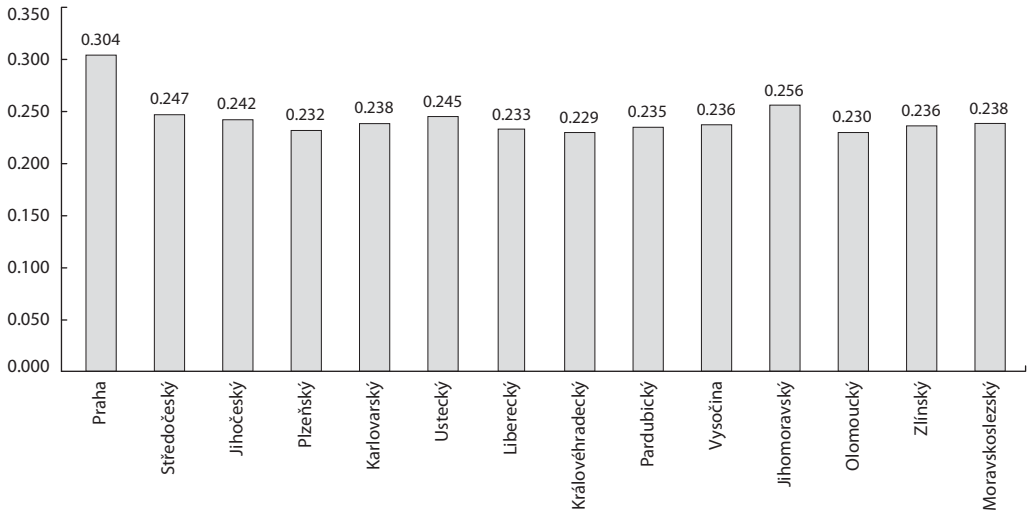
Source: Own construction

The average values of the Gini index over all observed periods are in the Table 5 (using geometric mean). The values are sorted in a descending order:

The values of the Gini index in 2010 are in the Figure 5.

It is clear, with the exception of Prague, that there are very small differences between the regions. Between the second value 0.256 (region Jihomoravský) and the last value 0.229 (region Královehradecký) is the difference 0.027 only. The difference between the first value (Prague) and the second value (region Jihomoravský) is 0.052, almost double. The difference between the first (Prague) and the last region (Královehradecký) is 0.071! This confirms the fact, that Prague is an extraordinary region in CR. This is valid for not only the Gini index but for all the economic data.

Figure 5 Gini index — regions CR in 2010



Source: Own construction

Table 6 Gini index — selected European countries and USA in 2007

Denmark	0.232	Rumania	0.315
Sweden	0.250	Bulgaria	0.316
Norway	0.258	Ireland	0.320
Czech Rep.	0.260	Spain	0.320
Slovakia	0.262	Italy	0.330
Luxemburg	0.268	Greece	0.330
Austria	0.268	Estonia	0.340
Finland	0.269	Great Britain	0.340
Belgium	0.280	Lithuania	0.360
Hungary	0.280	Poland	0.360
Germany	0.280	Latvia	0.377
France	0.287	Portugal	0.385
Cyprus	0.290	USA	0.450
Netherlands	0.309		

Source: Own construction

2.5 International comparison for year 2007

For the international comparison we used the data from the Table 6.

The data in the Table 6 are from 2007 because we cannot find newer data for all the selected countries. Because of that we compare data for year 2007, even though we have newer data for Czech Republic. The source of data is OECD (2009). The data for the same year are slightly different when we use another source such as CIA (2008). Because of that, the comparison is only approximate.

We can see, that Czech Republic belongs to the group of countries with a lower value of the Gini index. It means, that the amount of redistributing is small in CR, with comparison with the rest of the European countries. Smaller values of the Gini index are only in three north countries. The other values in table are higher.

CONCLUSION

The final conclusion is a summary of partial conclusions only. We can generally confirm, that the values of the Gini index in CR for the last 10 years are approximately constant. The differences in single years are small and are not significantly different from the average value. A similar situation is for the Gini index in accordance to sex and in accordance to age. But there are significant differences between single groups. When we compare the values of the Gini index in regions, Prague is quite

different from the other regions. The values of the Gini index of Prague are comparable with values of other European countries. In the international comparison the value of the Czech Gini index does not reach the OECD average.

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