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Inequality in Europe

Relatively Stable, Absolutely Alarming

politik für europa
#2017plus

FRIEDRICH EBERT STIFTUNG

AT A GLANCE

Income inequality in the European Union (EU) has barely changed for a number of years. Neither improvements like those before 2009 nor a substantial worsening have been observed. However, this applies only to relative inequality, which indicates the income of richer people, regions and countries as a multiple of that of poorer ones. If one looks at the absolute differences between the highest and the lowest incomes, however, an alarming increase in inequality is to be observed in Europe.

Viewed superficially, income inequality appears to be a simple concept. It covers a wide range, from low to high via middle incomes. But how is inequality measured? In economic statistics and theory a number of measures are used, such as the Gini coefficient,[1] standard deviation or the quintile ratio S80/S20.[2] Also informative is the ratio or distance between the highest and lowest incomes. If these indicators fall, one talks about convergence, otherwise of divergence. Economics differentiates here between sigma convergence, when income dispersion diminishes, and beta convergence, when lower incomes grow more rapidly than higher incomes.[3]

And what is meant by »income«? With regard to countries it is usually per capita GDP. In relation to households two forms are differentiated: market income and disposable income, the latter is derived from the former by subtracting taxes and including transfer payments, such as pensions. Here we look at disposable income on the basis of EU-SILC[4] data from the Statistical Office of the European Union (Eurostat).

1 The Gini coefficient varies between 0 and 1 (or as a percentage between 0 and 100), with 0 signifying absolutely equal distribution of incomes and I (or 100) a case in which all income goes to one person.

2 The quintile ratio is the ratio between the incomes of the richest and the poorest fifths (= quintile) of the total group.

3 Cf. Dauderstädt, Michael 2016: Konvergenz und Divergenz in der Europäischen Union [Convergence and divergence in the Euro-pean Union], in: ifo Schnelldienst 69 (17), pp. 12–15, http://www.dauderstaedt.de/pdf/sd.2016-17-text-dauderstaedt.pdf (22.02.17) and Dauderstädt, Michael 2014: Convergence in the crisis: European integration in jeopardy, International Policy Analysis, Friedrich-Ebert-Stiftung, Berlin, http://library.fes.de/pdf-files/id/ipa/11001.pdf (5.04.17) or Goecke, Henry 2013: Europa driftet auseinander – Ist dies das Ende der realwirtschaftlichen Konvergenz? [Europe drifting apart: is this the end of real economic convergence?], in: IW-Trends – Vierteljahresschrift zur empirischen Wirtschaftsforschung 40 (4), Institut der deutschen Wirtschaft Köln, pp. 1–15, https://www.iwkoeln.de/studien/iw-trends/beitrag/henry-goecke-europa-driftet-auseinander-138522 (22.02.17).

4 EU-SILC = EU Statistics on Income and Living Conditions (based on household surveys).

Table 1
The poorest (red) and richest (grey) quintiles in the EU, 2014 (in euros and PPS)

2015	Euro					PPS				
Member state	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Bulgaria	1.256	2.388	3.350	4.557	8.902	2.595	4.933	6.921	9.414	18.388
Romania	685	1.563	2.310	3.134	5.674	1.289	2.941	4.347	5.898	10.679
Latvia	2.243	4.081	5.828	8.110	14.579	3.114	5.665	8.092	11.259	20.241
Lithuania	2.005	3.625	5.186	7.451	14.395	3.194	5.774	8.260	11.867	22.929
Poland	2.512	4.217	5.562	7.220	12.366	4.499	7.552	9.961	12.930	22.147
Estonia	3.169	5.580	7.947	11.089	19.663	4.190	7.380	10.509	14.664	26.002
Hungary	2.220	3.571	4.586	5.915	9.530	3.858	6.207	7.971	10.281	16.563
Slovakia	3.419	5.623	6.900	8.430	12.088	5.042	8.293	10.175	12.433	17.827
Czech Republic	4.214	6.123	7.424	9.185	14.777	6.615	9.612	11.654	14.419	23.196
Portugal	3.436	6.232	8.416	11.234	20.656	4.203	7.623	10.294	13.740	25.263
Greece	2.714	5.443	7.515	10.103	17.626	3.177	6.371	8.796	11.826	20.631
Malta	6.768	10.166	13.485	17.321	28.082	8.367	12.568	16.671	21.414	34.718
Spain	4.549	9.499	13.360	18.375	31.255	4.928	10.290	14.472	19.906	33.858
Slovenia	6.280	9.831	12.321	15.060	22.553	7.691	12.040	15.090	18.444	27.620
Italy	5.996	11.593	15.884	20.959	35.014	5.825	11.263	15.431	20.362	34.016
Cyprus	6.780	10.281	13.827	18.563	35.251	7.527	11.414	15.350	20.609	39.136
Germany	9.339	15.845	20.723	26.782	44.788	9.202	15.613	20.420	26.390	44.131
France	11.219	16.924	21.471	27.179	48.094	10.417	15.715	19.937	25.237	44.657
Belgium	10.891	16.621	21.753	27.484	41.578	10.019	15.291	20.012	25.284	38.250
United Kingdom	9.540	15.808	21.043	28.373	49.901	8.068	13.368	17.795	23.993	42.199
Austria	11.649	18.413	23.340	29.250	47.099	10.909	17.244	21.858	27.393	44.109
Finland	12.920	18.868	23.766	29.711	45.929	10.564	15.427	19.432	24.293	37.553
Netherlands	11.346	16.957	21.346	26.600	43.367	10.331	15.440	19.436	24.220	39.487
Sweden	12.974	20.904	26.651	33.104	48.790	10.332	16.648	21.224	26.364	38.856
Ireland	10.528	16.159	21.617	28.475	47.391	5.737	8.804	11.778	15.515	25.822
Denmark	14.056	22.553	28.388	35.248	57.340	10.101	16.208	20.402	25.332	41.209
Luxembourg	17.385	26.925	35.081	45.258	73.832	14.435	22.356	29.128	37.579	61.304

Notes: The light shaded quintiles only go proportionately into the corresponding EU quintile; Croatia, which acceded to the EU in 2013, was not included in order to maintain comparability with previous years.
Source: Eurostat and authors' calculations.

MULTI-LEVEL INEQUALITY IN EUROPE

For an economy consisting of 28 countries, like that of the EU, inequality is even more complex. One has to examine the distribution on two levels, within and between countries, as well as its development. To that end, for ten years now we have been using a method that allows us to capture both levels at once. The analysis presented here uses the latest data for 2015. We refer to the average incomes of all quintiles provided by Eurostat (in other words, for each fifth of the inhabitants) of all 28 member states (see Table 1). On that basis we constructed the EU quintile (with around 100 million people) and thus are able to calculate the quintile ratio S80/S20 for the whole EU (the red and green areas in Table 1). Because incomes by international comparison have different purchasing power due to the differential development of price levels and exchange rates we refer to the values in euros at exchange rates (left hand side of the table) and also in terms of purchasing power standards (PPS; right hand side of the table). Inequality is lower measured in PPS because purchasing power is higher in poorer countries.

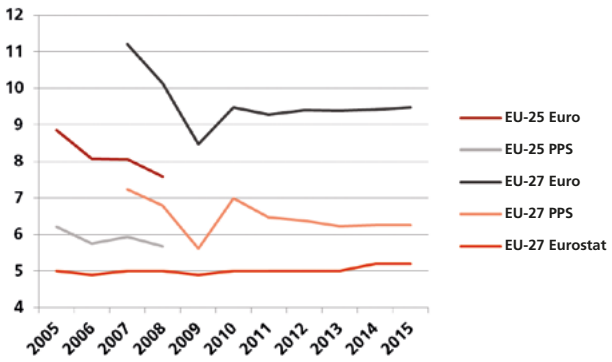
The development of European inequality is the result of changes in income distribution at both levels. And inequality between member states is higher than inequality within them. Compared at exchange rates the average per capita income of the richest countries, for example, is ten times as high as in the poorest. Within member states inequality has increased in most countries in recent years, although not particularly sharply, on average. Developments between 2014 and 2015, however, scarcely indicate any change: on average in the EU the S80/S20 ratio remained at 5.2, according to Eurostat (see Figure 1, lowest line). Behind this, however, national developments diverged. For example, in Lithuania the S80/S20 ratio rose from 6.1 to 7.5 (the sharpest increase in the EU) and in Romania from 7.2 to 8.3 (the highest value in the EU), while in Germany – probably due to the introduction of the minimum wage – it fell from 5.1 in 2014 to 4.8 in 2015.[5]

Generally speaking, however, the larger changes are to be observed in income distribution between member states. For a long time incomes in the poorer member states of central and eastern Europe have been growing much more strongly than incomes in the richer northwest of the EU, not to mention the southern periphery (Greece, Spain, Portugal, Italy), whose incomes lie somewhere in the middle in the EU and have fallen or stagnated.

If one estimates inequality in the EU as a whole by calculating the EU-wide S80/S20 ratio using the method described above a value of around 6.5 in PPS and 9.5 in euros at exchange rates is generated for 2015 (see Figure 1). These figures are much higher than Eurostat's 5.2, which neglects the differences between countries. Stagnation is to be observed in development between 2014 and 2015, too, as has already been the case since 2011.

5 All figures from the Eurostat EU-SILC survey [ilc_di11].

Figure 1
Development of income inequality in the EU (S80/S20 income ratios)



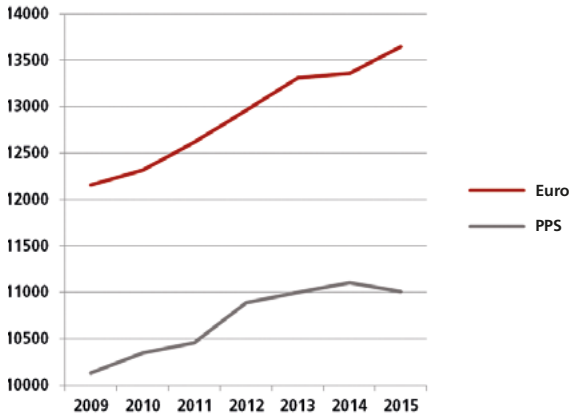
Note: PPS = purchasing power standards; to maintain comparability we had to leave out Croatia.
Source: Eurostat; authors' calculations.

ALARMING ABSOLUTE INEQUALITY

The fact that European inequality fell only up to 2009 and has now remained stubbornly at the same level for years is certainly no occasion for celebration. However, this picture of falling (up to 2009) and then stagnating (since 2011) inequality is also due to the selected indicator, the quintile ratio S80/S20, which measures relative inequality. It has already been pointed out with regard to global inequality, which is also a multi-level phenomenon, that the focus on relative inequality, which has also fallen slightly on a global scale, conceals rising absolute inequality.[6]

If one chooses a measure that illustrates the absolute gaps between incomes as indicator, the development of inequality in Europe appears much more alarming. Thus the standard deviation over all 135 (5 x 27) quintiles has increased constantly since 2009 (cf. Figure 2). Only in 2015 could a slight improvement be observed in a measurement in PPS.

Figure 2
Development of income inequality in the EU (standard deviation in euros and PPS)



Source: Eurostat; authors' calculations.

6 Cf. Nino-Zarazua, Miguel et al. 2016: Global Inequality: Relatively Lower, Absolutely Higher, in: Review of Income and Wealth, DOI: 10.1111/roiw.12240, http://onlinelibrary.wiley.com/doi/10.1111/roiw.12240/full (22.02.17)

This discrepancy between relative and absolute inequality conceals the dismal mathematical logic of ambivalent convergence of initially very different incomes. The following example serves as an illustration: at the beginning (for example, on EU accession) the per capita income of the poorer country is a fifth of that of the richer country (in the EU often even less). Subsequently, it grows – a rather optimistic long-term prognosis – by 5 per cent a year, while the GDP of the richer country increases by only 2 per cent (beta convergence). Then the absolute gap between the two countries still grows for 25 years , only after 56 years is income equality achieved (see Figure 3). The standard deviation also increases for 25 years before falling again (sigma convergence).[7]

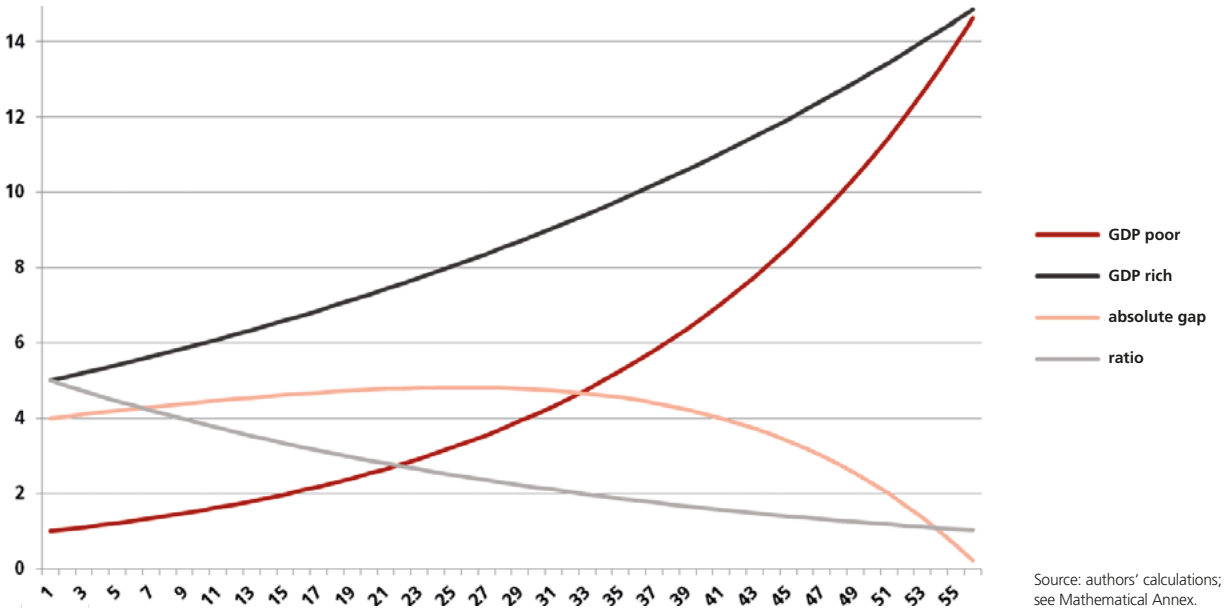
An even more dramatic picture of absolute inequality emerges if one compares the average per capita income of the richest and poorest national quintiles in Europe. As is evident in Table 1, the richest national quintile in Europe is that of Luxembourg (Q5) with an annual income of 73,832 euros (at exchange rates) and 61,304 euros at PPS. The poorest quintile is that of Romania (Q1) with an annual income of only 685 euros or 1,289 euros in PPS (see Table 1). The ratio is more than 1:100 at exchange rates and 1:47 in PPS. The absolute gap stands at 73,147 euros (exchange rates) and 60,015 euros (PPS). Furthermore, these indicators of extreme inequality have deteriorated further since 2009.

If one compares incomes at exchange rates, people in the poorest EU countries (above all Bulgaria and Romania) who belong to the richest 20 per cent there, are among the poorest in the richest EU countries (Denmark and Luxembourg). To put it another way, a person's living standards in the EU depend more on the country they are born and grow up in than on whether they belong to the relevant upper or lower stratum of their national society.

One might ask what these income differentials mean. Probably their most important consequence is the high emigration from the poorer EU member states to the richer ones. But while this migration contributes to income convergence, countries such as Romania, Lithuania and Latvia have lost around 10 per cent of their populations. In the receiving countries immigration has bolstered nationalist-populist tendencies, for example, in England and Wales, where the imagined possibility of restricting immigration was one of the main reasons for the Brexit vote. However, the figures on inequality and its dynamics show that there is little prospect of reducing absolute inequality in the foreseeable future.

7 For the basis of calculation see the mathematical annex in figure 3.

Figure 3
Difficult catch-up processes (in per cent and period in years)



Source: authors' calculations; see Mathematical Annex.

Mathematical Annex to Figure 3

$A_t=A_0*G_a^t$, where A_t is the income of poorer people at timepoint $_t$, A_0 initial income (t=0) and G_a the growth factor. The growth factor is G=1+g (g is the growth rate). If, then, the growth rate is 2 per cent, the growth factor is 1.02.

$R_t=R_0*G_r^t$, where R_t is the income of richer people at timepoint t, R_0 initial income (t=0) and G_r the growth factor.

The year of catching up is timepoint t, with regard to which $A_t=R_t$, is true and so: $A_0*G_a^t=R_0*G_r^t$

Solving this equation for t, we get: $T_{parity}=\ln(R_0/A_0)/\ln(G_a/G_r)$.

The timepoint of the biggest gap, after which the gap starts to diminish, is timepoint T_{max}, at which the gap $D_t=R_t-A_t$ reaches its maximum.

It is calculated using the following derivation:
$d/dt\ D_t=d/dt\ (R_0*G_r^t-A_0*G_a^t)=R_0*\ln G_r*G_r^t-A_0*\ln G_a*G_a^t=0$.
$T_{max}=\ln(R_0*\ln G_r/A_0*\ln G_a)/\ln(G_a/G_r)$.