Michael Dauderstädt and Cem Keltek

Inequality in Europe
Relatively Stable, Absolutely Alarming

politik für europa
# 2017 plus
Europe needs social democracy!

Why do we really want Europe? Can we demonstrate to European citizens the opportunities offered by social politics and a strong social democracy in Europe? This is the aim of the new Friedrich-Ebert-Stiftung project »Politics for Europe«. It shows that European integration can be done in a democratic, economic and socially balanced way and with a reliable foreign policy.

The following issues will be particularly important:
– Democratic Europe
– Economic and social policy in Europe
– Foreign and security policy in Europe

The FES will devote itself to these issues in publications and events throughout 2015–2017: we start from citizens’ concerns, identify new positions with decision-makers and lay out alternative policy approaches. We want a debate with you about »Politics for Europe«!

Further information on the project can be found here:
http://www.fes.de/de/politik-fuer-europa-2017plus/

Friedrich-Ebert-Stiftung
The Friedrich-Ebert-Stiftung (FES) is the oldest political foundation in Germany with a rich tradition dating back to its foundation in 1925. Today, it remains loyal to the legacy of its namesake and campaigns for the core ideas and values of social democracy: freedom, justice and solidarity. It has a close connection to social democracy and free trade unions.

FES promotes the advancement of social democracy, in particular by:
– Political educational work to strengthen civil society
– Think Tanks
– International cooperation with our international network of offices in more than 100 countries
– Support for talented young people
– Maintaining the collective memory of social democracy with archives, libraries and more.

About the authors:
Dr Michael Dauderstädt is managing director of Dietz-Verlag and up to 2013 was director of the division for Economic and Social Policy of the Friedrich-Ebert-Stiftung.
Cem Keltek is an economist and former recipient of a Friedrich-Ebert-Stiftung scholarship.

Responsible for this publication in the FES
Dr. Michael Bröning, Head of Department International Policy Analysis

Editor: Dominika Biegon, policy analyst for European Politics,
Co-Editor: Sabine Dörfler
CONTENTS

2   At a Glance
3   Multi-level Inequality in Europe
3   Alarming Absolute Inequality
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, standard deviation or the quintile ratio. Also informative is the ratio or distance between

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 1 (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.


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

Table 1

<table>
<thead>
<tr>
<th>Member state</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
<th>Q10</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Q15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>1.29</td>
<td>1.68</td>
<td>2.25</td>
<td>3.35</td>
<td>4.25</td>
<td>5.22</td>
<td>6.00</td>
<td>6.49</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.29</td>
<td>11.58</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.20</td>
<td>8.20</td>
<td>9.10</td>
<td>10.20</td>
<td>11.40</td>
<td></td>
</tr>
<tr>
<td>Latvia</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Lithuania</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Malta</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>1.29</td>
<td>1.44</td>
<td>1.60</td>
<td>2.10</td>
<td>2.80</td>
<td>3.50</td>
<td>4.20</td>
<td>5.00</td>
<td>6.00</td>
<td>7.00</td>
<td>8.00</td>
<td>8.93</td>
<td>9.41</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>17.38</td>
<td>26.32</td>
<td>39.08</td>
<td>45.25</td>
<td>73.83</td>
<td>14.43</td>
<td>22.35</td>
<td>20.42</td>
<td>17.57</td>
<td>61.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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.

---

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

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).

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.

---

**Figure 3**

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

![Graph showing catch-up processes](image)

**Mathematical Annex to Figure 3**

\[ A_t = A_0 \cdot G^t, \]  where \( A_t \) is the income of poorer people at timepoint \( t \), \( A_0 \) initial income (\( t=0 \)) and \( G \) 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.

\[ R_t = R_0 \cdot G^t, \]  where \( R_t \) is the income of richer people at timepoint \( t \), \( R_0 \) initial income (\( t=0 \)) and \( G \) the growth factor.

The year of catching up is timepoint \( t \), with regard to which \( A_t = R_t \) is true and so: \( A_0 \cdot G^t = R_0 \cdot G^t \)

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

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

It is calculated using the following derivation:

\[ \frac{d}{dt} D_t = \frac{d}{dt} (R_0 \cdot G^t - A_0 \cdot G^t) = R_0 \cdot G^t \cdot \ln G_r - A_0 \cdot G^t \cdot \ln G_a = 0. \]

\[ T_{\text{max}} = \frac{\ln(R_0)}{\ln(G_r)} \div \frac{\ln(A_0)}{\ln(G_a)}. \]