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Immeasurable Inequality in the European Union

Over time, the European Union has acquired more and more of the attributes of a state and, in economic terms, it can arguably be considered a single market. Nevertheless, the differences between member states are enormous. Small, rich countries, such as Luxembourg, contrast sharply with big, poor ones, such as Romania. Despite this, many indicators are published which refer to the EU as a whole, including measures of income inequality. According to Eurostat[1], the ratio between the incomes of the top and bottom quintiles is 5. But is this figure even roughly adequate? This paper will argue that it vastly underestimates the true level of inequality in the EU which, unfortunately, is immeasurable in the twofold sense that it is both hard to measure and extremely high.

Inequality is never easy to measure, but measuring transnational inequality is particularly difficult.[2] All the problems of measuring and comparing income levels (before or after redistribution through taxes and benefits, income and expenditure, individuals or households with adult-equivalents, the effects of owner occupancy and household production, and many more issues) are compounded by additional difficulties (exchange rates and purchasing power, different price levels and inflation rates, differences in national statistics). Nonetheless, there is a substantial body of literature on these questions as they relate to global inequality.[3] The most recent studies on world income distribution include Dorwick and Akmal[4], Milanovic[5] and Sala-i-Martín[6]. European inequality, however, has been explicitly covered less often and only by Brandolini[7], Dauderstädt[8] and Franzini[9]. All these approaches have certain drawbacks, and many of them have been subject to academic criticism.[10]

Constructing a measure of international (global or European) inequality requires the combination of measures of within-country inequality with measures of between-country inequality. As a rule, there is no simple mathematical operation which makes it possible to calculate the international measure from given national measures. The most widely used measures of inequality are the Gini coefficient and the Theil T-index and the ratio of certain income brackets, such as deciles or quintiles, usually between the top and the bottom bracket. The problem of composing aggregate measures mirrors the problem of decomposing aggregate indicators into contributory factors. The latter has long been a problem of social research with a view to identifying the role of sex, race or region in explaining overall inequality.[11] The literature on both processes, decomposing and composing, shows clearly that one needs to resort to the individual data sets. One cannot, for instance, calculate an international Gini coefficient from national Gini coefficients plus the population and average income per capita figures of the countries included. Starting from national quintile ratios, one cannot obtain the international ratio by calculating averages weighted by population or total income. Eu-

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1 See http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database; [ilc_di11] – inequality of income distribution (income quintile share ratio) [accessed on 28.7.2010].

2 See A.B. Atkinson: On the Measurement of Inequality, in: Journal of Economic Theory, Vol. 2, No. 3, 1970, pp. 244-263.

3 A very good survey is S. Anand, P. Segal: What Do We Know about Global Income Inequality?, in: Journal of Economic Literature, Vol. 46, No. 1, 2008, pp. 57-94.

4 S. Dorwick, M. Akmal: Contradictory Trends in Global Income Inequality: a Tale of Two Biases, in: Review of Income and Wealth, Vol. 51, No. 2, June 2005.

5 B. Milanovic: True World Income Distribution, 1988 and 1993: First Calculation Based on Household Surveys Alone, in: Economic Journal, Vol. 112, No. 476, January 2002, pp. 51-91.

6 X. Sala-i-Martín: The World Distribution of Income: Falling Poverty and … Convergence, Period, in: Quarterly Journal of Economics, Vol. 121, No. 2, 2006, pp. 351-397.

7 A. Brandolini: Measurement of Income Distribution in Supranational Entities: The Case of the European Union, Temi di discussione, No. 623, Bank of Italy, 2007.

8 M. Dauderstädt: Ungleichheit und sozialer Ausgleich in der erweiterten Europäischen Union, in: Wirtschaftsdienst, Vol. 88, No. 4, April 2008, pp. 261-269.

9 M. Franzini: Why Europe Needs a Policy on Inequality, in: Intereconomics, Vol. 44, No. 6, November/December 2009.

10 Again, S. Anand, P. Segal, op. cit., provides an excellent overview of the counterarguments.

11 See, for example, S. Yitzhaki, R.I. Lerman: Income Stratification and Income Inequality, in: Review of Income and Wealth, Vol. 37, No. 3, September 1991, pp. 313-329.

rostat has avoided this step in the past and thus has made wrong estimates of European inequality.

Constructing indicators of international inequality requires the ranking of incomes of individuals and households throughout the whole population of the group of countries considered, such as the world, the EU or the eurozone. Any such effort must rely on national domestic rankings and on country rankings. When national rankings are based on different concepts of income, the international ranking derived from them is necessarily flawed. This is a much bigger problem on the global level than within the European Union, which has worked for decades on harmonising statistical standards and in which economic and social structures are less diverse.

First, national income statistics mostly use representative household surveys. Although such surveys are biased at both ends of the income distribution (the wealthy often fail to respond and, even if they do, tend to underreport their income, whereas the marginalised poor, such as the homeless, are often not covered at all), thereby underreporting inequality[12], they are still the best source available. At the global level, some surveys are based on expenditure rather than income, and definitions of income differ from country to country. Given the lack of standardised, reliable datasets, researchers have been forced to construct the required data from various sources using national accounts as well as stumps of data from different surveys.

According to Anand and Segal[13], who analysed nine of the most recent studies on world inequality, all those efforts were flawed and cannot provide a realistic description of world income distribution and inequality. In their analysis, they identify several sources of error, foremost among which is the merger of survey data and national accounts.[14] Both the above-mentioned study by Sala-i-Martín and the one by Dorwick and Akmal suffer from a scale-up-to-gross domestic product (GDP) bias (where survey data are merged with national accounts regardless of the fact that the two datasets are inherently different, as Anand and Segal[15] point out), whereas Milanovic's study avoids this by using data from surveys only. Unfortunately, he remains the only one to have taken this – probably most favourable – approach to data collection.

The second main problem lies in the conversion of national values of income into a common currency standard in order to compare income between countries. Although it is generally agreed that purchasing power parity (PPP) should be employed rather than nominal exchange rates, the decision of which PPP measure to use poses several problems. Anand and Segal[16] show why conversion using PPP rates is more complicated than it might seem. They analyse the methods of constructing PPP rates used by the Penn World Tables and the World Bank and point out that at least the Penn World Table rates lead to substantial upward bias with regard to incomes in poor countries. A more detailed discussion of PPP rates and their significance in the calculation of inequality is given by Angus Deaton[17] in a recent paper. He focuses on the construction of the PPP rates used by the World Bank and states that international PPP rates become more and more arbitrary as the differences between market structure and products between countries grow larger. In conclusion, Deaton casts considerable doubt on the legitimacy of PPP comparisons between countries with very different living conditions, but nonetheless confirms that PPP comparisons can be fairly accurate if living and market conditions are similar.[18] In the end, it is not surprising that most of the studies yield very different (partially conflicting) results with regard to the extent of global inequality and how it has developed over the years.

Also, exchange rates should not be completely neglected as a conversion factor of national income values. The greater the role of foreign trade and investment in an economy, the more important the exchange rate becomes as it determines the purchasing power of domestic households which spend an increasing share of their income on imported goods. International investors compare locations using nominal costs and exchange rates when they calculate their potential profits.

In the course of economic development, PPP conversion rates and nominal exchange rates tend to converge. This may be partially due to the increased openness of more developed economies. Another factor is the Balassa-Samuelson effect, which implies higher inflation rates in poorer countries during the catching-up process, as prices for goods and services offered by domestic branches with relatively slow productivity

12 Angus Deaton: Measuring Poverty in a Growing World (or Measuring Growth in a Poor World), in: The Review of Economics and Statistics, Vol. 87, No. 1, 2005, pp. 10-13.
13 S. Anand, P. Segal, op. cit.
14 Ibid., pp. 65-70.
15 Ibid.
16 Ibid., pp. 70-73.
17 A. Deaton: Price Indexes, Inequality, and the Measurement of Poverty, in: The American Economic Review, Vol. 100, No. 1, 2010, pp. 5-34.
18 Ibid., pp. 31-32.

Table 1
Official Inequality of Income Distribution in the EU

geo\time	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
EU (27)	–	–	–	–	–	–	–	–	4.9	5.0	5.0	5.0
EU (25)	–	4.6	4.6	4.5	4.5	–	4.6	4.8	4.9	4.8	4.8	4.8
EU (15)	4.7	4.6	4.6	4.5	4.5	–	4.6	4.8	4.8	4.9	4.9	4.9

Source: Eurostat [ilc_di11] (see footnote 1).

growth – barbers, musicians, teachers and so on – become more expensive and wages in these branches increase more rapidly than productivity. Before and after the EU's eastern enlargement, this decline in the exchange rate deviation index (ERDI) could be observed in Europe, too.

Recent Studies on European Inequality

Table 1 presents the official picture of income distribution within the EU. It shows the top rows of a much larger table providing SS80/20 data for all EU member states and selected other countries between 1997 and 2008. The existence of this table indicates that the underlying data on income levels per quintile must have been collected by Eurostat or other entities. But Eurostat was neither able nor willing to provide these data (see also the following section on data and methodology), nor is there – to the knowledge of the authors – an official comprehensive evaluation of the EU's income distribution. The figures given for the EU-27 were most likely obtained as the population-weighted average of the national figures. This method cannot deliver correct results because it does not construct the correct EU income quintiles. It implicitly assumes that the poorest quintile of the EU is the sum of the poorest quintiles of all member states, neglecting the different levels of national income.

Most studies on inequality in the EU focus on regional inequality and thus on the differences between national (or regional) incomes. They cover inter-country inequality and interregional inequality. The EU itself publishes – every three years – a report on economic and social cohesion, which includes data on regional income levels.[19] Cohesion is an explicit goal of the EU. Article 2 of the new Lisbon Treaty, for example, states: "It [the Union] shall promote economic, social and territorial cohesion, and solidarity among Member States." Regional inequality is the major component of overall inequality within the EU. In the fifth cohesion report of 2010, the ratio of GDP per capita (in Purchasing Power Standards or PPS[20]) between the richest and the poorest region within the EU was about 10. According to the data given in the annex of the fifth report (unfortunately only for 2007), Luxembourg – which counts as one region – had a GDP per capita of 275.2 (EU average = 100), while some regions in Bulgaria and Romania had a GDP per capita of only 26.6 (Nord-Est of Macroregiunea doi in Romania) and 25.6 (Severozapaden in Bulgaria). The ratio between the richest and poorest member states in 2008 was slightly better, at 6.7, between Luxemburg (275) and Bulgaria (41).[21] The new fifth report also shows clearly that disparities between member states and regions in the EU have narrowed between 2004 and 2008.

While providing important information about regional inequality, these studies neglect personal income distribution, which can be obtained only from individualised household surveys. Thus, they do not present a full picture of inequality within the EU. To the knowledge of the authors, only the three papers previously mentioned deal with inequality in the EU: Brandolini, Dauderstädt and Franzini.

Maurizio Franzini's study uses data (Gini coefficients and decile/quintile distributions) from Brandolini's study, the OECD and an as yet unpublished study by M. Giammatteo and concludes (mainly from the Giammatteo study, which includes Gini estimates as recent as 2005) that inequality has risen significantly and that the European Gini of 0.369 is not much different from the American, which stands at 0.372. His mixing of dif-

19 As required by Art. 175 (ex Art. 159) of the TFEU; the last (fifth) report was published in November 2010. Available at: http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion5/pdf/5cr_en.pdf [last accessed on 29 November 2010]. The data on regional GDP per capita have to be accessed through the webpage http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion5/index_en.cfm [last accessed on 29 November 2010] and click on "The data behind the maps in the report can be found here" (The GDP figures are available in section 1.4).

20 All income data are converted into Purchasing Power Standards (PPS), which Eurostat uses instead of a specific currency when standardising PPP data.

21 Data from http://epp.eurostat.ec.europa.ec.europa.eu/statistics_explained/index.php/GDP_per_capita,_consumption_per_capita_and_comparative_price_levels [last accessed on 29 November 2010].

ferent data sources, such as the OECD, with values used in other studies makes his analysis somewhat ill-founded, however.

Brandolini is aware of the problems arising from the merging of survey data with national accounts and uses only the fully harmonised European Community Household Panel (ECHP) for all member states in 2000 and supplements the data for all new member states with data from the Luxembourg Income Study for the same year.[22] For data on PPP he uses official EU estimates obtained from prices taken from household final consumption expenditure (HFCE), as this should reflect the consumer prices better than the corresponding estimates for GDP in terms of PPP. Moreover, he introduces a PPP measure that considers regional price differences and determines values for both unadjusted PPS units and PPS units adjusted for regional differences. To adjust for increasing returns to scale in household consumption, he uses OECD equivalence scales (both old and new) and also examines their impact on inequality measures.

Brandolini also employs the Gini coefficient and quintile/decile shares of income as measures of inequality, but does not decompose the Gini coefficient. He only gives Gini coefficients for the European Union as a whole, but compares quintile/decile shares of single countries with each other graphically. In conclusion, he states that inequality in the European Union is slightly lower than in the USA, based on the overall Gini estimate.[23]

The main shortcoming of Brandolini's analysis is his failure to provide an explanation for some of his methodology. He does not explain, let alone provide a mathematical equation for composing measures of, EU inequality (as presented in Table 2 of his article), starting from national inequality measures (given in Figure 2 there). He does not explain precisely how he constructed regional PPP rates; nor does the reader obtain any insight into how he progressed the different OECD scales for household consumption on the existing data set, so that it is very difficult to reach a judgement on that aspect of the study.

Michael Dauderstädt's previous study[24] represents a more rough and ready approach to the topic. As a measure for inequality he uses the ratio quintile 5/quintile 1 (S80/S20), thereby indicating how many times greater GDP per capita is for the richest 20 per cent in comparison to that of the poorest. Data on national income distribution are taken from the World Bank from an updated Deininger and Lyn Squire dataset, which gives quintile shares of the income distribution for various countries in the world for different base years. These values are scaled up to GDP to construct GDP per capita for all the quintiles involved using population numbers. National GDP is compared using two different conversion methods, PPP and exchange rates. In both cases, Eurostat data are used. The quintiles produced are then weighted by the number of EU citizens that accrue to them to produce an EU-wide quintile comparison, squeezing national quintiles into an EU quintile distribution in which one quintile consists of several national quintiles that add up to one-fifth of the EU population (see the methodology section of his paper for a more detailed description). Using the S80/S20 benchmark, Dauderstädt concludes that inequality in the EU is higher than in the USA. Inequality measured at exchange rates is substantially higher than when measured using PPP.

On the one hand, the study apparently suffers from scale-up-to-GDP bias, although it is not possible to say to what extent this influences the outcome of the study. The conclusion differs from Brandolini, who considers European inequality to be lower than in the United States, but this might also be the result of different indicators. A further disadvantage of both Brandolini's and Dauderstädt's papers is that they provide only a static picture for a given year and do not make it possible to draw conclusions on the development of inequality.

The analysis presented here will try to correct these shortcomings by providing estimates of European inequality for several years and using compatible data from Eurostat in order to avoid errors resulting from different measurement concepts.

Data and Methods

This study used the most recent data available from reliable and standardised sources, namely the European Union Statistics on Living Conditions (EU-SILC), to determine European inequality. It was of the utmost importance to the authors not only to compare inequality within certain member states (such data are easily available from the Eurostat website)[25], but also

22 See http://www.lisproject.org/.
23 A. Brandolini, op. cit., pp. 20-21.
24 M. Dauderstädt, op. cit.

25 See http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database; [ilc_di11] – inequality of income distribution (income quintile share ratio) [accessed on 28.7.2010].

to determine inequality in Europe as a whole. The data used here were eventually provided by Eurostat[26] and are not available from the official database. The dataset gives the upper income boundaries for each decile, resulting in nine income values (there was obviously no upper boundary for the 10th and richest decile) per year from 2003 to 2008. Furthermore, all boundaries were given in nominal euro-values and PPS and income values were already equivalised according to the new OECD scale[27], meaning that the numbers can be seen as equivalised income per person. Unfortunately, the dataset was incomplete due to a high non-response rate in 2003 and 2004 and EU25 data were available only from 2005, whereas an EU27 dataset including Romania and Bulgaria was available only for 2007 and 2008. Data for earlier years (1995–2001) were provided to the authors by Destatis, but not used because they covered only 13 member states.

In order to calculate the SS80/20 values for the EU as a whole, the authors applied the method developed and described by Dauderstädt.[28] This method requires average income per quintile for each member state. To obtain these values, first average income per decile was calculated as the average between the lower and upper boundary of each decile, assuming a linear distribution of income within each decile.[29] The mean income of each quintile was then derived as the average of the two average incomes of the two deciles it consists of. Since there was no lower boundary for the first decile and no upper boundary for the tenth decile, a different approach had to be employed in order to estimate the mean income in these two deciles.

For the first (poorest) decile, a value of 75% of the upper boundary was chosen as the lower boundary since no survey was likely to yield an income of zero as the lower boundary of the first decile – even the poorest in a given country have some kind of income. To estimate the richest quintile's mean income (which is the average of the two highest deciles) the authors resorted to the already mentioned official table of SS80/20 ratios for all EU member states (see Table 1) and multiplied the mean income in the first quintile for each country with the values given in the table to produce an estimate for mean income in the 5th quintile. This method ensured that the SS80/20 values for each country were the same as those given by Eurostat.

Given these data for all quintiles for all member states, one can construct the European quintiles. In order to estimate the SS80/20 ratio for the EU, it suffices to build the poorest first and the richest fifth quintile of the EU as a whole. These two quintiles were constructed by adding up national quintiles until the necessary number of individuals for a European quintile (about 100 million = a fifth of the EU's total population of almost 500 million) was obtained. In order to determine the poorest and richest national quintiles to build the top and bottom EU quintiles, the national quintiles were ranked by their average income. Then the population of each quintile selected was calculated for each year based on Eurostat data.[30] The population and income of national quintiles were added up until the necessary number of persons was obtained, starting with the poorest national quintile and going upwards for the bottom EU quintile, and starting from the richest national quintile and going down for the top EU quintile.

Since it never automatically occurred that the population sum of the national quintiles with the highest (lowest) mean income added up to exactly one-fifth of the EU population, the authors took all national quintiles whose population sum was just below the one-fifth population mark and then took exactly the number of individuals with mean income from the next quintile assigned to them which was necessary to obtain exactly one-fifth of the EU population in one EU quintile, as required. Thanks to the new OECD equivalence scale, one can safely apply total population numbers as a reference for the inter-European weighing of quintiles, since the scale converts household income into equivalised income per person.

Table 2 shows the procedure for the EU-27 in 2008 with income measured in euros. Columns 3-7 give the average income level for each national quintile; column 8 shows the number of persons per national quintile. The green national quintiles are the poorest in the EU, while the grey ones are the richest. The last four columns contain the amount that each national quintile contributes to the top or bottom EU quintile in terms of population and total income. As can be seen in the fourth row from the bottom of the table, the population numbers do not

26 E-mail communication from Eurostat, 9 July 2010, 14:50.

27 »Detailed methodological notes« – e-mail communication from Eurostat, 13 July 2010, 17:23.

28 M. Dauderstädt, op. cit.

29 A possible shortcoming of the method may lie in the simplifying assumptions made about the linear distribution of income. If income is not distributed linearly between the quintiles, one might have over- or underestimated the mean income per national quintile. But regarding the small impact on the outcomes that a slightly deviant mean income in some quintiles may have had, this error can be considered almost insignificant. To make a significant impact, the distribution in each national quintile would have had to be systematically skewed, for which there is no evidence.

30 See http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=de&pcode=tps00001&tableSelection=1&footnotes=yes&labeling=labels&plugin=1 [last accessed on 29.7.10].

Table 2
Calculating the SS80/20 Ratio for the EU27 (2008)

2008		Income per capita in euros						Contribution of national quintiles to			
Member state	Population	Q1	Q2	Q3	Q4	Q5	pop/Q	Q1 EU (pop)	Q5 EU (pop)	Q1 EU (income)	Q5 EU (income)
Romania	21,528,627	726	1368	1967	2727	5079	4305725	21,528,627		51,096,043,322	
Bulgaria	7,640,238	900	1555	2195	3042	5851	1528048	7,640,238		20,694,348,647	
Lithuania	3,366,357	1787	3038	4179	5632	10542	673271	2,693,086		9,854,000,210	
Latvia	2,270,894	1807	3260	4851	6918	13187	454179	1,816,715		7,646,554,277	
Poland	38,115,641	1957	3164	4177	5552	9982	7623128	30,492,513		113,203,453,770	
Hungary	10,045,401	2327	3517	4387	5411	8378	2009080	8,036,321		31,426,032,488	
Estonia	1,340,935	2516	4047	5536	7383	12580	268187	804,561		3,244,794,513	
Slovakia	5,400,998	2624	3899	4789	5873	8922	1080200	4,320,798		18,563,230,126	
Czech Rep.	10,381,130	3439	4995	6069	7489	11691	2076226	4,152,452		29,733,635,172	
Portugal	10,617,575	3655	6015	8183	11226	22292	2123515	4,247,030		20,534,390,050	
Greece	11,213,785	4652	7999	10930	14675	27445	2242757	2,242,757	2,242,757	10,433,305,564	61,552,465,865
Malta	410,29	4787	7332	9590	12353	19146	82058	82,058		392,811,646	
Spain	45,283,259	5681	9554	12979	17312	30676	9056652	9,056,652	9,056,652	51,450,838,876	277,821,850,617
Slovenia	2,010,269	5763	8861	10916	13350	19595	402054	402,054		2,317,036,049	
Italy	59,619,290	7029	11625	15657	20573	35849	11923858		11,923,858		427,458,385,442
Cyprus	789,269	8197	12961	16779	21246	33608	157854		157,854		5,305,150,510
Germany	82,217,837	8880	14214	18316	23571	42623	16443567		16,443,567		700,874,173,290
Belgium	10,666,866	8991	13896	18018	22894	36864	2133373		2,133,373		78,644,669,645
France	63,982,881	9015	13986	17623	22179	37864	12796576		12,796,576		484,529,561,237
UK	61,179,256	9910	16118	21960	29316	55496	12235851		24,471,702		1,037,747,011,974
Austria	8,318,592	9980	15135	19074	24089	36926	1663718		1,663,718		81,938,901,993
Finland	5,300,484	10079	15445	19733	24659	38299	1060097		2,120,194		66,741,574,334
Netherlands	16,405,399	10677	15741	19532	24402	42708	3281080		6,562,160		220,193,265,378
Sweden	9,182,927	10695	16205	20260	24674	37431	1836585		3,673,171		114,061,136,267
Ireland	4,401,335	11286	17303	22991	30297	50788	880267		1,760,534		71,376,449,695
Denmark	5,475,791	12837	19422	24139	29230	46213	1095158		3,285,475		109,058,043,872
Luxembourg	483,799	15987	24673	31027	39590	65545	96760		387,039		15,562,362,433
Survey Total	497,649,125										
Population/Q	99,529,825							97,515,861	98,678,630		
Deviation								2,013,964	851,195		
Total EU Q1, Q5										370,590,474,711	3,752,865,002,554
EU Q5/Q1											10.13

Source: Eurostat; authors' calculations.

quite add up to the necessary one-fifth of the total EU population. Therefore, the number of persons missing (shown in the third row from the bottom) is added from the respective next national quintiles, in this case Q3 from the Czech Republic for EU Q1 and Q4 from Austria for EU Q5. The total income of both EU quintiles can be found in the second row from the bottom in the last two columns. Their quotient is the desired SS80/20 ratio, to be found in the bottom right corner (value: 10.13).

Similar tables were calculated for 2005, 2006, 2007 and 2008 in euros and PPS, to the extent that country data were available. The results are presented in the next section (see Table 3).

Results: Much Higher, but Declining, Inequality

The results of the authors' calculations (see Table 3) confirm the initial statement: inequality within the EU,

Table 3
S80/S20 Ratios for the EU25 and EU27

Year	EU25		EU27	
	Euro	PPS	Euro	PPS
2005	8.85	6.21		
2006	8.07	5.75		
2007	8.05	5.93	11.20	7.23
2008	7.58	5.67	10.13	6.79

Source: Eurostat; authors' calculations.

calculated as the S80/S20 ratio, is far higher than the value of 5 which Eurostat statistics (see Table 1) present for the EU27. Measured in euros at exchange rates, the value in 2008 was still more than 10 (down from 11.2 in 2007). Measured in Purchasing Power Standards (PPS), the value is substantially lower: 6.79 (2008) and 7.23 (2007). These values for the EU27 are significantly higher than the values for the EU25 because of the inclusion of Bulgaria and Romania, two relatively large and very poor countries. For the EU25, it was possible to obtain a longer time series, from 2005 to 2008. As expected, inequality measured in euros was again about two percentage points higher than when measured in PPS. The values declined from 8.85 in 2005 to 7.58 in 2008 and from 6.21 to 5.27, respectively.

With this level of inequality, the EU27 appears to be much more unequal than other large economies, at least when measured in euros. Taking data from the World Bank, the SS80/20 ratio for India is 5.61 (2005), for China 8.34 (2005), for the Russian Federation 8.96 (2007) and for the USA 8.42 (2000). But even measured in PPS, the EU27 is still more unequal than India. Since the World Bank income distribution data for individual EU member states do not diverge strongly from the EU data used in this paper, such a comparison seems justified.

It is worth noting that the results of this study differ from the official Eurostat data (see Table 1) regarding not only the level of inequality but also its dynamics. While Eurostat shows a slight increase of inequality for the EU27 and the EU25, Table 3 shows a clear decline (except for the 2006/2007 values for the EU25 in PPS). The difference can be explained by the construction of the EU-related indicator. The EU neglects between-country inequality. During the period considered, within-country inequality increased, on average, while between-country inequality decreased. This development can also be seen when one compares the composition of the poorest and richest quintiles of the EU. Between 2005 and 2008, some of the richest quintiles of the poorer countries left the lowest EU quintile, while in 2008 it was necessary to include some households from Germany's poorest quintile to construct the lowest EU quintile. This fact reflects Germany's slow growth and the increase in poverty and inequality in Germany during that period.

Regarding the dynamics of inequality, the decline measured in euros is more rapid than the decline measured in PPS. This can be explained by the underlying dynamics of the catching-up process which has reduced between-country inequality. To a considerable extent, the implicit income convergence was the result of the real appreciation of the currencies of the poorer EU member states. This real appreciation has been the effect of changes in the exchange rate (in other words, nominal appreciation) and higher inflation rates than the EU average (and higher in particular than in the core EU countries, such as Germany). Some countries with fixed exchange rates due to currency boards, such as Bulgaria or some Baltic countries, showed higher inflation, while others, such as Poland, relied more on nominal appreciation.

Making European Inequality Less "Immeasurable"

Reducing inequality is an official aim of the European Union. It is also worth achieving because greater equality is likely to increase the overall welfare of a society.[31] The EU can probably not yet be considered a "society" as such, but via market integration within the EU, high levels of inequality affect all citizens. They are likely to lead to a race to the bottom when it comes to wages and working conditions if there is no strong countervailing force. The fact that within-country inequality and the profit share of income (that is, the complement of the wage share of GDP) have both increased in many member states during the last decade (see also Table 1 or the underlying Eurostat table for all member states) can arguably also be explained by the impact of low-wage competition within the Single Market or global markets.[32]

The present study suggests that reducing inter-country inequality might represent a more rapid route to more

31 See R. Wilkinson, K. Pickett: The Spirit Level. Why More Equal Societies Almost Always Do Better, London 2009.

32 See OECD: Growing Unequal? Income Distribution and Poverty in OECD Countries, Paris 2008; Thomas Harjes: Globalization and Income Inequality: A European Perspective, IMF Working Paper WP/07/169, Washington, DC 2007; ILO: World of Work Report 2008. Income Inequalities in the Age of Financial Globalization, Geneva 2008.

equality than reducing intra-country inequality. In fact, there might even be a certain trade-off between the two approaches as the catching-up of poorer member states is partially based on the relocation of production from high-wage to low-wage locations. The resulting increase in inequality in the richer member states is traditionally explained by the Heckscher-Ohlin theorem, which predicts complementary redistribution between capital and labour in the trading partners involved. Unfortunately, the predicted rise in wages in the poorer countries has been slow and hardly shows up in their income distribution, which has often deteriorated.

Nevertheless, in the long run regional cohesion, with the implied strong increases in per capita income in the poorer countries, will mitigate these negative effects. Unfortunately, over many decades until the late 1990s, EU membership usually did not lead to catch-up growth. The income levels of poor countries which joined the EU in 1972 (Ireland), 1980 (Greece) and 1985 (Portugal and Spain) approached average EU levels fairly slowly, if at all. With the exception of the very special Irish case, the turnaround occurred with the start of the European Monetary Union. Declining interest rates spurred consumption and investment in the European periphery, which led to higher growth rates than in the rather stagnating core countries, particularly Germany. Growth also accelerated in the new member states in Central and Eastern Europe after 2002.

The financial crisis of 2008 halted this cohesion process. The higher growth rates on the European periphery had led to large imbalances, in particular current account deficits, which had been financed by correspondingly large capital inflows. The panic in the capital markets led to stronger risk awareness and made the financing of deficits much more costly, if not impossible. In the end, the European growth model of the past ten years appears not to have been sustainable, albeit relatively successful in terms of the cohesion achieved. Even that success depends on further development, however. If deleveraging is achieved through a prolonged period of slow growth in the deficit countries, stagnation there might undo past achievements.

Promoting cohesion thus seems to mean walking a tightrope: on the one hand, real appreciation must be allowed, although it might imply higher inflation than the EU average and nominal revaluation of the exchange rate, if the exchange-rate regime allows it. On the other hand, deficits and their underlying causes, such as rapidly increasing levels of private and/or public debt, as well as rising unit labour costs must be carefully controlled.

The following set of policies could promote regional and social cohesion:

- The financing of investment in the catching-up countries should rely less on the whims and herd instincts of capital markets and more on public transfers, based on a larger EU budget, funded through European taxes. Tighter regulation of financial markets should prevent the financing of bubbles.

- EU structural fund spending should increase, but be used more efficiently (Ireland is a good model for this).

- Adopting the euro should depend less on meeting the inflation and exchange-rate criteria, as these conditions prevent catch-up growth.

- Enlargement should depend not only on fulfilment of the Copenhagen criteria but also on reaching certain minimum levels of income and equality of income distribution, as the entry of very poor and unequal societies will exacerbate present social problems within the EU.

- A minimum wage should ensure that migrant workers receive a decent wage which allows a standard of living commensurate with the standards of the (rich) host economy in order to prevent a race to the bottom.

- A European incomes policy should prevent a substantial and lasting deviation of income growth from productivity growth (plus target inflation) in the member states. Deviations in both directions should be subject to monitoring by the EU and peer pressure.

To make inequality easier to measure, Eurostat should make household survey data more readily available.[33] Income distribution statistics published on the Eurostat website should contain not only the SS80/20 ratios but also average income per capita figures for all deciles and quintiles. These data should be available for every year, starting in 1995, in order to allow the evaluation of the development of inequality over time. The ratios given for the EU as a whole or country groups (eurozone, EU15, EU25, EU27) should be calculated in an appropriate manner, benefiting from the critique and alternative solutions presented in this paper.

33 As the EU itself demands; see Commission of the European Communities: Measuring progress in a changing world, COM(2009) 433 final, Brussels 20.8.2009, section 3.3: "More accurate reporting on distribution and inequalities".