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INTRODUCTION

Economic inequality has become one of the most prominent topics in public discourse among academics, policymakers and the general public. Typically, these debates are informed by longitudinal or cross-country comparisons with respect to some aggregate measure of economic inequality. For example, in recent academic and policy contributions the authors from the World Inequality (Piketty *et al.* 2018; Alvaredo *et al.* 2018) raise red flags with respect to the current development of inequality by drawing on long-term comparisons both within and between countries using top (income/wealth) shares as measures of inequality.

Such comparisons are important in their own right. Yet, they are less informative when it comes to the question of distributive justice. In many of these contributions the underlying normative assumption seems to be that less inequality is always better than more. Taking this presumption to its logical conclusion, the ideal point of income distribution is perfect equality. Perfect equality, however, seems almost indefensible both from an efficiency and from a moral perspective. To be sure, there are many potential reasons why inequality is not morally justifiable. However, there are also many reasons why some inequality may be defensible. All else equal, would we really want to redistribute from A to B if all their income difference is due to the fact that A works long hours, while B decides to prefer leisure over work? If not, it is clear that perfect equality is a misleading reference point when discussing the fairness of a given income distribution.

While hidden normative assumptions abound in public discourse on inequality, an explicit discussion of what it means to live in a society with a fair distribution of income is glaringly absent. Is the current income distribution of Denmark fairer than that of Germany? Have the United States become more unfair since the golden age of the welfare state in the aftermath of World War II? Such questions cannot be answered by merely comparing aggregate inequality measures such as the Gini coefficient. Instead – we argue in this paper – it is more useful to put the question of why we think that inequality is unfair first. Endowed with an explicit normative conception, it is then possible to evaluate the income distributions from a fairness perspective.

In this paper, we consider three aspects of inequality that could provoke normative concern. Specifically, we will calculate summary statistics for each of these concerns and analyse the extent to which they are reflected in a standard measure of inequality: the Gini index.[1]

Firstly, we consider individual deprivation, i.e. the concern that some do not have sufficient means to make ends meet (Lipton and Ravallion 1995). Typically, poverty is calculated by partitioning the population into a poor and a non-poor fraction by means of a poverty line. An aggregation index is then applied to summarize the income distribution below the poverty line (Sen 1976; Foster *et al.* 1984). The higher the poverty index, the unfairer the income distribution from the perspective of those who are poverty-averse.

Secondly, we consider individual affluence, i.e. the concern that some have so much that they could tilt the balance of social processes in their favour (Piketty 2014). In analogy to poverty measurement the population is partitioned into an affluent and a non-affluent fraction by means of a richness threshold. Then an aggregation index is applied to summarize the income distribution above the richness line (Peichl *et al.* 2010). The higher the richness index, the unfairer the income distribution from the perspective of those who are affluence-averse.

Thirdly, equality of opportunity, i.e. the concern that disparities among individuals are due to factors for which they should not be held responsible (Roemer and Trannoy 2015). Typically, inequality of opportunity is measured by comparing incomes across types that are defined by a set of factors beyond individual control (Checchi and Peragine 2010; Hufe *et al.* 2017). The larger the disparities across types, the more individual incomes are determined by factors beyond individual control, the unfairer the income distribution from the perspective of an opportunity-egalitarian.

DATA

To illustrate the suggested aspects of unfairness, we draw on the EU Statistics on Income and Living Conditions (EU-SILC), which cover 31 European countries.[2] EU-SILC is a well-researched database for monitoring inequality, poverty and social exclusion in Europe (see e.g. Atkinson *et al.* (2017) and the

[1] Naturally this analysis could be conducted using any prevalent measure of inequality. Yet it is well known that inequality measures are highly correlated – see Leigh (2007) for a comparison of top income share measures with the Gini coefficient. Therefore, our main conclusions will hardly be affected.

[2] This section is a modified version of the data description in Hufe *et al.* (2018). The sample consists of Austria (AT), Belgium (BE), Bulgaria (BG), Switzerland (CH), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), Finland (FI), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Iceland (IS), Italy (IT), Malta (MT), Lithuania (LT), Luxembourg (LU), Latvia (LV), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK), and Britain (UK).

references cited therein), which makes it easy to compare our results with previous works. In particular, we use the 2011 wave as it provides a module on the intergenerational transmission of advantages, which allows us to construct types from circumstance variables.[3] As is common in survey data, incomes are reported for the year preceding the survey, i.e. 2010 in our case.

We follow standard practices from the literature branches on inequality and poverty measurement in setting up the data. We focus on disposable household income adjusted by the OECD-equivalence scale as the outcome of interest. This is standard in poverty measurement, since the notion of deprivation typically refers to individual well-being as approximated by consumption possibilities. The few observations with incomes below zero are excluded from the analysis. We replace zero incomes by one to avoid sample reductions through logarithmic transformations. To curb the influence of outliers in the lower and the upper part of the income distribution, we winsorize at the 1st and the 99.95th-percentile of the country-specific income distribution. Furthermore, we restrict the sample to working-aged individuals of 25–59 years. To assure the representativeness of the sample, all calculations are performed considering personal cross-sectional sample weights.

Table 1

Descriptive Statistics

Country	No.	Mean	Med.	Pov. line	Rich. line	Types
AT	6,350	25,590	22,033	13,220	88,133	36
BE	5,407	24,131	20,063	12,038	80,251	35
BG	6,931	3,798	2,939	1,763	11,756	30
CH	6,897	42,253	34,691	20,815	138,764	36
CY	4,906	21,152	17,002	10,201	68,007	36
CZ	6,752	9,040	7,528	4,517	30,113	29
DE	12,316	22,398	18,980	11,388	75,922	36
DK	2,532	30,803	26,306	15,784	105,225	32
EE	5,374	7,178	5,514	3,309	22,058	36
EL	6,331	13,458	10,840	6,504	43,360	35
ES	15,360	17,359	14,160	8,496	56,641	36
FI	4,563	25,966	22,001	13,201	88,004	36
FR	11,145	24,583	20,550	12,330	82,200	36
HR	5,947	6,722	5,602	3,361	22,408	36
HU	13,583	5,397	4,617	2,770	18,469	31
IE	3,069	25,386	20,151	12,090	80,603	36
IS	1,579	20,616	19,398	11,639	77,592	34
IT	20,152	18,985	16,307	9,784	65,228	36
LT	5,295	4,810	3,874	2,325	15,497	34
LU	6,871	38,257	33,336	20,002	133,344	36
LV	6,437	5,457	4,183	2,510	16,733	36
MT	4,255	13,416	11,134	6,680	44,535	36
NL	5,513	24,024	20,708	12,425	82,834	36
NO	2,493	40,730	36,869	22,122	147,477	36
PL	1,4616	6,233	5,081	3,048	20,323	23
PT	5,923	11,037	8,558	5,135	34,231	33
RO	7,565	2,575	2,180	1,308	8,720	23
SE	5,75	24,500	22,706	13,624	90,824	30
SI	4,870	13,127	12,037	7,222	48,147	36
SK	7,288	7,494	6,392	3,835	25,569	32
UK	6,242	23,323	17,561	10,537	70,246	36

Note: All statistics refer to the equivalized disposable household income. The poverty line is calculated as 60% of the median income. The richness line is calculated as 400% of the median income.

Source: EU-SILC 2011 cross-sectional (rev. 5 June 2015).

The measurement of poverty and affluence is highly contingent on the specification of the poverty and the richness line. Here we hold the poverty line y_{min} fixed at the so-called European *At-Risk-Of-Poverty Rate* which is drawn at 60-percent of the country-specific median equivalized disposable household income. To be categorized as affluent, households must dispose of at least 400 percent of the country-specific median equivalized disposable household income.

For the estimation of inequality of opportunity it is indispensable to divide the population into types. In this paper we use four circumstance variables that are frequently utilized in the empirical literature on equality of opportunity. The first circumstance is the biological sex of the respondent. Secondly, we proxy the respondent's migration background by a binary indicator for whether the respondent lived in her country of birth at time of survey completion. Thirdly, we use information on the educational status of the parents. More specifically, we construct types based on whether the highest educated parent of a respondent dropped out of secondary education, attained a secondary school degree, or whether the highest educated parent of a respondent completed at least some tertiary education. Lastly, we proxy

[3] The 2005 wave also comprises a module on the intergenerational transmission of advantages for a sample of 26 European countries. Results for the 2005 wave are available on request.

the occupational status of both parents by grouping them into either elementary occupations, semi-skilled occupations, or top-rank positions. We only retain information on the parent with the highest occupational status. As such, each of the considered populations is partitioned into a maximum of 2*2*3*3=36 non-overlapping circumstance types. As illustrated in Table 1 some country observations fall short of 36 types. This is due to the fact that some combinations of circumstances are extremely rare in the data. To give an intuitive example, the combination of the highest educated parent having less than a secondary school degree, but occupying a top-rank position in her profession is extremely rare. In order to curb the influence of very small types, we only retain those types for which we have a minimum of 20 observations in the respective country cell.

Table 1 shows descriptive statistics for the income distributions in our country sample. In 2010 mean disposable household income was lowest in Romania, Bulgaria and Lithuania (μ < EUR 5,000). At the top of the intra-European country distribution we find Luxembourg, Norway and Switzerland, with average disposable household incomes hovering around the EUR 40,000 mark. In all countries in our sample income distributions are skewed to the right, i.e. the median income lies below the country average. In general, there are very few re-rankings when comparing countries based on the median instead of the mean. The leading countries are again Luxembourg, Norway and Switzerland, which are the only countries with median incomes above EUR 30,000 in 2010. At the lower end, we again find Romania, Bulgaria and Lithuania with median incomes of below EUR 4,000.

RESULTS

Inequality

To gain a first understanding of inequality in Europe, we calculate different inequality measures, all of which put particular emphases on different parts of the income distribution (Table 2). The Gini index is one of the most widely used inequality measure both in academia and public discourse. It is particularly sensitive to transfers in the middle of the income distribution. In addition to the Gini, we provide three inequality measures of the generalized entropy class (Cowell 2016). This class of measures is given by

$$(1) \quad I(Y) = \frac{1}{\alpha[\alpha-1]}\left[\frac{1}{N}\sum_i \left(\frac{y_i}{\mu}\right)^{\alpha} - 1\right]$$

where α is a parameter governing inequality aversion at different positions in the income distribution. In general, the lower α, the higher the concern for incomes at the lower end of the income distribution. We choose three different parameterizations of α. With $\alpha = 0$ we obtain the mean log deviation (MLD) which is particularly sensitive to transfers at the lower end of the income distribution. With $\alpha = 1$ we obtain the Theil index (Theil) and with $\alpha = 2$ the coefficient of variation (CV) – both of which increasingly shift their normative focus from the lower parts of the income distribution to the upper parts.

Despite their different foci, all of the inequality indices yield remarkably stable country rankings. This is reflected in rank correlations of above 0.80 for all inequality measures under consideration. However, there are some notable re-rankings. Sweden, for example, is the country with the second lowest inequality as measured by the Gini. However, it falls back to 17th position when summarizing the income distribution by the MLD index. Similarly, Denmark falls back from position 9 to position 16. This suggests that in both of these countries inequality is mainly driven by households that dispose of considerably less income than the population mean. France, by contrast, falls back from position 18 in the Gini-ranking to position 30 in the CV-ranking. Hence, inequality in France appears to be more strongly driven by high-income households pulling away from the population mean. According to all measures except for the CV (Rank 2) Norway is the most equal society within our sample.

Unfair Inequality

As outlined in the first section, claims for full equality are hard to substantiate. As a result, comparisons based on inequality measures can be misleading when it comes to the evaluation of income distributions from a fairness perspective. Therefore, we now turn to three different aspects of inequality that could raise normative concern: poverty, affluence and inequality of opportunity. Furthermore, we analyse the extent to which these aspects are correlated with total inequality levels in Europe.

(a) Poverty

To characterise the lower end of income distributions we draw on three measures. The headcount ratio yields the share of households falling short of the poverty line. Hence it is only sensitive to the number of the poor, while it is indifferent to the extent of deprivation faced by these households. The gap ratio measures the average distance of poor households to the poverty line. While it incorporates how severely households are deprived on average, it is indifferent to inequalities among the poor. Both measures belong to the larger Foster-Greer-Thorbecke family of poverty measures (Foster *et al.* 1984). Beyond the number of the poor and their average shortfall from the poverty line, the Watts index (Zheng 1993) additionally varies with inequality among the poor. Hence, *ceteris paribus* it increases with regressive transfer among the poor.

There is some variation in the country rankings based on the different measures of poverty. The headcount ratio in particular yields different

Table 2

Inequality Statistics

Country	Gini	Rank	MLD	Rank	Theil	Rank	CV	Rank
AT	0.270	12	0.127	12	0.127	13	0.154	13
	(0.00)		(0.00)		(0.00)		(0.01)	
BE	0.243	4	0.102	3	0.103	4	0.124	6
	(0.00)		(0.00)		(0.00)		(0.01)	
BG	0.332	29	0.200	26	0.195	29	0.253	28
	(0.00)		(0.01)		(0.01)		(0.02)	
CH	0.279	17	0.133	15	0.144	18	0.206	22
	(0.00)		(0.00)		(0.01)		(0.02)	
CY	0.277	16	0.129	13	0.134	16	0.171	17
	(0.00)		(0.00)		(0.01)		(0.01)	
CZ	0.255	8	0.112	7	0.116	8	0.143	9
	(0.00)		(0.00)		(0.00)		(0.01)	
DE	0.276	15	0.132	14	0.134	15	0.170	16
	(0.00)		(0.00)		(0.00)		(0.01)	
DK	0.258	9	0.133	16	0.128	14	0.174	18
	(0.01)		(0.01)		(0.01)		(0.03)	
EE	0.324	24	0.194	24	0.175	22	0.196	19
	(0.00)		(0.01)		(0.01)		(0.01)	
EL	0.331	26	0.204	28	0.198	30	0.262	29
	(0.01)		(0.01)		(0.01)		(0.02)	
ES	0.329	25	0.200	27	0.187	25	0.230	24
	(0.00)		(0.00)		(0.01)		(0.01)	
FI	0.252	7	0.111	6	0.115	7	0.152	11
	(0.00)		(0.00)		(0.01)		(0.02)	
FR	0.290	18	0.143	18	0.168	20	0.285	30
	(0.00)		(0.00)		(0.01)		(0.03)	
HR	0.302	20	0.173	20	0.152	19	0.165	15
	(0.00)		(0.00)		(0.00)		(0.01)	
HU	0.275	14	0.124	11	0.126	12	0.148	10
	(0.00)		(0.00)		(0.00)		(0.00)	
IE	0.292	19	0.150	19	0.142	17	0.160	14
	(0.01)		(0.01)		(0.01)		(0.01)	
IS	0.241	3	0.105	4	0.103	5	0.120	4
	(0.01)		(0.01)		(0.01)		(0.01)	
IT	0.310	21	0.198	25	0.170	21	0.204	20
	(0.00)		(0.00)		(0.00)		(0.01)	
LT	0.340	30	0.235	31	0.194	28	0.216	23
	(0.01)		(0.01)		(0.01)		(0.01)	
LU	0.272	13	0.123	10	0.126	11	0.153	12
	(0.00)		(0.00)		(0.01)		(0.01)	
LV	0.353	31	0.234	30	0.208	31	0.237	25
	(0.00)		(0.00)		(0.00)		(0.01)	
MT	0.269	11	0.120	8	0.119	10	0.135	8
	(0.00)		(0.00)		(0.00)		(0.01)	
NL	0.244	5	0.097	2	0.102	2	0.120	5
	(0.00)		(0.00)		(0.00)		(0.01)	
NO	0.221	1	0.089	1	0.089	1	0.109	2
	(0.01)		(0.00)		(0.01)		(0.01)	
PL	0.320	23	0.177	22	0.181	23	0.240	26
	(0.00)		(0.00)		(0.01)		(0.01)	
PT	0.332	28	0.186	23	0.192	27	0.249	27
	(0.01)		(0.01)		(0.01)		(0.01)	
RO	0.332	27	0.207	29	0.184	24	0.206	21
	(0.00)		(0.00)		(0.00)		(0.01)	
SE	0.237	2	0.137	17	0.102	3	0.105	1
	(0.01)		(0.02)		(0.01)		(0.02)	
SI	0.248	6	0.110	5	0.105	6	0.117	3
	(0.00)		(0.00)		(0.00)		(0.01)	
SK	0.259	10	0.122	9	0.116	9	0.134	7
	(0.00)		(0.00)		(0.00)		(0.01)	
UK	0.319	22	0.174	21	0.192	26	0.301	31
	(0.01)		(0.01)		(0.01)		(0.04)	

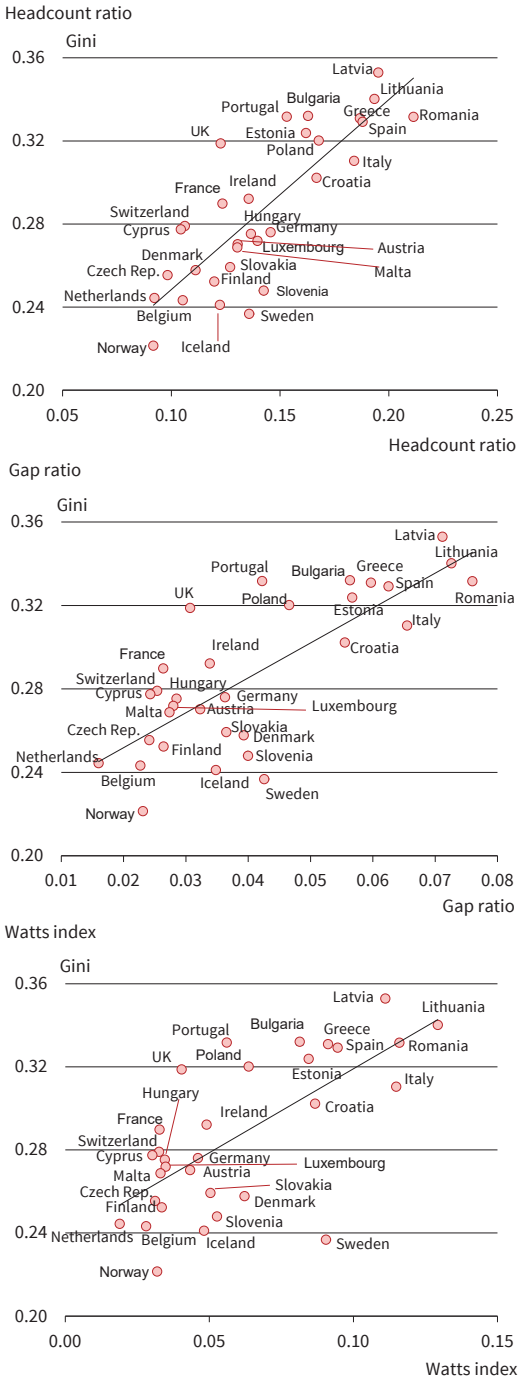
Note: All statistics refer to the equivalized disposable household income. Standard errors are calculated based on a bootstrap procedure with 500 draws and reported in parentheses.

Source: EU-SILC 2011 cross-sectional (rev. 5 June 2015).

conclusions than the remaining two measures. While the latter have a rank correlation of above 0.98, the analogous coefficients for the former hover around the 0.90 mark. For example, Denmark and Iceland rank 7 and 9 with respect to the headcount ratio. However, they fall back to ranks 18 and 15 in terms of the poverty gap. This suggests that in these countries poverty is not very pervasive, but on average relatively severe for those who actually fall below the deprivation threshold. The reverse holds true for Hungary and Luxembourg, which improve from ranks 17 and 18 to ranks 11 and 10 when the headcount ratio is replaced by the gap ratio. Hence, in these countries there is a relatively high number deprived households that, on average, are very close to the deprivation threshold. In line with the high rank correlation of the poverty gap ratio and the Watts index, there are only moderate re-rankings when comparing these measures.

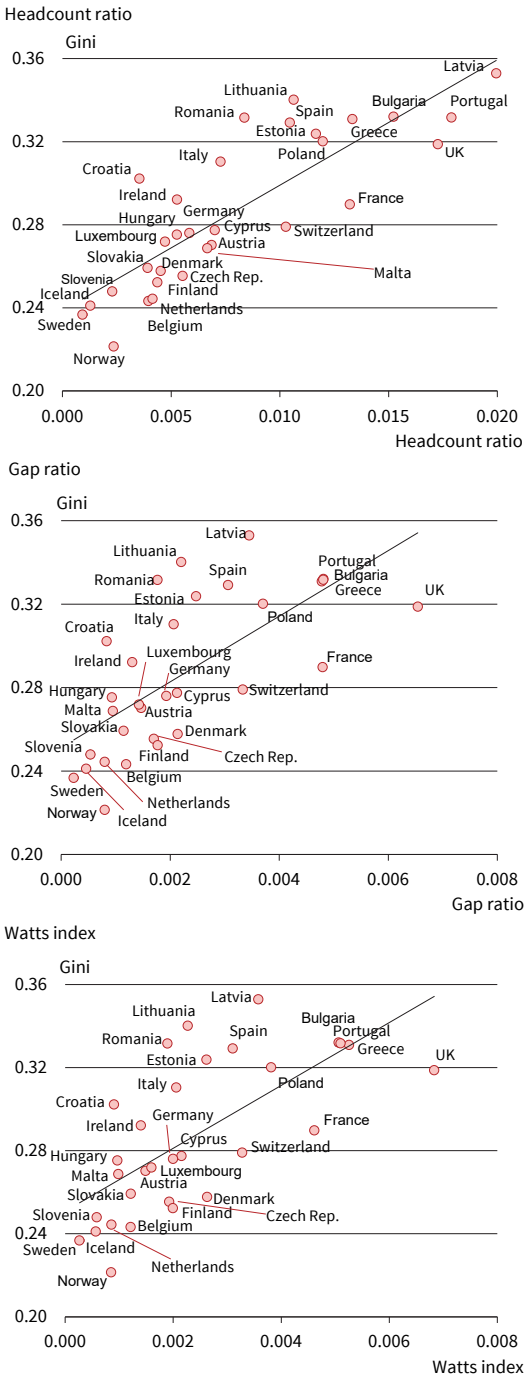
As illustrated in Figure 1 all of the considered poverty measures are positively correlated with total inequality as measured by the Gini index. Yet, the positive correlation hides a more nuanced picture. Consider the cases of Britain (UK) and Poland (PL). With a Gini index of approximately 0.320, both are on par in terms of aggregate inequality. Does this imply that both countries also are on par from a fairness perspective? This is definitely not the case if fairness accommodates poverty aversion. According to all considered measures, poverty levels in Poland far exceed their British counterparts. Hence, evaluating the income distribution of those

Figure 1
Inequality and Poverty



Note: The Pearson correlation coefficients are based on the Gini coefficient and the respective poverty measure.
The correlation coefficient of inequality with headcount ratio, gap ratio and Watts index are 0.819, 0.773, 0.686. Point estimates and standard errors are presented in Table A1.
Source: EU-SILC (2011) cross-sectional (rev. 5 June 2015).

Figure 2
Inequality and Affluence



Note: The Pearson correlation coefficients are based on the Gini coefficient and the respective affluence measure.
The correlation coefficient of inequality with headcount ratio, gap ratio and Watts index are 0.836, 0.676, 0.678. Point estimates and standard errors are presented in Table A1.
Source: EU-SILC (2011) cross-sectional (rev. 5 June 2015).

two countries with reference to aggregate inequality may be grossly misleading if we maintain that inequality is very worrying insofar as the poor do not have enough income to make ends meet. Of course, poverty may not be the only reason of why we care about income disparities. Hence, we now turn to the case of affluence.

(b) Affluence

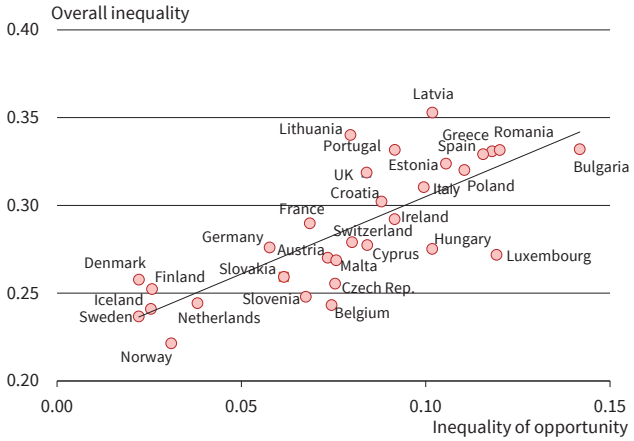
To characterise the upper end of the income distributions we draw on three measures that are reminiscent of the poverty measures characterised in the previous paragraph. The headcount ratio yields the share of households exceeding the richness line.

Like its poverty counterpart, it is only sensitive to the number of affluent individuals in a given population. The gap ratio measures the average share of income exceeding the richness lines for those who fall into the affluent group. While it incorporates how affluent households are on average, it is indifferent to inequalities among the rich. Lastly, we calculate the Watts index of affluence that weights incomes above the richness lines by means of a logarithmic transformation.[4]

Figure 3

Inequality and Inequality of Opportunity

Measured in terms of Gini coefficients



Note: The Pearson correlation coefficients are based on the Gini coefficient and the inequality of opportunity measure. The correlation coefficients of inequality with inequality of oppurtinity is 0.771. Point estimates and standard errors are presented in Table A1.

Source: EU-SILC 2011 cross-sectional (rev. 5 June 2015).

Again, rank correlations across the different measures are sizable and consistently above 0.90. Nevertheless, we obtain some notable re-rankings, especially when moving from the headcount ratio to the remaining two measures. Finland, for example, falls back from rank 9 in terms of the affluence headcount to rank 16 in terms of the gap ratio and the Watts index. Malta, by contrast, climbs from rank 16 to rank 8. Hence, in Finland there are relatively few rich people, but their average affluence is fairly high. In Malta, on the contrary, there appears to be a relatively large number of affluent households with incomes fairly close to the richness threshold.

In analogy to the poverty measures, all of the considered richness measures are positively correlated with total inequality as measured by the Gini index (Figure 2). Nevertheless, it is important to register the nuanced differences in the inequality experiences of the different countries to draw conclusions with respect to fairness. Consider again the cases of Britain (UK) and Poland (PL) which are comparable in overall inequality. In contrast to the comparison based on poverty, it is now Britain which is characterised by far more unfairness in income distribution, since affluence measures in this country far exceed their Polish counterparts. Hence, measured by poverty-aversion we should prefer the income distribution of Britain over that of Poland, affluence-aversion leads to the opposite conclusion.

(c) Inequality of Opportunity

In a last step we address concern over unequal opportunities. For the sake of this exposition we measure inequality of opportunity by means of the *ex-ante* utilitarian methodology (Van de gaer and Ramos 2016), in which we first replace the incomes of individuals by the mean income of their respective type. In a second step we characterise inequality in this counterfactual distribution by the Gini index. This measure follows the following logic: the larger the average disparities due to factors beyond individual control, the larger the disparities in circumstance type means, the larger the Gini index in the counterfactual distribution and hence the larger the measure of inequality of opportunity.

The correlation between inequality of opportunity and overall inequality is shown in Figure 3. As in the previous cases, overall inequality is positively correlated with concern over equal opportunities. However, this is not to say that opportunity egalitarians can make fairness judgements based on the comparison of overall inequality alone. For example, despite their comparability in overall inequality, Poland and Britain are strongly diverging in terms of the distribution of opportunities. While inequality of opportunity reaches a level of 0.084 Gini points in Britain (Rank 17), inequality of opportunity amounts to 0.110 Gini points (Rank 27) in Poland. Hence an opportunity egalitarian would prefer the income distribution of Britain over the one in Poland.

CONCLUSION

This article shows that aggregate measures of inequality are imperfect proxies of fairness in a given distribution of income. While inequality correlates positively with poverty, affluence and inequality of opportunity, the correlation is far from perfect, leading to different country rankings depending on the normative principle chosen. For fairness

[4] Due to the logarithmic transformation the index is particularly sensitive in the income range just above the richness threshold. As a consequence the richness index may decrease through regressive transfers in the affluent partition of the population. In spite of this crude property we retain the Watts index of affluence for comparative purposes with its analogous measure of poverty. For a more thorough discussion of concave and convex affluence indices, see Peichl *et al.* (2010).

considerations, it is thus indispensable to have a clear understanding of why we care about inequality.

Current research on fairness preferences suggests that fairness cannot be captured by referring to one normative principle alone (Konow 2003; Konow and Schwettmann 2016). Instead, it appears that fairness preferences are informed by multiple normative principles – like freedom from poverty, freedom from affluence and equality of opportunity. Our analysis shows that the isolated analysis of these aspects may point in different directions when comparing income distributions. It is not necessarily the case that less poverty goes hand in hand with less affluence and a more equal distribution of opportunities. Therefore empirical researchers interested in the question of fairness need to find ways to reconcile different normative concerns into aggregate measures of unfair inequality. A first contribution to this research agenda can be found in Hufe *et al.* (2018).

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APPENDIX: DETAILED RESULTS OVERVIEW

Table A1

Estimates by Country

Country	Gini (inequality)	Rank	Headcount (poverty)	Rank	Gap ratio (poverty)	Rank	Watts index (poverty)	Rank	Headcount (affluence)	Rank	Gap ratio (affluence)	Rank	Watts index (affluence)	Rank	Gini (inequality of opp.)	Rank
AT	0.270	12	0.131	14	0.032	13	0.043	13	0.007	17	0.001	13	0.001	12	0.073	11
	(0.003)		(0.005)		(0.002)		(0.002)		(0.001)		(0.000)		(0.000)		(0.004)	
BE	0.243	4	0.105	5	0.023	2	0.028	2	0.004	7	0.001	10	0.001	9	0.074	12
	(0.004)		(0.005)		(0.001)		(0.002)		(0.001)		(0.000)		(0.000)		(0.004)	
BG	0.332	29	0.163	23	0.056	24	0.081	22	0.015	28	0.005	30	0.005	28	0.142	31
	(0.004)		(0.005)		(0.002)		(0.003)		(0.002)		(0.001)		(0.001)		(0.006)	
CH	0.279	17	0.106	6	0.025	6	0.033	6	0.010	21	0.003	24	0.003	24	0.080	16
	(0.004)		(0.005)		(0.001)		(0.002)		(0.001)		(0.001)		(0.001)		(0.004)	
CY	0.277	16	0.104	4	0.024	5	0.030	3	0.007	18	0.002	19	0.002	19	0.084	18
	(0.005)		(0.006)		(0.002)		(0.002)		(0.001)		(0.001)		(0.001)		(0.006)	
CZ	0.255	8	0.098	3	0.024	4	0.031	4	0.006	14	0.002	14	0.002	15	0.075	13
	(0.004)		(0.004)		(0.001)		(0.002)		(0.001)		(0.000)		(0.000)		(0.004)	
DE	0.276	15	0.146	20	0.036	16	0.046	14	0.006	15	0.002	17	0.002	17	0.058	7
	(0.003)		(0.004)		(0.001)		(0.002)		(0.001)		(0.000)		(0.000)		(0.004)	
DK	0.258	9	0.111	7	0.039	18	0.062	20	0.005	10	0.002	20	0.003	22	0.022	2
	(0.008)		(0.012)		(0.006)		(0.012)		(0.002)		(0.001)		(0.001)		(0.007)	
EE	0.324	24	0.162	22	0.057	25	0.085	23	0.012	24	0.002	22	0.003	21	0.105	25
	(0.005)		(0.006)		(0.003)		(0.005)		(0.002)		(0.001)		(0.001)		(0.007)	
EL	0.331	26	0.187	27	0.060	26	0.091	26	0.013	27	0.005	27	0.005	30	0.118	28
	(0.006)		(0.006)		(0.002)		(0.005)		(0.002)		(0.001)		(0.001)		(0.007)	
ES	0.329	25	0.188	28	0.063	27	0.095	27	0.010	22	0.003	23	0.003	23	0.116	27
	(0.003)		(0.004)		(0.002)		(0.003)		(0.001)		(0.000)		(0.001)		(0.004)	
FI	0.252	7	0.120	8	0.026	8	0.034	9	0.004	9	0.002	16	0.002	16	0.026	4
	(0.005)		(0.007)		(0.002)		(0.003)		(0.001)		(0.000)		(0.001)		(0.005)	
FR	0.290	18	0.124	11	0.026	7	0.033	7	0.013	26	0.005	28	0.005	27	0.069	10
	(0.005)		(0.004)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.004)	
HR	0.302	20	0.167	24	0.056	23	0.087	24	0.004	5	0.001	6	0.001	6	0.088	19
	(0.003)		(0.005)		(0.002)		(0.004)		(0.001)		(0.000)		(0.000)		(0.005)	
HU	0.275	14	0.137	17	0.028	11	0.035	10	0.005	12	0.001	7	0.001	7	0.102	23
	(0.002)		(0.003)		(0.001)		(0.001)		(0.001)		(0.000)		(0.000)		(0.003)	
IE	0.292	19	0.136	15	0.034	14	0.049	16	0.005	13	0.001	11	0.001	11	0.092	20
	(0.005)		(0.008)		(0.003)		(0.005)		(0.001)		(0.000)		(0.000)		(0.008)	
IS	0.241	3	0.122	9	0.035	15	0.048	15	0.001	2	0.000	2	0.001	2	0.025	3
	(0.007)		(0.010)		(0.004)		(0.006)		(0.001)		(0.000)		(0.000)		(0.006)	

Continued Table A1:

IT	0.310	21	0.184	26	0.066	28	0.115	29	0.007	19	0.002	18	0.002	18	0.099	22
	(0.002)		(0.004)		(0.002)		(0.004)		(0.001)		(0.000)		(0.000)		(0.003)	
LT	0.340	30	0.193	29	0.073	30	0.129	31	0.011	23	0.002	21	0.002	20	0.080	15
	(0.005)		(0.009)		(0.004)		(0.010)		(0.002)		(0.000)		(0.001)		(0.007)	
LU	0.272	13	0.140	18	0.028	10	0.035	11	0.005	11	0.001	12	0.002	13	0.119	29
	(0.004)		(0.007)		(0.002)		(0.002)		(0.001)		(0.000)		(0.001)		(0.005)	
LV	0.353	31	0.195	30	0.071	29	0.111	28	0.020	31	0.003	25	0.004	25	0.102	24
	(0.004)		(0.005)		(0.002)		(0.004)		(0.002)		(0.000)		(0.000)		(0.005)	
MT	0.269	11	0.130	13	0.027	9	0.033	8	0.007	16	0.001	8	0.001	8	0.076	14
	(0.004)		(0.006)		(0.002)		(0.002)		(0.001)		(0.000)		(0.000)		(0.005)	
NL	0.244	5	0.092	2	0.016	1	0.019	1	0.004	8	0.001	5	0.001	5	0.038	6
	(0.004)		(0.008)		(0.002)		(0.002)		(0.001)		(0.000)		(0.000)		(0.004)	
NO	0.221	1	0.092	1	0.023	3	0.032	5	0.002	4	0.001	4	0.001	4	0.031	5
	(0.005)		(0.008)		(0.003)		(0.004)		(0.001)		(0.000)		(0.000)		(0.005)	
PL	0.320	23	0.168	25	0.047	22	0.064	21	0.012	25	0.004	26	0.004	26	0.110	26
	(0.003)		(0.003)		(0.001)		(0.002)		(0.001)		(0.000)		(0.001)		(0.004)	
PT	0.332	28	0.153	21	0.042	20	0.056	19	0.018	30	0.005	29	0.005	29	0.092	21
	(0.005)		(0.006)		(0.002)		(0.003)		(0.002)		(0.001)		(0.001)		(0.006)	
RO	0.332	27	0.211	31	0.076	31	0.116	30	0.008	20	0.002	15	0.002	14	0.120	30
	(0.004)		(0.005)		(0.003)		(0.005)		(0.001)		(0.000)		(0.000)		(0.005)	
SE	0.237	2	0.136	16	0.043	21	0.090	25	0.001	1	0.000	1	0.000	1	0.022	1
	(0.013)		(0.021)		(0.010)		(0.028)		(0.001)		(0.000)		(0.000)		(0.010)	
SI	0.248	6	0.143	19	0.040	19	0.053	18	0.002	3	0.001	3	0.001	3	0.067	9
	(0.004)		(0.008)		(0.003)		(0.004)		(0.001)		(0.000)		(0.000)		(0.005)	
SK	0.259	10	0.127	12	0.036	17	0.050	17	0.004	6	0.001	9	0.001	10	0.062	8
	(0.003)		(0.004)		(0.002)		(0.003)		(0.001)		(0.000)		(0.000)		(0.004)	
UK	0.319	22	0.123	10	0.031	12	0.040	12	0.017	29	0.007	31	0.007	31	0.084	17
	(0.006)		(0.005)		(0.002)		(0.002)		(0.002)		(0.001)		(0.001)		(0.006)	

Note: All statistics refer to the equivalized disposable household income. Standard errors are calculated based on a bootstrap procedure with 500 draws and reported in parentheses.

Source: EU-SILC 2011 Cross-sectional (rev. 5 June 2015).