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Fairness in Europe: A Multidimensional Comparison

ABSTRACT

What is the status quo of fairness in Europe? To answer this question, we have calculated multidimensional equality of opportunity in income, education, and health for 29 European countries in 2019. Our results show that inequalities of opportunity in education and health are lower than in income. Furthermore, inequality of opportunity measures for these outcome dimensions are imperfectly correlated. This pattern has important implications for fairness comparisons across European countries. While the Scandinavian countries still emerge as the places with the most leveled playing field, the opportunity gap between Northern Europe and Southern Europe is much reduced when jointly considering income, education, and health.

Social justice is one of the dominant issues of our times that penetrates both public and political discourse (Dewar et al. 2017). In response, many governing bodies have adopted policy agendas that feature fairness as an overarching priority. For example, fairness is identified as a cross-cutting objective in both the European Pillar of Social Rights and the political priorities of the European Commission for the time period 2019–2024. In this paper we contribute to these debates by answering the following question: What is the status quo of fairness in Europe?

In order to provide such an assessment, we first need to delineate a reasonable conception of fairness. While there is plurality in fairness conceptions across individuals (Cappelen et al. 2007), the current academic literature suggests two broad features that we incorporate in our analysis.

First, most theories of distributive justice argue that we should not focus on overall inequality to make fairness assessments. Instead, these theories differentiate between fair and unfair inequality depending on the source of inequality. For example, if outcome differences were due to discrimination based on sex and race, they would be deemed unfair. In contrast, if outcome differences were due to different choices in labor hours, they would be deemed fair. This normative approach is oftentimes summarized under the label of "equality of opportunity" (Roemer 1998) and finds widespread support among academic philosophers (Rawls 1971a; Cohen 1989; Arneson 2018) and the general public (Cappelen et al. 2010; Almås et al. 2020; Hufe et al. 2021a).

Second, concerns about fairness pertain to multiple dimensions of life. While income and wealth feature prominently in public debates and academic research, other life outcomes are important as well. For example, many people value education and health independent of their impact on monetary resources (Oreopoulos and Salvanes 2011; Dewar et al. 2017). To consider such preferences, the influential report of the Stiglitz-Sen-Fitoussi commission advocates for abandoning the prevalent focus on monetary resources in favor of a broader perspective on individual well-being (Stiglitz et al. 2009).

In line with these considerations, we have conceptualized fairness as *multidimensional equality of opportunity.* In particular, we compared fairness in 29 European countries in 2019. Thereby, we focus on three important outcomes that feature prominently in conceptions of a "good life:" income, education, and health.[1]

Our findings can be summarized as follows. First, inequality of opportunity is higher in income than in education and health. Hence, an exclusive focus on income may give an overly pessimistic outlook on fairness in Europe. Second, the correlations between measures of inequality of opportunity in income, education, and health are far from perfect. Thus, a country offering relatively fair chances to earn high income

[1] For example, the Human Development Index (HDI) of the United Nations—the most prominent attempt at the country level of expanding the measurement of human well-being beyond GDP—comprises measures of the same three outcomes (http://hdr.undp.org/en/data).

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does not necessarily offer fair chances to acquire education and to maintain good health. Third, once we compute inequality of opportunity for the joint distribution of all three outcomes, fairness disparities between European countries decrease. Our results therefore suggest that an exclusive focus on income does not only give a pessimistic outlook on fairness but also overstates differences between countries in Europe.

MEASURING MULTIDIMENSIONAL INEQUALITY OF OPPORTUNITY

Following a large volume of philosophical literature (among others Rawls 1971b; Sen 1980; Roemer 1998), opportunity egalitarians distinguish fair from unfair inequality using the concepts of circumstances and effort. Circumstances are defined as all factors that cannot be influenced by individuals, like their sex, or the socio-economic status of their parents. To the contrary, efforts are under the partial control of individuals (Ooghe and Peichl 2010), like working hours and educational attainment. According to the opportunity egalitarian ideal, outcome differences due to heterogeneity in effort exertion are morally permissible, whereas differences due to circumstances are inequitable and call for compensation.

Measures of inequality of opportunity quantify the extent to which individual outcomes are predicted by circumstance characteristics. These measures are frequently constructed via a three-step procedure: First, one partitions the population into types such that all members of a type share the same circumstances. Second, one predicts the outcome of interest, such as income, education, or health, for each type. Third, one summarizes the resulting distribution by applying any inequality index, such as the Gini or the mean-log deviation. The resulting measure follows a simple logic: the more predicted outcomes diverge, the more circumstances beyond individual control influence outcomes, and the more inequality of opportunity there is.

Many studies have relied on similar strategies to estimate inequality of opportunity with respect to different life outcomes and in different societies across the globe—see Roemer and Trannoy (2016) or Ramos and Van de Gaer (2016) for recent overviews on this active literature. Common to these studies is their focus on a single life outcome, e.g., income in the majority of cases. In this paper, we depart from such prior work by considering the joint distribution of income, education, and health. In particular, we draw on recent work by Kobus et al. (2020) and Hufe et al. (2021b) who are the first to present a measure of multidimensional inequality of opportunity. The idea of the measure is as follows: First, one aggregates different outcomes via a utility function. Second, one predicts utility for each type. Third, one summarizes between-type inequality in utility by an inequality index. If every type achieves equal outcomes in each dimension, the measure is equal to zero, thus indicating perfect equality of opportunity. Conversely, if all resources are concentrated in the hands of just one type, the measure approaches one, thus indicating perfect inequality of opportunity. In general, the resulting measure has a very intuitive interpretation: It indicates the amount of resources society would be willing to sacrifice to achieve perfect equality of opportunity. For example, a value of 0.5 (0.25) implies that society would be willing to sacrifice 50 percent (25 percent) of its resources in every outcome dimension to attain perfect equality of opportunity.

DATA

We wanted to compare inequality of opportunity in Europe while accounting for the multidimensional nature of outcomes that contribute to well-being. Therefore, we required data that i) contains information on important life-outcomes, ii) contains information on the circumstance characteristics of individuals, and iii) provides this data for a wide range of European countries.

Data Source

The only data source satisfying criteria i)–iii) is the European Union Statistics on Income and Living Conditions (EU-SILC). EU-SILC is the official reference source for comparative statistics on income distribution and social inclusion in the European Union. Data is collected by national statistical agencies of participating countries and follows a common framework for variable definitions and collection procedures. Our analysis is based on EU-SILC 2019. In this year EU-SILC contained an ad-hoc module about the "Intergenerational transmission of disadvantages, household composition and evolution of income." This module collects detailed information on family background characteristics of individuals such as the occupation and education of their parents. In sum, EU-SILC con-

tains harmonized individual-level data on various life-outcomes, as well as individual circumstances for representative samples of 29 European countries.

Outcome Variables

We considered three variables that are informative for individual well-being: income, health, and education. Income was measured as annual disposable household income. We scaled all household incomes by the modified OECD equivalence scale and consistently expressed income in 2019 Euro. We measured education by the highest completed education program. This measure is expressed in six levels ranging from pre-primary education to tertiary education. This grouping follows the International Standard Classification of Education (ISCED 2011). Finally, we measured health by subjective general health status. Self-assessments of general health capture different health domains including physical, social, and emotional symptoms. In spite of their subjective nature, self-assessments are highly predictive of objective health criteria, including mortality (Idler and Benyamini 1997). Self-assessments were made on a 5-point Likert-scale and range from very bad to very good.

Circumstances

We considered three circumstance variables: gender, parental education (low, medium, high),[2] and parental occupation (low, medium, high).[3] For both parental education and occupation we recorded the highest category of both parents. As a result, we partitioned the population into 18 (= 2 x 3 x 3) circumstance types.

Sample Definition and Summary Statistics

We restricted our sample to the working age population (25–60). This ensured that most of the sample members have finished their education and are not retired. Furthermore, we list-wise deleted observations with missing information about the relevant circumstance and outcome variables. Furthermore, we dropped all observations with zero and negative incomes. We present summary statistics for each country in our sample in Table 1.

Table 1

Summary Statistics

Country	N	Income	Education	Health
Austria	5.144	31.381	3.7	4.1
Belgium	6.067	28.775	3.8	4
Bulgaria	6.432	6.147	3.3	3.9
Croatia	7.120	8.391	3.3	3.9
Cyprus	4.596	21.140	3.6	4.4
Czechia	5.205	12.028	3.5	4
Germany	7.791	29.656	3.9	3.9
Greece	14.377	9.517	3.3	4.5
Denmark	2.326	39.045	3.9	3.8
Estonia	5.813	13.846	3.8	3.7
Finland	4.431	32.890	4	4
France	8.369	27.244	3.6	3.9
Hungary	4.542	6.699	3.3	3.7
Ireland	3.513	32.801	4.1	4.3
Italy	15.859	21.655	3.2	4.1
Lithuania	3.049	10.191	4	3.5
Luxembourg	3.515	45.063	3.6	3.9
Latvia	3.666	10.056	3.7	3.5
Malta	3.576	18.979	3.1	4.1
Netherlands	5.346	30.747	3,8	4
Norway	2.731	46.482	3.9	4
Poland	15.592	8.162	3.5	3.8
Portugal	13.669	11.638	2.6	3.6
Romania	6.819	5.017	3.2	4.2
Slovenia	4.343	16.256	3.7	3.9
Slovakia	6.028	9.144	3.4	3,9
Spain	16.583	17.924	3.3	4
Sweden	2.576	30.387	4	4.1
Switzerland	5.460	54.692	4	4.2

Note: This table reports summary statistics for each country in our sample. Income is measured as equivalized disposable household income in 2019 Euro. Education (health) is measured on a scale 0–5 (1–5) with increasing values indicating higher education (better health).

Source: Authors' calculations based on EU-SILC (2019).

RESULTS

Our analysis proceeds in three steps. First, we describe cross-country differences in inequality of opportunity in Europe. This step allows us to assess which countries in Europe provide the most leveled playing field in income, health, and education. Second, we characterize correlations in inequality of opportunity across these three outcome dimensions. This step allows us to assess whether societies that are opportunity egalitarian in one outcome also provide a leveled playing field for other dimensions of life. Third, we analyze correlations between inequality of opportunity and total inequality in the different outcome dimensions. This step allows us to assess whether inequality goes hand in hand with inequality of opportunity and whether such associations differ across outcome domains.

Inequality of Opportunity in Europe

Figure 1 displays the level of inequality of opportunity in Europe for income, education, and health. In line with previous literature, Panel (a) shows that Scan-

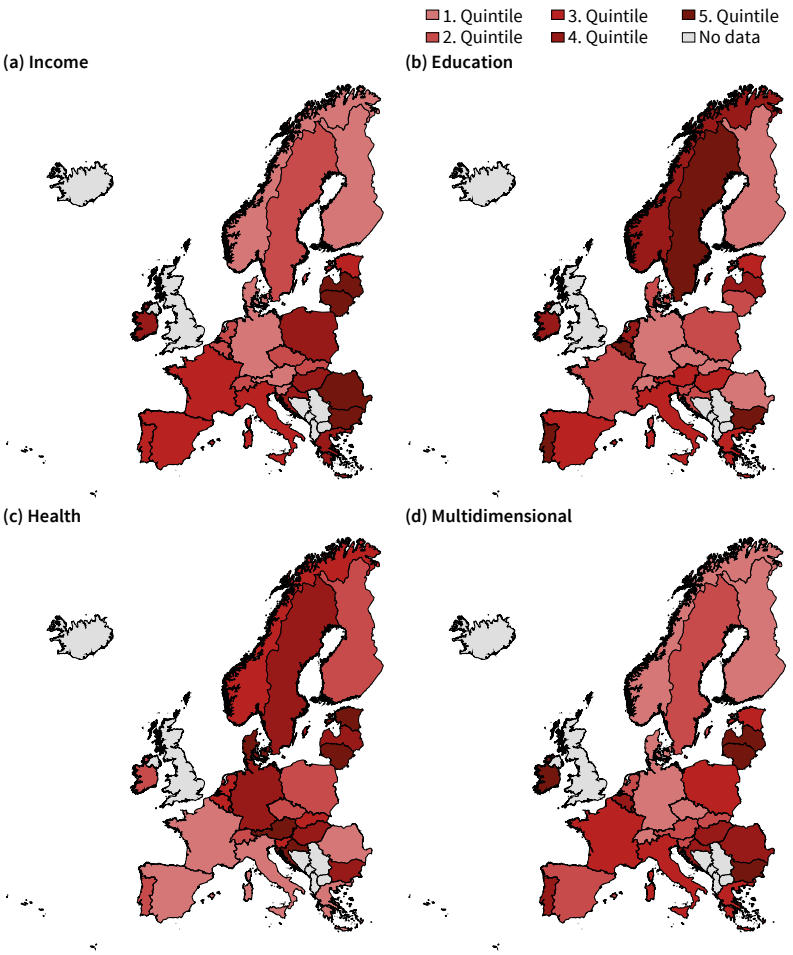
[2] Low: pre-primary, primary, or lower secondary education; medium: upper secondary and post-secondary non-tertiary education; high: first stage of tertiary education.

[3] Low: craft and related trades workers, plant and machine operators and assemblers, elementary occupations; medium: armed forces occupations, technicians and associate professionals, clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers; high: managers, professionals.

dinavian countries afford the most equal chances for income acquisition (Lefranc et al. 2008; Brunori et al. 2021). The most leveled playing field is found in Denmark. A measured value of 0.016 indicates that the Danish population would be equally well-off in an equal-opportunity society if such equalization came at the cost of a 1.6 percent reduction in average incomes. Next to Denmark, low levels of inequality of opportunity exist in Norway (0.025) and Finland (0.028). On the other side of the spectrum, we find Bulgaria. A measured value of 0.248 indicates that the Bulgarian population would be willing to forego 24.8 percent of its income if this reduction led to an opportunity-egalitarian society. Further countries with highly unequal opportunities for income acquisition include Luxembourg (0.118) and Lithuania (0.115).

Panel (b) displays estimates of inequality of opportunity in education. Clearly, countries which rank high in income do not necessarily do so in education. For example, with respect to education the Scandinavian countries perform worse than the EU average. This result is consistent with recent work by Heckman and Landersø (2021), who show that the influence of family background characteristics on important educational outcomes in Denmark is about as strong as it is in the United States. However, in turn, Denmark manages to level the playing field in the income domain through its generous welfare state programs. In our sample, the most leveled playing fields for acquiring education are found in Germany (0.055), Slovakia (0.056), and the Czechia (0.057). The countries where chances to obtain a good education are least equally distributed are Luxembourg (0.135), Bulgaria (0.132), and Portugal (0.099).

Figure 1
Inequality of Opportunity in Europe



Note: This figure shows cross-country differences of inequality of Opportunity in Europe. Panels (a), (b) and (c) show the results for unidimensional outcomes. Panel (d) shows results for the joint distribution of income, education, and health. Inequality of opportunity estimates are based on the measure proposed in Kobus et al. (2020). In each panel, point estimates are grouped into quintiles, where first (firth) quintile contains countries with the lowest (highest) estimates of Inequality of Opportunity.
Source: Authors' calculations based on EU-SILC (2019).

Panel (c) shows that a yet different ranking of countries emerges in the health domain. Inequality of opportunities are lowest in Italy (0.009), Spain (0.009), and Greece (0.010). In contrast, the worst-performing European countries are Lithuania (0.054), Denmark (0.031), and Croatia (0.028). In general, inequality of opportunity levels in self-assessed health are lower than in income and education.

Our estimates show that equality of opportunity is multifaceted. For example, on the one hand the Scandinavian countries indeed provide close to equal chances for income acquisition independent of socio-economic backgrounds. On the other hand, educational attainment and good health are more stratified by circumstantial factors than in other European countries. Hence, cross-country comparisons based on unidimensional comparisons may paint a misleading picture about the status quo of fairness in Europe.

In response, we have computed multidimensional estimates of inequality of opportunity. To perform these calculations, we assumed that individuals attach equal value to all three outcomes. Panel (d) shows the results. The countries with the least tilt in the playing field are Finland (0.033), Norway (0.035), and Denmark (0.036). The most unequal distribution of chances to achieve high income, education, and health are found in Bulgaria (0.147), Luxembourg (0.097), and Lithuania (0.083).

Correlation of Inequality of Opportunity across Life Outcomes

The graphical evidence in Figure 1 demonstrates that an even playing field in one dimension does not rule out an uneven playing field in other dimensions. Therefore, we now investigate the correlation between the different measures in more detail. Table 2 displays the cross-country correlation for all measures of inequality of opportunity considered in Figure 1.

On the one hand, we find a large and positive correlation between income and education (0.566). This pattern is consistent with the fact that a large share of income inequality is shaped by returns to education (Carneiro et al. 2011). Yet, even the correlation among these dimensions is far from perfect. On the other hand, unequal opportunities in health

seem to be completely unrelated to unequal opportunities in income and education. This pattern explains that differences in inequality of opportunity across Europe are more attenuated in the multidimensional setting than in any unidimensional comparison (see Figure 1). Consider again the example of Scandinavia: for a comprehensive assessment of fairness relatively equal opportunities for income acquisition have to be weighed against relatively unequal opportunities for educational attainment and good health. As a result, fairness assessments of Scandinavia move closer to the remainder of Europe than a comparison based on incomes would suggest.

Correlation of Inequality and Inequality of Opportunity

We finally ask how the level of inequality of opportunity in a country relates to total inequality. Various papers have pointed to the positive association between income inequality and intergenerational immobility, where the latter is often interpreted as a proxy measure of inequality of opportunity. This empirical regularity has attained prominence in public discourse under the label “Great Gatsby Curve” (Corak 2013). In Figure 2 we show “Great Gatsby Curves” for all outcomes considered in this work. In each panel we plot total inequality on the y-axis against inequality of opportunity on the x-axis.[4]

Panel (a) replicates previous findings showing a positive relationship between total inequality in income and inequality of opportunity. Panels (b) and (c) show similar relationships for education and health. As a consequence, it is also the case that higher multidimensional inequality is indicative of higher multidimensional inequality of opportunity, and thus higher levels of unfairness in society. The multidimensional "Great Gatsby Curve" has a slope of 1.07, i.e., a one unit increase in multidimensional inequality of opportunity is associated with a 1.07 increase in multidimensional inequality. Lookin at all outcomes separately, it is interesting tha the "Great Gatsby Curves" in health (1.48) and education (2.04) are steeper than in income (1.03).

CONCLUSION

Many researchers equate fairness with equal opportunities for income acquisition. However, other life outcomes like education or health are important in their own right and far from perfectly correlated with the former. As a consequence, comparative fairness assessments based on unidimensional comparisons may lead to false conclusions. In this article, we address this concern by characterizing *multidimensional inequality of opportunity* for 29 European countries in 2019.

Our results show that inequalities of opportunity in education and health are lower than in income. Furthermore, the correlations between the different statistics are far from perfect. As a consequence, fairness disparities between European countries are much reduced if we focus on multidimensional comparisons. While the Scandinavian countries still emerge as the places with the most leveled playing field, the opportunity gap between Northern Europe and Southern Europe is much reduced when jointly considering income, education, and health.

The statistics presented in this work focus on disparities within countries. As the social and economic ties of European countries grow stronger, one may argue for the European distribution of outcomes as the appropriate target for fairness assessments and subsequent policy intervention. From such a perspective,

Table 2

Correlation between Inequality of Opportunity Measures

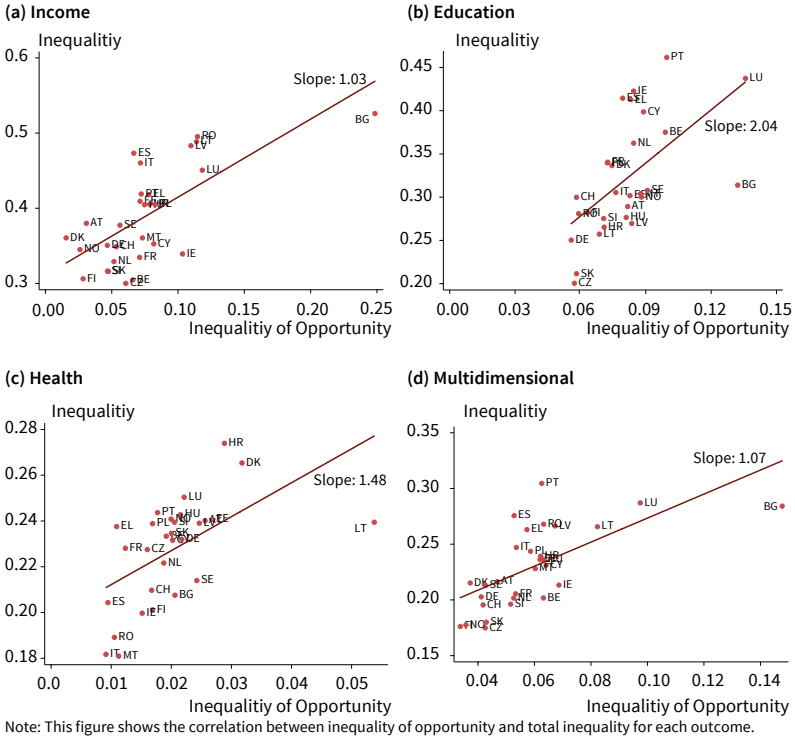
	Income	Education	Health
Income	1	–	–
Education	0.566	1	–
Health	0.059	0.007	1

Note: This table shows cross-country correlations of inequality of opportunity measures across dimensions. Inequality of opportunity estimates are based on the measure proposed in Kobus et al. (2020). All correlations are based on Pearson correlation coefficients.

Source: Authors' calculations based on EU-SILC 2019.

Figure 2

Great Gatsby Curve



Note: This figure shows the correlation between inequality of opportunity and total inequality for each outcome. Inequality of opportunity and total inequality estimates are based on the measure proposed in Kobus et al. (2020).
Source: Authors' calculations based on EU-SILC (2019). © ifo Institute

[4] Inequality of opportunity is measured based on the index proposed in Kobus et al. (2020)—see Section 2. Total inequality is measured by the same index but instead of defining 18 types based on circumstances, we assume that each observed individual is its own type. As a consequence, the index captures all inequality between in the outcome dimensions.

Table 3

Country Ranks and Point Estimates

Country	Multidimensional		Income		Education		Health	
	Rank	IOp	Rank	IOp	Rank	IOp	Rank	IOp
Finland	1	0.033	3	0.028	6	0.063	10	0.016
Norway	2	0.035	2	0.025	23	0.088	16	0.020
Denmark	3	0.036	1	0.016	12	0.074	28	0.031
Germany	4	0.040	5	0.045	1	0.055	21	0.021
Switzerland	5	0.041	8	0.053	4	0.058	9	0.016
Sweden	6	0.042	10	0.056	25	0.091	23	0.022
Czechia	7	0.042	11	0.060	3	0.057	8	0.015
Slovakia	8	0.043	7	0.047	2	0.056	15	0.019
Austria	9	0.046	4	0.031	16	0.081	25	0.025
Slovenia	10	0.051	6	0.046	8	0.070	18	0.020
Netherlands	11	0.052	9	0.054	20	0.084	14	0.019
Spain	12	0.053	13	0.067	14	0.079	2	0.009
France	13	0.053	14	0.070	10	0.072	6	0.012
Italy	14	0.053	16	0.072	13	0.076	1	0.009
Greece	15	0.057	20	0.078	18	0.083	3	0.010
Poland	16	0.058	23	0.083	11	0.072	11	0.016
Malta	17	0.060	18	0.072	22	0.087	5	0.011
Estonia	18	0.061	15	0.070	17	0.082	26	0.026
Croatia	19	0.062	21	0.079	9	0.070	27	0.028
Portugal	20	0.062	17	0.072	27	0.099	12	0.017
Hungary	21	0.063	19	0.074	15	0.080	20	0.021
Romania	22	0.063	26	0.114	5	0.059	4	0.010
Belgium	23	0.063	12	0.066	26	0.098	13	0.019
Cyprus	24	0.064	22	0.081	24	0.089	17	0.020
Latvia	25	0.067	25	0.110	19	0.083	24	0.025
Ireland	26	0.068	24	0.103	21	0.084	7	0.015
Lithuania	27	0.083	27	0.115	7	0.069	29	0.054
Luxembourg	28	0.097	28	0.118	29	0.135	22	0.022
Bulgaria	29	0.147	29	0.248	28	0.132	19	0.020

Note: This table reports point estimates of four inequality of opportunity measures—multidimensional, income, education, and health, respectively. It also shows country rank for a specific inequality of opportunity measure. Countries are ordered based on their point estimate rank of multidimensional inequality of opportunity. Income is measured as equivalized disposable household income in 2019 Euro. Education (health) is measured on a scale 0–5 (1–5) with increasing values indicating higher education (better health).

Source: Authors' calculations based on EU-SILC (2019).

multidimensional inequality of opportunity as presented in this work may mask important cross-country disparities. We contend that such a perspective may provide interesting insights and leave such explorations for future work.

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