

## 4. Has the public opinion become more divided?

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This chapter goes beyond country-level averages to look at the entire distribution of people's perceptions of and levels of concern about economic inequalities in different countries. In most, it finds, public opinion is deeply divided with perceptions of inequality widely dispersed from very low to very high. Such dispersion can only be partially explained by standard socio-economic divides across income, education, employment status, gender, age and household size. In some instances, the dispersion of perceptions and concern becomes polarization between groups with starkly different views. Both dispersion and polarization of perceived disparities and concern have grown steeply over time. Higher levels of observed inequality are associated not only with greater perceived disparities and concerns, but with a more divided public opinion.

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## 4.1. The dispersion of perceptions and concern

### *Perceptions are widely dispersed and polarised*

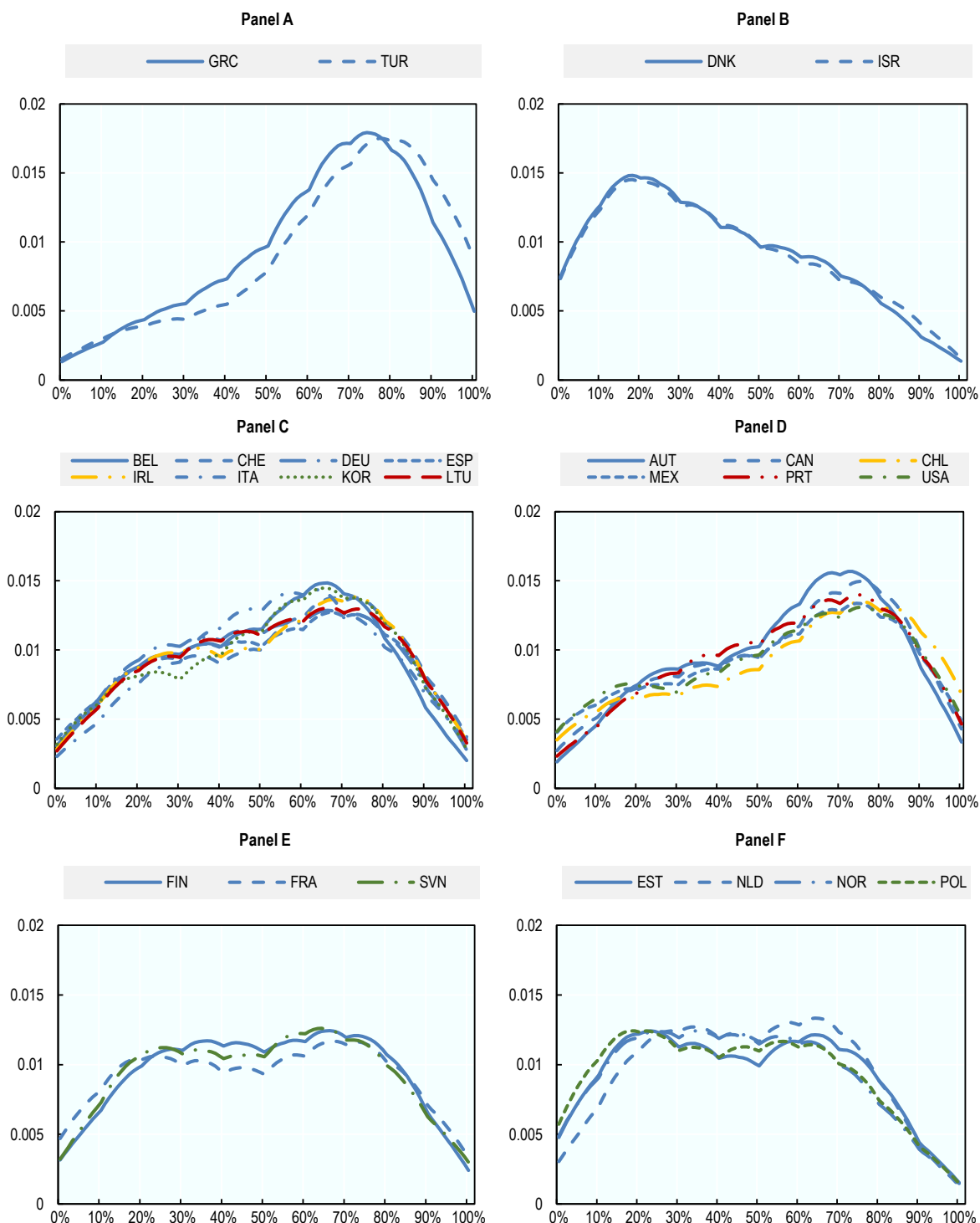
While people OECD-wide perceive high average levels of inequality, public opinion within countries is deeply divided. The distribution of the perceived income shares of the richest 10% in each country (Figure 4.1) reveals that perceptions range widely, from extremely low to extremely high. This dispersion in perceived and preferred disparities points to the scale of disagreement about inequality between citizens of the same country. Analysing it is important, because social tensions can arise not just when large groups of individuals demand more equality, but when people strongly disagree with each other about what current levels of inequality are and should be.

The extent of disagreement, reflected in the dispersion of perceptions, varies from country to country. In only a few is there a relatively strong consensus as to the richest 10%'s share of income – whether perceived to be high as in Greece and Turkey (Figure 4.1, Panel A) or low, like in Denmark and Israel (Panel B). In most countries, sizeable groups view inequality as substantial. But a large minority harbours perceptions of lower inequality (Panels C and D) that are not clustered at particular levels, but scattered across the distribution.

In a smaller subset of countries, there is no single peak in the distribution, but two groups of respondents who agree on either low or high levels of inequality. The presence of distinct groups whose views are far apart but who both show strong internal consensus is a sign of the polarisation of perceptions (Duclos, Esteban and Ray, 2004<sup>[1]</sup>; Osberg and Smeeding, 2006<sup>[2]</sup>). Two groups with high and low levels of perceived inequality are to be found in Estonia, France, Finland, the Netherlands, Norway, Poland, and Slovenia (Panels E and F).

**Figure 4.1. In most countries, people’s perceptions of inequality are strongly dispersed across a wide range of values**

Estimated density distributions of the perceived shares of the country’s total income that goes to the 10% richest households, year 2020



Note: The plots show the probability density functions for the perception of the country’s total income going to the richest 10% households, as estimated through the kernel density estimation.

Source: OECD calculations from the 2020 Risks that Matter Survey.

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### ***Most disagreement is between people with similar socio-economic characteristics***

The dispersion in perceptions of inequality can be explained only partly by differences across standard socio-economic groups, as defined by income, education, employment status, gender, age and household size. Indeed, divisions of opinion along these traditional lines are relatively narrow in most countries, even though views of equality are widely scattered. People belonging to the top income tertile believe that the richest 10%'s income share is lower than the poor do, though the difference is quite small – less than 5 percentage points (Table 4.1). In some countries, the rich actually perceive wider disparities, as in Austria, France, Korea, and Turkey. The unemployed, too, tend to think disparities are wider, although employment status matters only in a handful of countries, like Chile, Denmark and Slovenia.


**Table 4.1. On average, differences in perceived income inequality across socio-demographic groups are slight**

Differences between socio-economic groups in perceptions of richest 10%'s income share

	Education	Income		Employment status	Gender	Age		Household size	
	Tertiary vs lower	Middle vs bottom tertile	Top vs bottom tertile	Not empl. vs empl.	Female vs male	Prime age vs. young	Senior vs. young	3-4 vs 1-2 members	5+ vs 1-2 members
OECD 25	=	-	-	+	-	+	+	-	=
Austria	=	=	+	=	-	++	++	=	++
Belgium	=	=	--	=	=	=	+	=	=
Canada	=	=	-	=	=	=	=	=	=
Switzerland	=	=	=	=	-	=	=	-	=
Chile	-	=	--	++	+	=	=	=	=
Germany	++	=	=	=	--	=	+	=	=
Denmark	=	-	=	++	=	=	=	=	=
Spain	=	=	-	=	=	=	--	=	=
Estonia	=	=	--	=	-	++	+++	=	=
Finland	-	-	=	=	-	++	++	=	=
France	=	=	+	=	--	=	=	-	--
Greece	=	=	-	=	=	++	++	+	=
Ireland	=	=	=	=	--	=	++	-	--
Israel	=	=	--	=	=	+	+	=	=
Italy	=	=	=	=	=	=	=	=	=
Korea	++	=	++	-	---	=	++	=	=
Lithuania	=	=	=	=	-	=	++	-	=
Mexico	=	=	--	=	=	+	=	=	=
Netherlands	=	=	=	=	--	=	=	=	=
Norway	--	-	--	=	=	=	=	=	=
Poland	=	-	=	=	=	=	=	=	=
Portugal	=	=	=	=	=	=	=	+	++
Slovenia	=	-	=	+	=	=	++	-	=
Turkey	++	-	+	=	+	++	+++	=	=
United States	++	=	=	=	=	=	--	=	=

Note: The signs indicate whether the difference between the two groups is positive or negative. "+" (or "-") indicates that the difference is positive (or negative) and less than 5 percentage points; "++" (or "--") if it is up to 10 percentage points; "+++ (or "---") if it is more. "=" indicates differences not statistically different from 0 (less than at the 5% level), regardless of the value of the difference "Prime age" refers to the 30-50-year-olds and "senior" to 50-64-year-olds.

Source: OECD calculations from the 2020 Risks that Matter Survey.

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Gender is also a factor. In Germany, Korea, France, the Netherlands and Ireland, women perceive much lower concentrations of income at the top of the distribution than men (by up to 10 percentage points), while the opposite is true in Chile and Turkey. However, in half of OECD countries, women and men generally express similar views on income inequality. Perceptions also vary little with educational attainment. Only in the United States, Turkey, Korea and Germany do respondents educated to tertiary level perceive significantly wider income disparities than the less well educated – again by as much as 10 percentage points. As for age, older respondents generally perceive higher income disparities than the young, with the generation gap especially pronounced in Estonia and Turkey. Only older American and Spanish respondents perceive less income inequality than their younger compatriots (by more than 5 percentage points).

**Table 4.2. In some countries, stark divides in perceived intergenerational persistence exist among people with different educational attainment levels**

Differences between socio-economic groups in the perceived bottom 10% income intergenerational persistence

	Education	Income		Employment status	Gender	Age		Household size	
	Tertiary vs Lower	Middle vs Bottom tertile	Top vs Bottom tertile	Not empl. vs Empl.	Female vs Male	Prime Age vs. Young	Senior vs. Young	3-4 vs 1-2 members	5+ vs 1-2 members
OECD 25	+	=	+	+	+	+	=	=	=
Austria	++	=	=	=	=	=	--	=	=
Belgium	+++	=	=	-	=	=	=	=	=
Canada	=	=	=	=	=	=	=	=	=
Switzerland	=	=	=	=	=	=	=	=	=
Chile	++	=	++	=	+	--	--	=	=
Germany	=	=	=	=	=	=	=	=	=
Denmark	++	=	=	+	+	=	=	=	=
Spain	=	=	=	=	=	=	=	=	=
Estonia	=	=	=	=	=	=	++	=	=
Finland	=	=	=	=	+	=	=	-	--
France	++	=	=	=	-	=	=	=	=
Greece	=	=	=	=	=	=	=	=	=
Ireland	++	=	++	=	+	=	=	--	=
Israel	++	++	++	=	=	=	=	=	=
Italy	+	=	=	+	=	---	--	+	=
Korea	=	=	=	=	--	=	=	=	=
Lithuania	=	=	=	=	+	=	+	-	=
Mexico	=	=	=	=	=	=	++	=	=
Netherlands	+	=	+	=	=	=	=	=	=
Norway	++	=	=	--	+	+++	++	=	=
Poland	=	=	=	=	=	=	=	=	=
Portugal	+	-	=	=	=	=	=	=	+++
Slovenia	+	=	=	=	+	=	=	=	=
Turkey	+++	=	++	+	+	++	++	=	=
United States	++	=	=	=	=	=	=	=	=

Note: Perceived intergenerational persistence among the poorest 10% refers to the chances that a child from the 10% of lowest-income households will still be living in a poor household once an adult. The signs indicate whether the difference between the two groups is positive or negative. "+" (or "-") indicates that the difference is positive (or negative) and less than 5 percentage points; "++" (or "--") if it is up to 10 percentage points; "+++"; (or "---") if it is more. "=" indicates differences not statistically different from 0 (less than at the 5% level), regardless of the value of the coefficient. "Prime age" refers to 30-50-year-olds and "senior" to 50-64-year-olds.

Source: OECD calculations from the 2020 Risks that Matter Survey.

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Differences between traditional socio-economic groups are slightly wider when it comes to perceived intergenerational persistence. For example, the highly educated (Table 4.2) are particularly pessimistic about intergenerational mobility in the USA, Belgium and Turkey. Women, too, though more moderately so – 5 percentage points less than men. Differences in perception by income group are small and not significant in most countries. There are, however, some exceptions. In Chile, Turkey, Ireland, and Israel the higher income classes express considerably gloomier views of social mobility than poorer respondents. Similarly, although age differences are usually negligible, the under-30s in Chile and Italy have remarkably less faith in social mobility than older respondents – which points to a pervasive sense among the young of lack of opportunity. The opposite is true in Mexico, Turkey, Estonia and Norway.

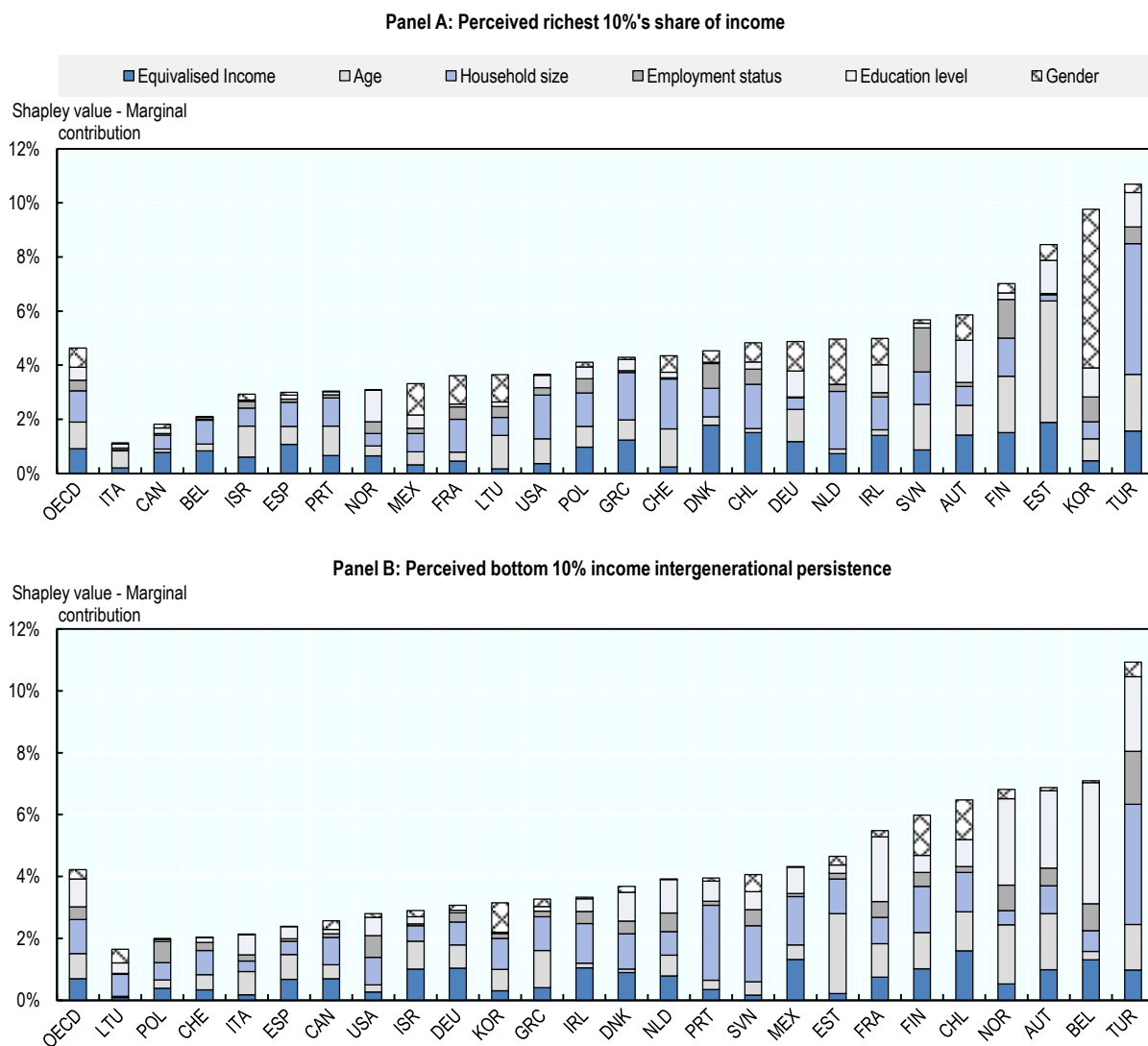
Overall, differences between traditional socio-economic groups account for a small share of total dispersion in perceptions of inequality and social mobility (Figure 4.2). That share can be measured by breaking down the total variance in perceptions into:

- a between-group component, which captures how much of the total dispersion is due to differences between socio-demographic groups;
- a within-group component, which measures the dispersion of perceptions within classic socio-economic groups (income, education, gender, age and household size).

With some exceptions, the between-groups component explains no more than 5% of the total variance, so perceptions differ widely within groups. In other words, there are high levels of disagreement between people with similar socio-demographic characteristics.

**Figure 4.2. Only in a few countries do the differences between socio-demographic groups account for more than 5% of the total dispersion of perceptions**

The share of differences in perception between socio-demographic groups to the overall dispersion of perceptions



Note: The total in each bar represent the share of the overall dispersion of perceptions – measured by variance – which can be attributed to differences in perceptions over groups defined by socio-economic characteristics. Each segment in each bar refers to the difference between socio-economic groups – for instance, the segment that denotes “income” refers to contribution of differences in perceptions between rich and poor to the total dispersion of perceptions. The bars’ totals represent the total R-squared values for the linear regression of perceived top 10% income share and perceived bottom 10% income intergenerational persistence on socio-demographic covariates in each country. See Ciani et al. (forthcoming<sup>[3]</sup>) for a discussion of the decomposition.

Source: OECD calculations from the 2020 Risks that Matter Survey.

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Only in a few countries do differences between groups account for sizeable shares of the total dispersion of perceptions. Korea’s wide gender perception gap, with women believing there is greater inequality, accounts alone for 6% of total dispersion. In Estonia, older respondents consistently take much more negative views of both income disparities and intergenerational mobility. As for household size, it matters in most countries, particularly in Turkey. There, households with 2 members or less and those with more than 5 members perceive high levels of inequality after accounting for other socio-economic characteristics. (Note that this difference by household size is not picked up without accounting for other

characteristics, as in Table 4.1 and Table 4.2). One explanation could be that household size correlates with other beliefs and regional factors that are not accounted for.

The conclusion that dispersion within rather than between socio-demographic groups explains the lion's share of country-wide variation in perceptions comes with two possible caveats.

- People in the same group may actually agree with each other but report different figures. In other terms, perceptions are measured with some degree of error and this error contributes to the dispersion. However, the analysis in Section 3.2 shows that differences in perceptions do help explain demand for redistribution on top of socio-demographic differences.
- Self-defined social class status matters in addition to characteristics such as income and education. However, if it is included together with the other variables in calculations (Figure 4.2), the thus explained share of the total dispersion does not rise, because self-defined social class only reduces the importance of other socio-economic characteristics.

### ***The extensive disagreement in perceptions translates into concern***

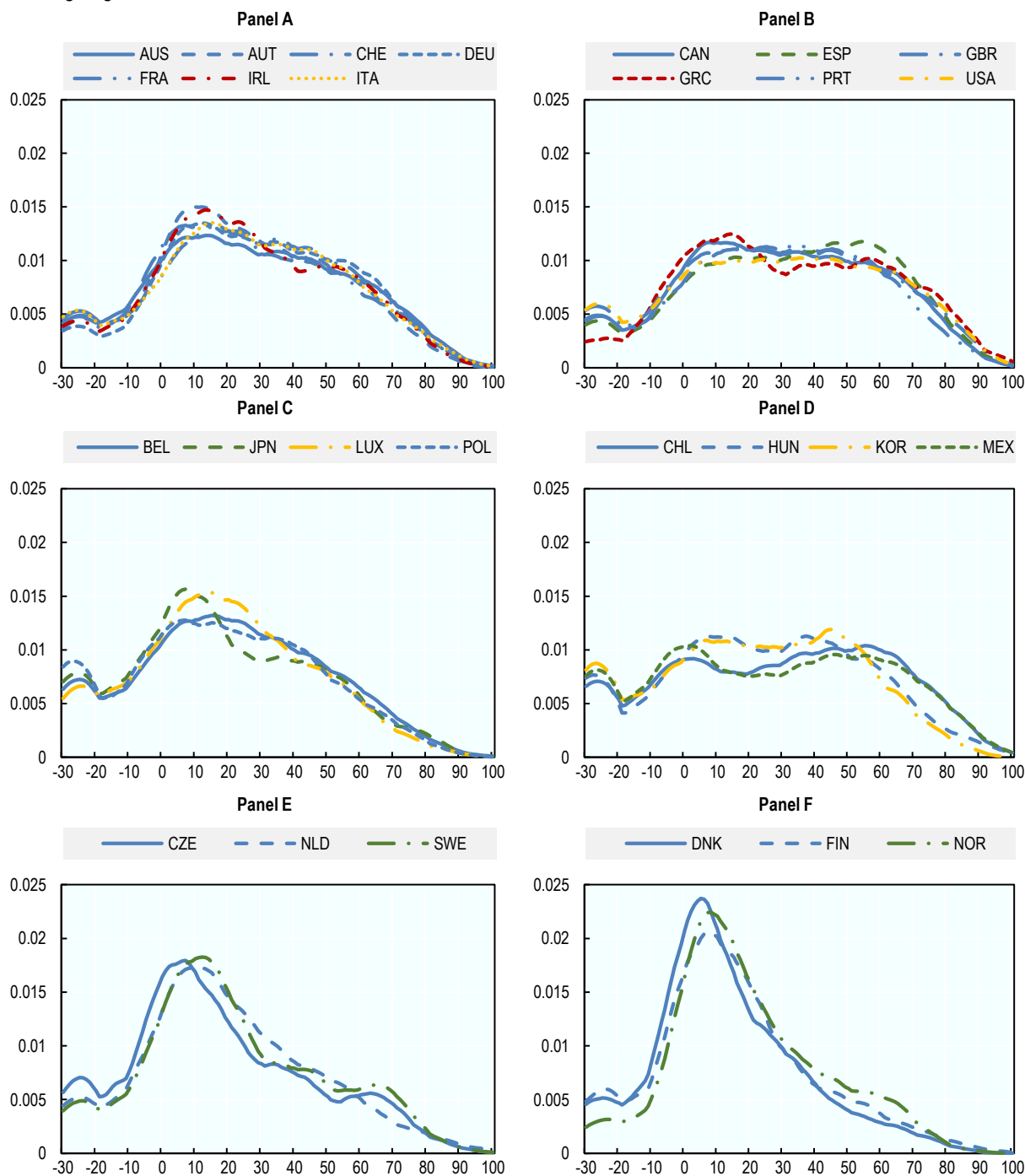
Widely scattered differences of perception do not necessarily indicate that concern, i.e. the gap between perceived and preferred disparities, is widely dispersed, too. If preferred disparities fully mirrored perceived disparities, the gap between the two would be the same for everybody. And there would be no disagreement between people as to the extent of inequality that exceeds their preferences. However, data from Compare your Income (Figure 4.3) show that concern – as it relates to the gap between the perceived and preferred income shares of the richest 10% – is widely dispersed within countries (Balestra and Cohen, (forthcoming<sup>[41]</sup>)).

A look at the country-wide distribution of concern (Figure 4.3) reveals a small but non-negligible group of respondents in most countries who believe that the richest 10%'s income share is actually smaller than it should be (Panels A, B and C and Norton and Ariely (2011<sup>[5]</sup>)).<sup>1</sup> It is followed by a group, whose size varies from country to country and who believe that the level of inequality is very much what it should be. There is then a long tail of respondents who find the current level of top incomes too high. Only in a few countries does the distribution appear to be polarised – Chile, Hungary, Korea and Mexico (Panel D) – with an additional set of respondents distinguished by the very wide gap that separates their perceived and preferred richest 10%'s income shares. The Scandinavian countries and the Czech Republic emerge in this context with fairly cohesive public opinion, as a very large group of respondents believe there is some, but not much, inequality in excess of what it should be (Panels E and F).



**Figure 4.3. Concern about the extent of income inequality is also strongly dispersed over a wide range of values**

Estimated distribution of the gap in percentage points between perceived and preferred share of the country's total income going to the 10% richest households, 2015-2020



Note: The distributions have been censored at -30 for presentational purposes – those who believe that the perceived top income share is lower than 30 percentage points with respect to their preferred value are included along with the -30. This generates a peak in the distribution at lower values, which is due only to the censoring. The plots show the probability density functions for the perception of total income going to the richest 10% households estimated through the kernel density estimation.

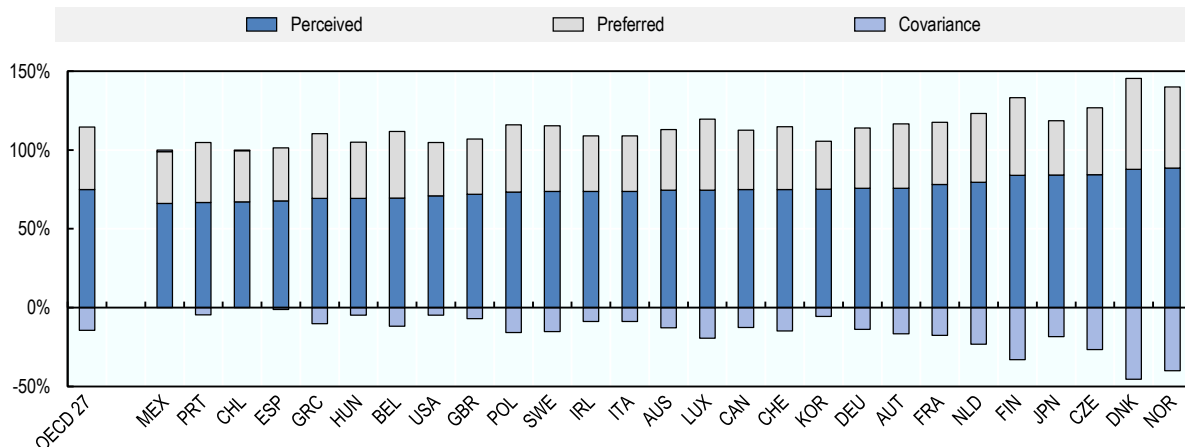
Source: OECD calculations from Compare your Income 2015-20 (Balestra and Cohen, forthcoming<sup>[4]</sup>).

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In all countries preferred richest 10%'s shares of income are less dispersed than perceived ones. The inference is that people tend to be more in agreement as to what income inequality should be, rather than what it currently is. It follows that most of the disagreement in concern (i.e. the gap between perceived and preferred inequality) stems from differences in perceptions across people (Figure 4.4). OECD-wide, the dispersion in perceptions of the richest 10%'s income share contributes to more than two-thirds of the total variance in concern over high income inequality.<sup>2</sup>

**Figure 4.4. Most of the dispersion in concern over the income share of the richest 10% share stems from differences in perceptions**

Contribution to the total variance of concern about the richest 10%'s share of income



Note: Concern is captured by the percentage point gap between perceived and preferred shares of a country's total income going to the top 10% richest households. The total variance can be broken down into the variance of perceived shares, the variance of preferred shares, minus twice the covariance of perceived and preferred shares. With few exceptions, covariance is close to zero or positive. When it is positive, it means that people who report high perceived shares also report higher preferred shares. This makes the distance between perceived and preferred more similar across people who hold different perceptions.

Source: OECD calculations from Compare your Income, 2015-20 (Balestra and Cohen, forthcoming<sup>(4)</sup>).

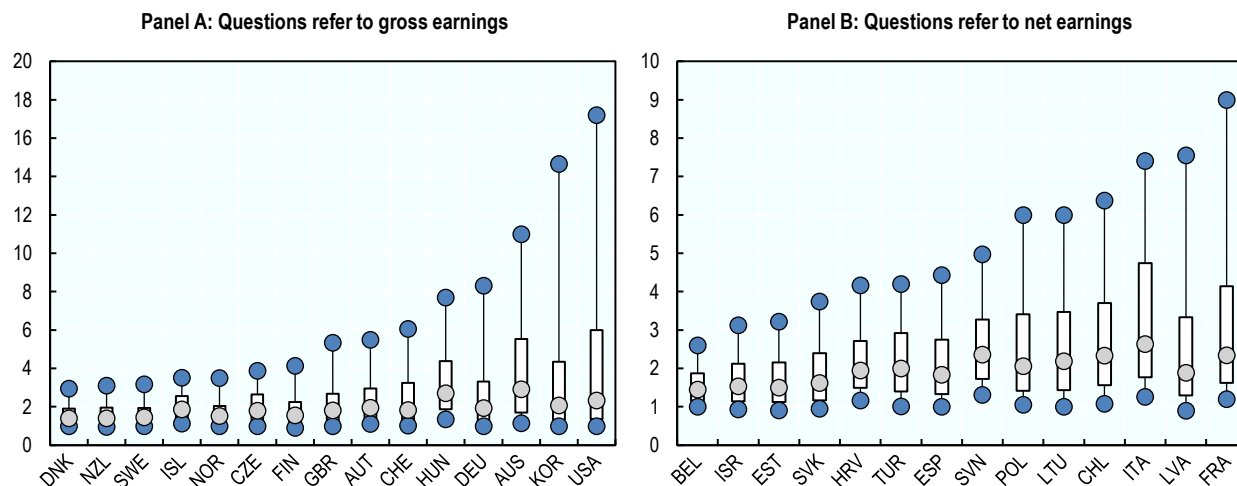
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Concern over the extent of earnings disparities within countries is also widely dispersed, as the ratio of perception-to-preference shows (Figure 4.5). Countries are split into two groups, according to whether respondents' perceived and preferred earnings are collected gross or net of taxes and social security contributions, as gross and net change the dispersion of perceptions.<sup>3</sup>

Analysis of the gross earnings group in the United States reveals that, for 10% of respondents' earnings, disparities are narrower or equal to their preferences – the 10th percentile of the distribution of concern. Another 10%, above the 90th percentile, believe that perceived disparities are at least 17 times what they deem fair. In Denmark, by contrast, perceptions at each end of the spectrum harbour do not diverge as widely: the 90th percentile perceives disparities that are only 3 times greater than preferences. Cross-country differences in dispersion are also strong in the net earnings group.

**Figure 4.5. Concern about the top-bottom earnings ratio is also highly dispersed**

Distribution of the perceived top-bottom earnings ratio divided by the preferred ratio: blue dots denote the 10th and 90th percentiles, the rectangle the 25th and 75th percentiles, while the grey dot is the average



Note: The figure plots how much larger respondents think the current level of earnings disparities is compared to what they believe it should be, at different points across the entire distribution of answers. For instance, in the United States the median respondent believes that the top-bottom earnings ratio is twice the one what she would prefer it to be, while the respondent at the 90th percentile believes that it is almost 18 times greater.

Source: OECD calculations from ISSP 2009.

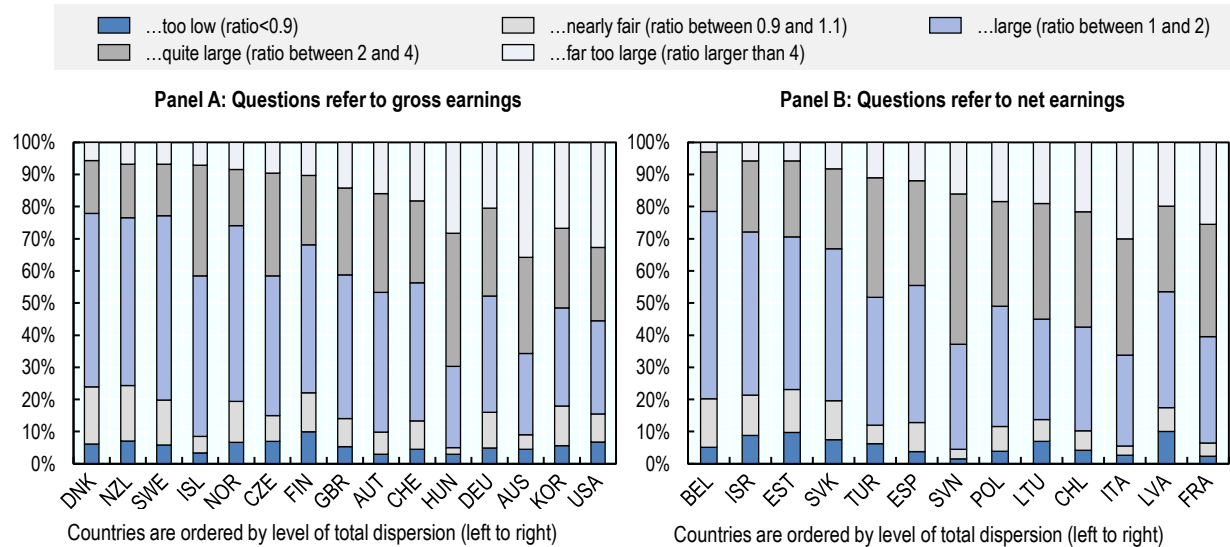
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In all countries, there is a non-negligible group of respondents whose perceptions of disparities are similar to their preferences (Figure 4.6). Countries with the lowest dispersion of perceptions feature large, cohesive groups of respondents who believe that the current level of inequality is wider than their preferences, but not excessively so. In some cases, low-dispersion countries have smaller groups of respondents whose preferences reflect the status quo (e.g. Iceland).

In countries where concerns are more widely dispersed, there is a pronounced gap between proponents of the status quo and respondents who believe inequality is large-scale, and there is a bigger group with a perception/preference ratio of 4 or more. In some instances, particularly in Korea and the United States, there is still a large share of pro-status-quo respondents, which spells wide polarisation.

**Figure 4.6. In countries where concern is less dispersed, many believe that earnings disparities are large, but not excessively so**

Share of respondents by level of concern over top-bottom earnings disparities, i.e. how much larger the perceived ratio is than the preferred ratio



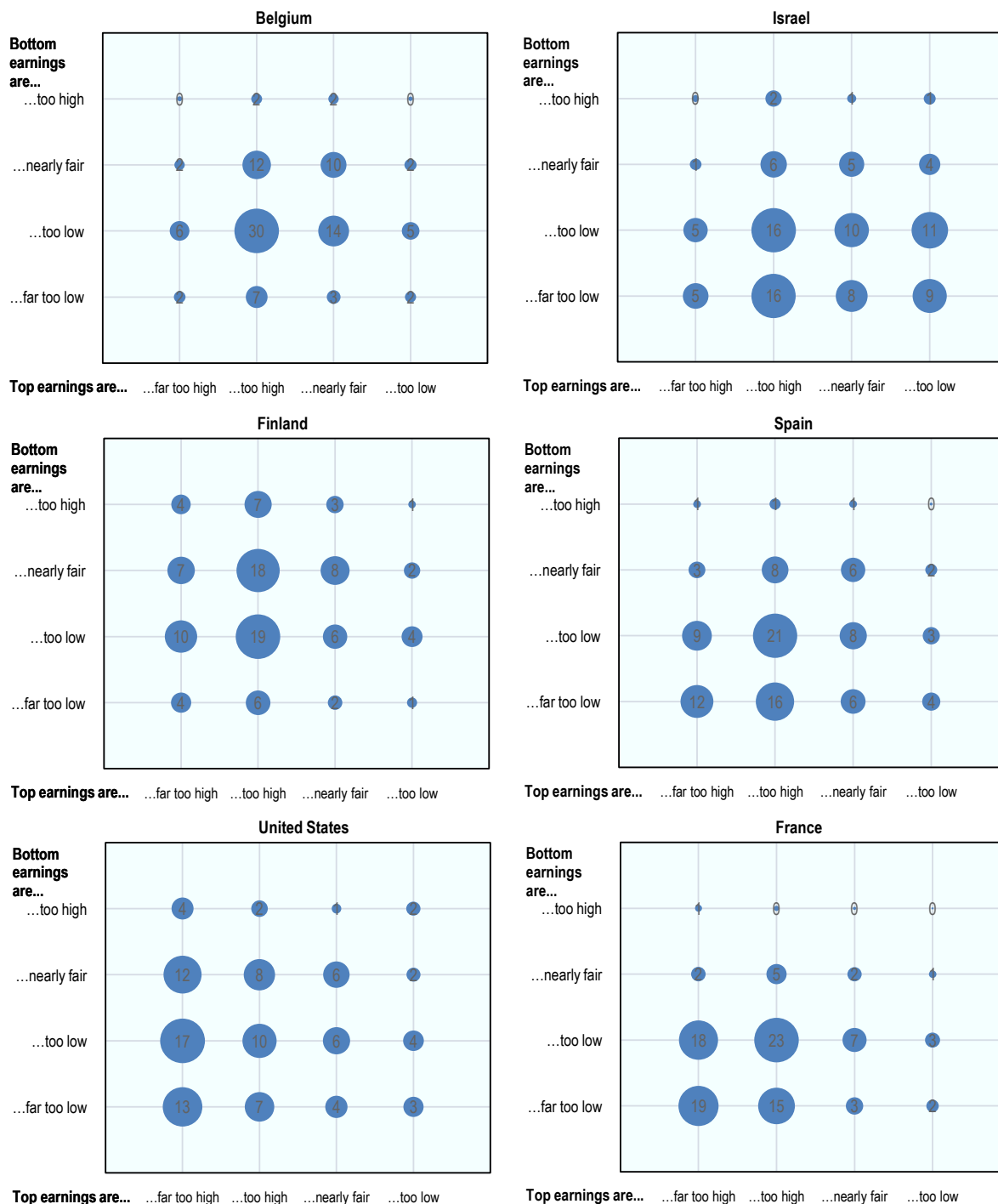
Source: OECD calculations on ISSP 2009.

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People also disagree extensively about whether top earnings are too high or bottom earnings too low. Disagreement is illustrated by the respondents in different groups who differ in their perception of current levels of top and bottom earnings and what they believe they should be – their preferences (Figure 4.7). The countries analysed are chosen from the bottom, middle and top of the dispersion. The overall cross-country trend points to often strong disagreement about top earnings, which is consistent with previous findings (Kelley et al., 1993<sup>[6]</sup>). However, different patterns also emerge. In France, for example, most respondents find that the current level of bottom earnings is too low and top earnings too high. In the United States, by contrast, people are more divided over bottom earnings. Compared to other countries, more respondents find them almost fair.

**Figure 4.7. People disagree as to whether top earnings are too high or bottom earnings too low**

Percentage share of respondents by level of perceived bottom and top earnings (y-axis and x-axis, respectively) compared to preferred levels, selected countries, 2009



Note: The figure plots on the x-axis the share of respondents who think that top earnings are far too high (they should be 50% less), too high (they should be between 50% and 10% less), are nearly fair (less than 10% from what they should be), or are too low. The y-axis shows the share of respondents who think that bottom earnings are far too low (they should be 50% higher), too low (they should be between 10% and 50% higher), are nearly fair (within 10% from what they should be), or are too high.

Source: OECD calculations from ISSP 2009.

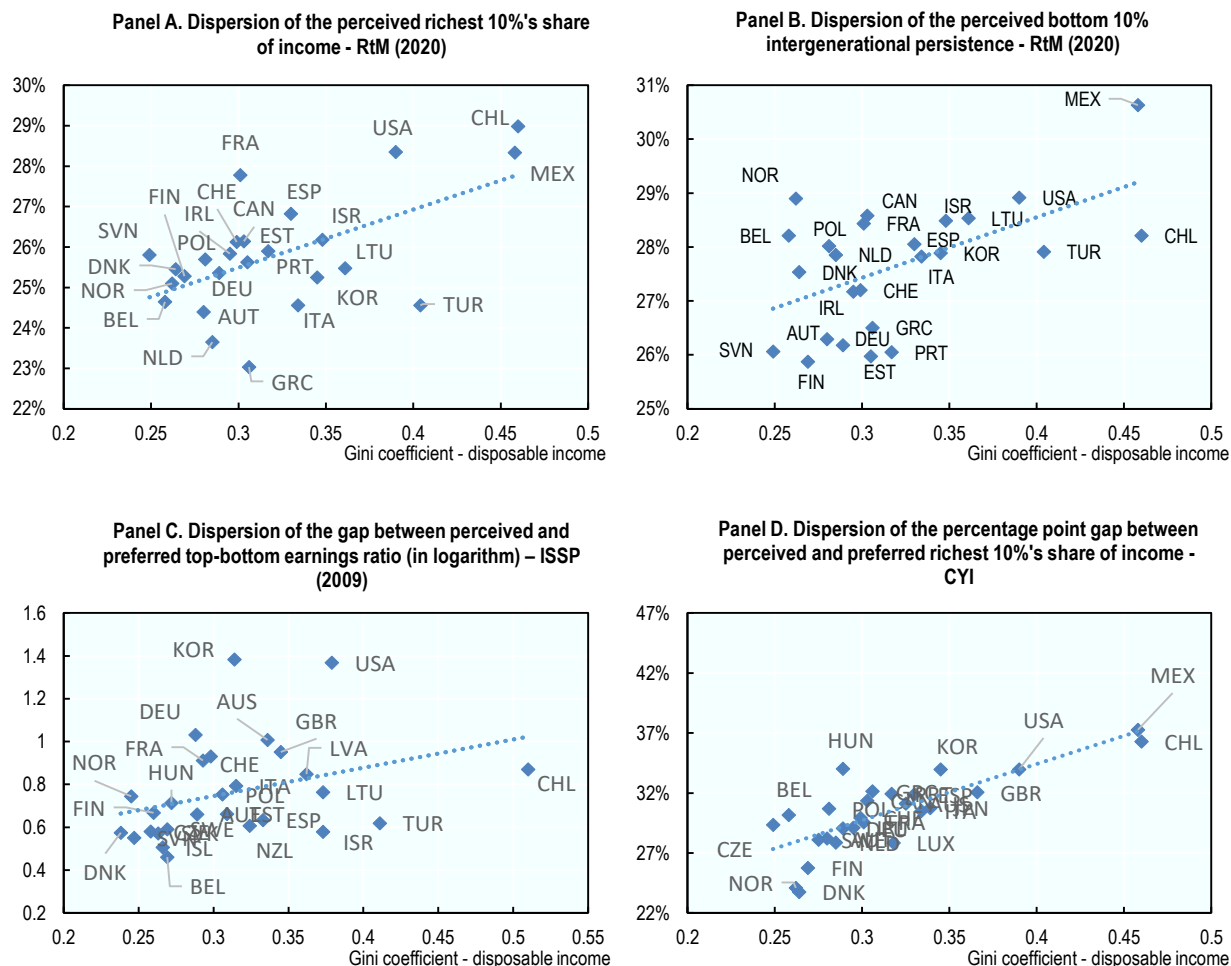
***More unequal countries have a more divided public opinion***

Perceptions and concern are more widely dispersed where there are higher levels of income inequality (measured by the Gini coefficient for disposable income; Figure 4.8). For perceptions, the correlation is strong with regard to both the perceived richest 10%'s income share and perceived intergenerational persistence. It is driven chiefly by the countries with high inequality and high dispersion (Chile, Mexico and the United States).<sup>4</sup> Two noticeable outliers in perceptions of the richest 10%'s income share are Turkey and France. In Turkey perceptions are weakly dispersed and inequality is high, while France shows wider dispersion compared to other countries with medium level of inequality. The dispersion of concern about inequality of earnings and income – concern being measured by the gap between perceived and preferred disparities – is also closely associated with the actual scale of inequality, particularly in Compare Your Income findings.

The wider distribution of perceptions and concern in more unequal countries may stem from the fact that, when inequality is high, individuals struggle to correctly estimate income and earnings disparities, particularly with regard to high incomes and earnings. The reason might be that their social circle is unlikely to be a perfect representation of the overall income distribution.<sup>5</sup> In societies where social groups mix little there is greater dispersion of outlooks. Groups know little about each other and each other's perceptions. This can also explain why the rich sometimes perceive the top-bottom earnings ratio to be higher than the poor do. Irrespective of the mechanism at work, public opinion is more divided in more unequal societies.


**Figure 4.8. Public opinion is more divided in countries with higher income inequality**

Dispersion of perceptions and concerns vs. inequality measured by the Gini index



Note: The dispersion of perceptions/concerns is measured as the standard deviation in the sample. The Gini index refers to disposable income and refers to the latest available year for Risks that Matter and Compare Your Income, and to 2008 or 2009 (when available) for ISSP (for years 2008/2009 until 2011 the old income definition for the IDD is used). The standardized slope in Panel A is 0.582 and is statistically significant at the 1% level (with heteroscedasticity robust standard errors); for Panel B it is 0.561, significant at the 5% level; for Panel C it is equal to 0.341, significant at the 10% level; for Panel D it is 0.785, significant at the 1% level.

Source: OECD calculations from the 2020 Risks that Matter Survey, ISSP 2009, Compare Your Income 2015-20; *OECD Income Distribution Database* (<https://stats.oecd.org/Index.aspx?DataSetCode=IDD>) for the Gini coefficient.

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## 4.2. Has the extent of disagreement between people increased?

### ***The distribution of perceptions and concerns has long become more dispersed and polarized***

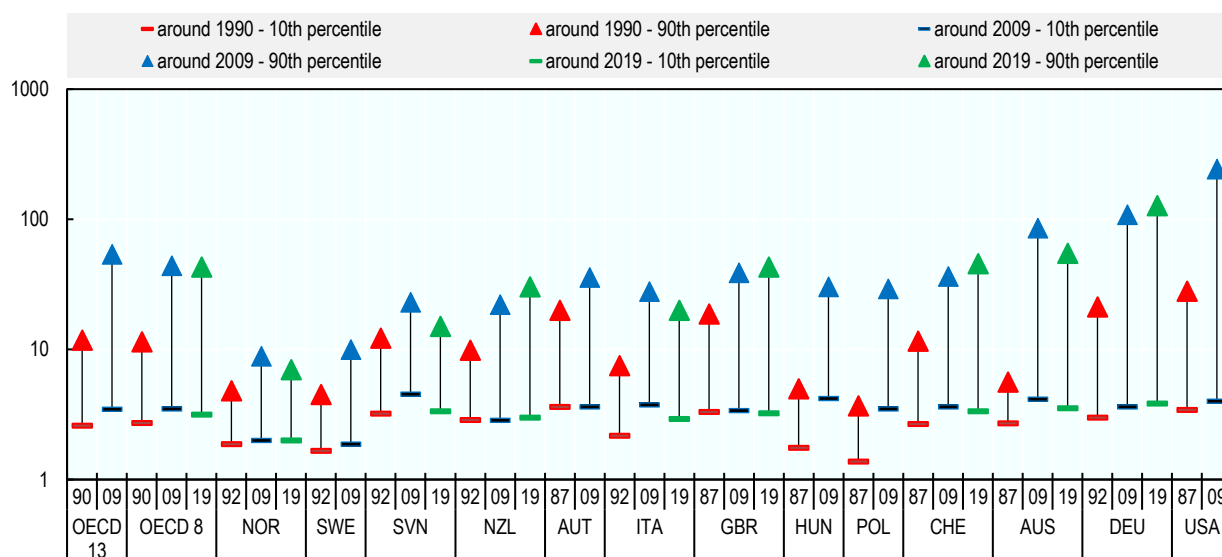
Public opinion has grown more divided over the years. Between the 1990s and the global financial crisis, the increase in perceived earnings disparities (Section 2.2) was not uniform across the population and the gap between people who perceived wide or narrow disparities grew (Figure 4.9 and Giger and Lascombes (2019<sub>[7]</sub>)). As a result, in the countries for which data are available<sup>6</sup>, the dispersion of perceptions

increased – least in the Nordic countries (Norway and Sweden), and Slovenia and Austria, and most in Australia, Germany and the United States. In fact, dispersion spread most where the average perception of inequality spread most (Annex Figure 4.A.1).<sup>7</sup> This correlation shows that the rise in perceptions, because it was heterogeneous across a country's population, was accompanied by increasingly strong disagreement as to what the level of inequality was.


Although perceived earning disparities shrunk in the most recent decade from 2010-19, dispersion remained the same as during the global financial crisis. It fell somewhat in Italy, Norway, Slovenia and Australia, but was still more widespread than in the late 1990s or late 1980s. It grew in the other five countries observed until ISSP 2019, particularly in Germany.

**Figure 4.9. Perceptions of earnings disparities have grown more dispersed over time**

90th and 10th percentile of the perceived top-bottom earnings ratio (logarithmic scale)



Note: The year refers to the ISSP wave. Countries ordered by change in the 90th-10th distance between late 80s/early 90s and 2009. The lines represent the extent of the differences between the bottom 10% of respondents and the top 10%. For instance in the United States in 2009 the bottom 10 percent of respondents believed that the ratio was lower than 4, while the top 10% believed it was larger than 244. The question on perceptions of the top-bottom earnings ratio relates to gross earnings, apart from Poland and Slovenia (where it refers to net earnings). In Hungary in 1987, neither gross or net earnings were mentioned, perhaps because personal income tax was only introduced in 1988. In Italy the earnings definition used in the ISSP question switched from gross earnings in the first wave to net earnings in 2009: as actual net earnings are usually less dispersed than gross earnings, the change observed in the figure likely underestimates the increase in dispersion. Source: OECD calculations from ISSP 1987, 1992, 2009 and 2019.

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Increased dispersion was also associated in some countries with increased polarisation (Osberg and Smeeding, 2006<sup>[21]</sup>), as the estimated distribution of perceptions attests. Six countries with small (Norway and Sweden), medium-sized (Italy and the United Kingdom) and large (Germany and the United States) changes in dispersion in the two decades up to the global financial crisis illustrate the growing divergence at the time between the 90th and 10th percentiles in perceptions of top-bottom earnings ratios (Figure 4.10). The distributions not only moved towards higher values, but also flattened out considerably over the years, so that the gap between the perceptions of any two respondents increased. Some countries showed signs of rising polarisation. The peaks observed in some countries corresponded to two (or more) groups of respondents clustered around low, medium or high levels of perceived inequality. These values moved away from each other over time, indicating an increase in the extent of disagreement between the groups.

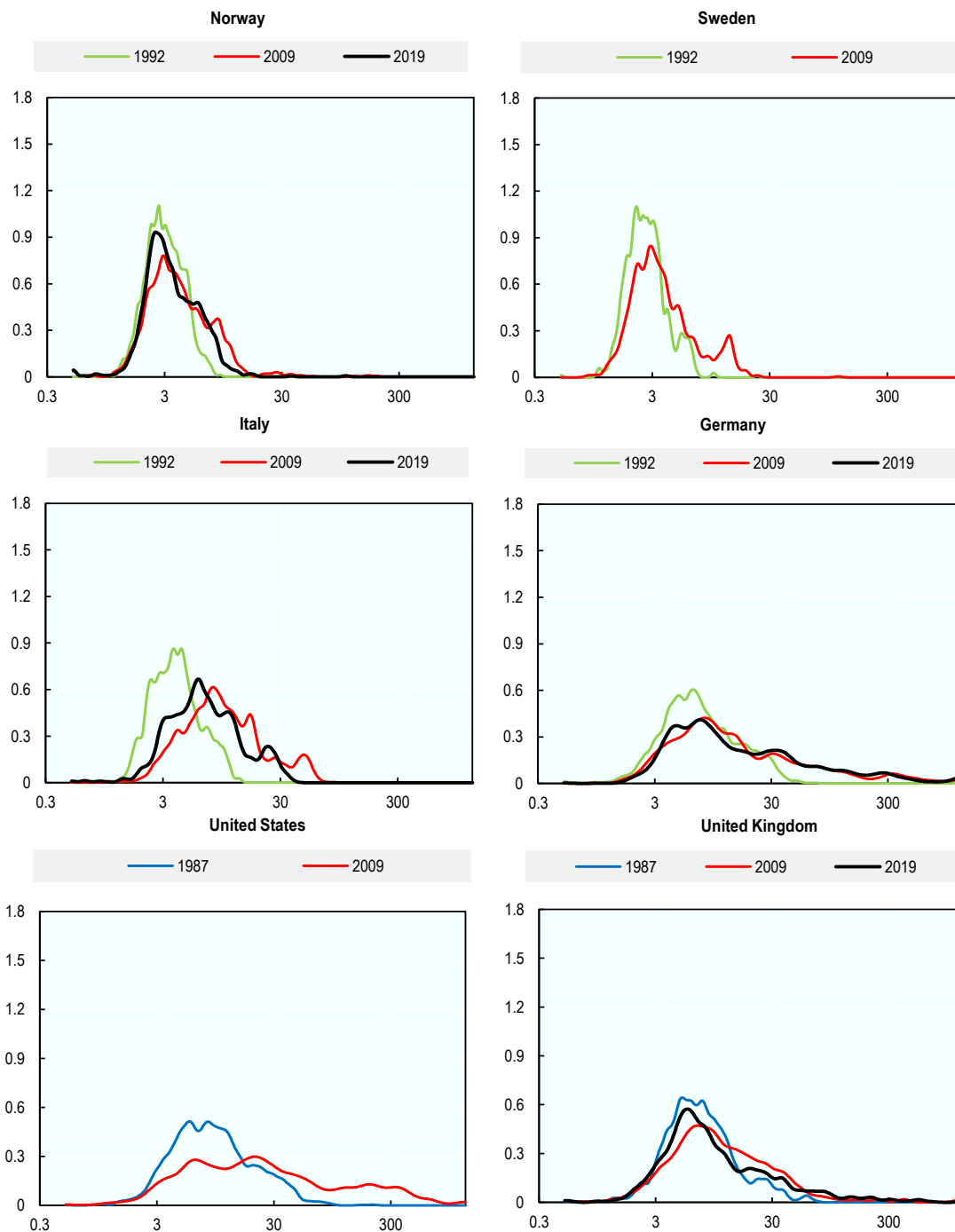


Widening polarization between the early 1990s and the global financial crisis was also apparent in Sweden, despite the limited change in the overall dispersion of perceptions, and Norway. Polarisation nevertheless seemed to ease in the following decade.

Italy and the United Kingdom stand out in that they started from a narrow range of perceptions, before they dispersed increasingly in the two decades up to the global financial crisis. Dispersion eased only mildly in the following decade, while polarisation across different groups persisted. Both in Germany and the United States the distribution in late 1980s and early 1990s was already dispersed and polarized. Disagreement grew even stronger in the following two decades and perceptions moved further apart. The strong level of disagreement has continued in Germany.

**Figure 4.10. The distribution of perceived top-bottom earnings ratios has become more dispersed and polarised**

Estimated density distribution (y-axis) for each possible top-bottom earnings ratio (x-axis, logarithmic scale), selected countries, the year refers to the ISSP wave



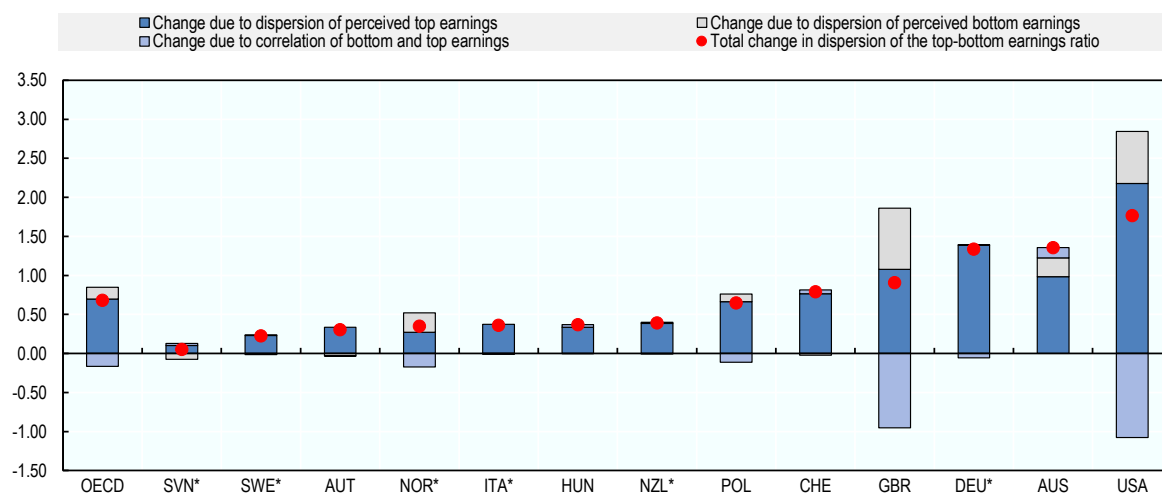
Note: The graphs plot the density of responses; respondents' answers are more frequent around the points where the values are higher. For instance, in the United States in 1987 most respondents believed that the ratio was between 3 and 30, while in 2009 there was more dispersion, with an increase in the number of those who believed it was much larger than 30. The density is estimated using kernel regressions with Gaussian kernel. The x-axis is in log scale.

Source: OECD calculations on ISSP 1987, 1999, 2009.

The rise in the dispersion of perceptions over time has been due mostly to the rise in disagreement over levels of top earnings (Figure 4.11 and Osberg and Bechert (2016<sup>[8]</sup>)). Australia, the United Kingdom, Norway and the United States saw sizeable increases in disagreement over levels of bottom earnings.<sup>8</sup> Top earnings nevertheless fuelled far stronger disagreement, probably because most people had limited experience or knowledge of highly paid occupations (the benchmark being the pay of doctors or CEOs of a national corporation). Respondents probably received different, wide-ranging information about top incomes, which rose fast in most OECD countries. As a result, people changed their perceptions of them in very different ways.

**Figure 4.11. The increased disagreement about the level of disparities is mostly due to the increased dispersion of perceived top earnings**

Change in the dispersion of the logarithm for the perceived top-bottom earnings ratios between around 1990 and 2009



Note: The dispersion of the top-bottom earnings ratio is captured by the variance of its logarithm. It is broken down into the dispersion of beliefs about the level of top-earnings and bottom-earnings. For instance, the increased dispersion of beliefs across the population in Germany is entirely due to the rise in dispersion of beliefs about top-earnings, while the level of disagreement over the current level of bottom earnings has remained stable over time. The component due to correlation is the opposite of twice the covariance between perceived bottom and top earnings. It is negative in the United Kingdom and the United States because, in both countries, respondents who report higher top earnings also report higher bottom earnings, and this correlation has increased over time. Countries denoted by \* are observed from 1992.

Source: OECD calculations from ISSP 1987, 1992, 2009.

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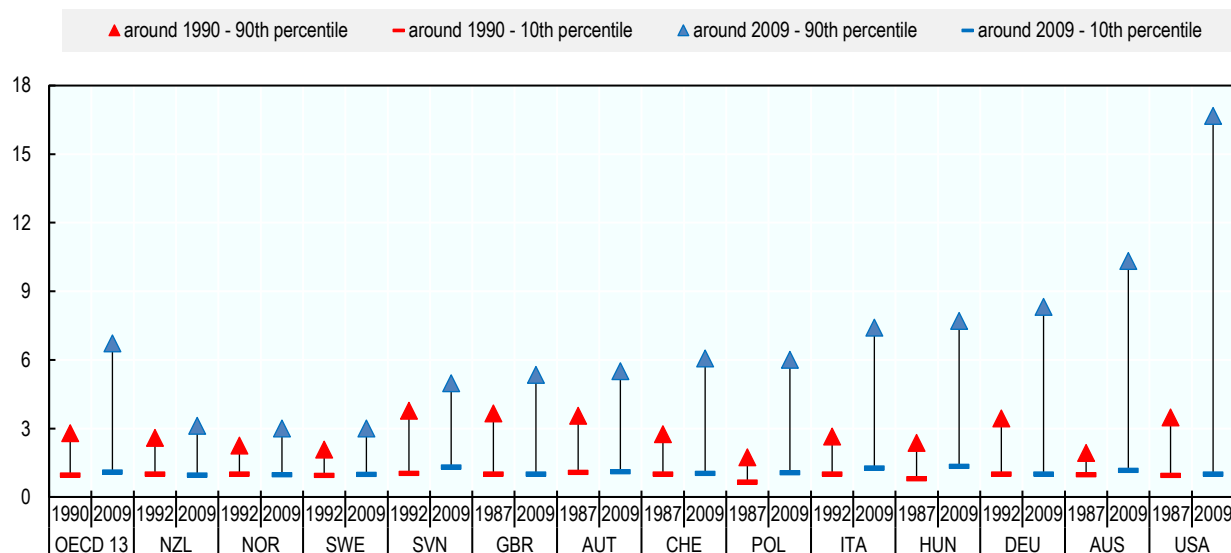
The increasing dispersion in perceptions has given rise to growing disagreement over what people think the earnings differentials should be and what they think they are (Figure 4.12). In most countries, there has been increasing divergence between:

- people who believe that perceived current earnings differentials are acceptable,
- those whose preferred level of disparities is far from what they think the current level is.

The increasing dispersion of concern is mostly attributable to growing disagreement over the scale of current earnings differentials, rather than to the rise in the top-bottom ratio that individuals deem acceptable (Ciani et al., forthcoming<sup>[3]</sup>).

**Figure 4.12. Increasing disagreement relates not only to perceptions, but to concerns**

10th and 90th percentile of the gap between people's perceived and preferred top-bottom earnings ratio; the year refers to the ISSP wave



Note: The gap is calculated as the ratio between perceived and preferred top-bottom earnings ratios and can be interpreted as an alternative measure of concern over earnings disparities. For instance, in 2009 in Australia, 10% of respondents (the bottom 10% in the distribution of concerns) thought that the top-bottom earnings ratio is at most only slightly larger – 1.2 times – than it should be. At the opposite spectrum, 10% of respondents (the top 10%) thought that it is more than 10 times what it should be. In 1987 the difference between the two groups was smaller.

Source: OECD calculations from ISSP 1987, 1992, 2009.

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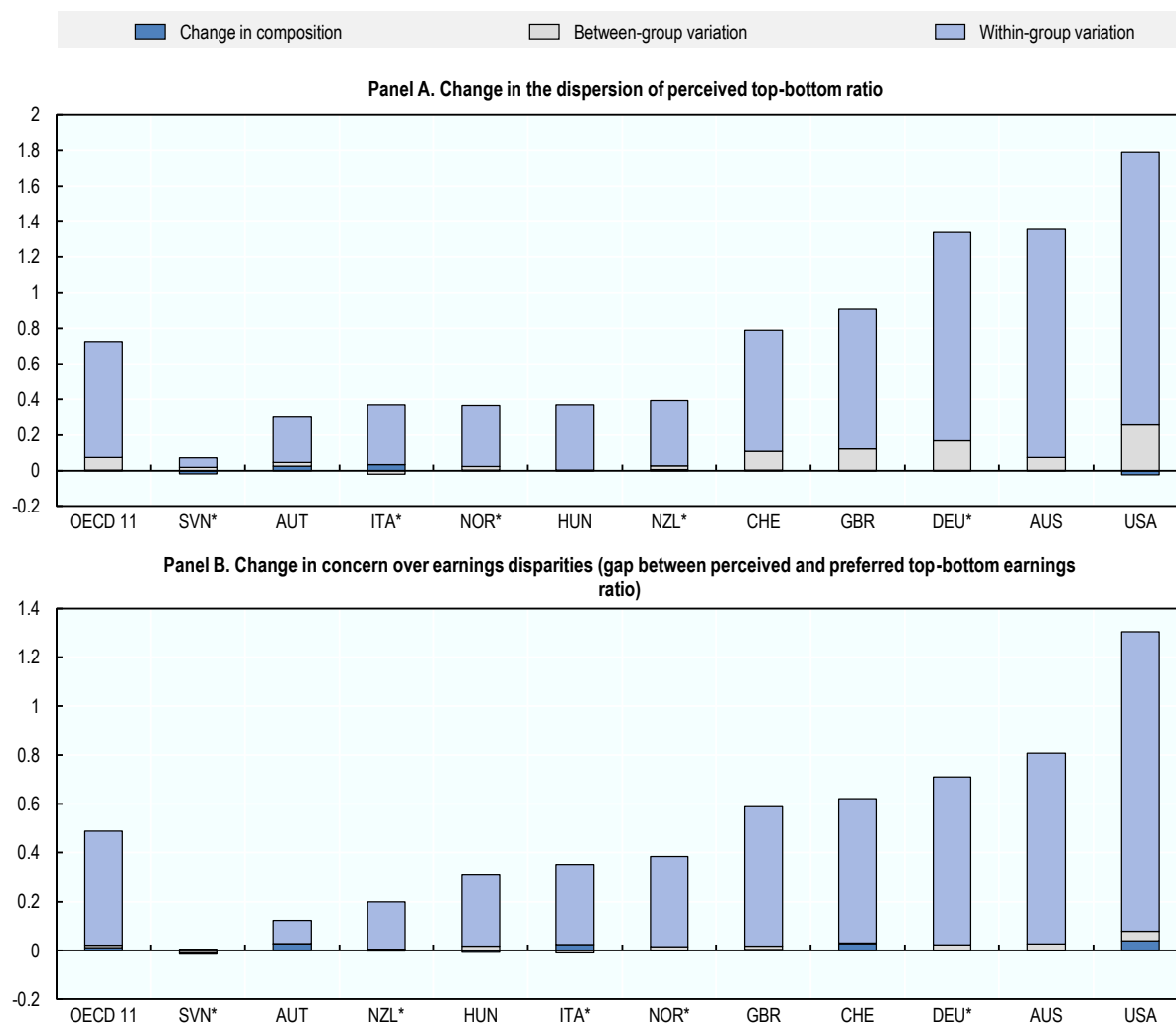
### ***Most of the increased dispersion of perceptions of and concern over earnings disparities is among people with similar socio-economic characteristics***

The long-run increase in the dispersion of perceptions of and concern over earnings disparities might be due to compositional changes. For instance, the increase in educational level might have changed the relevance of educational divides in explaining overall dispersion, as some groups become more relevant in size. However, compositional changes in terms of education, relative income, employment status, gender, age and household size explain little to nothing of the change in dispersion of perceptions and concerns about the top-bottom earnings ratio (Figure 4.13, Panel A).

The increased dispersion in perceptions and concern can stem from higher levels of disagreement between people with different socio-economic characteristics (i.e. *between* socio-economic groups dispersion), but also from disagreement among people with similar characteristics (i.e. *within* socio-economic groups dispersion). Differences between socio-economic groups – as defined by gender, age, education, household size, employment status and relative income – increased over time, and these growing differences explain part of the overall increase in the dispersion of perceptions and concerns (Figure 4.13, Panel B). For the United States, Germany, the United Kingdom, Switzerland and Australia, where the rise in dispersion was stronger, a non-trivial share of the change in the levels of disagreement about levels of income inequality can be attributed to changes in between-group variation. Nevertheless, within-group variation remains responsible for the lion's share of the surge in dispersion observed between 1987/1992 and 2009, both for perceptions and concerns.

**Figure 4.13. The dispersion of perceptions of and concern over earnings disparities rose mostly within**

Decomposition of the change in the dispersion of perceptions and concerns between 1987/1992 and 2009



Note: The dispersion refers to the variance of the logarithm of the perceived ratio in the upper panel and to the variance of the logarithmic difference between the perceived and preferred ratio in the bottom panel. The decomposition was obtained through the creation of counterfactual distributions (see Annex 4.B). An asterisk (\*) indicates that 1992 was the first wave used for the country. Sweden and Poland were dropped because of the absence of available income data for the two first waves.

Source: ISSP 1987, 1992, 2007.

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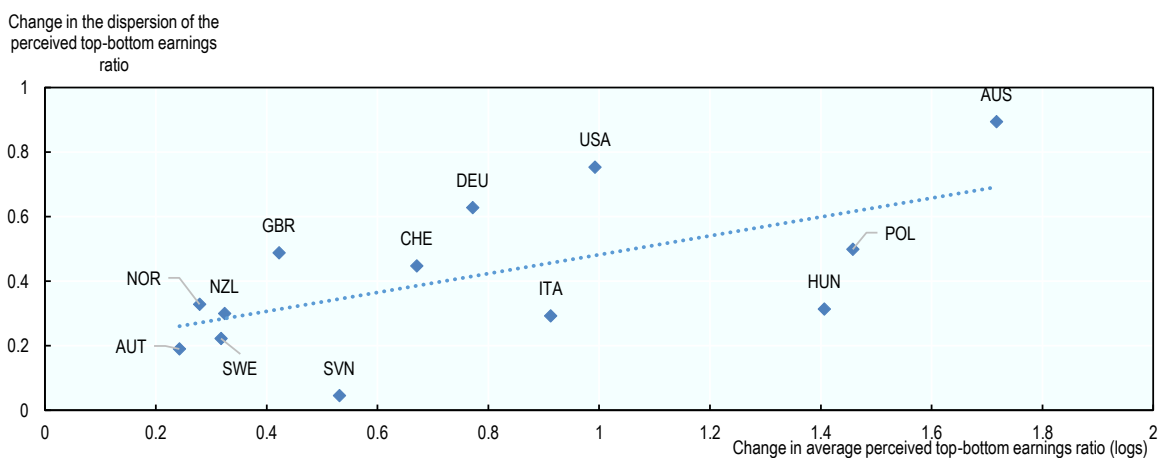
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## Annex 4.A. Additional figures

### Annex Figure 4.A.1. Where perceived inequality grew the most, perceptions became more dispersed

Change in the average and dispersion of the perceived top-bottom earnings ratio, 1990 and 2009



Note: The dispersion refers to the standard deviation of the logarithm of the top-bottom earnings ratio, the average top-bottom earnings ratio is the average of the logs of the ratio.

Source: OECD calculations from ISSP 1987, 1992, 2009.

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## Annex 4.B. Methodological details

### Decomposition of changes in dispersion into compositional effects and between-groups variance

The decomposition for Figure 4.13 was obtained through the creation of counterfactual distributions, as in Lemieux (2002<sup>[9]</sup>). In details, the share of the change in dispersion due to compositional effects was obtained as follows:

- First, by reweighting the distributions of the samples in 1987 and 1992 for each country so that they correspond more closely to the distributions of 2009, on the basis of common observable characteristics.
- Second, by subtracting the total variance for the original 1987/1992 sample from the reweighted 1987/1992 sample and dividing by the total change in variance between the two periods.

The share explained by the between-group variation is obtained the following way:

- First, a counterfactual distribution for 1987/1992 was created by (i) running an OLS regression of the variable of interest on socio-demographic characteristics on the 2009 wave; (ii) using it to calculate fitted values for the 1987/1992 observations; (iii) adding to the fitted values the residuals from an OLS regression conducted on 1987/1992. These values use between-groups differences as in 2009 (the fitted part) but within group variation (the residuals) from 1987/1992. This exercise was conducted using the weights calculated to account for compositional effects.
- The total variance of the reweighted 1987/1992 was then subtracted from this counterfactual distribution and divided by the total change in variance between the two periods.
- The share explained by within-group variation (the unexplained part of our models) is obtained after subtracting the total variance of the reweighted counterfactual distribution for 1987/1992 from the original 2009 distribution, and then dividing by the total change in variance between the two periods.



## Notes

<sup>1</sup> This group appears to be grouped around the -30 value, but this is only due to the fact that the value had to be censored for presentational reasons. In fact, the group is widely dispersed over the [-100, 0) range.

<sup>2</sup> Note that a negative contribution to the overall variance comes from the fact that preferred and perceived disparities are correlated, i.e. people who believe the income share of the top 10% is higher also tend to report a higher preferred share. However, the correlation is generally weak and therefore this contribution is small, on average.

<sup>3</sup> If income (or payroll) taxes are progressive, net earnings are less dispersed than gross earnings. The reason is that individuals are likely to form their beliefs by observing the earnings of a sample of some workers around them. Their concerns are therefore less likely to be more dispersed if these earnings are more dispersed, which depends on whether the object is gross or net earnings.

<sup>4</sup> A more elaborate analysis of outliers, based on each observation leverage and  $dfbeta$ , shows that the relations are not driven by specific outliers.

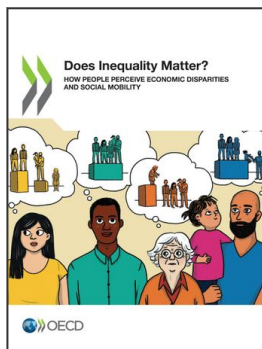
<sup>5</sup> Individuals form their expectations by observing a subset of the entire population composed, for example, of relatives, friends and co-workers (Cruces, Perez-Truglia and Tetaz, 2013<sup>[10]</sup>). Even if this subset was a random draw from the entire population, there are still chances that it would not be truly representative of the entire population and that the individual estimates of inequality would contain some “sampling” error, exactly as happens to statisticians working with a small sample. The more dispersed the earnings and income distributions are, the higher the individual sampling error is, and the greater the dispersion of perceptions.

<sup>6</sup> Norway, Sweden, Slovenia, New Zealand, Austria, Italy, Great Britain, Hungary, Poland, the Czech Republic, Australia, Germany and the United States.

<sup>7</sup> All the figures analysing the change in distribution over time (Section 4.2) account for the fact that, for some countries, the initial wave involved a certain degree of censoring of the questions about chairman’s earnings, while no censoring was applied to 2009. To this aim, for countries where there was at least 1% censoring in the first wave, the same level of censoring was applied to the final wave. See Ciani et al. (forthcoming<sup>[3]</sup>) for more details.

<sup>8</sup> However, in these countries (apart from Australia), the tendency of people who report higher top earnings to also report higher bottom earnings has increased over time, reducing the dispersion of the ratio between the two.





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