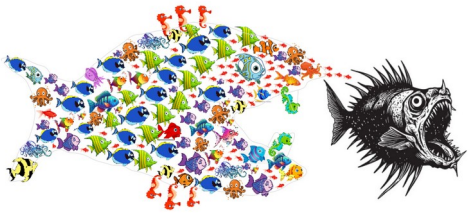

zamheifa

working paper 02

may 2025

Distribution of Income and its Evolution in the Six Decades from 1960 – 2020 – WID Data

Version 1.0 (29.05.2025)

Content:

Summary

The income distribution and its **long-term evolution in the five European countries Czech Republic, Germany, Spain, France and Italy** is analysed based on data from the WID data base.

The distribution of income within about 90% of population is relatively flat, within a range between 0,5x and 2x the median income (4:1). Towards the upper end there is a strong concentration of income following a so-called power-law distribution reaching levels of 250 to 400 times the median income for the upper 0,001%.

The average income of the top 1% of population is between 6 and 10 times the median income depending on the country, while the following upper 9 percentiles (the rest of the upper 10%) receive an average income of about 2 times the median. **The total share of post-tax income of the top 10% ranges from 23 to 30 % of total income**.

The excess (post-tax) income (understood as income above 2x the median income) varies from about 6,5 to 15,5 % of total income. From 4,5 to 12 % of the population receives an income above this threshold. If income would be limited to a maximum of 4x the median income, an amount from 3 to 8 % of total net national income could be redistributed affecting negatively only between 0,8% and 2,7% of the population.

Germany and Italy show a very unequal distribution (excess income above 4x the median of 7,7 and 6,3% of NNI), while France and the Czech Republic have a comparatively equal distribution (excess income of 2,8 and 2,9% respectively), and Spain being situated in between.

The historic evolution of income inequality since 1980 in the five countries analysed is quite different and strongly diverging **in recent years (since 1995): France and the Czech Republic show a slight decrease in income inequality, while in Germany and Italy income inequality has strongly increased**. Income inequality in Spain has been decreasing, too, but from a very high initial level, so that currently in 2020 it is situated in between the two pairs of other countries.

For a longer term perspective since 1960 only pre-tax data are available. in (Western-)Germany, France and Italy (pre-tax) income inequality strongly decreased during the 1960ies and 1970ies, arriving at a turning point and increasing again in the neoliberal era since 1980. **Current levels of inequality in Germany and Italy are higher than that in 1960**.

While **median post-tax income from 1980 to 2020 increased in Germany and France at** average yearly growth rates of 0,75% and 0,71% and **a cumulative increase of 35% and 33% respectively**, **in Italy median income in 2020 is 14% lower than 40 years ago**. Divergence of the evolution in Italy with respect to Germany and France started around 1990, while before and since 1960 all those three countries were evolving similarly. **In Spain, the cumulative increase has been 54%**, starting from a comparatively low level, catching up with Italy and reaching about ⅔ of the level in Germany and France in 2020. I**n Czech Republic there has been a strong decline of median income after transition to capitalism, and a gradual recovery since then catching up with Spain and Italy.**

1 Objective

The objective of this paper is analysing income distribution and its **long-term evolution in the five European countries** Czech Republic (CZ), Germany (DE), Spain (ES), France (FR) and Italy (IT).

2 Data Source and Basic Concepts Used

2.1 WID Data Base and Distributional National Accounts

The data used in this fact sheet are obtained from the *world inequality data base* [WID 2024, downloaded in December, 4th, 2024].

Although this release of the data set contains data until 2022, here only data until 2020 are presented, as 2021 and 2022 data are showing strong deviations from the trend, and it is not fully clear whether this are real effects (COVID-19 crisis, beginning of the war in Ukraine) or if data for those years have not yet been fully consolidated at the date of the release.

The long-run objective of the WID is "t*he production of annual Distributional National Accounts (DINA) describing the entire distribution of income and wealth, from bottom to top, using concepts consistent with macroeconomic national accounts*".

For a detailed description of the DINA concept and methodology see the DINA Guidelines [WID 2024a].

2.2 Definition of National Income

The DINA concept analyses distribution of income based on the net national income (NNI). The NNI is similar, but similar to the most widely used gross domestic product (GDP), but differing by two quantities.

Mathematically the following relation between NNI and GDP holds:

$$NNI = GDP - CFC + NFI \tag{1}$$

The consumption of fixed capital (CFC) is substracted from GDP as this is not really an income, and the net foreign income of residents (NFI) is added.

The NNI forms the "*whole of the cake*" which is then subject to further analysis regarding income distribution among (adult) individuals.

2.3 Distribution of income - imputation to individuals

2.3.1 Distribution of national income on adult individuals

In WID data, the total national income is distributed on households and individuals using different methodologies. The data presented here are based on the "equal split adult" concept: the income of households is distributed equally between adults, not to children.

2.3.2 Pre-tax, post-tax and disposable income

The DINA methodology uses four basic concepts for analysing the distribution of income after successive steps of (re-)distribution of income:

- *pre-tax factor income*: corresponds to primary net national income before any redistribution and taxes. capital income is imputed to individuals or households by stock ownership.
- *pre-tax income*: primary income after redistribution by social security system (pensions, etc.), but before taxes
- *post-tax disposable income*: net income of households after taxes, i.e. pre-tax income after applying direct taxes on income and wealth. Government spending that cannot be imputed to individuals or households is not included. Therefore, the sum of post-tax disponsable income is less than net national income
- *post-tax income*: like post-task disposable income, but adding in-kind redistribution by imputing government spendig as additional in-kind income to individuals or households.

Where not otherwise mentioned, post-tax income is analysed in first place throughout this paper.

Figure 1 schematically shows the most relevant flows of income and its re-distribution.

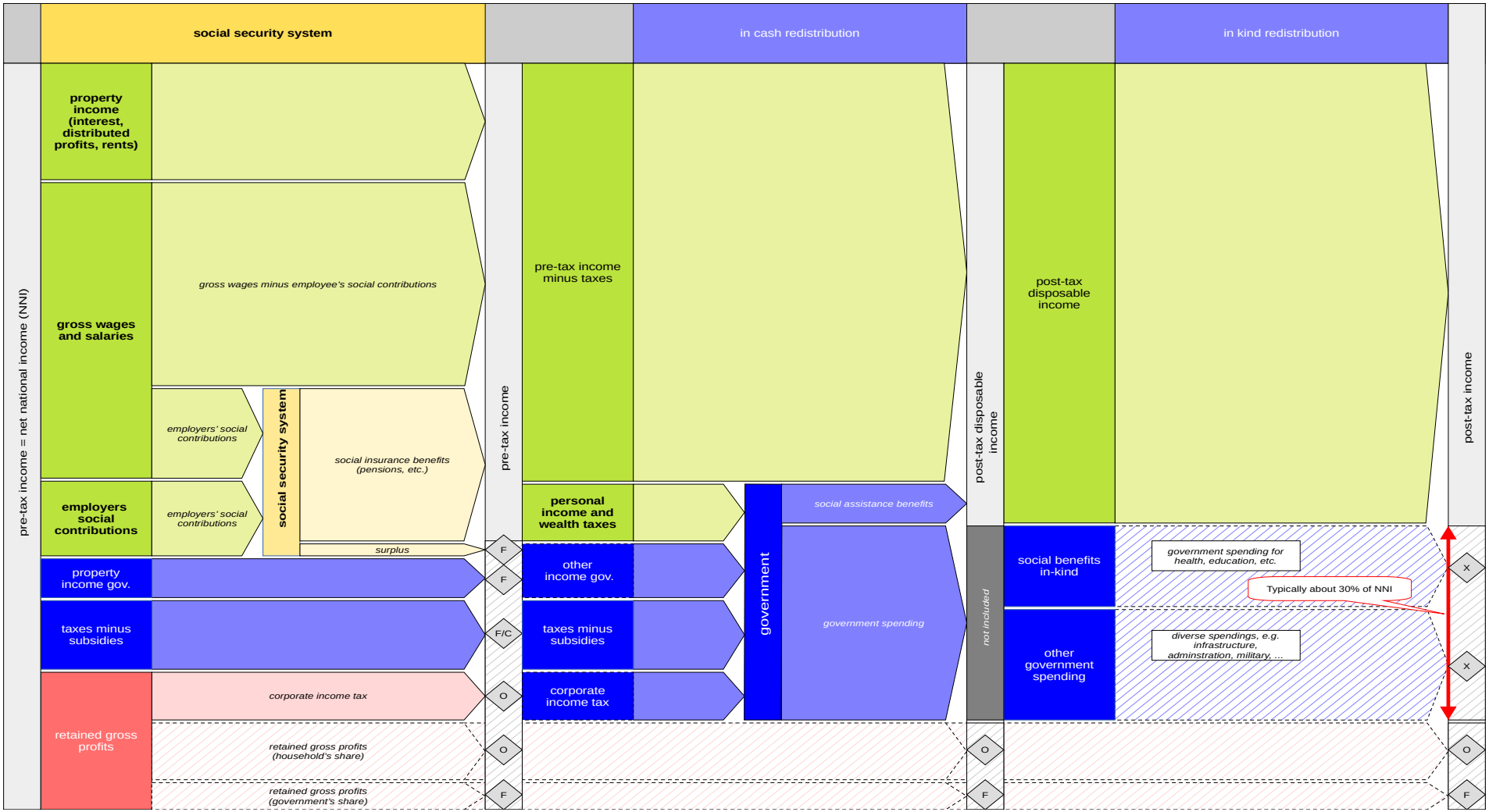

Figure 1. Scheme of the different income concepts in DINA.

2.4 Currency and price index

WID data are available in constant prices (2023) and local currency (DINA, section 1.2). The WID uses a single price index to deflate all series, the national income deflator which usually corresponds to the GDP deflator (code in WID data: inyixxi999).

Data given in this fact sheet are in constant prices (2023) and EUR, using the currency conversion rate from WID (code in WID data: xlceuxi999).

2.5 Indicators Used

2.5.1 Social classes

Social classes within this paper are defined on the one hand by grouping individuals in the order of their relative income levels by fix levels of percentiles:

- Top 1: 1% of the population with top incomes
- Upper 9: population within the upper 10% except top 1
- Upper 10: upper 10%, aggregate of Top 1 and Upper 9
- Middle 40: individuals between the 10th and 50th percentile
- Bottom 50: individuals above 50th percentile (half of the population with lower incomes)

Alterntatively the population can be grouped by the level of income with the respect to the median. The following classification is used here:

- top income: income level higher than 4x the median
- high income: income level between 2x and 4x the median
- common people: income between 0,6x and 2x the median
- poor: income below 0,6x the median income

2.5.2 Average and Median Income

The median income is the income threshold between the 50% of population with higher and the 50% with lower income, i.e. the income of the individual which stands just in the middle of social (income) hierarchy. The median income is used as a reference for defining relative incomes.

Due to the asymmetry of the distribution the average income is substantially higher than the median, so that a careful distinction between the two quantities is necessary.

2.5.3 Share of Excess Income

The share of excess income is thought as a measure of which share of total net national income could be redistributed, if top incomes would be constrained to some reasonable upper limit. In this analysis the thresholds of 2x and 4x the median income are used for this purpose.

3 Facts

3.1 Distribution of Income 2020

Figures 2 to 11 show the distribution of income in the five countries analysed by percentiles of population. Due to the large concentration of income at the higher end, the curves for each country are visualised in two separate graphs, one showing the distribution for the whole population, but cutting-off the income levels above 4x the median for better visibility; and an additional one focusing on the upper 10%.

- The distribution of income within the majority (about 80%) of population is relatively flat, within a range of variation between the extremes of 1:3,3 (between 0,6x and 2x the median income).
- From 10 to 15 % of total population belong belong to the group of “poor” with incomes below 60% of the median.
- Towards the upper end there is a strong concentration of income following a so-called power-law distribution[1] reaching levels of 250x to 400x the median income for the upper 0,001% (10 persons out of a million, somewhat more than 2.000 adult persons in the five countries analysed).

[1] A distribution given mathematically by $f(x) = ax^k$

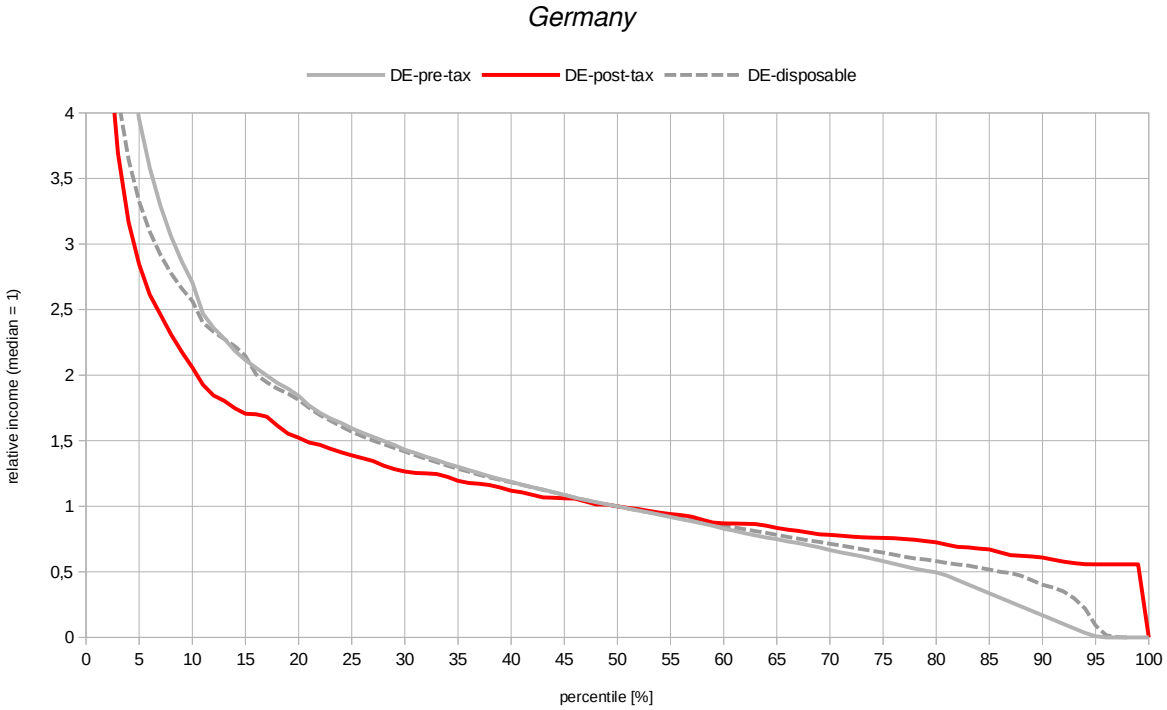

Figure 2. Germany. Relative income with respect to the median, total population, data for 2020. Source: WID data base [WID 2024].

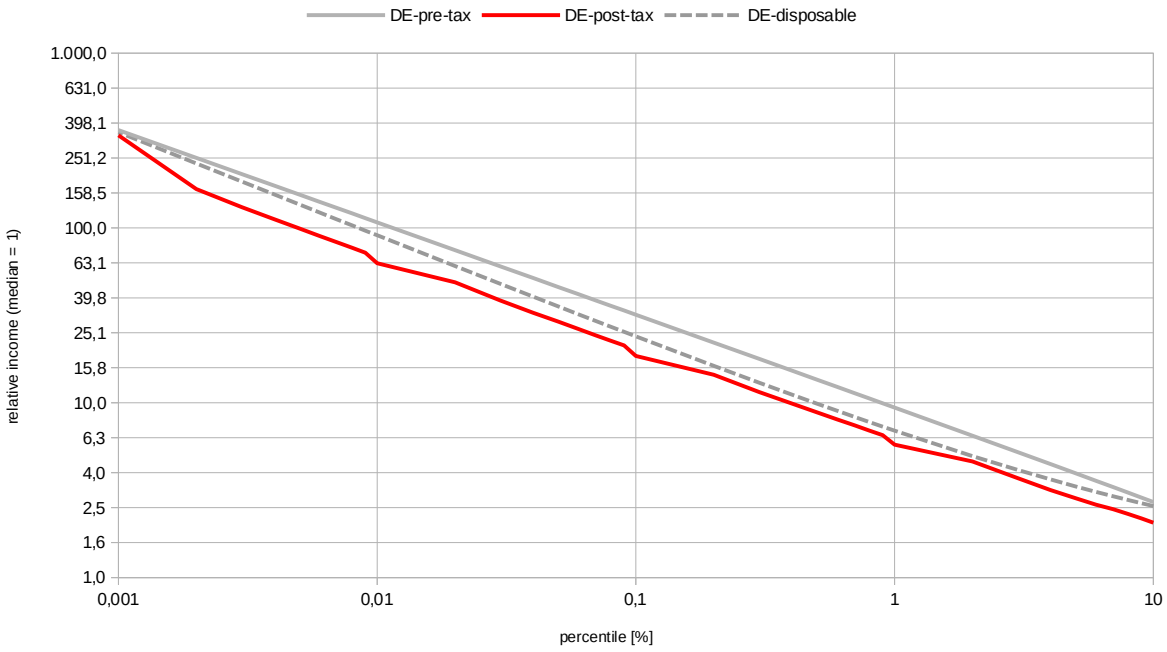

Figure 3. Germany. Relative income with respect to the median, upper class – logarithmic representation, data for 2020. Source: WID data base [WID 2024].

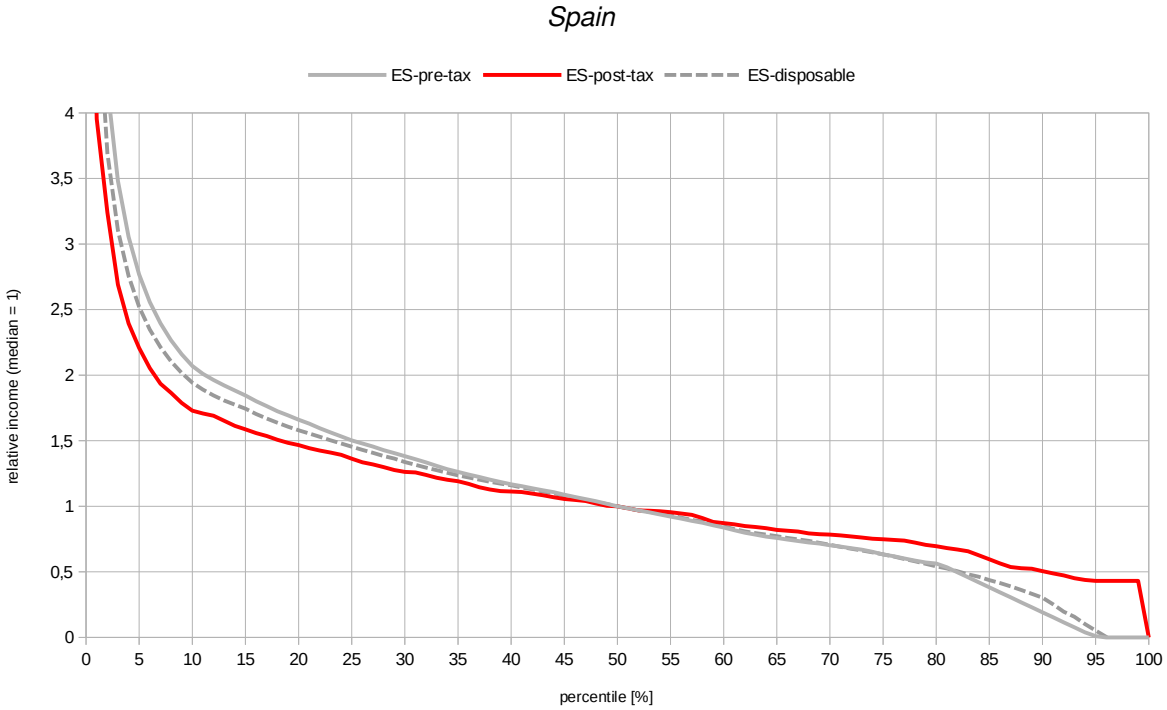

Figure 4. Spain. Relative income with respect to the median, total population, data for 2020. Source: WID data base [WID 2024].

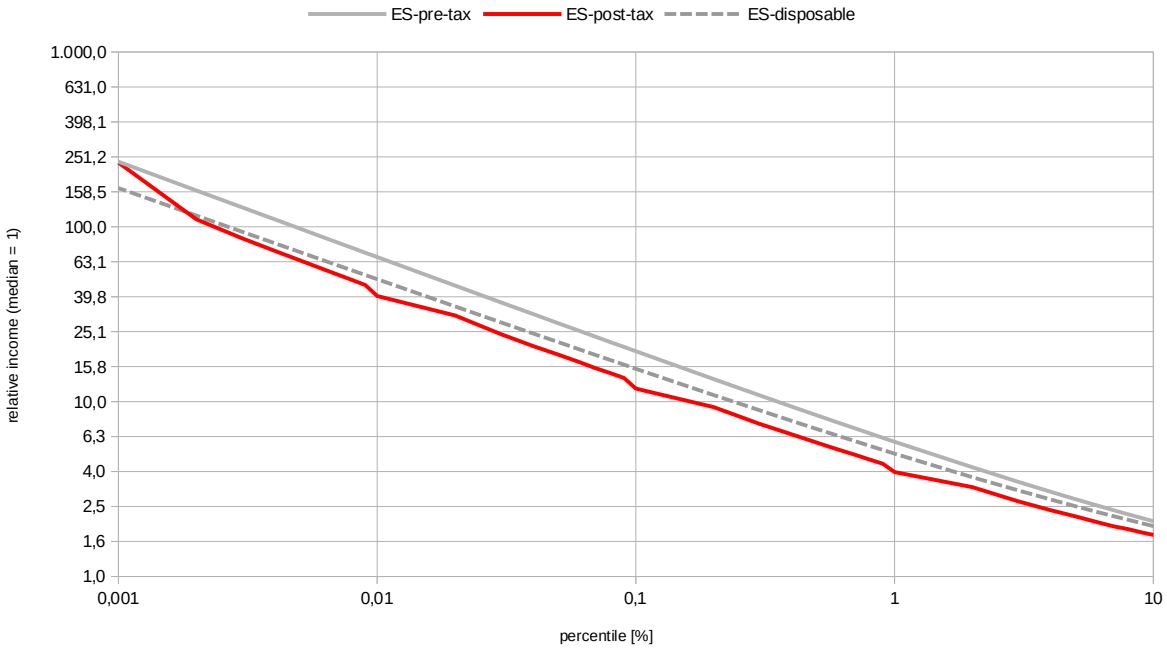

Figure 5. Spain. Relative income with respect to the median, upper class – logarithmic representation, data for 2020. Source: WID data base [WID 2024].

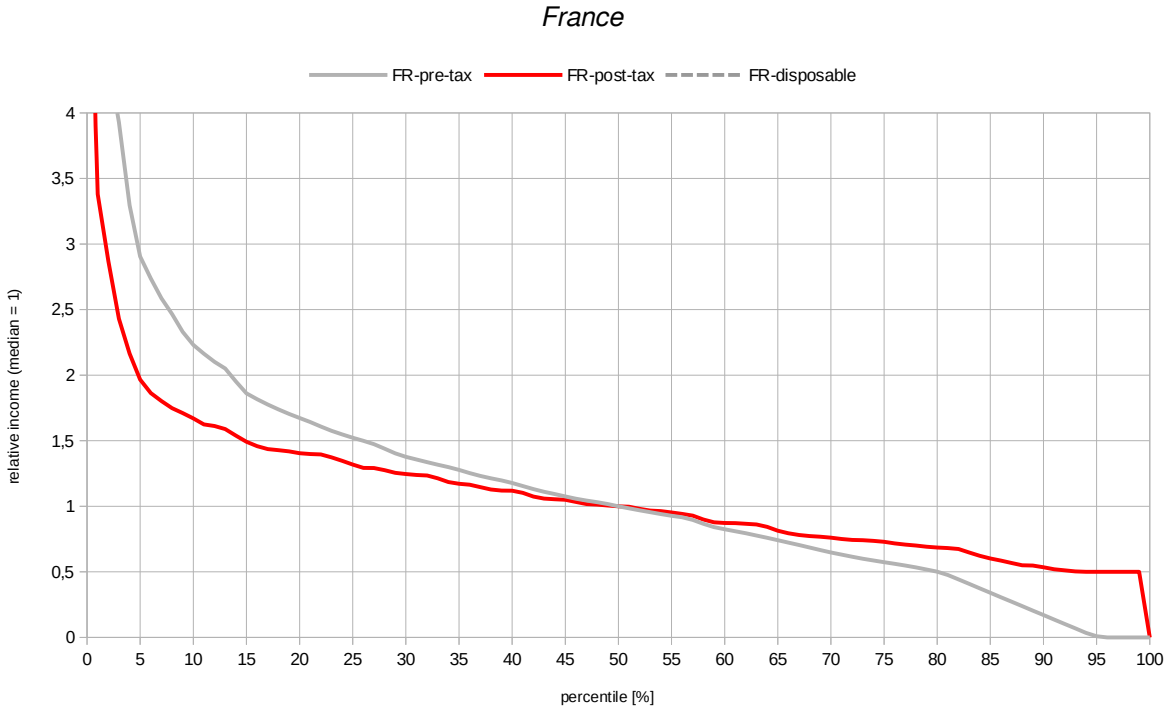

Figure 6. France. Relative income with respect to the median, total population, data for 2020. Source: WID data base [WID 2024].

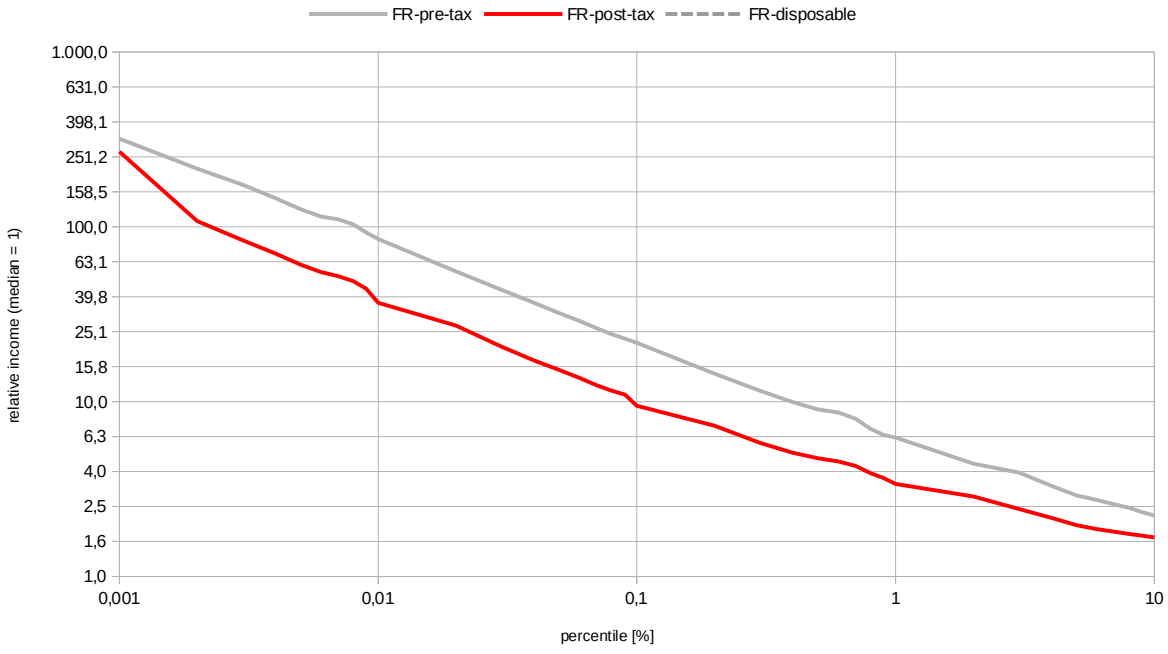

Figure 7. France. Relative income with respect to the median, upper class – logarithmic representation, data for 2020. Source: WID data base [WID 2024].

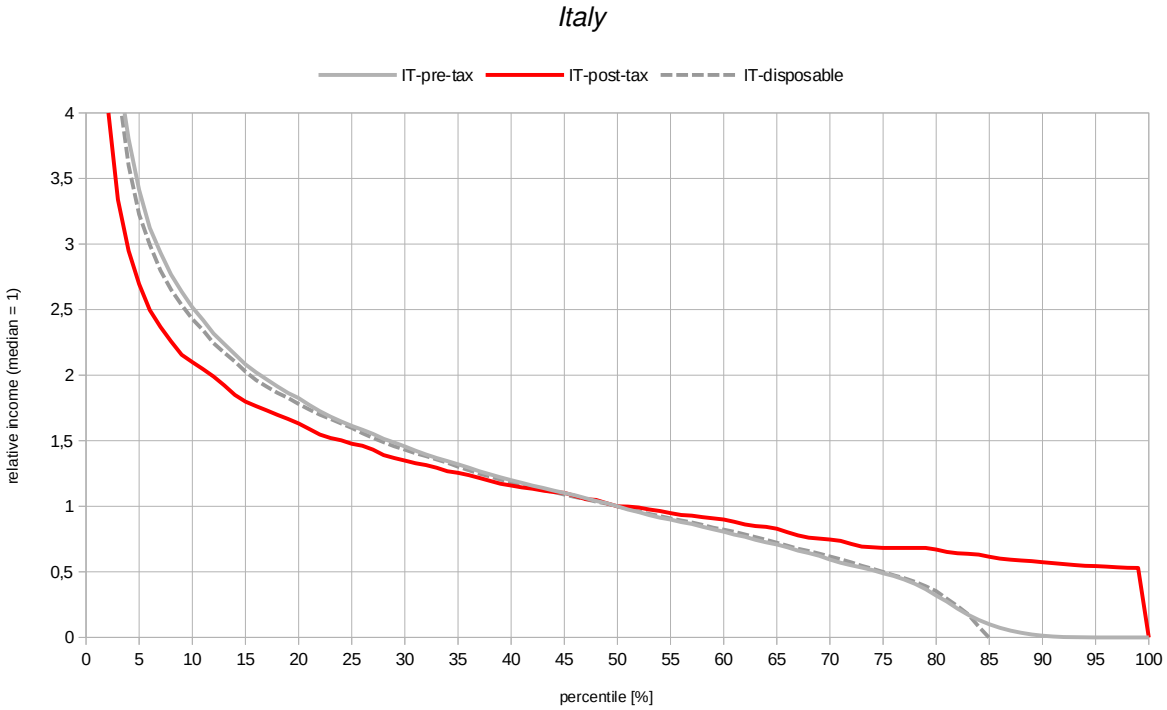

Figure 8. Italy. Relative income with respect to the median, total population, data for 2020. Source: WID data base [WID 2024].

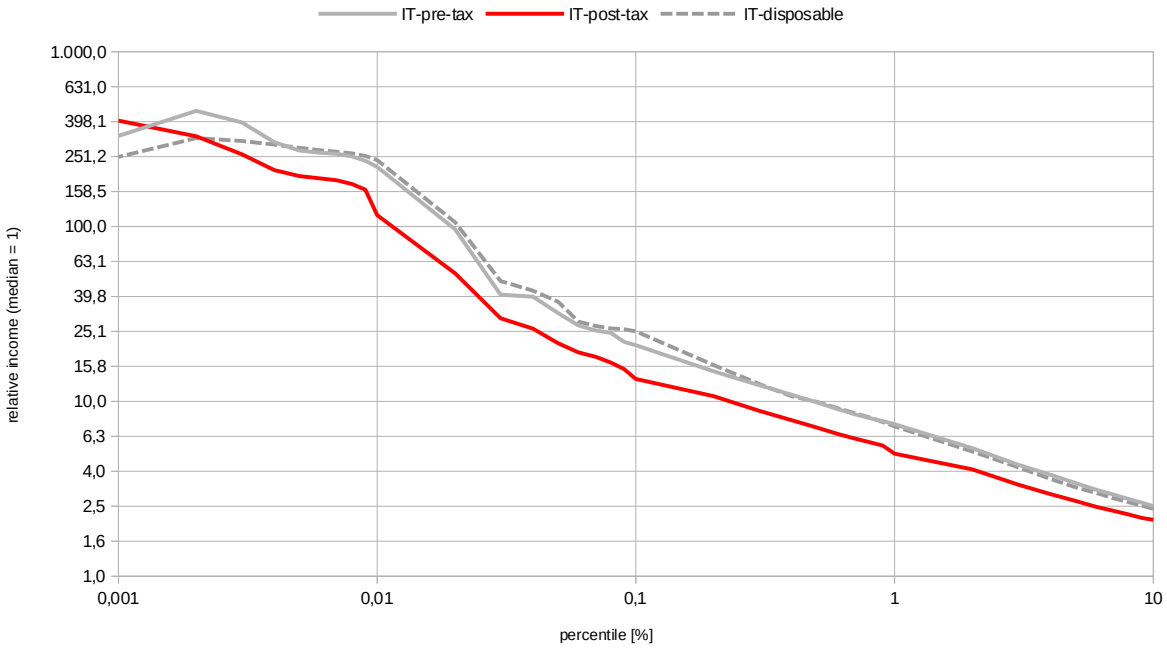

Figure 9. Italy. Relative income with respect to the median, upper class – logarithmic representation, data for 2020. Source: WID data base [WID 2024].[2]

[2] At the high-income end of pre-tax and disposable income data there is some methodological error, as income by percentiles should be monotonally decreasing. It is not clear whether this is due to an error in the WID data set or due to a wrong understanding from my side.

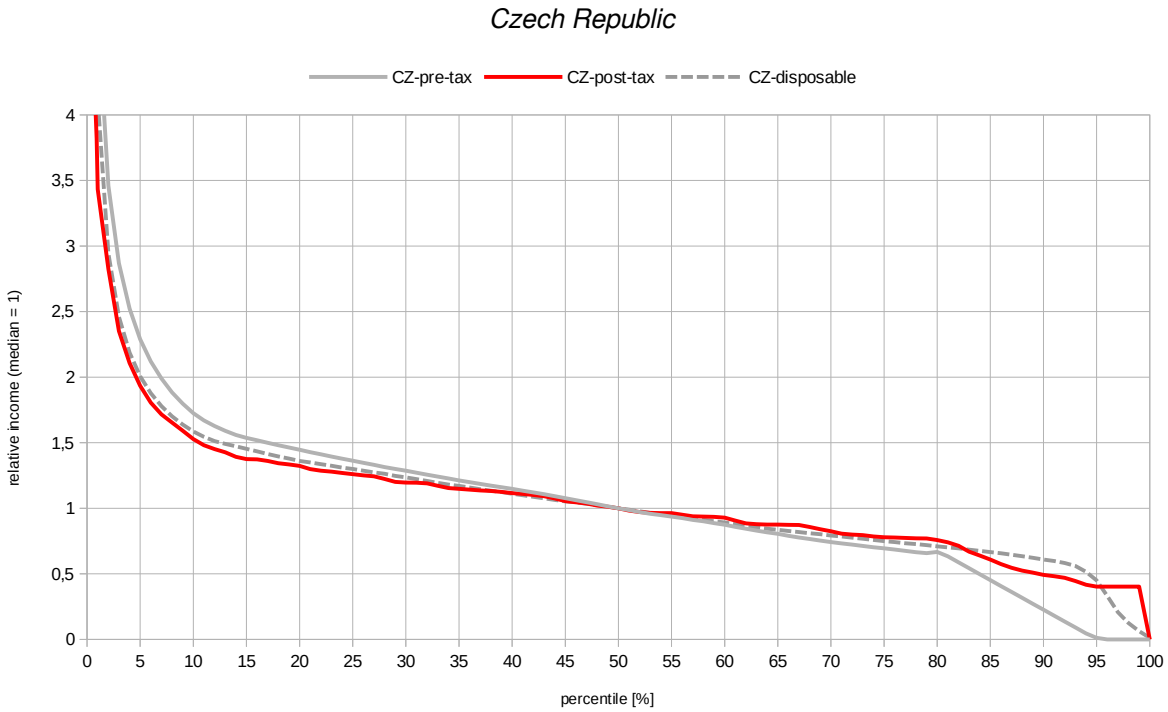

Figure 10. Czech Republic. Relative income with respect to the median, total population, data for 2020. Source: WID data base [WID 2024].

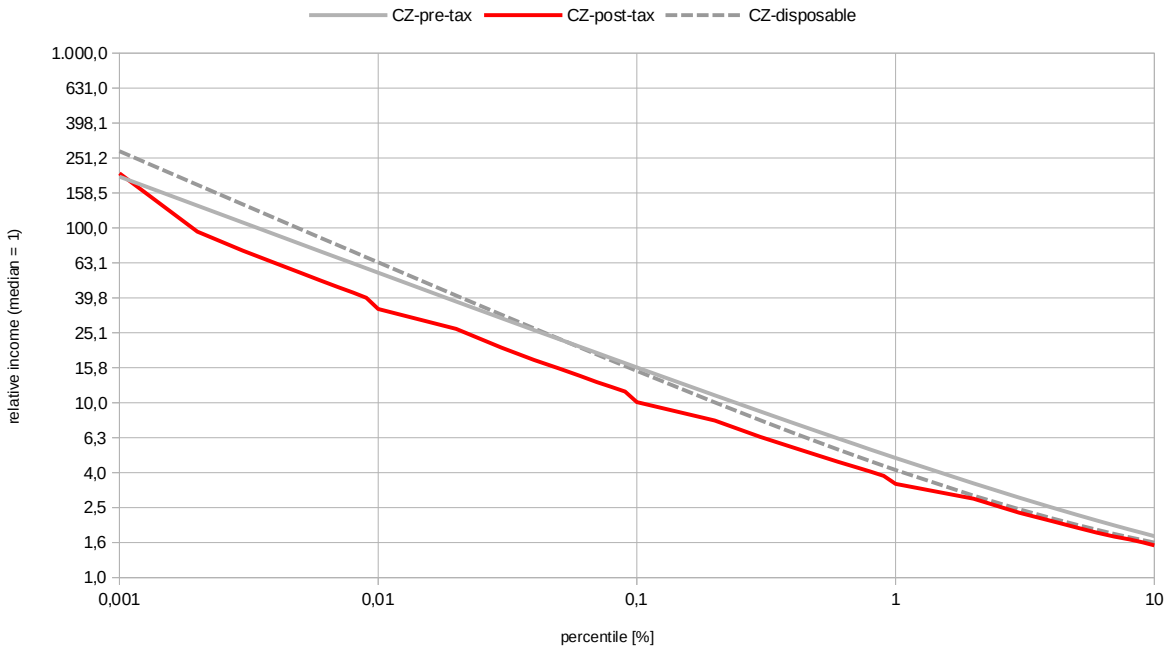

Figure 11. Czech Republic. Relative income with respect to the median, upper class – logarithmic representation, data for 2020. Source: WID data base [WID 2024].

In Figures 12 to 15 some characteristic parameters of the distributions are presented and compared between the five countries.

- The average income of the upper 1% of population is between 7x and 13x the median income depending on the country, while the following upper 9 percentiles (the rest of the upper 10%) receive an average income of 2x to 3x the median (Figure 12).

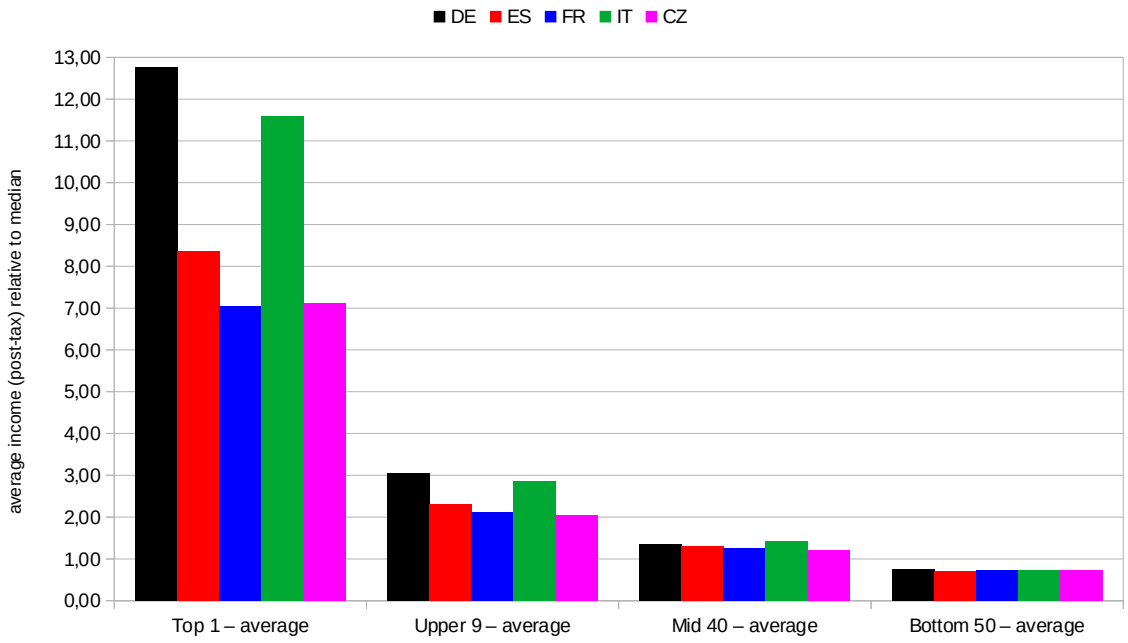

Figure 12. Average relative income (post-tax) with respect to the median by countries and social classes, data for 2020. Source: WID data base [WID 2024].

- The total share of (post-tax) income of the top 10% ranges from 23 to 30 % of total income Figure 13.

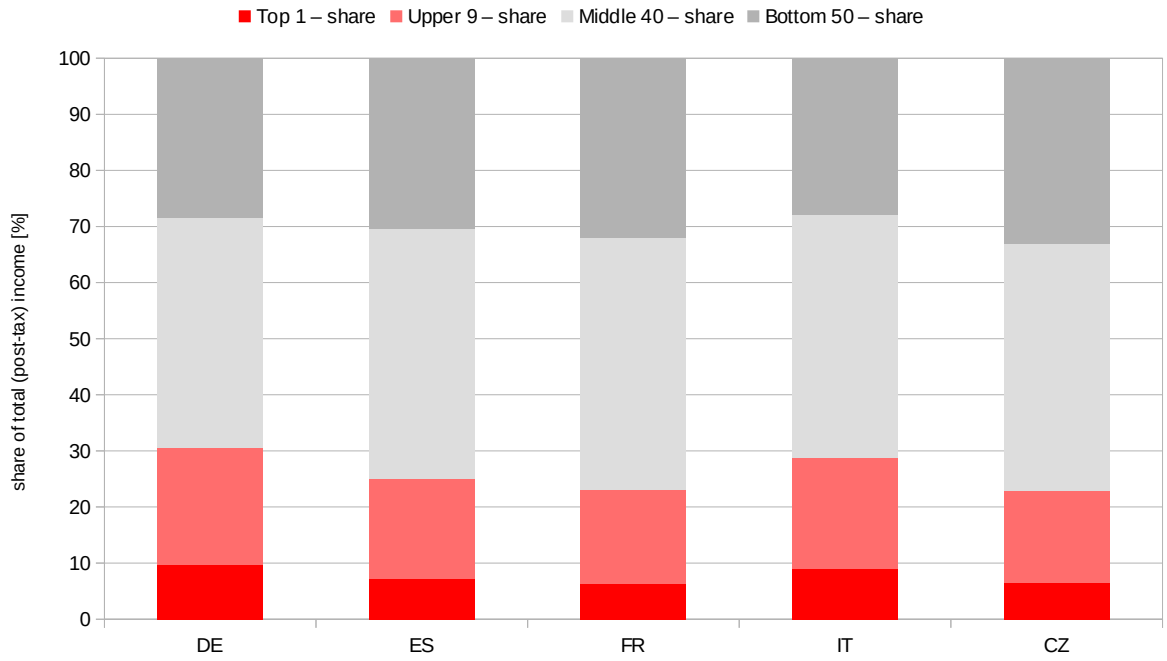

Figure 13. Share of income (post-tax) by countries and social classes, data for 2020. Source: WID data base [WID 2024].

- The share of (post-tax) **excess income above 2x the median varies strongly from country to country** from about 6,5 to 15,5 % of total income. From 4,5 to 12 % of the population receives an income above this threshold.

- **If (post-tax) income would be limited to a maximum of 4x the median income,** an amount **from 3 to 8 %** (strongly varying from country to country) **of total net national income could be redistributed affecting negatively only between 0,8% and 2,7% of the population** (Figures 14 and 15).

- Within the 5 countries analysed there are **two countries (Germany and Italy) with a very unequal distribution** (excess income above 4x the median of 7,7 and 6,3% of NNI), **two countries (France and the Czech Republic) with a comparatively equal distribution** (excess income above 4x the median of 2,8 and 2,9%), and **Spain being situated in between.**

Figure 14. Share of excess income (post-tax) above 2x and 4x median income. By countries, data for 2020. Source: WID data base [WID 2024].

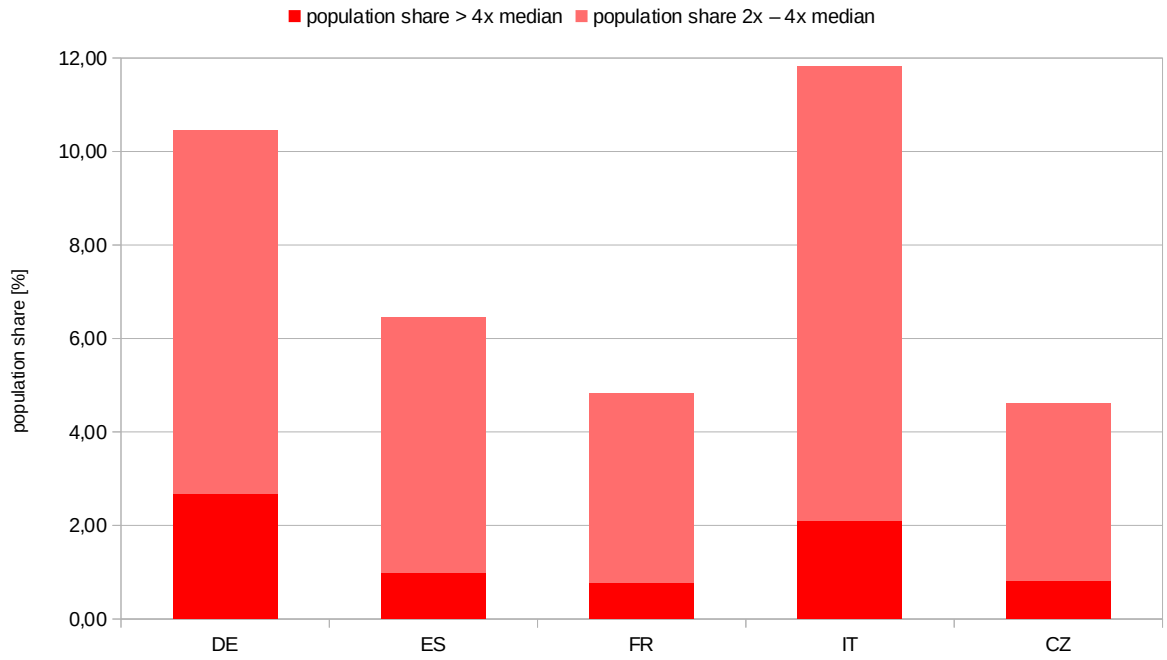

Figure 15. Share of population with an income (post-tax) above 2x and 4x median income. By countries, data for 2020. Source: WID data base [WID 2024].

Summarising some main results of this section, in 2020 the five countries under study can be classified into two groups with significantly different level of income inequality.

In the group with lower income inequality (CZ, ES, FR) roughly about 5% belong to an upper class of high and top income individuals (the latter forming less than 1% of total population). The share of excess income above 2x the median income is around 7% of total income on the average of this group of countries

In the second group with higher inequality (DE and IT) the upper class is larger (slightly above 10% of high and top income individuals) and excess income of this upper class is more than the double (around 14 % of total income).

3.2 Evolution of income inequality from 1960/1980 to 2020

The analysis of long-term evolution of income equality presented here is first of all carried out based on post-tax data. Unfortunately for this series data are available only from 1980 on, so that the analysis has to be completed by some graphics based on pre-tax data for the longer historic perspective since 1960.

Figures 16 to 17 show the historic evolution of income inequality in terms of the share of post-tax "excess income" using 2x and 4x the median income as threshold.

- The historic **evolution of income inequality since 1980 in the five countries analysed is quite different**, inspite of the increasing integration of the national economies within the European Union, and **strongly diverging in recent years**: **France and the Czech Republic (since 1995[3]) show a slight decrease in income inequality**, while **in Germany and Italy income inequality has strongly increased** in the 40 years from 1980 to 2020. **Income inequality in Spain has been decreasing, too, but from a very high initial level**, so that currently in 2020 it is situated in between the two pairs of other countries.

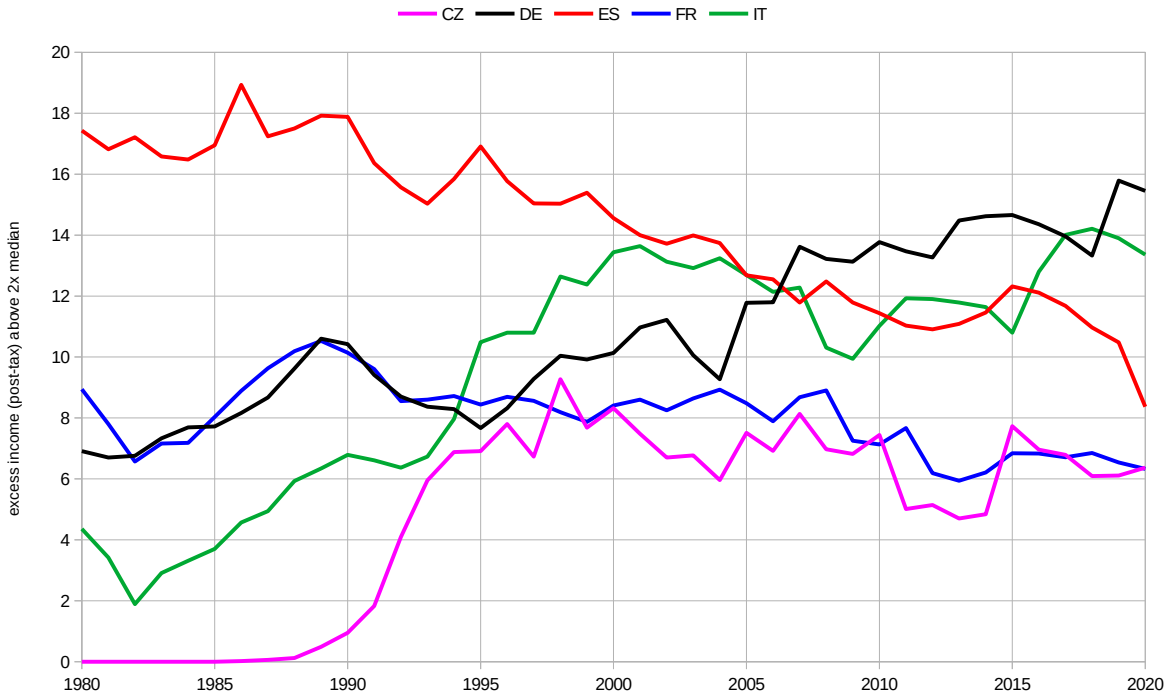

Figure 16. Share of "excess income" (post-tax) above 2x the median on total national income in %. Source: WID data base [WID 2024].

[3] after a structural change (transiton from state socialism to capitalism) accompanied by a strong an sudden increase of income inequality.

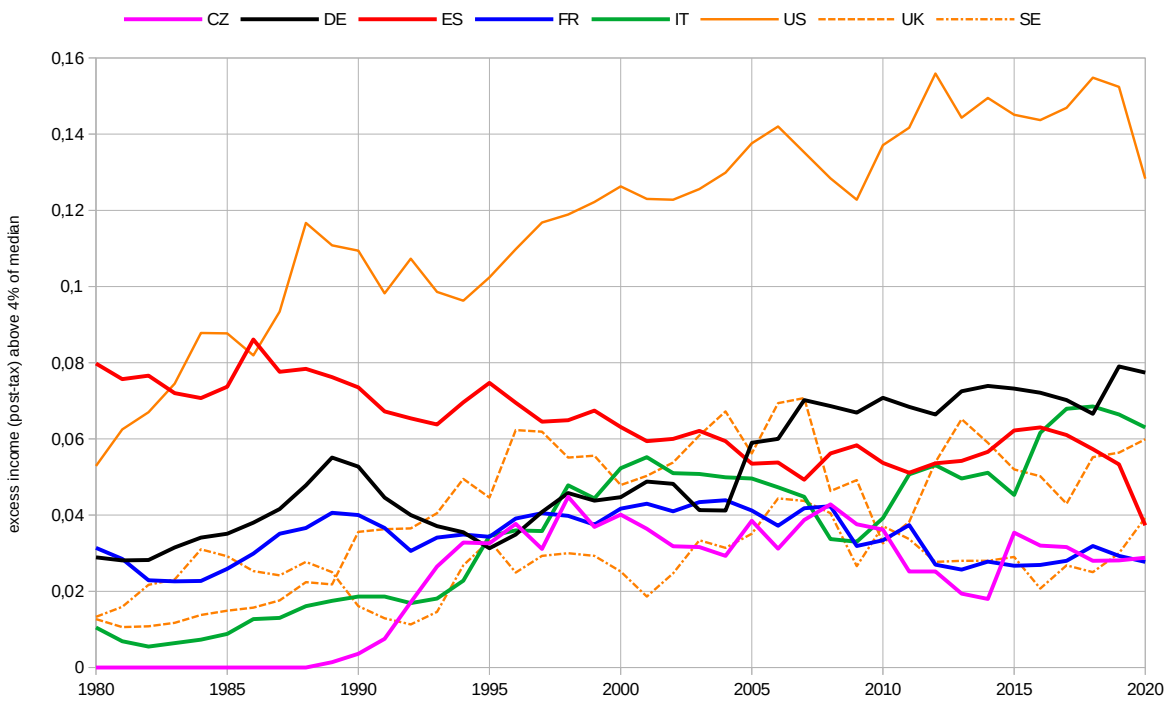

Figure 17. Share of "excess income" (post-tax) above 4x the median on total national income in %. Source: WID data base [WID 2024]. For comparison, also data for the USA, the UK[4] and Sweden are included.

[4] In the WID data base data for GB (Great Britain) are given instead of UK.

Figures 18 to 19 show the evolution of share of upper class population using 2x and 4x the median income as threshold, and in Figures 20 and 21 the evolution of the income share of the top 1% and the following upper 9% of population is presented.

- Parallel to the increase of the share of excess income also **the share of rich people** (above 2% or 4% of median income respectively) **in the total of population has increased or decreased depending on the countrie's path regarding inequality**, so that the increase (or decrease) in average income of the top 1% or upper 9% is less pronounced than the variation in the share of excess income.

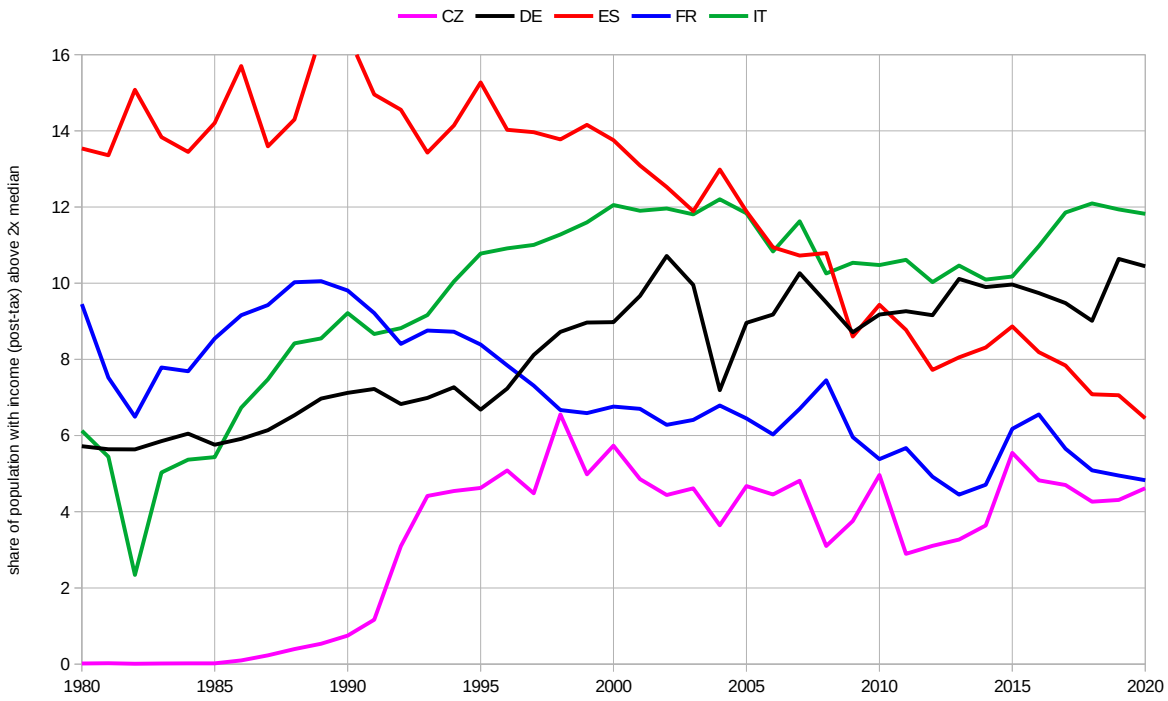

Figure 18. Share of population with a (post-tax) income above 2x the median in %, data for 2020. Source: WID data base [WID 2024].

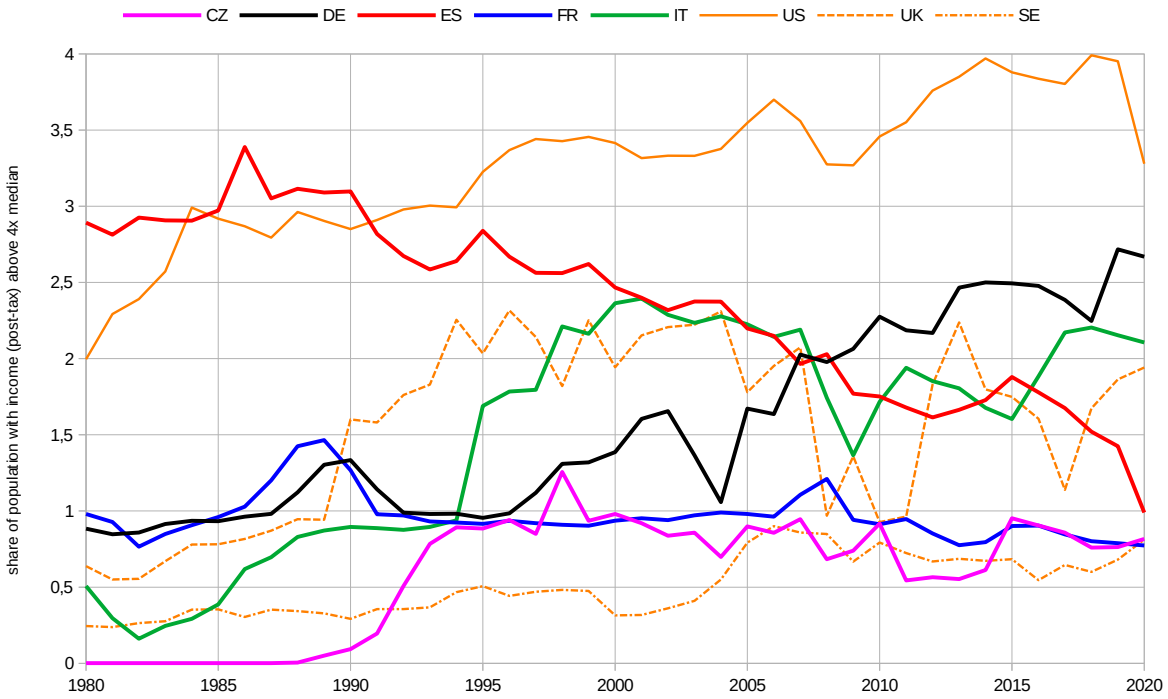

Figure 19. Share of population with a (post-tax) income above 4x the median in %, data for 2020. Source: WID data base [WID 2024]. For comparison, also data for the USA, the UK[5] and Sweden are included.

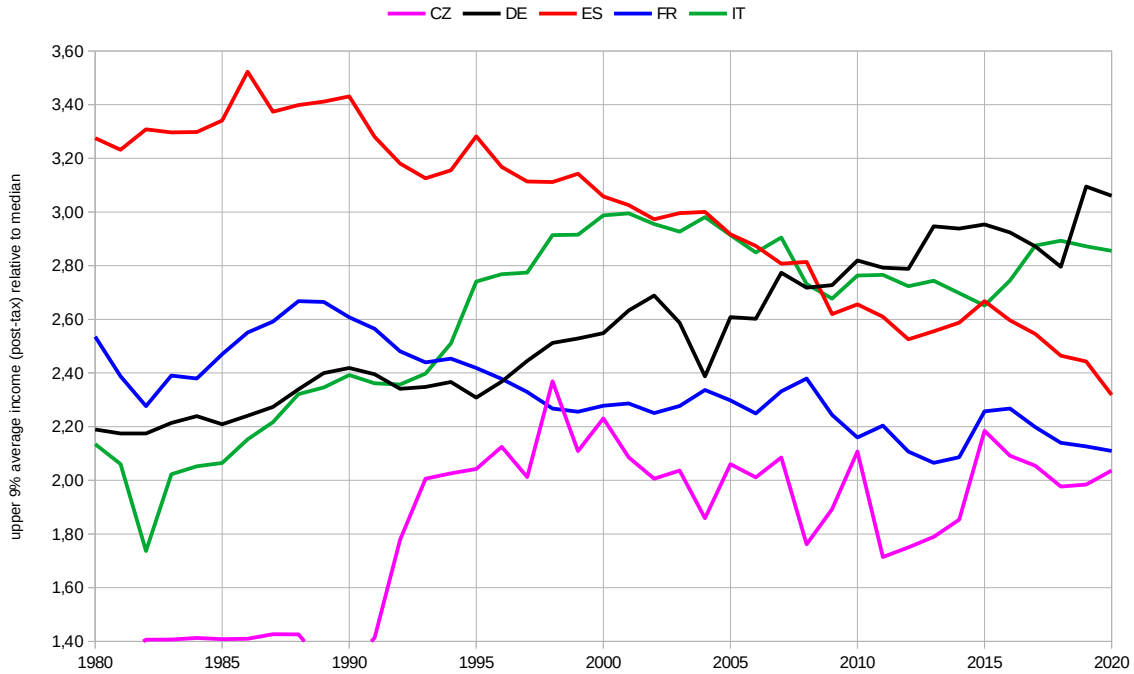

Figure 20. Average relative post-tax income of upper 9% - with respect to the median, data for 2020. Source: WID data base [WID 2024].

[5] In the WID data base data for GB (Great Britain) are given instead of UK.

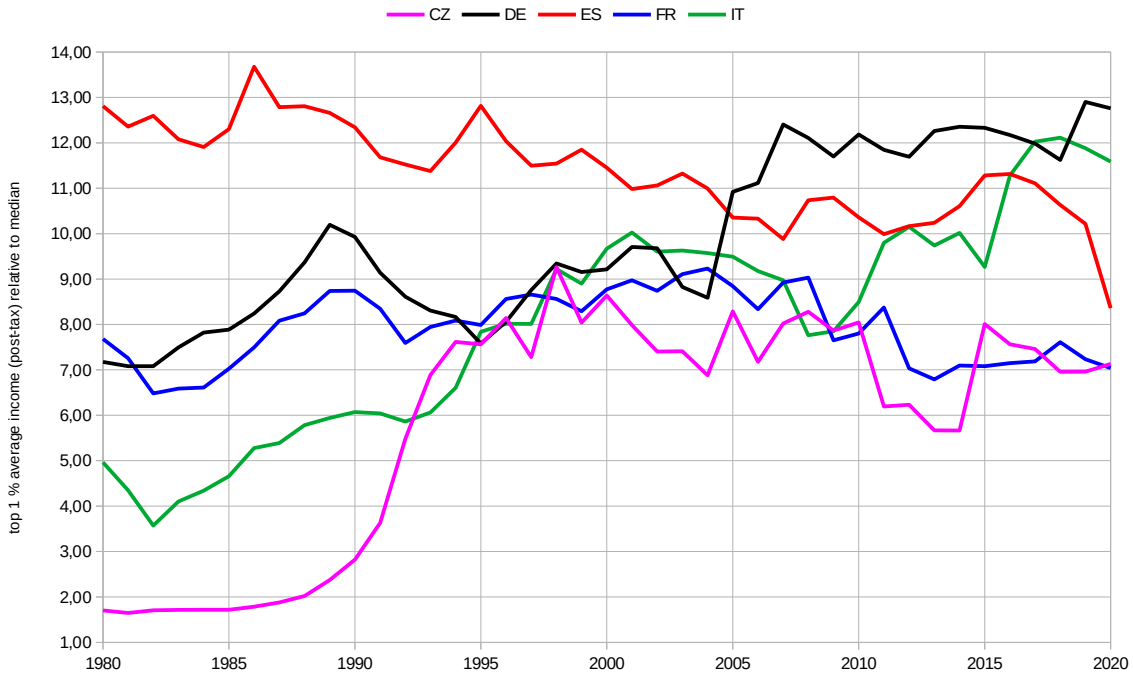

Figure 21. Average relative post-tax income of top 1% with respect to the median, data for 2020. Source: WID data base [WID 2024].

Figures 22 to 23 show the equivalent plots for *pre-tax data* which are available also for a longer-term perspective since 1960.

- For a long-term perspective since 1960 only pre-tax data are available. in (Western-)Germany, France and Italy (pre-tax) income inequality strongly decreased during the 1960ies and 1970ies, arriving at a turning point and increasing again in the neoliberal era since 1980. **Current levels of inequality in Germany and Italy are higher than that in 1960**.

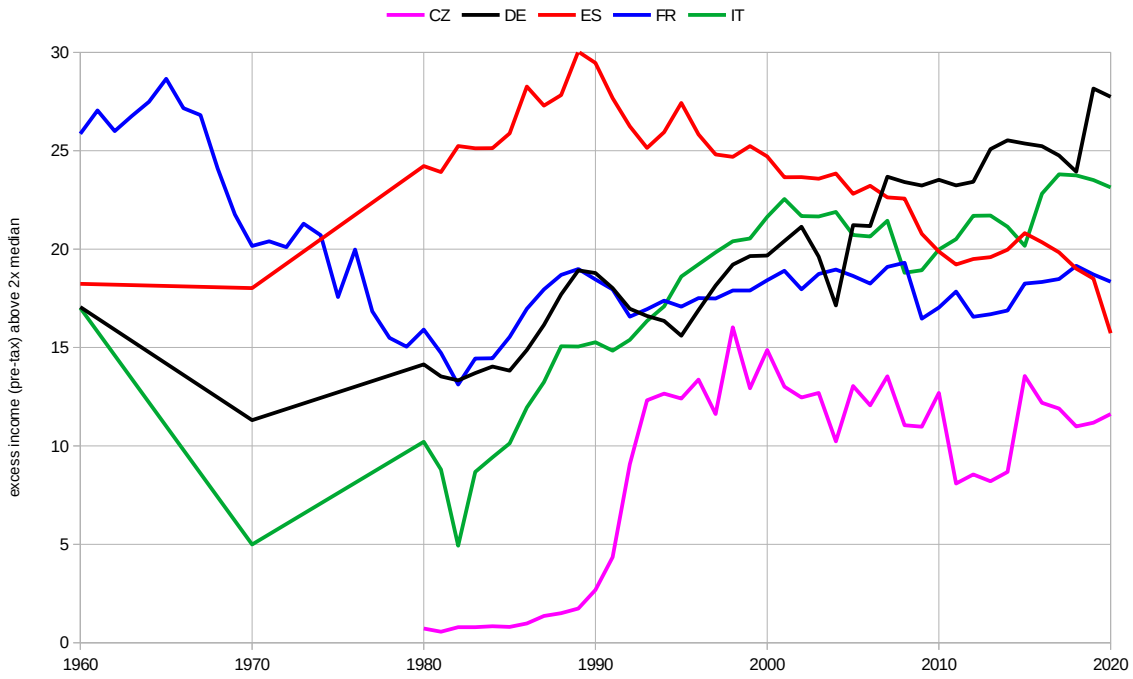

Figure 22. Share of "excess income" (pre-tax) above 2x the median on total national income in %. Source: WID data base [WID 2024].

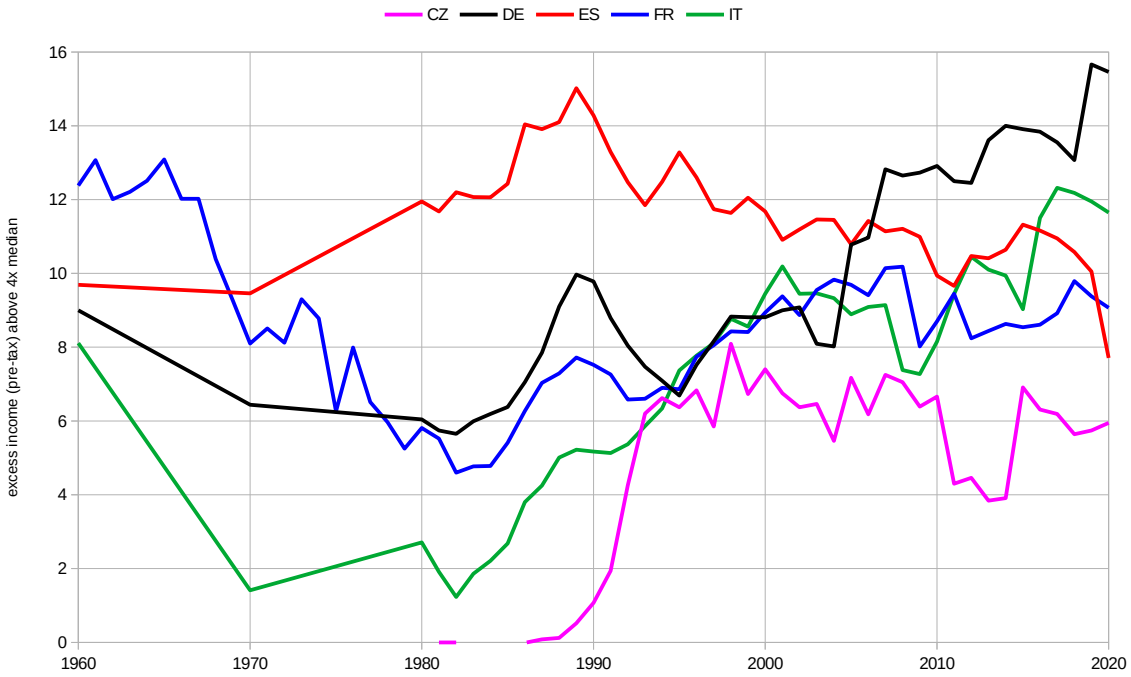

Figure 23. Share of "excess income" (pre-tax) above 4x the median on total national income in %. Source: WID data base [WID 2024].

3.3 Evolution of median and average income 1960/1980 to 2020

In Figures 25 to 28 the historic evolution of the median and average income since 1960 (pre-tax) and 1980 (post-tax) respectively is shown. Figure 24 compares the median post-tax income in the countries analysed for the years 1980 and 2020.

Reminder: When comparing the absolute numbers in EUR as shown in the following figures with own experience or data on the level of salaries or household income, one has to be aware that the concept of post-tax income in WID and used here does not only include disposable income of the individuals, but also income received in-kind by public spending.

- While **median post-tax income increased in Germany and France** at average yearly growth rates of 0,75% and 0,71% and a cumulative increase of 35% and 33% respectively, **in Italy median income in 2020 is 14% lower than 40 years ago**. Divergence of the evolution in Italy with respect to Germany and France started around 1990, while before and since 1960 all those three countries were evolving similarly.
- **In Spain, the cumulative increase has been 54%, starting from a comparatively low level**, catching up with Italy and reaching about two thirds of the level in Germany and France in 2020.
- Starting from a relatively high median income in the socialist era, **in Czech Republic there has been a strong decline of median income after transition to capitalism, and a gradual recovery since then catching up with Spain and Italy**. The cumulative increase in the four decades is only about 15%.

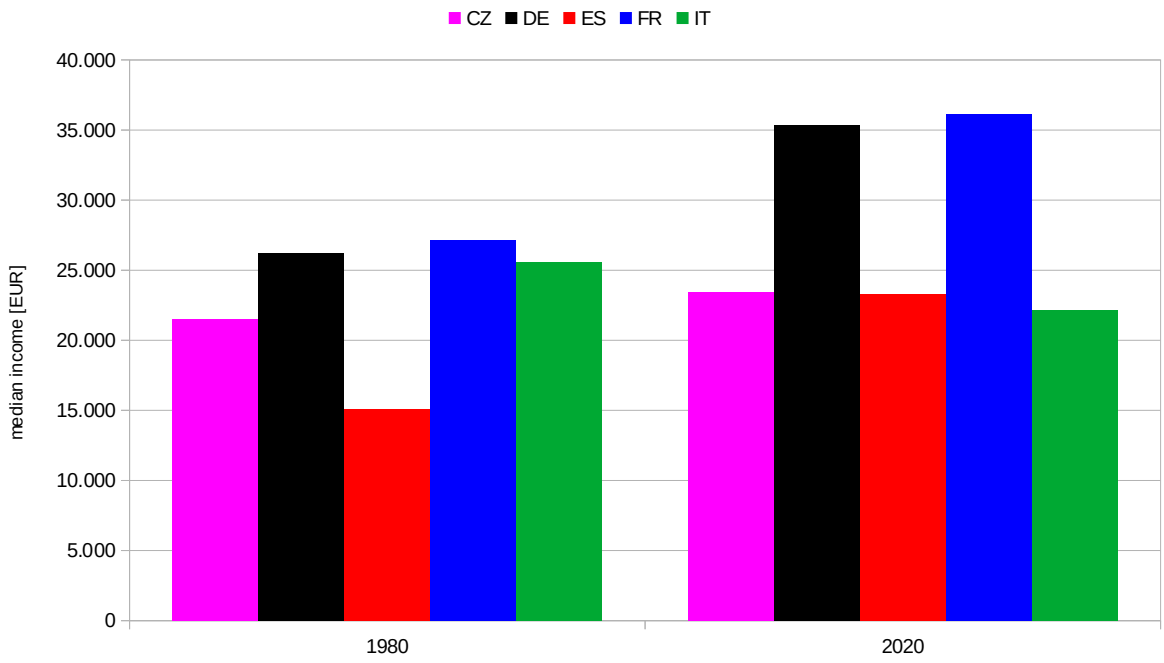

Figure 24. Evolution of the median income (post-tax) 1980 vs. 2020 (in constant prices EUR 2023). Source: WID data base [WID 2024]

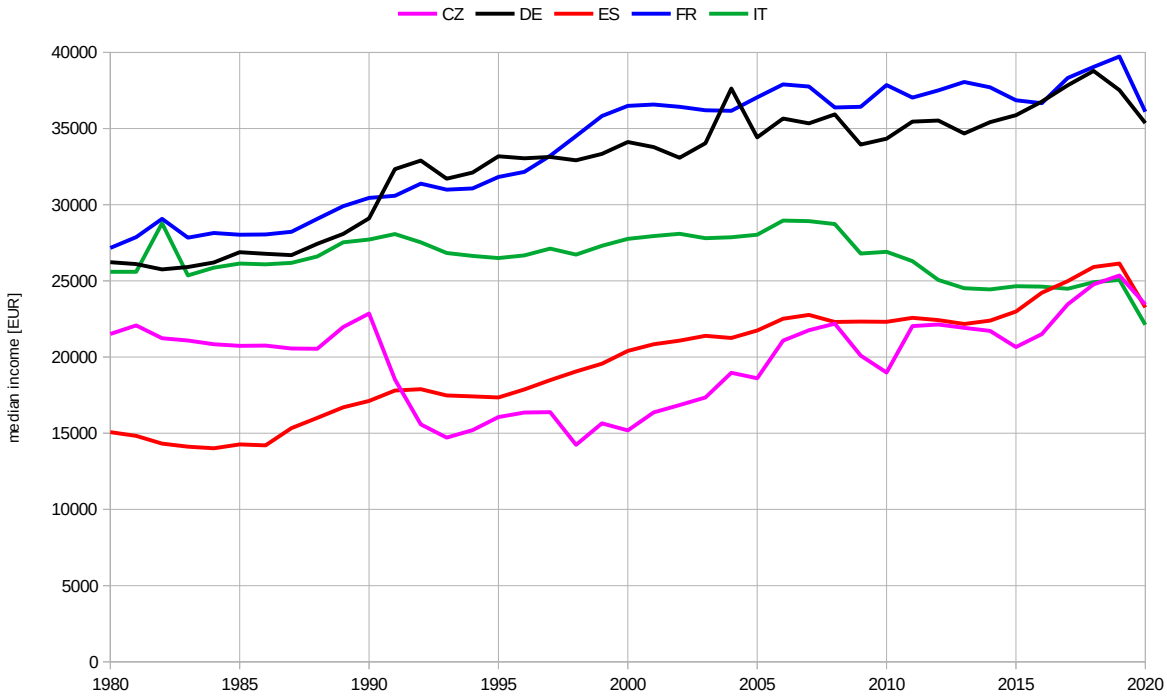

Figure 25. Evolution of the median income (post-tax) 1980 – 2020 (in constant prices EUR 2023). Source: WID data base [WID 2024]

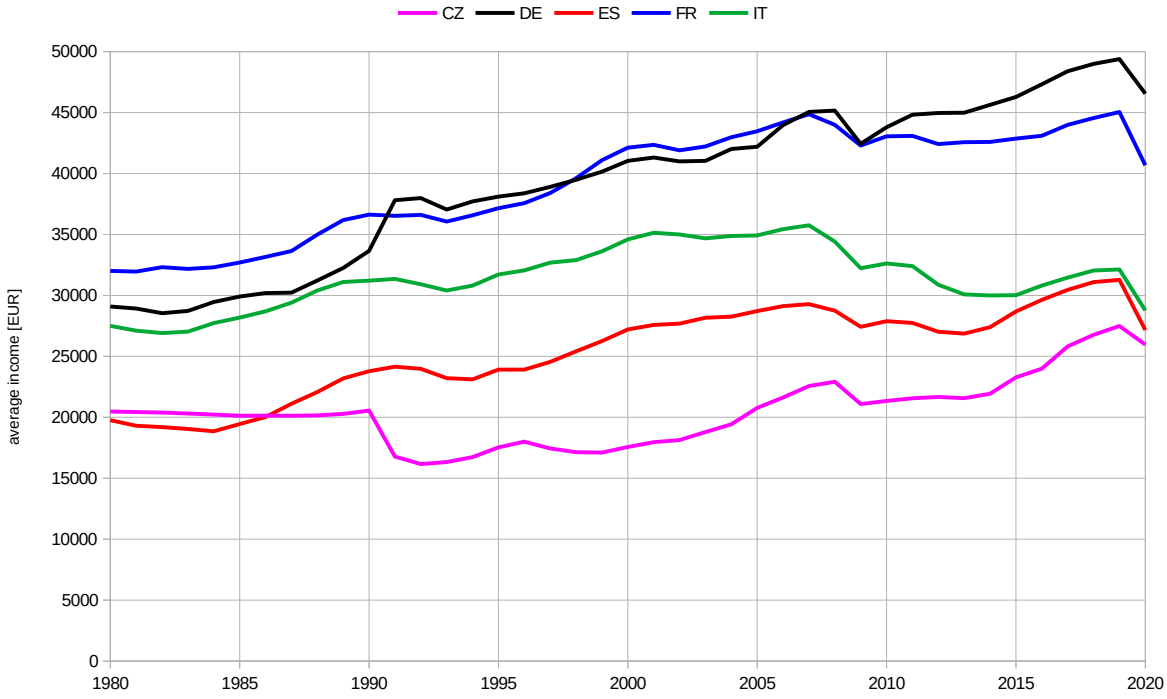

Figure 26. Evolution of the average income (post-tax) 1980 – 2020 (in constant prices EUR 2023). Source: WID data base [WID 2024]

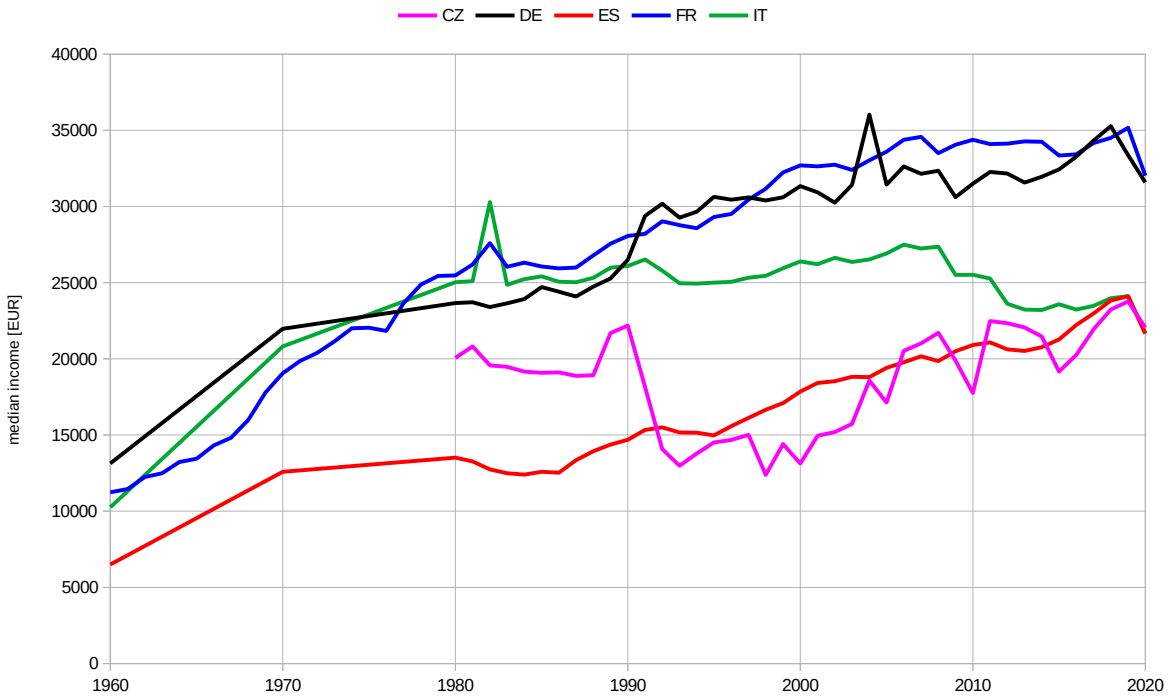

Figure 27. Evolution of the median income (pre-tax) 1960 – 2020 (in constant prices EUR 2023). Source: WID data base [WID 2024]

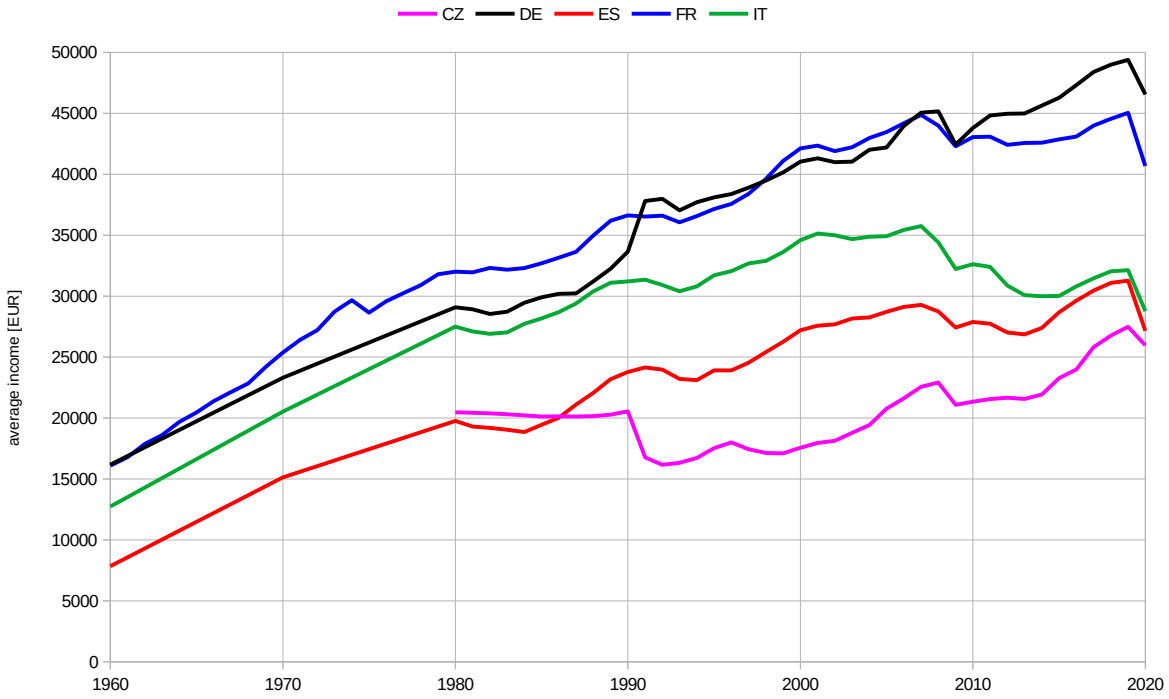

Figure 28. Evolution of the average income (pre-tax) 1960 – 2020 (in constant prices EUR 2023). Source: WID data base [WID 2024]

In Table 1 the aggregates of the relevant macroeconomic data, the GDP deflator and the currency conversion factors used in this analysis are given.

Table 1. Aggregates of relevant macroeconomic data in EUR (constant prices 2023), GDP deflator and currency conversion factors used.

		CZ		DE		ES		FR		IT	
		1980	*2020*	*1980*	*2020*	*1980*	*2020*	*1980*	*2020*	*1980*	*2020*
Total economy											
GDP	GEUR	185	294	1.894	3.757	560	1.255	1.400	2.469	1.237	1.748
NNI	GEUR	145	217	1.650	3.192	486	1.031	1.249	2.147	1.074	1.423
ratio NNI/GDP		79 %	74 %	87 %	85 %	87 %	82 %	89 %	87 %	87 %	81 %
Population											
total	mio.	10,33	10,54	77,79	83,49	37,64	47,27	54,97	66,55	56,43	59,97
adult	mio.	7,21	8,38	56,93	68,53	24,71	38,06	39,06	52,37	39,17	49,36
percentage adults		70 %	79 %	73 %	82 %	66 %	81 %	71 %	79 %	69 %	82 %
Per capita quantities											
GDP/capita	EUR	17.878	27.872	24.347	44.993	14.869	26.556	25.464	37.106	21.919	29.151
NNI/adult (average)	EUR	20.167	25.875	28.977	46.573	19.659	27.083	31.977	40.992	27.407	28.836
Conversion ratios											
Currency conversion (2023)	LCU/EUR	1,000		23,771		1,000		1,000		1,000	
GDP deflator (2023=1,0)	EUR	0,152	0,733	0,295	0,865	0,266	0,883	0,324	0,909	0,245	0,911

(*) LCU = local currency unit (CZK for the Czech Republic); GEUR = billions (10^9) EUR.

4 Conclusions

Income distribution is rather flat within the major part (around 90% - 95% of the population) and shows a strong concentration at high and top incomes. Only 5 to somewhat more than 10 %, depending on the country, obtain a (post-tax) income higher than 2x the median. The excess income of this small group, understood as all income above 2x the median, nevertheless amounts to between 7 and 14 % of total income.

The evolution of inequality on a long term (since 1960) show's an U-shape with a decrease of inequality in the fordist era (during the 1960ies and 70ies), a turning point and a successive increase since then in the neoliberal era until the mid/end of the 1990ies (except the special cases CZ and ES).

In the present 21st century, nevertheless, the evolution in the countries is diverging strongly into two groups of countries, with DE and IT showing a continued increase of inequality, while in CZ, ES and FR inequality (in post-tax data) is slightly decreasing.

In absolute terms, median income in all countries except IT is growing since 1990 rather in parallel, in CZ and ES at a lower level (about ⅔ of the median income in DE and FR), with yearly growth rates around 0,7%. Growth and median income in FR and DE are quite similar, in spite of the diverging rates of total (and average) income, due to the diverging path's with respect to (in-)equality.

In Italy, after starting in the 1980ies with a median income comparable to FR and DE in the 1980ies, since then median income is stagnating (in spite of still growing total income, due to a strong increase in inequality between 1980 and 2000) and since 2007 even decreasing.

References

[WID 2024] World Inequality Lab: Full data set, downloaded on December, 4th, 2024 from https://wid.world/data/

[WID 2024a] World Inequality Lab: *Distributional National Accounts Guidelines. Methods and Concepts used in the World Inequality Database*. Version from February 27th, 2024. Downloaded from https://wid.world/document/distributional-national-accounts-guidelines-2020-concepts-and-methods-used-in-the-world-inequality-database/ in December 2024.