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Varieties of Capitalism (VoC) and Varieties of Distributions (VoD): How Welfare Regimes Affect the Pre- and Post-Transfer Shapes of Inequalities?

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Abstract

In comparative analysis, we know that shapes of income distribution are variable and broadly related to types of welfare capitalism. Here, we expand on the socio-economic regimes literature and show almost perfect similarity between varieties of capitalism (VoC) and varieties of distributions (VoD). Utilising a new tool for income analysis, the isograph, and when we consider three stages of distributions by country-period: "before" taxes and redistributions, "after" (equivalized disposable of incomes) and the shape of "effort" between, the empirical clustering of countries are strongly related to what is theoretically known of welfare capitalism. We extend this relation to over 30 countries (LIS datasets) and then compare transformations over time, and then to the 183 LIS datasets having pre and post transfer incomes. We specifically detect, in particular in the lower percentiles of Nordic countries, but in other countries too, an increasing problem of massive inequality "before": a strong decline of market incomes at the bottom of the distribution is balanced by more generous transfers, but the risk is to generate poverty and dependence traps that contradicts the initial concept of the Social-Democratic welfare regime.

The aim of this paper is to understand how varieties of capitalisms (VoC) is related to the varieties of distributions (VoD) of income. We focus here on how models of welfare regimes and models of income distribution versus income redistribution are relatively consistently connected to each other. While the term welfare regimes and the corresponding models of capitalism (Esping-Andersen 1990, Schröder 2013) is based on historical, cultural and political background and is related to the level of de-commodification in a society, these types have been proven to impact the shape of income hierarchies. Goodin (1999) demonstrated that welfare regimes are ordered by their level of income inequality as well as poverty. Later researchers argued that welfare regimes also have characteristics other than income inequality reduction: they can be more or less gender equalitarian (Mandel and Shalev 2009), junior or senior friendly (Chauvel 2010, Storelli and Williamson 2015), have different ways to protect insider workers and/or stimulate labour reactivation, they can be prone to support more traditional families or new types of household arrangements. Some of these characteristics, especially the level of inequality, are formed by income redistribution.

The central purpose of redistributions is to reduce – or not – economic inequalities between individuals (and between households). Income redistribution is aimed to deal with problems such as extreme poverty (Luebker 2014, Van Vliet and Wang 2015, Korpi and Palme 1998, Brooks and Manza 2006, Marx, Salanauskaite and Verbist 2013), unemployment and inclusion of the working class (Bradley et al. 2003, Huber and Stephens 2014), finding tax resources by taxing the upper middle class and the rich (Koreh and Shalev 2009, Kemmerling 2014), and the promotion of a model of the middle class citizen (Dallinger 2013). These have been important aspects of welfare regime development over the 20th century (Marshall 1950, Wilensky 1974, Powell 2015).

However, the understanding of the relation between the institutional characteristics of regime types and their actual redistribution effort is still underdeveloped. Most of the work on this matter has focused on an indirect mechanism, in which for example, attitudes towards redistribution are clustered by welfare regimes (Svallfors 1997, Edlund 1999, Jaeger 2009, Brady and Bostic 2015). Differences in attitudes are expected to lead to differences in redistribution effort.

An extension of this explanation is the median voter theory. A political-economic regime, such as a welfare regime, is supposed to represent the interest of the median voter (whose economic position is dependent on the level of inequality in the country). Therefore, redistribution should be higher in countries with higher market income inequality (Milanovic 1999, 2000). However, this model has been proven insufficient to distinguish between regimes types, probably due to complex mechanisms that translate the voters' interests into policy in representative democracies. Even though countries are targeting their redistribution toward different income deciles, their targeting is not correlated with market income inequality, nor associated with specific regime types.

Another approach to identify the importance of redistribution policy in the constructing of regime types was to focus on the income redistribution as the differences between market income inequality and disposable income inequality (Kakwani 1986). Using this method, Korpi and Palme (1998) tried to identify redistribution effort with theoretical concept of social insurance institute, which are based on the patterns of redistribution (but only on the benefits side). Of course, the social insurance regimes are highly associated with both welfare regimes and types of capitalism.

The social insurance institute regimes consist of ideal types that represent several characteristics of redistribution which describe social insurance schemes but can be also extrapolated to other kinds of tax and transfers arrangements: to which part of the income distribution (or the occupational ladder) it is targeted; which parts of the society are not beneficiaries of the distribution effort; Are the benefits given at a flat rate or are they earning related and whether the redistribution is based on voluntary (state subsidized) effort?

These ideal types follow, to a large extent, the categories of welfare capitalism. Ferrarini and Nelson (2003) found that the Scandinavian social democratic countries (with the exception of Denmark) are employing a distinct generous and universal scheme (encompassing regime); the continental west European countries are using the corporatist social insurance model and the English-speaking countries are associated with a distinct type of social insurance system, based on flat rate benefit structure. Montanari, Nelson and Palme (2008) later, refinedthese types into welfare system classification similar to Esping-Andersen (1990): basic security countries (liberal countries according to Esping-Andersen), encompassing countries (social-democratic countries) and state corporatist countries (conservative-corporatist countries).

Contrary to Korpi and Palme's (1998) assumptions, there were only few associations between the social insurance regimes and income redistribution. Moreover, it turned out to be correlated with the level of targeting the redistribution effort, implying that targeting redistribution toward the poor leads to less distribution effort. This finding is known as the paradox of redistribution (Korpi and Palme 1998). However, a more recent study (Marx et al. 2013) provided less conclusive results, suggesting that there is little correlation between the level of redistribution and the specific income level for which it is targeted.

This paper aspires to extend the framework suggested by Korpi and Palme (1998), Ferrarini and Nelson (2003) and Montanari, Nelson and Palme (2008) to include more types of redistribution policies and to account for the interdependencies between market income inequality, disposable income inequality and distribution policy. By this, we address several critiques of the redistribution literature:

- The effect of market income on redistribution. High market income inequality (before tax and transfers) leads to more redistribution even among countries within the same regime and even for the same country over time (Kenworthy and Pontusson 2005). By focusing on the redistribution effort only, the importance of pre redistribution inequality in the welfare strategy has been somewhat overlooked, and this is especially true for countries with types of "informal" redistribution schemes based on social and communal networks (Cecil, Offer and St. Leger 1987, Wood 2009).

- Different targeting strategies. The institutional approach of Korpi and Palme (1998) focused only on social insurance. However, other schemes not based on tax and transfers might compensate for the lack of targeted social security institutions or even make them obsolete. For example, market regulations and collective bargaining might produce market income targeting the median to the lower end of the income distribution (Rhodes 2001). Therefore, it is important, in assessing welfare state patterns, to examine also the targeting level of the market income (and not only the disposable income or the redistribution effort).
- Intentions versus. actions. The institutional framework of distribution regimes focus on the welfare strategies that are reflected in each country's regulations and declared spending. However, the actual effort and its targeting is usually overlooked.
- Analytical versus. empirical clustering. The use of analytical clusters, or regimes, has its advantages, especially when it aims to predict changes in these regimes or to include varieties of complex institutional aspects of each regime. On the other side, the possibility to use empirical clusters of countries, based on only several clear characteristics that are theoretically grounded in the theory of redistribution, might help to validate the analytical clusters and to expand the knowledge on countries that are not usually included in such studies. For example, only few studies tried to evaluate the welfare regime of post-Soviet countries (Fenger 2007).
- Discrete clusters versus continuous range. Analytical clusters usually produce discrete categories (but see Vis 2007 for a different approach to analytical clusters). However, there should be an option for a continuous range, in which countries are ranked on their distance from the ideal type represented in each cluster. Several attempts to pursue this have been made, most notable by Powell and Barrientos (2004).

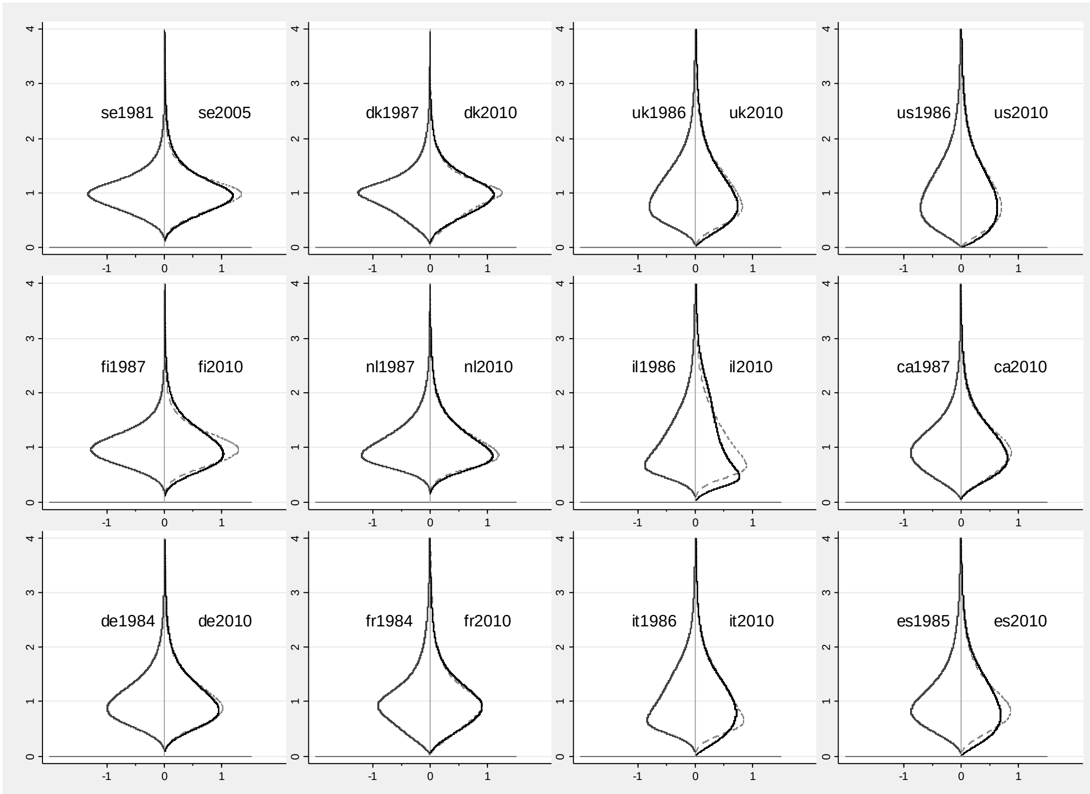
Our approach is based on measuring the level of targeted effort, as well as market and disposable income inequality to produce empirical clusters that represent varieties of distributions: cluster of different distribution which are either based on tax and transfers or on other measures, which have been taken effect prior formal redistribution. We focus on distinguishing clusters with a substantial meaning but also examine countries that are not located within any distinct cluster.

We do know that different types of welfare capitalism are relatively well differentiated by their shape of income distribution (Chauvel 2016): for instance, Nordic countries have specific middle class dense distributions and (neo-) liberal countries show strong stretches between the top and the bottom.

In this paper, we aim at improving this linkage between VoC and VoD by first developing the existing tools for the analysis of inequality, and second by generalizing their implementation to the levels of living (equivalized disposable income after tax and transfers, we define "inequality after" as the final distribution after taxes and transfers), to "inequality before" taxes and transfers (the initial "market" inequalities resulting from initial distribution of resources based on labour and capital), and to "effort" that happens between "before" and "after" inequalities. We show here how welfare capitalism shapes models of societies via these three facets of income distribution.

Since our aim is to focus on the vertical/hierarchical shapes of income distributions, we neglect here the aspect of disparity between socio-demographic groups. Specifically, we focus on labour-age population (25- to 54-year-olds), and we do not differentiate between household arrangements, gender or age group preferences, or immigrant/native imbalances..

Figure 1: The changing shape of income distribution (relative to the country-year median income = 1):12 typical strobiloids



Note: The strobiloid shows the income hierarchy as a vertical axis (1 = country-year median). Exactly 50% of the population is below versus above level 1. The larger the middle class, the larger the curve near level 1. Many individuals are at the intermediate level around the median and their number diminishes at the top (the rich, topped here at 4 times above the median, are relatively few) and at the bottom (impossible to survive near income = 0). Thus, in strobiloids with a larger belly, the intermediate middle class is larger with a more equal distribution (e.g. Denmark). The Israeli and the U.S. cases are very specific examples of massive erosion of the middle or median class. The dashed line mirrors the left-hand side of the curve to facilitate comparison over time. Source: Luxembourg Income Study (Chauvel 2016).

The aspect of “inequality after” is relatively well known: it is well acknowledged that “inequality” is not simply a question of the Gini index or of other scalar measures of inequality, but a question of shape of distribution (Figure 1): the same level of Gini can describe very contrasted incomes shapes (Chauvel 2016), intensities of poverty, density of middle class, etc. The two other facets (“inequality before” and “effort”) remain rather unclear aspects of VoD, beyond the measurement of Gini reduction (Wang et al. 2014) or other broad and unprecise measurements. Our aim is to show how (re)distribution is not only a rich to poor transfer of higher or lower intensity measured by the Gini index, it is an income-level specific action that can profit some strata and not the others as well.

In its most obvious form, redistribution of income is done by taxation of the rich and benefiting the poor, with some indeterminate, complex, and relative position of the middle class between the two as participants in the taxes and beneficiaries in redistributions (Roemer et al. 2003). By (more) taxation of the the upper parts of the income distribution, societies reduce the gap between the poor and the rich. They later can use the tax money to compensate the poor, thus reducing inequality even more. The “effort” between “before inequalities” and “after inequalities” is an important factor in the reduction of the vertical hierarchy and in reshaping the distances between income strata. Another aspect of inequalities relies on the primary (or “market”, “initial”, or “before”) distribution of resources: “inequalities before” can be reduced via labour incentives (Earned Income Tax Credits) or the creation of specific forms of contracts (state subsidised labour positions), or even by supporting complex household structures (multi-generational families can reduce the visibility of senior poverty and junior unemployment).

Therefore, it is vital to measure, in parallel, income inequality before and after tax and transfers to understand the level of income inequality in a comparative perspective, or to compare the efficiency of the efforts in countries’ income inequality.

Targeted redistribution

While the basic model of redistribution is of the taking from the richest and giving to the poorest, in reality, redistribution efforts can be concentrated in any part of the distribution. According to the Pigou-Dalton principle, taking part of the income (taxing) from an individual at position x1 on the distribution and giving it (transfer) to an individual at position x2 will reduce income inequality, as long as x1 > x2 both before and after the transfer.

This enables societies to preform redistribution polices that benefit specific groups and classes. They can chose to give tax benefits to the richest and deny transfer benefits from the poorest while still enjoy less inequality than before, as long as there are some transfers through the middle of the distribution (Korpi and Palme 1998).

Esping-Andersen (1990) underlines that welfare states utilise different patterns of redistribution policies to reduce inequalities. Some countries, known as the liberal welfare states, focus on transfers to the lowest end of the income distribution, with almost no direct transfers to other parts of the distribution. Other countries, regarded as the social-democratic welfare states, take a more universalist approach, with social transfers aimed for the entire population. A third group of countries, called the conservative welfare states, according to Esping-Andersen, focus mainly on labour market regulation and collective bargaining, with limited transfers to specific income groups. Esping-Andersen identifies these three redistribution policies as welfare-state regimes. Other scholars, such as Leibfried (1993), have suggested that the conservative welfare regime should be further decomposed into two variants: the “Bismarck” countries, in which welfare policy is mainly based on labour relations and the southern or ”Latin Rim” countries, in which the welfare policy is based on traditional institutions, such as family or religious identity as the main base of eligibility for social transfers.

Later studies on welfare state regimes introduced other characteristics of these countries, without contradicting Esping-Andersen’s (1990) basic classification. Hall and Soskice (2001) argued that the production system, whether it is liberal or coordinated market, is the main characteristic in defining the nature of income distribution in a country. Their typology enables researchers to distinguish between redistribution policies (or the lack thereof) which are effective before tax and transfers.

Welfare state typologies are based on the policies rather on their actual results. Empirical validations of them are usually established on policy, aggregated social spending, declared tax rates and level of wage bargaining (Schröder 2013, Josifidis et al. 2015). Little is known about which groups benefit the most from each policy.. Moreover, it is not clear what the role of taxation in different regimes is. While taxation can be an important equalizer policy component (even without accompanied transfers), there has been no effort to empirically analyse its actual effect.

When comparing income inequality between these clusters of countries, there is an evident hierarchy in terms of the intensity of inequality. social-democratic countries have lower inequality than conservative countries, and liberal countries are more unequal than any other type of countries (Castles and Mitchell 1992). However, little is known about the actual redistribution policy of each welfare regime or even if the countries belonging to each regime utilise a similar redistribution policy.

The patterns of redistribution and the question whether redistribution patterns form distinct types that are overlapping with welfare state regimes are the focus of this paper.

The term “pattern of distribution” (or redistribution) pertains to inequality within levels in the social hierarchy and the relations between these levels. Usually, studies of inequality within categories (or levels) in the social hierarchy investigate polarization rather than inequality (Wolfson 1994). Another approach, taken by Yitzhaki and Lerman (1991), was to decompose Gini inequality in order to examine how much the difference between stratified groups contributes to income inequality.

Our approach is quite different. We measure inequality within each stratum, and we depict “distribution of inequalities”. In this distribution, inequality differences between stratification categories (e.g. income quantiles) can indicate the level in which the redistribution is most effective. This enables us to examine overall and level-specific inequality at the same time.

This is especially important when we compare inequality before and after tax and transfers. As we noted, the effect of redistribution policies might be different on overall and level-specific inequalities. It is likely that in order to achieve more equality for the entire population, countries are increasing some specific-level inequalities. They might also intentionally decrease inequalities for a specific stratum, for example the lowest one, in accordance with their welfare ideology (Esping-Andersen 1990).

In sum, we suspect welfare regimes and different types of welfare capitalisms have different ways of generating inequalities by a mix of before/effort/after shapes of inequalities.

Methods

The Isograph: detecting the shape of inequalities

To study patterns of redistribution, we introduce a tool called the Isograph (Chauvel 2016). The Isograph describes inequalities in different income levels, thus providing the overall pattern of inequality together with level-specific inequalities, serving as Meta-Gini. The formal definition of Isograph is as follows:

$$ISO_{\mathrm{i}} = \frac{\ln(\frac{income_i}{median(income)})}{logit(r_i)}$$

Where logit(r) = ln(r/(1-r)) and $r_i \in]0,1[$ is the fractional rank order of income quantiles. For individual i of $income_i$, the fractional rank is r_i. The value $X_i = logit(r_i)$, the “logit rank”, varies from minus to plus infinite, with a value of 0 for the median. In a nutshell, logit rank is particularly useful to standardize variables in comparative inequality contexts, and it is a strong tool for the exploration of income tails (see Table 1). This X = logit(rank) allows the comparative analysis of country variation (e.g. comparing the bottom 5 % of country A to the bottom 5 % of country B).[1]

[1] Logit rank procedure is implemented in Stata as a subroutine of the “abg” Stata module abg.ado (ssc install abg / help logitrank). Download available at https://ideas.repec.org/c/boc/bocode/s457936a.html

Table 1: Conversion between logit(rank) and percentiles

logit(rank)	-4	-3	-2	-1	0	1	2	3	4
Percentile/rank	0.018	0.047	0.119	0.269	0.500	0.731	0.881	0.953	0.982

…

0 is median

1 is close to top quartile

2 is close to top decile

3 is close to top vingtile

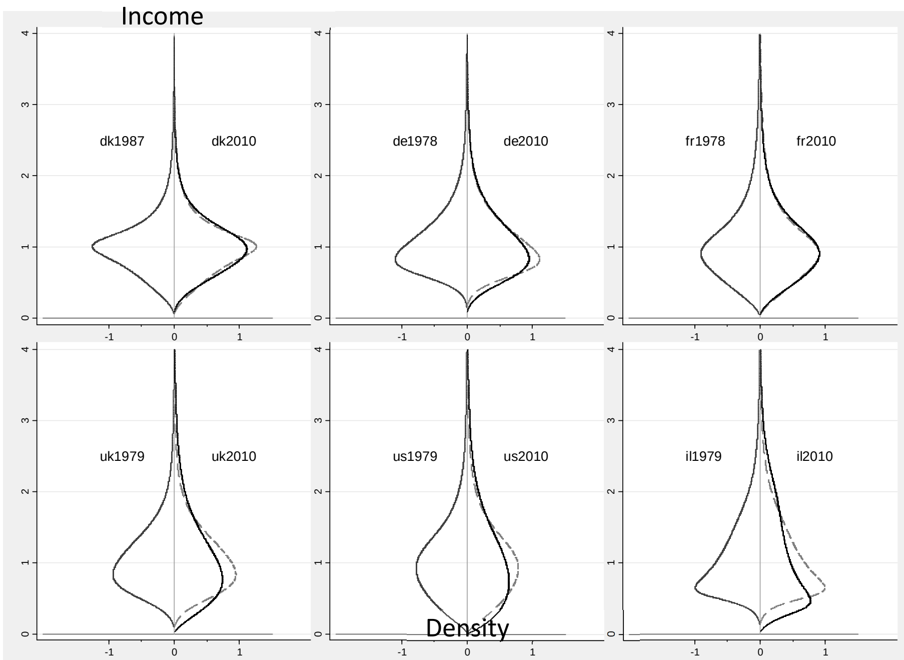
4 is close to top 2%

The log-medianized income of individual i is $Y_i = \ln(\frac{income_i}{median(income)})$. Former analyses (Chauvel 2016) show that Y is a monotonous, generally close to a linear function of X with constant equal to zero: $Y \approx \alpha X$. When Y is a perfectly straight line, income is a Champernowne-Fisk distribution with Gini = α.

We define ISO = Y/X at each income. We show (Chauvel 2016) that ISO provides the level of inequality for this quantile level X. The isograph depicts the ISO*i* for all the ranks of the social order, in our case income quantiles. In the isograph, X is the horizontal axis and ISO=Y/X the vertical one: the isograph is higher at a given income percentile X when inequality increases at this level. The values of ISO are homogeneous to the Gini index of the distribution. When ISO is a constant, the value of ISO is the Gini index of the distribution.

This tool is able to detect precisely where stretches in the income distribution occur, with higher income gaps between percentile levels. For instance, the isograph detects a strong dynamics of income polarization in Israel, and a specific increase in income inequality at the bottom of the income distribution in Germany (figure 3).

Figure 2: Six typical strobiloids (Denmark, Germany, France, U.K., U.S. and Israel)

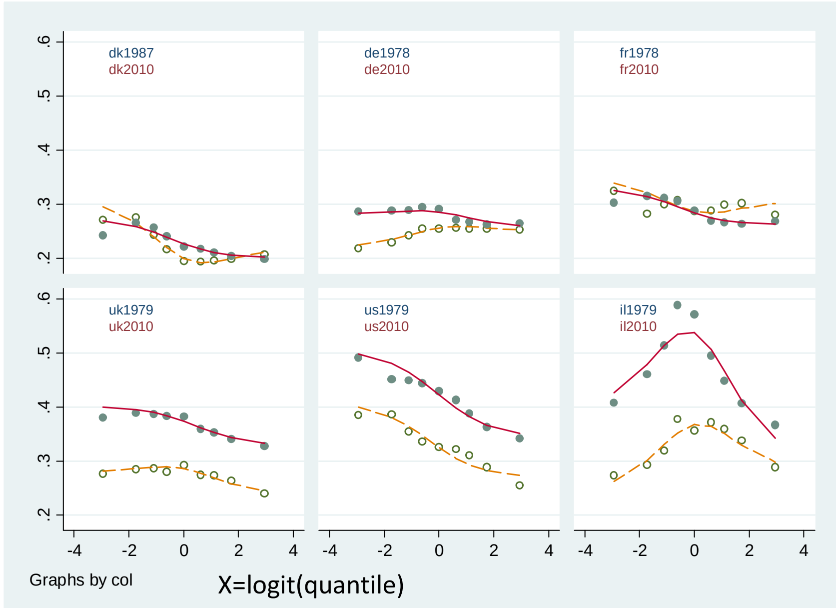


Note: The strobiloid shows the income hierarchy (on the vertical axis, 1 = median). The curve is larger (horizontal axis) when the density at this level of income is higher: Many individuals are at the intermediate level close to the median, and their number diminishes at the top and at the bottom.

Thus, in strobiloids with a larger belly, the intermediate middle class is larger with a more equal distribution.

Source: Luxembourg Income Study (Chauvel 2016).

Figure 3: The Isographs for six typical countries



Note: The dots represent the empirical values and the lines are the fitted isographs (ABG method). For each country, two periods are considered: the dashed line and white dots depict the older years, the solid line and grey dots refer to more recent years. The higher the curve at a given level of X (logit rank), the greater are the income inequalities at this level. The isographs for Israel between 1979 and 2010 reveal an obvious case of extreme polarisation..

Source: Luxembourg Income Study (Chauvel 2016).

Data

We employ a harmonised data set based on the Luxembourg Income Study Database (LIS) household level data. The LIS is an international project that collects, archives and harmonises income studies at the individual and household level. The project contains micro-data that enable cross-national and over time analysis of income inequality.

The data contain information from 36 countries for the time period 1967 to 2013. Overall, there are 183 unique country-period samples. We restrict respondents' age to 25–54 years to exclude the data of pensioners and students in the analyses.

Variables

Disposable income

LIS household data contain information regarding the equivalized disposable household income (= "level of living"), tax paid by the household and in cash benefits that have been received. We used the calculated DHI (disposable household income) equivalized by the square root of the number of persons in the household. Income quantiles and logit-ranks were also calculated based on this variable.

Income before tax and transfers

Using the data available from the LIS data sets, we subtracted the household social security transfers from the household disposable income (DHI) and added the income taxes and social contributions to it. The result serves as an estimation of the income before tax and transfers.

Method

ISO (specific-level inequalities)

Using the ISOGRAPH Stata module (a new tool with confidence intervals available from the authors, soon available on ssc install), we calculated specific-level inequalities for each quantile (isographs). We did it once for the DHI ISO_3 ("inequality after") and once for the income before tax and transfers ISO_1 ("inequality before"). There are many ways to present ISO_1 as "initial" of better "market" inequalities. We expect (but exception) $ISO_1 > ISO_3$ since the (a) role of redistribution is to reduce inequality. For both isographs, we presumed social hierarchy to be based on the DHI, to avoid cases of rank change, and this is founded on the assumption that social order is based on the actual income.

To calculate the distribution of the redistribution effort, or the inequality difference between the DHI and the income before tax and transfers, we subtracted ISO_1 from ISO_3. Thus:

$ISO_2 = ISO_1$-ISO_3 measures the intensity of redistribution efforts at each level of the distribution.

For a group of observations taken from developed countries during the last decade, we conducted a principal component analysis (PCA) for ISO_1, ISO_2 and ISO_3. Using the PCA results, we predicted two components and calculated clusters using hierarchical cluster analysis with average linkage (see PCA table in annex: principal components for ISOs).

Results

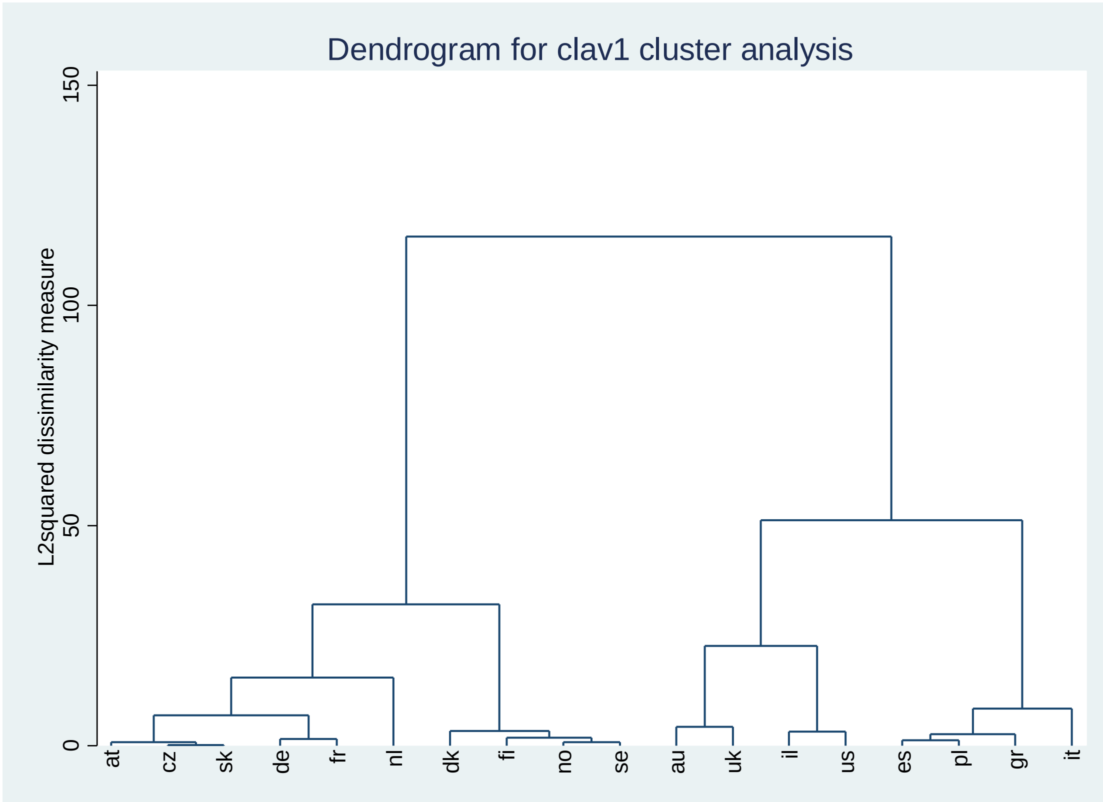
Figure 4 presents the results of the hierarchical clustering according to the isographs (the components that clustering is based on are presented in the appendix). Restricting the analysis to the most central countries available in the years 2000s and beyond, we detect four consistent groups clearly contrasting one another and corresponding to what we know of welfare capitalism:

- **Corporatist**, built on the proximity of France and Germany, and includes central versus Eastern European countries;
- **Social-Democratic**, which includes all of the Scandinavian countries;
- **(Neo) Liberal**, that includes all the English-speaking countries and Israel; and
- **Conservative-Christian**[2] which includes Italy, Spain, Greece and Poland.

The dendrogram of the clustering suggests how the 4 types are close to one another: Conservative Christian countries have more in common with Neo-Liberal countries than with Corporatist ones. This finding somewhat contradicts Hall and Soskice's (2001) typology. However, the question whether these countries share more similarities with Corporatist countries than with Neo-Liberal ones in terms of redistribution policy and market regulation is ambiguous in the literature, and different typology variants can give divergent results on this respect.

[2] Similar types of welfare regimes have been previously called Mediterranean capitalism (Amable 2003) and Latin regime (Ebbinghaus 2006)

Figure 4: Cluster Analysis for Isographs (Before and After Tax and Transfers and Redistribution Effort)



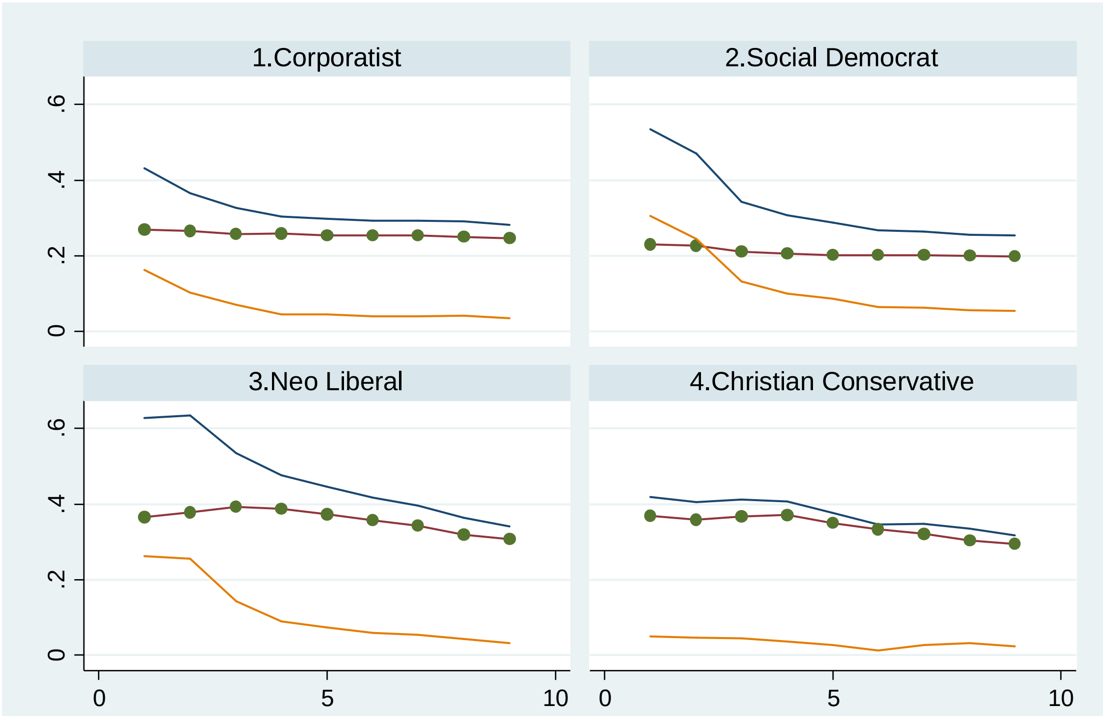
Source: Luxembourg Income Study

Figure 4 depicts three isographs based on average ISOs for each redistribution regime – before tax and transfers, after tax and transfers and the differences between them, or the redistribution effort. Corporatist and Social-Democratic countries, achieve a relatively flat line after redistribution (even though level of overall inequality in Social-Democratic countries is lower than in the Corporatist ones). This means that there are almost no specific level inequalities after redistribution. However, level-specific inequalities below the median income is considerably higher in Social-Democratic countries, leading to a much higher redistribution effort. Apparently, in corporatist countries, much of the redistribution is done within the labour market (through collective bargaining for example), leading to lower inequalities below the median income before tax and transfers.

Figure 5 depicts the average isographs (before and after tax and transfers as well as the effort) for each distribution regime. Liberal countries start with high level of overall inequality and high specific level inequalities, especially below the median income. They spend much effort in reducing inequalities for the lowest parts of the distribution with considerable results. Even though the overall level of inequality is still very high, level-specific inequalities among the poorest are much lower after tax and transfers. However, since most of the effort is concentrated on the poorest, there is relatively high specific-level inequality around the median income.

Christian Conservative countries have very little differences between inequalities before and after tax and transfers. Specific-level inequalities are higher below the median income before and after tax and transfers. Redistribution effort decreases inequalities for the lower end of the income distribution, creating a pattern similar to the one found for the Liberal countries. However, in contrast to the Liberal countries, the result is very similar to the pattern before tax and transfer. The redistribution effort of Christian Conservative countries is not based on tax and transfers.

Figure 5: Isographs by Redistribution Regime (Before and After Tax and Transfers and Effort)



Source: Luxembourg Income Study

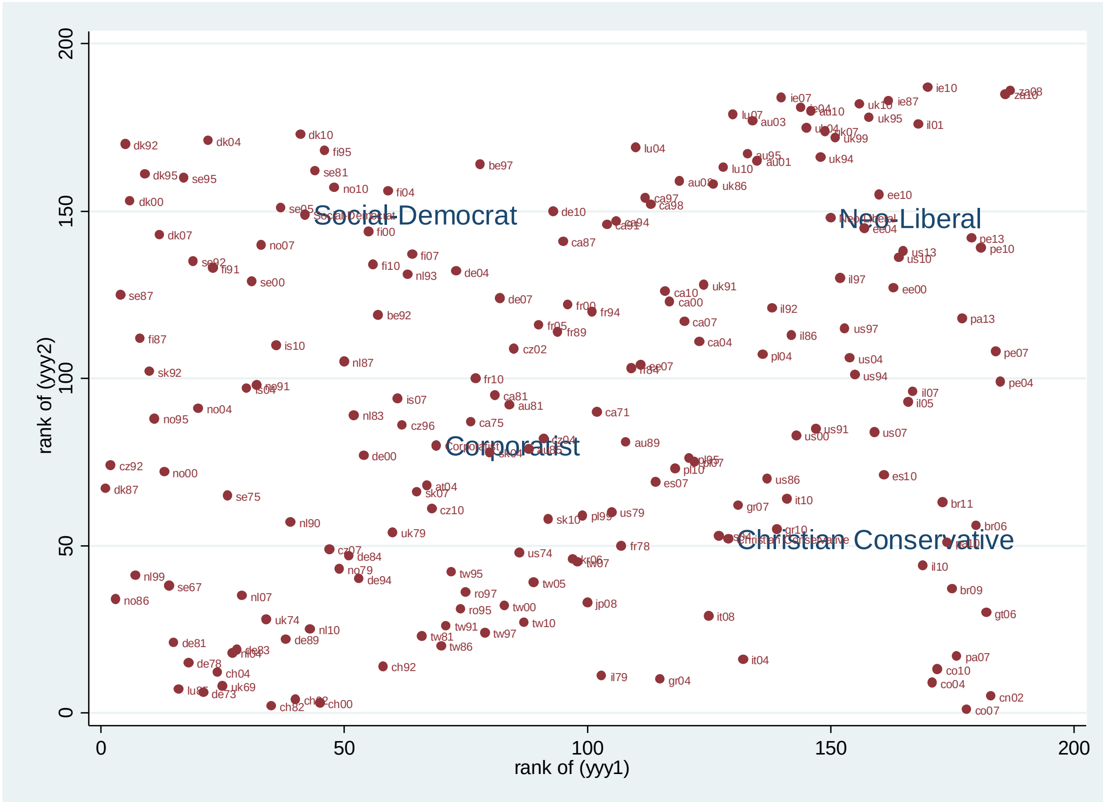
Note: The blue line represents ISO_1: "inequality before"; the dotted one represents ISO_3: "inequality after". The orange line depicts the pattern of the efforts of redistribution ISO_2.

The typological profiles of "inequality before", "after" and "effort" are useful for the understanding of the VoC to VoD logics. Beginning with less developed welfare regimes, the Christian Conservative model shows low levels of inequality "before", in particular at the bottom of the distribution: the very poor, in terms of "market" income shared at the level of the household, are relatively scarce. This unexpected specificity is due to extended family structures where the "market" poor population (unemployed youth, elderly, potentially lone mothers, etc.) are hosted by their family, a specific trait of the familialistic welfare regime of the Christian Conservative group. Conversely, the role of redistributions in terms of inequality reduction is specifically weak. Specific to the Neo-Liberal group are massive inequalities "before", in particular at the bottom (together with massive margins of almost no-incomes before redistribution), moderately balanced by high means-tested redistributions. The overall level of inequality "after" remains higher than in any other distribution regime.

If we consider the most developed welfare regime, the Social-Democratic one shows relatively high inequalities before redistributions, in particular at the bottom of the distribution, and this almost at the same level as the Neo-Liberal type: extreme redistribution at the bottom balances these margins of poverty. Conversely, relatively low levels of inequality "before" and redistributive taxes (relatively high ISO_2 at the top) generates relatively low overall inequalities: ISO_3 is lower regardless of the percentile position of X. The Corporatist system's position is intermediate between the three other models. Relatively low inequality "before" is associated with intermediate levels of redistributions that are not strongly targeted to the bottom.

Figure 6 presents the rank of each country at each available time point for the first two components. There is an evident convergence over time for each of the clusters. The Neo-Liberal redistribution regime regime consists of several countries which used to be belong to the Corporatist redistribution regime in the past (the U.K., Israel and Canada).

Figure 6: Predicted Ranks Based on the First Two Components

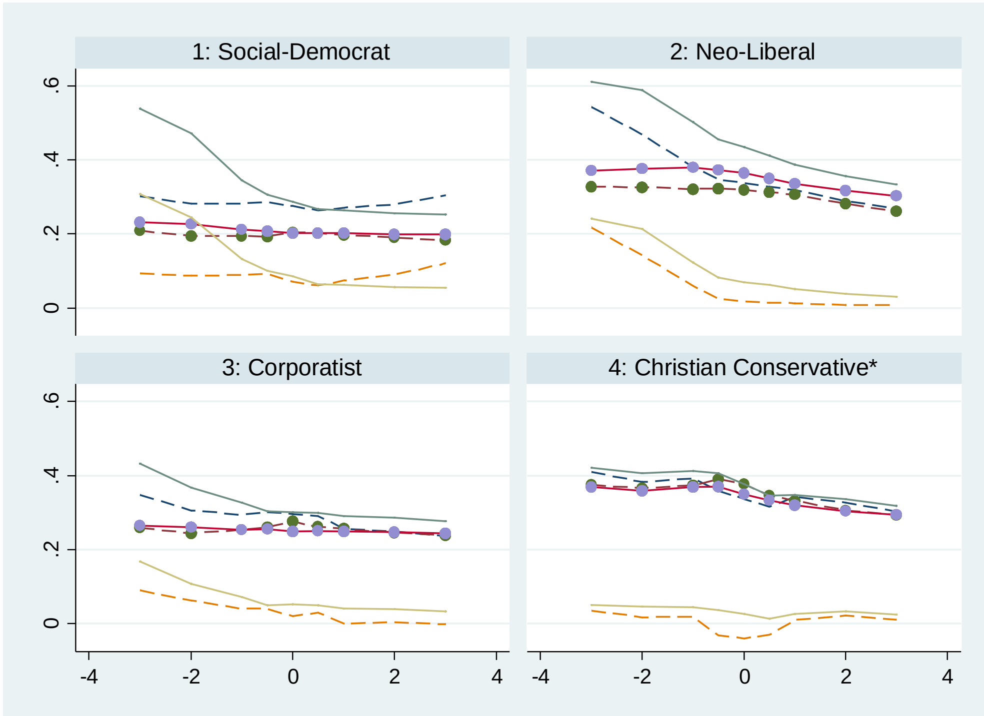


Source: Luxembourg Income Study

Developing countries usually form the extreme cases of Neo-Liberal and Christian Conservative regimes. South Africa is a case of an extreme Neo-Liberal distribution regime while Brazil and other Latin American countries are more Christian Conservative countries. East-Asian countries seem to be aligning with the Corporatist distribution regime, in line with previous findings regarding their level of market coordination (Hall and Soskice 2001).

In line with this representation of the 183 LIS samples, a crucial result is the comparison of typologies between the 1980s and the 2000s: Figure 7 presents the transformations of VoDs for the three decades.

Figure 7: Isographs by Redistribution Regime (Before and After Tax and Transfers and Effort) in the 1980s and the 2000s



Source: Luxembourg Income Study

Note: We superimpose the results of the 2 decades. The dashed lines pertain to the 1980s and the solid lines the 2000s. The blue line represents ISO_1: "inequality before"; the dotted one represents ISO_3: "inequality after". The orange line represents the efforts of redistribution ISO_2. (*) Since no data with respect to "before" and "after" were available for the Christian Conservative countries before 2000, we contrast here the year 2010 to the early 2000s.

The main result of the comparison over time is the massive shift of the Social-Democratic type from labour-based inequality (based on low ISO_1 even at the bottom of the distribution) to massive redistributions that were increasingly targeted to the lower part of the hierarchy. In the 1980s, the Nordic regime was massively equalitarian in terms of market inequality, and strong redistributions, including extremely progressive taxes, reduced inequalities "after" to world minima. Now, inequality "before" is comparable with the Neo-Liberal shapes, at least at the bottom of the distribution. At the bottom we also observe a general shift, characterised by a tremendous increase in inequality "before", with redistributions attempting to rebalance this trend which affects market incomes.. In Neo-Liberal countries we find an inordinate increase in market inequalities, regardless of the percentile, and an increase in redistributions in an attempt to reduce the flood of inequalities "after".

Discussion

Shapes of inequalities are diverse, and the varieties of distribution we observe are consistent with what is known about welfare capitalisms. A new tool (isograph) reveals the hidden differences and changes in distributions after tax and transfers redistributions have taken place, before they occur, and the effort of redistribution between the two. The results suggest four types of (re)distribution regimes which are similar to the welfare regimes suggested by Esping-Andersen (1990) and later scholars. These regimes have unique characteristics in terms of distribution and redistribution of income:

Social-Democratic distribution regime: This regime invests a large amount of redistribution effort to reduce inequality "after", creating a society with low income inequality and with almost no differences in level-specific inequalities. The substantial change we observed in this type of regime is a shift from labour-market based equality, where market inequalities were lower than anywhere else in the 1980s, to the current situation where large margins of potential poverty developed at the bottom of the distribution of market incomes, almost entirely rebalanced today by extensive means-tested redistribution. At some point, however, the risk here is the development of a sector of free-riders of the Social-Democratic welfare regime that allow no-incomers to benefit from an acceptable level of living.

Neo-Liberal distribution regime: Inequality below the median is higher than in any other regime. The victims of market incomes benefit from targeted programs (excluding the median from redistributive gains) but inequality/poverty after redistribution are high and have been increasing over the last decades. Therefore, the end result is not only high overall level of inequality, but also more specific-level inequalities for the groups who are near the median income.

Conservative Christian distribution regime: In this regime, the redistribution based on tax and transfers is minimal. However, family and community arrangements prevent strong "market" inequalities, mainly by the inclusion in relatively richer households of the groups excluded from the market (unemployed youth, single mothers without jobs, etc.). inequality below the median income to be high before tax and transfers. After tax and transfers, the overall inequality is similar to the Neo-Liberal regime, in a context where redistributions have almost no role in income equalization.

Corporatist distribution regime: This model is intermediate, located somewhere between the others. A considerable part of the redistribution efforts of these countries are based on labour market efforts (regulation and collective bargaining). Therefore, level-specific inequalities before redistribution below the median income are low compared to the Social-Democratic regime today. The end result is higher inequality than the Social-Democratic regime but lower than any other regime, in a context where redistribution is relatively not so massive.

The most important result is the progressive shift of the Nordic regime from labour-market based equalitarianism in the 1980s, when equality was based on massive labour participation even in the lower strata of Nordic societies, to a new shape of distribution where extensive means-tested redistributions rebalance massive potential poverty at the bottom of income distribution. This increasing shift from labour-based market sufficient working class of the 1980s to the subsidised welfare state dependent lower class, that is "market poor" but "consumption competitive" via massive redistribution, can become a real challenge and source of social stress for the future of the Social-Democratic regime, and for the others too since this trend appears to be more general than specific to the Nordic countries.

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Appendix

Table 2: Principal Components for ISOs

	Component 1	Component 2	Component 3
DPI			
-3	**0.2292**	0.0367	0.2841
-2	**0.2296**	0.0669	0.1567
-1	**0.2305**	0.0614	0.1472
-0.5	**0.2323**	0.0445	0.1493
0	**0.2335**	0.0465	0.0333
0.5	**0.2339**	0.0419	-0.0136
1	**0.2343**	0.036	-0.0419
2	**0.2347**	0.0172	-0.1042
3	**0.234**	-0.0047	-0.1634
Before tax and transfers			
-3	-0.0006	**0.3407**	-0.1775
-2	0.0678	**0.3283**	-0.0869
-1	0.1698	**0.238**	0.0444
-0.5	**0.2058**	0.1633	0.1501
0	**0.2039**	0.1711	0.0801
0.5	**0.2011**	0.1793	0.0007
1	**0.2187**	0.128	0.0201
2	**0.2309**	0.0683	0.0375
3	**0.2327**	0.0548	0.0059
Efforts			
-3	-0.1308	**0.2747**	-0.3155
-2	-0.09	**0.3133**	-0.2079
-1	-0.1106	**0.3**	-0.1802
-0.5	-0.141	**0.2751**	-0.0472
0	-0.1419	**0.2732**	0.0976
0.5	-0.1192	**0.2963**	0.0343
1	-0.1747	**0.2257**	0.1895
2	-0.1971	0.1395	**0.5069**
3	-0.1988	0.1343	**0.5074**