

The Development of Richness in Europe

Andreas Peichl*

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Abstract

In recent years, a branch of literature on the top of the (income) distribution emerged in Economics using top income shares as a measure of richness. This paper contributes to this literature by comparing different measures of richness (income shares, headcount, intensity measures). We analyse the development of various richness indices over time in Europe (and other OECD-Countries) using micro data. We explain the different developments in different countries by taking country specific situations (institutions, distribution of resources) into account. Further on, we compare the findings between different richness indices to show their differences and similarities in evaluating the top of the income distribution.

Our analysis yields the following results. Different data sources as well as different richness measures can lead to different results for cross country comparisons and rankings, the analysis of the development of richness over time. However, in general, different rather homogeneous groups of countries can be identified: richness is rather high in Southern and Eastern European countries, as well as the English speaking countries, medium in Continental Europe and low in Scandinavian countries.

JEL Codes: D31, D60, H20

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* IZA Bonn, ISER and University of Cologne, P.O. Box 7240, 53072 Bonn, Germany. peichl@iza.org

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1 Introduction

European welfare states are under pressure because of population ageing and globalisation. The former increases the need for public funds whereas the latter makes tax bases (sources of public funds) more elastic and tends to increase unemployment of low-skilled workers. Poverty at the bottom of the income distribution has been in the spotlight of both academic research and political discussion since a long period of time. While it is indisputable that society should ensure a certain minimum subsistence level, the top of the income distribution has just recently become a particular focus of attention, especially in the context of income tax reform. Many recent tax reforms proposals with a tendency to lower (marginal) tax rates have been criticized for redistributing from the poor to the rich (see e.g. OECD (2006)). It is widely believed that the rich are getting richer and the poor are getting poorer.

Given this debate, appropriate summary measures, which provide additional information beyond analyzing the inequality of the whole income distribution, are of key importance for an empirical assessment of the development of poverty and richness. Several poverty indices have been developed in the long tradition of the literature on measuring income poverty. Measuring income richness (affluence) is a less considered field (see, e.g., Medeiros (2006a)). Empirical studies have so far mainly used either the headcount ratio or top income shares to measure richness (see, e.g., Atkinson (2005), Dell (2005), Piketty (2005), Saez (2005), Saez and Veall (2005), Piketty and Saez (2006), Atkinson and Piketty (2007), Aaberge and Atkinson (2008), Roine and Waldenström (2008)). These studies have shown that top income shares has increased in the Anglo-Saxon countries (and Norway) since the 1970s, whereas the level remained nearly constant in Continental Europe (and Sweden) until the late 1990s. However, most of these studies have been single country analyses, sometimes comparing the results with findings from studies for other countries. However, the lack of consistency and different qualities of data, the coverage of policy elements and in definitions of income components restrict the comparability of single country analyses.

However, the headcount is not a satisfying measure for either poverty or richness. It is only concerned with the number of people below (above) a cutoff. Therefore, if nobody changes his or her status, an income change will not affect this index. In a recent paper, Peichl et al. (2008) define a new class of richness indices analogously to well-known measures of poverty. This approach also takes the dimension of changes and not only the number of people beyond a given richness line into account and therefore allows for a more sophisticated analysis of richness in addition to the traditional headcount index.

The aim of this paper is to analyse the development of various richness indices and income shares over time in Europe (and other OECD-Countries) using micro data from different sources in a comparable manner. We explain the different developments in different countries by taking

country specific situations (institutions, distribution of resources) into account. Further on, we compare the findings between different richness indices to show their differences and similarities in evaluating the top of the income distribution.

Our analysis yields the following results. Different data sources as well as different richness measures can lead to different results for cross country comparisons and rankings, the analysis of the development of richness over time. However, in general, different rather homogeneous groups of countries can be identified: richness is rather high in Southern and Eastern European countries, as well as the English speaking countries, medium in Continental Europe and low in Scandinavian countries.

The setup of the paper is organised as follows: Section 2 describes the measurement of richness, section 3 the different data sources. In section 4, the development of richness over time is analysed. Section 5 concludes.

2 Measuring Richness

While an extensive literature on poverty indices exists, little research has been done on the measurement of richness yet. For an overview of the sparse literature see Medeiros (2006a).

To analyse poverty, often the measures of Foster et al. (1984) are used. Consider a net income distribution $x = (x_1, x_2, \dots, x_n) \in R_+^n$, where n is the number of individuals or households. Let π be the poverty line, e.g. 60% of the median income, and $p = \#\{i|x_i < \pi, i = 1, 2, \dots, n\}$ the number of poor persons. The proportion of poor persons (headcount) is defined as

$$\varphi_{HC}(\mathbf{x}) = \frac{1}{n} \sum_{i=1}^n \mathbf{1}_{x_i < \pi} = \frac{p}{n}, \quad (1)$$

with $\mathbf{1}_{x_i < \pi} = 1$, for $x_i < \pi$ and $\mathbf{1}_{x_i < \pi} = 0$ elsewhere. The Foster et al. (1984) indices (FGT) are defined by

$$\varphi_{FGT}(x) = \frac{1}{n} \sum_{i=1}^n \left(\left(\frac{\pi - x_i}{\pi} \right)_+ \right)^\alpha, \quad (2)$$

with $\alpha > 0$ and $y_+ := \max\{y, 0\}$. The coefficient $\alpha > 1$ may be interpreted as a parameter of poverty aversion, since greater values of α attach increasingly greater weight to large poverty gaps.

Measuring richness is a less considered field. The first challenge is to define an affluence or richness line. We define it analogously to the poverty line as a cutoff income point above (below) which a person or household is considered to be rich (non-rich). Like the poverty line, it is possible to define the richness line in absolute terms (e.g. 1 million Euros) or relative terms (e.g. 200% of the median or the mean income). Let ρ be the richness line and $r = \#\{i|x_i >$

$\rho, i = 1, 2, \dots, n\}$ the number of rich persons. In many studies on income richness, only the proportion of rich persons is used as a measure of richness:

$$R^{HC}(\mathbf{x}) = \frac{1}{n} \sum_{i=1}^n \mathbf{1}_{x_i > \rho} = \frac{r}{n}. \quad (3)$$

with $\mathbf{1}_{x_i > \rho} = 1$, for $x_i > \rho$ and $\mathbf{1}_{x_i > \rho} = 0$ elsewhere. Its definition resembles that of the poverty headcount ratio. But if we want to compare different tax and transfer reform scenarios, this is not a satisfying definition of richness: if nobody changes his or her status (rich or non-rich), neither a change in a rich person's income nor a transfer between rich persons will change this index. Another often used concept of measuring richness is to take the income share of the top $p\%$ of the income distribution:

$$IS_p(\mathbf{x}) = \frac{\sum_{i=1}^n x_i \mathbf{1}_{x_i > q_{1-p}}}{\sum_{i=1}^n x_i} \quad (4)$$

with q_p being the $(1-p)\%$ quantile. Medeiros (2006b) defined an affluence gap by

$$R^{Med}(\mathbf{x}) = \frac{1}{n} \sum_{i=1}^n (x_i - \rho)_+ = \frac{1}{n} \sum_{i=1}^n \max\{x_i - \rho, 0\}. \quad (5)$$

The advantage of this definition compared to the headcount is that this affluence gap is increasing in income. However, Medeiros' index of richness is not standardized and is an absolute measure of richness. R^{Med} is proportional in income implicitly, i.e. a transfer between two rich persons will not change the index. Further on, this absolute index is not scale invariant, i.e. multiplying all incomes with a scalar increases R^{Med} by this factor.

To overcome the drawbacks of the different approaches, Peichl et al. (2008) propose a new class of richness measures analogously to well-known measures of poverty. The general idea for measuring richness analogously to poverty is to take into account the number of rich people as well as the intensity of richness. Thereby, an index of affluence is constructed as the weighted sum of the individual contributions to affluence. The weighting function of the index shall have some desirable properties which are derived following the literature on axioms for poverty indices (see e.g. Sen (1976), Chakravarty and Muliere (2004), Foster et al. (1984)) and include the focus, continuity, monotonicity and subgroup decomposability axioms.

However, the transfer axiom of poverty measurement cannot be translated one-to-one to richness measurement and has to be discussed in more detail. A poverty index satisfies the transfer axiom if the index decreases when a rank-preserving progressive transfer from a poor person to someone who is poorer takes place. This property can be translated to richness measurement in two different ways:

- *Transfer axiom T1 (concave¹)*: a richness index shall increase when a rank-preserving progressive transfer between two rich persons takes place.
- *Transfer axiom T2 (convex)*: a richness index shall decrease when a rank-preserving progressive transfer between two rich persons takes place.

The question behind the definition of these two opposite axioms is: shall an index of richness increase if (i) a billionaire gives an amount x to a millionaire, or (ii) if the millionaire gives the same amount x to the billionaire. This question cannot be answered without moral judgement.

In a first step, Peichl et al. (2008) define a general class of richness measures satisfying the four axioms and either T1 or T2 as

$$R(\mathbf{x}, \rho) = \frac{1}{n} \sum_{i=1}^n f\left(\frac{x_i}{\rho}\right), \quad (6)$$

where f is a continuous (except for the headcount), strictly increasing function that is either concave (for T1) or convex (for T2). We use strictly increasing transformations because the indices of affluence should be sensitive to higher incomes, i.e. satisfy the monotonicity axiom. To fulfill the focus axiom, a person with an income not higher than ρ should not influence the measure of richness, i.e. $f(\frac{x_i}{\rho}) = 0$, for $x_i \leq \rho$. To fulfill the subgroup decomposability axiom, the index of richness has to be additively decomposable, i.e. the affluence index is a weighted sum of several household subgroups:

$$R(\mathbf{x}, \rho) = \sum_{m=1}^M \frac{n_m}{n} R_m(\mathbf{x}, \rho) \quad (7)$$

for any given richness line ρ , M population subgroups indexed $m = 1, \dots, M$, n_m the number of people and $R_m(\mathbf{x}, \rho)$ the richness index of subgroup m with the same overall richness line ρ .

As mentioned above, an important difference between the measurement of poverty and richness concerns the transfer axiom. In poverty measurement decreasing the income of a very poor person shall have a larger effect than increasing the income of a less poor person (minimal transfer axiom). We propose that an affluence index shall be less sensitive to changes of very high incomes, i.e. a progressive transfer between rich persons increases affluence (concave transfer axiom (T1)). Formally spoken f has to be concave. The relative incomes $\frac{x_i}{\rho}$ then have to be transformed by a function that is concave on $(1, \infty)$.

Taking all this into account, Peichl et al. (2008) employ $f(y) = \left(1 - \frac{1}{y^\beta}\right) \cdot \mathbf{1}_{y>1}$, $\beta > 0$ and

¹Unless otherwise stated, concave and convex are meant in the strict sense.

obtain an index analogous to the poverty index of Chakravarty (1983):

$$R_{\beta}^{Cha}(\mathbf{x}, \rho) = \frac{1}{n} \sum_{i=1}^n \left(1 - \left(\frac{\rho}{x_i} \right)^{\beta} \right)_{+}, \quad \beta > 0. \quad (8)$$

Obviously, $f(y) = (1 - (\frac{\rho}{y})^{\beta})$ is concave for $y > \rho$ and $\beta > 0$ (T1). For $\beta \rightarrow \infty$, $R_{\beta \rightarrow \infty}^{Cha}$ resembles the headcount index R^{HC} .

If we use $f(y) := (y - 1)^{\alpha}$ for $y > 1$, with $\alpha > 1^2$, we obtain an affluence index $R_{\alpha}^{FGT, T2}$, that resembles the FGT index of poverty satisfying T2:

$$R_{\alpha}^{FGT, T2}(\mathbf{x}, \rho) = \frac{1}{n} \sum_{i=1}^n \left(\frac{x_i}{\rho} - 1 \right)^{\alpha} \cdot \mathbf{1}_{x_i > \rho} = \frac{1}{n} \sum_{i=1}^n \left(\left(\frac{x_i - \rho}{\rho} \right)_{+} \right)^{\alpha}, \quad (9)$$

This affluence index decreases by a progressive transfer between a rich and a very rich person (T2), since $(\frac{x-\rho}{\rho})^{\alpha}$ is convex on (ρ, ∞) for $\alpha > 1$. We will use this index in the remainder of this paper as our convex measure of affluence, which we compare with the concave R_{β}^{Cha} .

3 Data

To analyse the development of richness over time we use micro data from different sources which are described in the following subsections.

3.1 LIS

The Luxembourg Income Study (LIS) provides micro-level data for about thirty countries at different points in time.³ The LIS database includes cross-nationally and historically harmonized and nationally representative individual-level datasets from surveys with standardized measures of key variables.

LIS data are based on uniform definitions, making reliable comparisons across countries and over time possible. The LIS is not conducted annually, but in waves which take five years each; each country is supposed to have one observation within each wave, but for some years the data are incomplete. For our analysis, we have selected those countries with observations in at

²Note that for $\alpha \in (0, 1)$ f is concave and we have a non-standardized version of the concave FGT.

³The LIS countries include: Australia (AU), Austria (AT), Belgium (BE), Canada (CA), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Ireland (IE), Israel (IL), Italy (IT), Japan (JP), Korea (KR), Luxembourg (LU), Mexico (MX), Netherlands (NL), Norway (NO), Poland (PL), Romania (RO), Russia (RU), Slovak Republic (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Taiwan (TW), United Kingdom (UK), United States (US). See <http://www.lisproject.org/techdoc.htm> for further description and documentation.

LIS-Wave year	historical		I	II	III	IV	V	VI
	1970	1975	1980	1985	1990	1995	2000	2004
AU			1981	1985	1989	1995	2001	2003
CA	1971	1975	1981	1987	1991	1994	2000	
CH			1982		1992		2000	
DE	1973	1978	1981	1984	1989	1994	2000	
DK				1987	1992	1995	2000	2004
FI				1987	1991	1995	2000	2004
IL			1979	1986	1992	1997	2001	
NL				1983	1991	1994	1999	
NO			1979	1986	1991	1995	2000	
PL				1986	1992	1995	1999	
SE			1981	1987	1992	1995	2000	2005
TW			1981	1986	1991	1995	2000	2005
UK	1969	1974	1979	1986	1991	1995	1999	2004
US		1974	1979	1986	1991	1994	2000	2004

Table 1: LIS data matrix

least four different waves. Table 1 lists the allocation of years to the LIS waves for the selected countries.

3.2 ECHP

The European Community Household Panel (ECHP) micro data is a household survey with a common conceptual framework conducted in the member states of the EU, co-ordinated by the Statistical Office of the European Communities (Eurostat). ECHP data was first collected in 1994, when a sample of 60,500 nationally representative households (i.e. approximately 130,000 adults aged over 16) were interviewed in the then 12 member states. Austria has joined the project in the second wave in 1995, Finland in 1996. From 1997 onwards, similar data is also available for Sweden. Since then, the data is covering all (old) EU-15 member states. With the last wave in 2001, ECHP data is available for 8 waves altogether. The dataset includes information on e.g. family size and composition, living conditions and several income measures. Therefore it provides a source of mutually comparable income data of EU member countries. Unfortunately ECHP data does not report gross incomes but the survey is limited to net incomes, which is gross income (primary income) after social transfers and taxes increased by housing benefits and educational allowances.

3.3 EU-SILC

EU-SILC (European Union Statistics on Income and Living Conditions) is the successor of ECHP data.⁴ The EU-SILC collects comparable cross-sectional and longitudinal multidimensional micro data on income and social exclusion in European countries. Since 2005, the dataset covers 25 EU member states, plus Norway and Iceland, and is the largest comparative survey of European income and living conditions.

3.4 Income concept and methodology

We use the disposable income defined as market income minus direct taxes and social contributions plus cash benefits (including pensions) for our analyses. The unit of analysis is the individual. To compensate for different household structures and possible economies of scale in households, we use equivalent incomes throughout the analyses. For each person, the equivalent (per-capita) total net income is its household's total disposable income divided by the equivalent household size according to the modified OECD scale.⁵ To account for regional differences across Europe, we use PPP-adjusted incomes and express all incomes in prices of 2000.

The richness line is 200% of median equivalent income. Choosing the richness line as twice the median is arbitrary but common practice (see e.g. Medeiros (2006b)). However, when analyzing richness, choosing the richness line is not as problematic as choosing the poverty line (usually 60% of median income) because the upper parts of the income distribution are not as dense as the lower parts.

4 Development of Richness

The values for the various measures of richness described in section 2 can be found in the Appendix . In the following subsections, the most important findings and general trends will be highlighted.

⁴The ECHP/EU-SILC countries include: Austria (AT), Belgium (BE), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Iceland (IS), Ireland (IE), Italy (IT), Latvia(LV), Lithuania (LT), Luxembourg (LU), Netherlands (NL), Norway (NO), Poland (PL), Slovak Republic (SK), Slovenia (SI), Spain (ES), Sweden (SE), United Kingdom (UK).

⁵The modified OECD scale assigns a weight of 1.0 to the head of household, 0.5 to every household member aged 14 or more and 0.3 to each child aged less than 14. Summing up the individual weights gives the household specific equivalence factor.

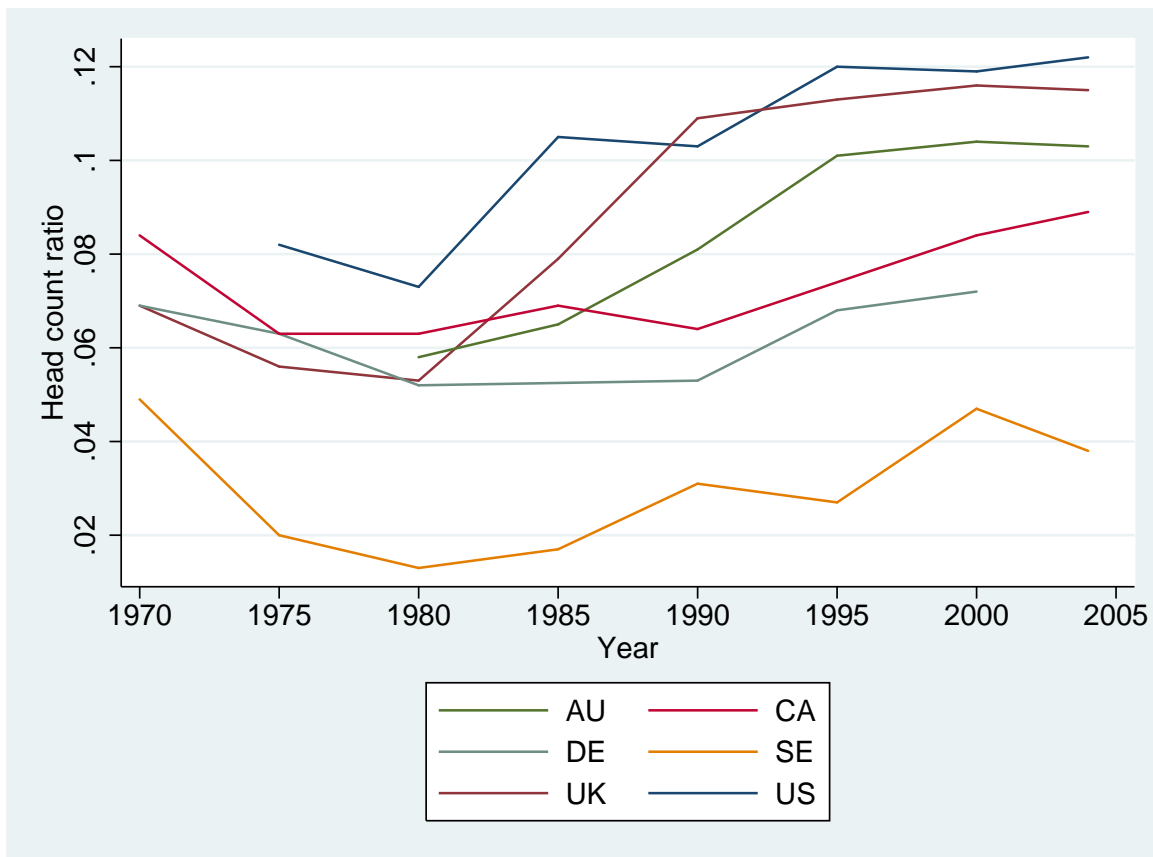


Figure 1: Richness according to headcount ratio (LIS data)

4.1 LIS data

When comparing the absolute values of richness according to the different concepts across countries, different groups can be identified for the year 2000: richness is rather high in Anglo-Saxon welfare states (US, UK and Australia), Israel and Mexico, medium in Continental Europe (Germany, Poland, Switzerland) and Canada, and low in Scandinavian countries (Denmark, Norway, Finland, Sweden) and the Netherlands.

When looking at the development of richness over time (see Figures 1 and 2)⁶ a U-shaped pattern can be identified for many countries. Richness declined in the 1970s and has been increasing since 1980. The Netherlands and Switzerland are the only countries where richness is not increasing during this period of time. As a consequence, all richness measures show values below those of Finland and Sweden in the year 2000 and only Denmark has lower richness. The results differ slightly when looking at different measures of richness. For instance, for the US a small decline in the head count ratio between 1995 and 2000 can be observed. However, the

⁶We selected the six countries with the longest available data series in LIS for these two figures. The results for the other countries are available in the Appendix.

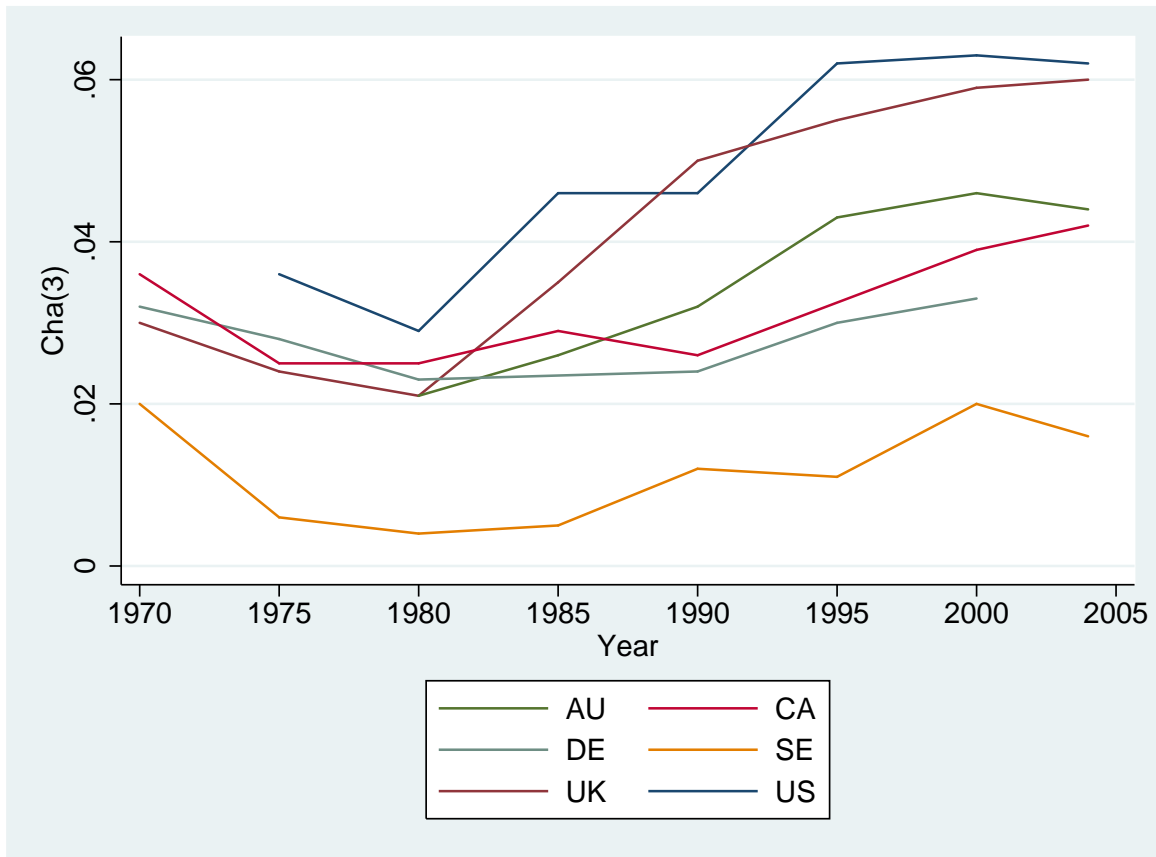


Figure 2: Richness according to $R_{\beta=3}^{Cha}$ (LIS data)

income share of the rich people remains constant. Therefore, the income of the (fewer) rich people increased. One should note, though, that the income share of the people defined “rich” by the head count ratio is not a very good measure when comparing countries with different fractions of rich people. Therefore, the income shares of the top $x\%$ of the income distribution are used in addition. When taking a closer look at the distribution within rich people (the head count index is 12%, i.e. the top 10% are all belonging to the group of the “rich”), the income shares of the top 10% and 5% increase, respectively. The income share of the top 1%, however, decreases. These different changes in income shares and number of rich people are reflected in changes in the R_α measures: $R_{\alpha=1}$ is increasing, i.e. the income structure is changing, but $R_{\alpha=2}$ does not change, i.e. the change is not happening at the very top of the distribution. Although the ranking of countries according to the absolute values of indices might differ, in general, all measures show the same trends and relationship of changes.

The different indicators lead to a similar ranking of countries, however some small changes in the order occur. In 1980, richness is highest in Switzerland according to all measures but the head count ratio (R_{HC}) which is highest in Israel that is ranked second according to all

other measures. Taiwan is always ranked third, whereas the US is fourth for most measures. However, $R_{\alpha=2}$ and $R_{IS,1}$ indicate lower values for the US than, for instance, for Germany, which is usually ranked as a country with little richness (only the Scandinavian countries have less). In 1990, the UK and the US move up in the richness table. Switzerland moves down according to R_{HC} and R_{α} but remains the country with the highest top income shares $R_{IS,p}$. For the US, $R_{IS,1}$ still indicates a rather low level. In 2000, the US has the highest richness according to all measures except the head count ratio (highest in Israel, US is second) and $R_{IS,1}$ (third). Switzerland continues to move downwards and drops out of the top four according to all measures, whereas the UK battles for the second place with Israel. $R_{IS,1}$ indicates rather high richness for Sweden, which has the lowest values for all other measures, and Norway which has the second highest top 1% income share but is ranked second according to all other measures (except $R_{IS,5}$). Richness is also increasing in Canada and Australia (except for $R_{IS,1}$).

These findings are, generally speaking, in line with the studies in Atkinson and Piketty (2007) which find increasing richness in English speaking countries but not in Continental European countries. The differences in the ranking order can be attributed to differences in the underlying income distribution. For instance, the results for the US show that between 1980 and 2000 the share of the top decile ($R_{IS,10}$) increased but not as strong as the share of the top percentile ($R_{IS,1}$) which is confirmed by the findings of Piketty and Saez (2006). This development is also captured in the development of the $R_{\alpha=2}$ measure. Therefore, not only changes in the overall income distribution (between rich and non-rich) but also within the rich subpopulation play an important role for the development of richness over time.

4.2 ECHP / EU-SILC data

When looking at the richness measures for the European countries in 2004/2005, again different groups of countries can be identified: richness is rather high in Southern and Eastern European countries, as well as the Anglo-Saxon countries, medium in Continental Europe and low in Scandinavian countries. Two exceptions are the Czech and Slovak Republics which have rather low values similar to those of Continental countries.

The development of richness according to the ECHP/EU-SILC⁷ data depicts a slightly different and (due to more observations for a shorter period of time) more complex picture than according to the LIS data. When looking at the ECHP data only (1993-2000), a general decline over the whole period of analysis can be observed. However, in general, a cycling pattern can be found for most countries. The cycles, however, are not the same for all countries and

⁷One should be aware that there are some conceptual differences regarding the coverage of policy elements and definitions of income components between ECHP and EU-SILC that affect the consistency and the quality of data and restrict the comparability of the analysis (see Eurostat (2005)).

continue when taking the EU-SILC data into account.

4.2.1 Income shares

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Table 2: Richness according to incT10

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.214	0.205	0.195	0.192	0.206	0.193	0.195	0.204	0.213	0.204
BE	0.231	0.227	0.224	0.223	0.216	0.236	0.239	0.226	0.204	0.224	0.214
CY	.	.	.	.	.	.	.	.	.	0.220	0.225
CZ	.	.	.	.	.	.	.	.	.	0.217	0.214
DE	0.220	0.217	0.207	0.204	0.202	0.202	0.203	0.209	.	0.216	0.218
DK	0.191	0.189	0.193	0.178	0.178	0.181	0.181	0.178	0.197	0.191	0.196
EE	.	.	.	.	.	.	.	.	0.272	0.251	0.245
ES	0.255	0.255	0.274	0.264	0.253	0.255	0.247	0.250	0.266	0.238	0.235
FI	.	.	0.193	0.190	0.189	0.198	0.197	0.201	0.215	0.212	0.221
FR	0.286	0.232	0.228	0.228	0.221	0.240	0.221	0.214	0.225	0.225	0.222
GR	0.266	0.251	0.254	0.261	0.260	0.253	0.238	0.237	0.235	0.247	0.259
HU	.	.	.	.	.	.	.	.	.	0.232	0.270
IE	0.249	0.257	0.265	0.255	0.272	0.244	0.217	0.210	0.245	0.247	0.251
IS	.	.	.	.	.	.	.	.	0.201	0.212	0.221
IT	0.244	0.247	0.236	0.224	0.225	0.226	0.221	0.220	0.256	0.253	0.240
LT	.	.	.	.	.	.	.	.	.	0.266	0.257
LU	.	0.205	0.201	0.206	0.206	0.216	0.214	0.212	0.214	0.211	0.224
LV	.	.	.	.	.	.	.	.	.	0.264	0.285
NL	0.204	0.235	0.240	0.209	0.207	0.215	0.205	0.210	.	0.212	0.218
NO	.	.	.	.	.	.	.	.	0.226	0.232	0.245
PL	.	.	.	.	.	.	.	.	.	0.267	0.252
PT	0.283	0.274	0.267	0.275	0.280	0.282	0.273	0.287	0.281	0.299	0.294
SE	.	.	.	0.188	0.197	0.189	0.203	0.210	0.184	0.192	0.189
SI	.	.	.	.	.	.	.	.	.	0.194	0.194
SK	.	.	.	.	.	.	.	.	.	0.212	0.242
UK	0.234	0.259	0.235	0.229	0.234	0.237	0.239	0.229	.	0.267	0.242
EU	0.251	0.247	0.244	0.234	0.234	0.237	0.232	0.232	0.242	0.255	0.248

- Top 10 %: rather stable between 1993 and 2005, average: 25 %
 - highest values (2005): PT (29.4 %), LV (28.5 %), HU (27.0 %)
 - lowest values (2005): SE (18.9 %), SI (19.4 %), DK (19.6 %)
- Top 5 %: also stable, average: 15 %

Table 3: Richness according to incT05

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.128	0.121	0.112	0.111	0.121	0.116	0.115	0.121	0.128	0.123
BE	0.144	0.143	0.140	0.139	0.128	0.156	0.156	0.143	0.119	0.141	0.130
CY	.	.	.	.	.	.	.	.	.	0.132	0.139
CZ	.	.	.	.	.	.	.	.	.	0.135	0.132
DE	0.129	0.132	0.121	0.121	0.120	0.119	0.117	0.125	.	0.134	0.136
DK	0.116	0.114	0.117	0.103	0.102	0.106	0.106	0.103	0.121	0.114	0.119
EE	.	.	.	.	.	.	.	.	0.166	0.154	0.146
ES	0.153	0.151	0.172	0.154	0.148	0.155	0.129	0.116	0.162	0.142	0.140
FI	.	.	0.116	0.111	0.111	0.118	0.117	0.121	0.135	0.131	0.140
FR	0.197	0.143	0.138	0.140	0.132	0.154	0.134	0.125	0.139	0.137	0.135
GR	0.170	0.152	0.157	0.162	0.164	0.157	0.142	0.141	0.141	0.150	0.162
HU	.	.	.	.	.	.	.	.	.	0.148	0.182
IE	0.154	0.166	0.176	0.170	0.188	0.156	0.129	0.123	0.157	0.158	0.162
IS	.	.	.	.	.	.	.	.	0.123	0.133	0.139
IT	0.148	0.152	0.143	0.133	0.133	0.134	0.131	0.130	0.162	0.162	0.146
LT	.	.	.	.	.	.	.	.	.	0.164	0.155
LU	.	0.121	0.116	0.121	0.119	0.128	0.125	0.122	0.128	0.124	0.134
LV	.	.	.	.	.	.	.	.	.	0.166	0.186
NL	0.122	0.150	0.153	0.126	0.122	0.132	0.120	0.128	.	0.128	0.135
NO	.	.	.	.	.	.	.	.	0.151	0.158	0.172
PL	.	.	.	.	.	.	.	.	.	0.167	0.153
PT	0.178	0.170	0.164	0.167	0.177	0.175	0.171	0.183	0.175	0.191	0.187
SE	.	.	.	0.108	0.117	0.110	0.123	0.130	0.105	0.113	0.110
SI	.	.	.	.	.	.	.	.	.	0.113	0.112
SK	.	.	.	.	.	.	.	.	.	0.129	0.159
UK	0.137	0.166	0.142	0.137	0.141	0.145	0.148	0.139	.	0.170	0.149
EU	0.156	0.151	0.150	0.141	0.142	0.145	0.140	0.140	0.150	0.160	0.153

– highest values (2005): PT (18.7 %), LV, HU + NO (T10% below average!)

– lowest values (2005): SE (11.0 %), SI, DK

- Top 1 %: (slightly) more volatility, average: 5.1 %

– highest values (2005): NO (8.9 %), HU, SK

– lowest values (2005): SI (3.1 %), SE, AT, LU (?)

4.2.2 Headcount

TO BE COMPLETED

Table 4: Richness according to HCR200

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.063	0.045	0.041	0.038	0.045	0.041	0.039	0.050	0.056	0.048
BE	0.065	0.058	0.048	0.052	0.062	0.053	0.063	0.060	0.048	0.056	0.050
CY	.	.	.	.	.	.	.	.	.	0.072	0.070
CZ	.	.	.	.	.	.	.	.	.	0.055	0.049
DE	0.073	0.062	0.054	0.047	0.049	0.052	0.048	0.054	.	0.051	0.053
DK	0.030	0.028	0.024	0.025	0.019	0.021	0.019	0.025	0.032	0.028	0.027
EE	.	.	.	.	.	.	.	.	0.139	0.114	0.105
ES	0.128	0.136	0.125	0.150	0.134	0.111	0.123	0.112	0.138	0.102	0.095
FI	.	.	0.031	0.036	0.030	0.039	0.039	0.039	0.045	0.045	0.046
FR	0.090	0.079	0.081	0.075	0.069	0.069	0.065	0.067	0.067	0.074	0.066
GR	0.111	0.120	0.113	0.119	0.117	0.112	0.108	0.101	0.098	0.110	0.110
HU	.	.	.	.	.	.	.	.	.	0.065	0.084
IE	0.114	0.102	0.095	0.085	0.076	0.083	0.071	0.061	0.073	0.075	0.088
IS	.	.	.	.	.	.	.	.	0.037	0.043	0.052
IT	0.097	0.100	0.086	0.080	0.084	0.079	0.065	0.061	0.095	0.088	0.090
LT	.	.	.	.	.	.	.	.	.	0.132	0.113
LU	.	0.063	0.049	0.057	0.055	0.069	0.074	0.087	0.072	0.062	0.079
LV	.	.	.	.	.	.	.	.	.	0.114	0.137
NL	0.065	0.065	0.073	0.053	0.054	0.053	0.057	0.055	.	0.054	0.057
NO	.	.	.	.	.	.	.	.	0.036	0.032	0.040
PL	.	.	.	.	.	.	.	.	.	0.124	0.114
PT	0.137	0.128	0.127	0.130	0.127	0.130	0.124	0.135	0.137	0.138	0.141
SE	.	.	.	0.031	0.037	0.029	0.038	0.044	0.030	0.037	0.026
SI	.	.	.	.	.	.	.	.	.	0.043	0.044
SK	.	.	.	.	.	.	.	.	.	0.045	0.053
UK	0.098	0.095	0.085	0.083	0.086	0.086	0.080	0.078	.	0.108	0.093
EU	0.102	0.099	0.094	0.086	0.083	0.082	0.081	0.081	0.084	0.097	0.096

- Headcount index ($\rho = 2 * p_{50}$): more variation than income shares
 - Europe: U-shape pattern (1993: 10.2%, 1999: 8.2%, 2005: 9.6%)
 - highest values (2005): PT (14.1 %), LV (13.7 %), but not HU (high T10 share)
 - lowest values (2005): SE (2.6 %), DK (2.7 %), NO (!, 4.0 %)
- income share of the rich (combination of headcount and income share): hard to compare across time or countries
- Different richness lines (e.g. $\rho \in \{200\%, 300\%, 400\%, \dots\}$): identify for which richness line certain income shares are considered "rich":
 - 200%: Eastern + Southern Europe: 8-14%, Continental + Nordic Europe: 2-6%
 - 300-400%: Eastern + Southern Europe: 2-6%, Continental + Nordic Europe: 0.5-1.5%
 - $\geq 500\%$: Eastern + Southern Europe: $\rightarrow 0$, Continental + Nordic Europe: $\sim 0.5\%$

Table 5: Head count ratio for different richness lines, 2005

	200	300	400	500	600	700	800	900	1000
AT	0.048	0.010	0.005	0.002	0.001	0.000	0.000	0.000	0.000
BE	0.050	0.010	0.004	0.002	0.001	0.001	0.000	0.000	0.000
CY	0.070	0.014	0.006	0.003	0.002	0.001	0.001	0.001	0.001
CZ	0.049	0.012	0.005	0.003	0.002	0.001	0.001	0.001	0.001
DE	0.053	0.012	0.006	0.004	0.003	0.001	0.001	0.001	0.001
DK	0.027	0.008	0.005	0.004	0.002	0.001	0.001	0.001	0.000
EE	0.105	0.029	0.007	0.004	0.002	0.001	0.001	0.000	0.000
ES	0.095	0.019	0.005	0.003	0.001	0.000	0.000	0.000	0.000
FI	0.046	0.013	0.007	0.003	0.002	0.002	0.001	0.001	0.001
FR	0.066	0.016	0.006	0.002	0.001	0.001	0.001	0.001	0.001
GR	0.110	0.033	0.013	0.008	0.004	0.003	0.001	0.001	0.000
HU	0.084	0.026	0.016	0.012	0.009	0.007	0.006	0.005	0.004
IE	0.088	0.021	0.012	0.008	0.004	0.003	0.003	0.003	0.001
IS	0.052	0.017	0.009	0.004	0.003	0.002	0.001	0.001	0.001
IT	0.090	0.021	0.009	0.004	0.002	0.001	0.001	0.000	0.000
LT	0.113	0.037	0.017	0.005	0.001	0.000	0.000	0.000	0.000
LU	0.079	0.019	0.004	0.001	0.001	0.000	0.000	0.000	0.000
LV	0.137	0.048	0.022	0.012	0.005	0.004	0.004	0.003	0.002
NL	0.057	0.014	0.005	0.003	0.002	0.001	0.001	0.001	0.000
NO	0.040	0.013	0.007	0.006	0.005	0.004	0.004	0.004	0.003
PL	0.114	0.034	0.012	0.005	0.002	0.001	0.000	0.000	0.000
PT	0.141	0.061	0.028	0.014	0.010	0.004	0.002	0.001	0.001
SE	0.026	0.005	0.002	0.001	0.001	0.000	0.000	0.000	0.000
SI	0.044	0.007	0.001	0.000	0.000	0.000	0.000	0.000	0.000
SK	0.053	0.017	0.008	0.005	0.004	0.003	0.002	0.002	0.001
UK	0.093	0.021	0.008	0.004	0.003	0.002	0.001	0.001	0.001
EU	0.096	0.022	0.008	0.004	0.002	0.002	0.001	0.001	0.001

4.2.3 Intensity measures

TO BE COMPLETED

Table 6: Richness according to RCHA1

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.013	0.010	0.007	0.006	0.009	0.008	0.009	0.010	0.013	0.010
BE	0.015	0.013	0.011	0.014	0.013	0.016	0.016	0.013	0.009	0.013	0.011
CY	.	.	.	.	.	.	.	.	.	0.014	0.015
CZ	.	.	.	.	.	.	.	.	.	0.013	0.012
DE	0.015	0.013	0.010	0.010	0.009	0.010	0.009	0.012	.	0.011	0.012
DK	0.007	0.006	0.007	0.004	0.004	0.005	0.004	0.004	0.007	0.006	0.007
EE	.	.	.	.	.	.	.	.	0.036	0.028	0.025
ES	0.031	0.033	0.034	0.037	0.033	0.028	0.028	0.028	0.033	0.022	0.020
FI	.	.	0.006	0.007	0.006	0.009	0.008	0.008	0.010	0.010	0.011
FR	0.024	0.017	0.017	0.017	0.014	0.014	0.013	0.012	0.015	0.017	0.014
GR	0.027	0.027	0.027	0.029	0.029	0.026	0.023	0.021	0.020	0.026	0.028
HU	.	.	.	.	.	.	.	.	.	0.015	0.023
IE	0.026	0.025	0.023	0.019	0.018	0.017	0.014	0.009	0.018	0.018	0.021
IS	.	.	.	.	.	.	.	.	0.009	0.010	0.014
IT	0.022	0.023	0.019	0.016	0.016	0.016	0.013	0.012	0.024	0.021	0.020
LT	.	.	.	.	.	.	.	.	.	0.035	0.030
LU	.	0.011	0.009	0.011	0.011	0.014	0.014	0.015	0.014	0.013	0.017
LV	.	.	.	.	.	.	.	.	.	0.029	0.037
NL	0.012	0.015	0.016	0.011	0.011	0.010	0.010	0.011	.	0.011	0.013
NO	.	.	.	.	.	.	.	.	0.009	0.008	0.012
PL	.	.	.	.	.	.	.	.	.	0.031	0.028
PT	0.038	0.036	0.035	0.038	0.039	0.039	0.036	0.041	0.039	0.044	0.044
SE	.	.	.	0.005	0.007	0.005	0.008	0.009	0.005	0.007	0.005
SI	.	.	.	.	.	.	.	.	.	0.007	0.008
SK	.	.	.	.	.	.	.	.	.	0.010	0.014
UK	0.019	0.022	0.020	0.016	0.018	0.018	0.019	0.016	.	0.028	0.020
EU	0.023	0.022	0.021	0.018	0.018	0.018	0.017	0.017	0.019	0.023	0.021

- Concave measure $R_{\beta=3}^{Cha}$:
 - Europe: U-shape pattern
 - rather stable values within countries over time
- Convex measure $R_{\alpha=2}^{FGT,T2}$:
 - most volatile measure, no clear patterns

Table 7: Richness according to RCHA3

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.028	0.020	0.016	0.014	0.019	0.018	0.018	0.021	0.026	0.022
BE	0.030	0.027	0.022	0.028	0.027	0.030	0.030	0.026	0.019	0.027	0.022
CY	.	.	.	.	.	.	.	.	.	0.030	0.031
CZ	.	.	.	.	.	.	.	.	.	0.027	0.024
DE	0.032	0.027	0.021	0.021	0.020	0.022	0.020	0.025	.	0.023	0.024
DK	0.015	0.012	0.013	0.010	0.008	0.010	0.009	0.008	0.014	0.012	0.013
EE	.	.	.	.	.	.	.	.	0.073	0.056	0.052
ES	0.064	0.069	0.067	0.077	0.068	0.057	0.060	0.058	0.068	0.047	0.042
FI	.	.	0.013	0.014	0.013	0.018	0.017	0.017	0.020	0.020	0.022
FR	0.045	0.036	0.036	0.034	0.030	0.030	0.027	0.026	0.031	0.034	0.030
GR	0.054	0.057	0.054	0.058	0.058	0.053	0.049	0.045	0.043	0.053	0.055
HU	.	.	.	.	.	.	.	.	.	0.030	0.043
IE	0.054	0.049	0.045	0.038	0.036	0.034	0.031	0.021	0.035	0.035	0.041
IS	.	.	.	.	.	.	.	.	0.017	0.020	0.026
IT	0.046	0.047	0.040	0.034	0.035	0.034	0.028	0.026	0.047	0.043	0.042
LT	.	.	.	.	.	.	.	.	.	0.069	0.060
LU	.	0.024	0.020	0.024	0.024	0.030	0.030	0.034	0.030	0.028	0.037
LV	.	.	.	.	.	.	.	.	.	0.058	0.071
NL	0.026	0.029	0.032	0.023	0.022	0.021	0.023	0.023	.	0.023	0.027
NO	.	.	.	.	.	.	.	.	0.018	0.016	0.022
PL	.	.	.	.	.	.	.	.	.	0.063	0.058
PT	0.074	0.071	0.069	0.074	0.075	0.075	0.069	0.077	0.077	0.083	0.083
SE	.	.	.	0.011	0.015	0.011	0.016	0.019	0.011	0.015	0.010
SI	.	.	.	.	.	.	.	.	.	0.017	0.017
SK	.	.	.	.	.	.	.	.	.	0.021	0.026
UK	0.042	0.045	0.042	0.035	0.038	0.039	0.038	0.034	.	0.057	0.042
EU	0.048	0.046	0.043	0.037	0.037	0.037	0.035	0.036	0.039	0.047	0.044

Table 8: Richness according to RMED

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	624	528	336	279	535	430	437	633	754	605
BE	811	844	826	803	675	1176	1292	1033	482	866	695
CY	.	.	.	.	.	.	.	.	.	473	593
CZ	.	.	.	.	.	.	.	.	.	427	402
DE	625	588	450	458	438	443	482	622	.	738	749
DK	374	369	467	215	223	277	307	233	592	393	529
EE	.	.	.	.	.	.	.	.	612	542	549
ES	972	970	1127	1143	1005	987	1029	1178	1250	823	797
FI	.	.	366	281	287	430	424	500	822	684	893
FR	1621	850	807	855	729	1147	777	634	929	830	788
GR	1109	928	936	1071	1158	968	784	745	910	1054	1267
HU	.	.	.	.	.	.	.	.	.	399	758
IE	869	1067	1193	1181	1642	1062	605	472	1486	1346	1595
IS	.	.	.	.	.	.	.	.	621	868	1099
IT	736	808	602	504	576	600	557	503	1536	1309	1033
LT	.	.	.	.	.	.	.	.	.	546	532
LU	.	664	558	702	700	938	995	1016	1288	1074	1525
LV	.	.	.	.	.	.	.	.	.	544	809
NL	447	849	978	540	485	633	454	606	.	635	827
NO	.	.	.	.	.	.	.	.	1385	1600	2087
PL	.	.	.	.	.	.	.	.	.	605	530
PT	1091	958	930	1051	1145	1199	1136	1463	1496	1650	1641
SE	.	.	.	207	335	249	443	606	234	356	271
SI	.	.	.	.	.	.	.	.	.	281	291
SK	.	.	.	.	.	.	.	.	.	232	516
UK	695	1256	857	809	964	991	1101	993	.	2055	1347
EU	919	922	893	763	794	857	798	848	1098	1189	1073

Table 9: Richness according to RFGTT22

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.019	0.021	0.010	0.006	0.026	0.012	0.010	0.018	0.022	0.015
BE	0.077	0.117	0.133	0.030	0.038	0.172	0.474	0.143	0.013	0.658	0.175
CY	.	.	.	.	.	.	.	.	.	0.051	0.068
CZ	.	.	.	.	.	.	.	.	.	0.042	0.046
DE	0.020	0.031	0.018	0.014	0.018	0.015	0.017	0.025	.	0.075	0.059
DK	0.017	0.032	0.025	0.005	0.008	0.009	0.013	0.006	0.038	0.017	0.028
EE	.	.	.	.	.	.	.	.	0.094	0.056	0.043
ES	0.053	0.048	0.100	0.064	0.048	0.047	0.052	0.057	0.065	0.037	0.036
FI	.	.	0.041	0.009	0.013	0.020	0.021	0.035	0.122	0.127	0.109
FR	0.332	0.054	0.039	0.058	0.060	0.259	0.066	0.021	0.080	0.032	0.037
GR	0.114	0.058	0.082	0.120	0.104	0.077	0.043	0.036	0.049	0.049	0.068
HU	.	.	.	.	.	.	.	.	.	0.088	0.162
IE	0.143	0.204	0.406	0.455	1.374	0.163	0.022	0.017	0.106	0.152	0.167
IS	.	.	.	.	.	.	.	.	0.029	0.065	0.054
IT	0.042	0.047	0.038	0.021	0.027	0.026	0.027	0.020	0.102	0.135	0.054
LT	.	.	.	.	.	.	.	.	.	0.067	0.047
LU	.	0.014	0.009	0.014	0.014	0.021	0.023	0.016	0.019	0.027	0.023
LV	.	.	.	.	.	.	.	.	.	0.114	0.167
NL	0.017	0.098	0.117	0.033	0.025	0.057	0.013	0.039	.	0.035	0.046
NO	.	.	.	.	.	.	.	.	0.464	2.356	0.751
PL	.	.	.	.	.	.	.	.	.	0.102	0.052
PT	0.101	0.086	0.074	0.070	0.097	0.106	0.077	0.126	0.145	0.171	0.164
SE	.	.	.	0.011	0.016	0.029	0.032	0.063	0.004	0.022	0.014
SI	.	.	.	.	.	.	.	.	.	0.007	0.006
SK	.	.	.	.	.	.	.	.	.	0.035	0.359
UK	0.022	0.199	0.032	0.035	0.042	0.066	0.071	0.055	.	0.177	0.073
EU	0.094	0.077	0.078	0.059	0.123	0.081	0.065	0.044	0.089	0.182	0.092

- Ranking of countries depends on chosen index:
 - 2005: $R_{\alpha}^{FGT,T2}$ highest in NO, SK, BE, but low according to headcount and R_{β}^{Cha} (average according to income shares)
- Sensitivity: different values of parameters α, β : similar results

4.2.4 Comparison of measures

Table 10: Comparison of measures, 2005

	p50	RCHA 3	RCHA3	RMED	RFGTT22	HCR200	incRich	incT10	incT05
AT	17313	0.004	0.022	605	0.015	0.048	0.118	0.204	0.123
BE	16717	0.004	0.022	695	0.175	0.050	0.130	0.214	0.130
CY	9934	0.005	0.031	593	0.068	0.070	0.176	0.225	0.139
CZ	8594	0.004	0.024	402	0.046	0.049	0.130	0.214	0.132
DE	14820	0.004	0.024	749	0.059	0.053	0.141	0.218	0.136
DK	17338	0.003	0.013	529	0.028	0.027	0.081	0.196	0.119
EE	6367	0.009	0.052	549	0.043	0.105	0.255	0.245	0.146
ES	12170	0.007	0.042	797	0.036	0.095	0.227	0.235	0.140
FI	15978	0.004	0.022	893	0.109	0.046	0.134	0.221	0.140
FR	14892	0.005	0.030	788	0.037	0.066	0.165	0.222	0.135
GR	11868	0.010	0.055	1267	0.068	0.110	0.276	0.259	0.162
HU	6273	0.009	0.043	758	0.162	0.084	0.245	0.270	0.182
IE	16340	0.008	0.041	1595	0.167	0.088	0.231	0.251	0.162
IS	19205	0.005	0.026	1099	0.054	0.052	0.143	0.221	0.139
IT	14079	0.007	0.042	1033	0.054	0.090	0.224	0.240	0.146
LT	5174	0.011	0.060	532	0.047	0.113	0.281	0.257	0.155
LU	27208	0.006	0.037	1525	0.023	0.079	0.188	0.224	0.134
LV	5030	0.014	0.071	809	0.167	0.137	0.348	0.285	0.186
NL	16138	0.005	0.027	827	0.046	0.057	0.148	0.218	0.135
NO	21651	0.005	0.022	2087	0.751	0.040	0.155	0.245	0.172
PL	5316	0.010	0.058	530	0.052	0.114	0.276	0.252	0.153
PT	8877	0.016	0.083	1641	0.164	0.141	0.364	0.294	0.187
SE	15181	0.002	0.010	271	0.014	0.026	0.067	0.189	0.110
SI	13115	0.003	0.017	291	0.006	0.044	0.102	0.194	0.112
SK	6320	0.005	0.026	516	0.359	0.053	0.166	0.242	0.159
UK	17245	0.007	0.042	1347	0.073	0.093	0.230	0.242	0.149
EU	13231	0.008	0.044	1073	0.092	0.096	0.240	0.248	0.153

Table ?? shows the ranking of countries according to the different measures of richness. For our analysis, the country with the lowest value of the corresponding richness index is assigned the rank #1, the second lowest #2, and so. This ranking order does not imply any normative

Table 11: Comparison of rankings of measures, 2005

	p50	RCHA3	RCHA3	RMED	RFGTT22	HCR200	incRich	incT10	incT05
AT	22	4	5	10	3	6	4	4	4
BE	20	5	7	11	24	8	6	6	5
CY	9	14	14	9	16	14	14	13	11
CZ	7	7	8	3	9	7	5	5	6
DE	14	8	9	12	15	10	8	8	10
DK	23	3	2	5	5	2	2	3	3
EE	6	20	21	8	8	21	21	19	15
ES	11	16	19	15	6	20	17	14	13
FI	17	6	6	18	19	5	7	9	14
FR	15	12	13	14	7	13	12	11	9
GR	10	23	22	21	17	22	22	23	21
HU	4	21	20	13	20	16	20	24	24
IE	19	19	16	24	23	17	19	20	22
IS	24	11	11	20	14	9	9	10	12
IT	13	17	17	19	13	18	16	15	16
LT	2	24	24	7	11	23	24	22	19
LU	26	15	15	23	4	15	15	12	7
LV	1	25	25	16	22	25	25	25	25
NL	18	9	12	17	10	12	10	7	8
NO	25	10	4	26	26	3	11	18	23
PL	3	22	23	6	12	24	23	21	18
PT	8	26	26	25	21	26	26	26	26
SE	16	1	1	1	2	1	1	1	1
SI	12	2	3	2	1	4	3	2	2
SK	5	13	10	4	25	11	13	17	20
UK	21	18	18	22	18	19	18	16	17

assumptions or judgements about less richness (inequality) being better than more or vice versa. Equivalent statements (with different “signs”) could be derived with an opposite ordering.

The ranking of countries differs when looking at different measures of richness. For instance, considering only the top income shares (especially $R_{IS,1}$) indicate a higher ranking (i.e. higher richness in comparison to other countries) for the Czech Republic, Germany, Denmark, Finland, Hungary, Ireland, Iceland and the Slovak Republic in 2005. When comparing these rankings with those of 2004, the same observation can be made for all countries but the Czech Republic. In 2004, all measures rank the Czech Republic between 9 and 13. In 2005, all measures but $R_{IS,1}$ (#11) rank the Czech Republic between 5 and 7.

Especially the high ranks of Denmark (#9 instead of #2–3 according to all other measures), Germany (#17 instead of #9 (R_{HC}) or #8 (R_α)), Finland (#21 ($R_{IS,1}$) or #14 ($R_{IS,5}$) instead of #4 (R_{HC}) or #6–7 (R_α)) when using the income share of the top 1% ($R_{IS,1}$) can be quite misleading if they are used as the only measure to compare countries. In contrast, of course, for some other countries the ranking changes in the opposite direction. According to $R_{IS,1}$, Spain (#8 instead of #19 (R_{HC}) or #15 (R_α)), Estonia (#5 instead of #20 (R_{HC}) or #19–21 (R_α)), Lithuania (#5 instead of #19 (R_{HC}) or #15 (R_α)) and Luxembourg (#3 instead of #13–14 (R_{HC} and R_α)) are among the countries with the lowest richness in 2005 (together with Austria, Sweden and Slovenia that are among the top group according to all measures). In 2004, Spain and Luxembourg are also ranked among the countries with the lowest richness according to $R_{IS,1}$, Estonia and Lithuania are not, but still for them $R_{IS,1}$ indicates a higher rank than the other measures. The low values for Luxembourg might be surprising. When taking a look at the 2004 data, Luxembourg is ranked #4 according to $R_{IS,10}$, $R_{IS,5}$ and $R_{IS,1}$, but #12 (R_{HC}) and #10 ($R_{\alpha=1}$) whereas $R_{\alpha=2}$ ranks it #5. These results imply a rather high inequality among the top 10% of the income distribution. However, the overall inequality according to the Gini coefficient, for example, is on an average level compared to other Continental countries (see, e.g., Peichl (2008)). Further on, Greece is ranked #10 according to $R_{IS,1}$ in 2004, whereas all other measures rank it around #20. In 2005, $R_{IS,1}$ ranks it 19th and all other measures are just above #20.

These results show that taking into account at several measures should lead to a more reliable picture than focussing on a single measure.

Table 12: Correlation of measures, 2005

	RCHA 3	RCHA3	RMED	RFGTT22	HCR200	incRich	incT10	incT05
RCHA 3	1.000							
RCHA3	0.988	1.000						
RMED	0.343	0.294	1.000					
RFGTT22	0.065	-0.031	0.541	1.000				
HCR200	0.955	0.986	0.264	-0.099	1.000			
incRich	0.982	0.987	0.349	0.060	0.982	1.000		
incT10	0.943	0.903	0.462	0.318	0.869	0.946	1.000	
incT05	0.834	0.760	0.535	0.514	0.709	0.827	0.962	1.000

Table 13: Rank-Correlation of measures, 2005

	RCHA 3	RCHA3	RMED	RFGTT22	HCR200	incRich	incT10	incT05
RCHA 3	1.000							
RCHA3	0.883	1.000						
RMED	0.317	0.237	1.000					
RFGTT22	0.280	0.175	0.348	1.000				
HCR200	0.834	0.938	0.237	0.175	1.000			
incRich	0.951	0.895	0.305	0.268	0.858	1.000		
incT10	0.852	0.735	0.366	0.428	0.698	0.840	1.000	
incT05	0.705	0.588	0.391	0.563	0.538	0.680	0.840	1.000

4.3 Comparison of results from different data sources

In comparison of ECHP and EU-SILC data, no systematic differences can be found. For some countries the EU-SILC values seem to be in line with ECHP data (e.g. Germany, Denmark, France, Greece, Netherlands, Portugal), for some countries the EU-SILC values are higher (e.g. Ireland, Italy, UK), for others lower (e.g. Sweden). These changes, however, could not be traced back to systematic differences in the data, they might as well stem from different developments in the underlying income distributions.

When comparing the values between the LIS and the ECHP data, it can be found that, in general, the LIS data yield higher values for all richness indices. Especially the absolute values of indices and the ranking of countries according to these values differ. The income shares of the top $x\%$ of the population seem to be the most robust measures across data sets.⁸ However, in general, all measures show the same trends and relationship of changes.

5 Conclusion

The financing problems of the European welfare states and the increasing pressure of global economic competition have given rise to a debate whether the gap between rich and poor is widening. Given this debate, appropriate measures of poverty and richness are of key importance for an empirical analysis. The aim of this paper was to analyse the development of richness over time and the likely impact of flat tax reforms on richness. For a comprehensive analysis of richness, several data sources and richness indicators have been used.

In principle, all richness measures and data sources lead to similar results in many cases. However, for some countries quite striking differences between measures and / or data sources have been shown. For instance, in general, LIS data yield higher values for the head count and R_α measures, whereas the income shares yield similar results. When comparing the results across countries, different rather homogeneous groups of countries can be identified: richness is rather high in Southern and Eastern European countries, as well as the English speaking countries, medium in Continental Europe and low in Scandinavian countries.

It is widely believed that the rich are getting richer and the poor are getting poorer when introducing a flat tax system. Countries worldwide differ with respect to various dimensions including the design of the welfare state, i.e. the tax benefit system. Reasons for the fact that one system does not fit all countries include, among others, the specific socio-economic structure and the preferences of the society. Therefore, different outcomes of (similar) policy reforms should be expected for different countries.

⁸However, all data sources are survey samples that use weights to extrapolate the results to the whole population. These weights are usually designed such that the overall income is well represented.

One should note, though, that our analysis is based on survey data where the top and the bottom of the income distribution are usually underrepresented. One solution could be to construct series of top income data based on tax return data. However, tax return data is generally not comparable across countries as income tax systems differ considerably across countries. Constructing a homogeneous cross-country top income dataset is subject to further research and could lead to important insights for future cross-country comparisons (see e.g. Atkinson and Piketty (2007)). However, to be able to apply the R_α measures, information about the whole income distribution or at least the median income (for the richness line) is needed. Therefore, it would be useful to merge such a top income dataset with information of the bottom of the income distribution. As a result, a reliable picture of the entire income distribution can be obtained (see e.g. Bach et al. (2007)).

To sum up, our analysis showed that the measurement of richness is a complex field. The results of cross country comparisons and development over time depend on the chosen measure of richness. Therefore, several measures should be used for a distinct analysis of structural changes at the top of the income distribution.

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A LIS

Table 14: Richness according to hcr

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.058	0.065	0.081	0.101	0.104	0.103
CA	0.084	0.063	0.063	0.069	0.064	.	0.084	0.089
CH	.	.	0.082	.	0.076	.	0.070	.
DE	0.069	0.063	0.052	.	0.053	0.068	0.072	.
DK	.	.	.	0.038	0.024	0.022	0.025	0.026
FI	.	.	.	0.019	0.022	0.031	0.044	0.048
IL	.	.	0.104	0.118	0.117	0.123	0.128	.
MX	.	.	.	0.195	.	.	0.221	0.196
NL	.	.	.	.	0.057	0.049	0.039	.
NO	.	.	0.032	0.032	0.028	0.027	0.037	0.040
PL	.	.	.	0.052	0.081	0.084	0.077	0.102
SE	0.049	0.020	0.013	0.017	0.031	0.027	0.047	0.038
TW	.	.	0.078	0.078	0.083	0.087	0.095	0.103
UK	0.069	0.056	0.053	0.079	0.109	0.113	0.116	0.115
US	.	0.082	0.073	0.105	0.103	0.120	0.119	0.122

Table 15: Richness according to cha1

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.009	0.012	0.015	0.020	0.022	0.021
CA	0.017	0.011	0.011	0.013	0.012	.	0.019	0.021
CH	.	.	0.024	.	0.018	.	0.015	.
DE	0.015	0.014	0.011	.	0.012	0.014	0.016	.
DK	.	.	.	0.008	0.005	0.004	0.005	0.005
FI	.	.	.	0.003	0.003	0.006	0.010	0.010
IL	.	.	0.021	0.024	0.024	0.029	0.031	.
MX	.	.	.	0.065	.	.	0.083	0.072
NL	.	.	.	.	0.012	0.008	0.007	.
NO	.	.	0.005	0.006	0.007	0.006	0.010	0.011
PL	.	.	.	0.010	0.017	0.021	0.018	0.026
SE	0.009	0.003	0.001	0.002	0.005	0.005	0.010	0.008
TW	.	.	0.017	0.017	0.017	0.019	0.021	0.025
UK	0.014	0.012	0.009	0.017	0.024	0.027	0.030	0.031
US	.	0.017	0.013	0.021	0.021	0.032	0.033	0.032

Table 16: Richness according to cha3

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.021	0.026	0.032	0.043	0.046	0.044
CA	0.036	0.025	0.025	0.029	0.026	.	0.039	0.042
CH	.	.	0.046	.	0.037	.	0.032	.
DE	0.032	0.028	0.023	.	0.024	0.030	0.033	.
DK	.	.	.	0.018	0.010	0.008	0.010	0.011
FI	.	.	.	0.007	0.008	0.013	0.020	0.020
IL	.	.	0.045	0.053	0.051	0.059	0.063	.
MX	.	.	.	0.120	.	.	0.143	0.126
NL	.	.	.	.	0.025	0.019	0.015	.
NO	.	.	0.012	0.013	0.014	0.012	0.018	0.022
PL	.	.	.	0.021	0.035	0.042	0.037	0.051
SE	0.020	0.006	0.004	0.005	0.012	0.011	0.020	0.016
TW	.	.	0.035	0.036	0.036	0.040	0.044	0.051
UK	0.030	0.024	0.021	0.035	0.050	0.055	0.059	0.060
US	.	0.036	0.029	0.046	0.046	0.062	0.063	0.062

Table 17: Richness according to fgtt22

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.007	0.018	0.026	0.033	0.043	0.044
CA	0.022	0.011	0.012	0.014	0.021	.	0.076	0.066
CH	.	.	0.278	.	0.191	.	0.135	.
DE	0.027	0.043	0.013	.	0.035	0.030	0.055	.
DK	.	.	.	0.012	0.029	0.074	0.028	0.028
FI	.	.	.	0.007	0.003	0.020	0.171	0.214
IL	.	.	0.061	0.056	0.047	0.086	0.133	.
MX	.	.	.	0.364	.	.	1.006	1.345
NL	.	.	.	.	0.058	0.007	0.009	.
NO	.	.	0.053	0.006	0.018	0.073	0.157	1.480
PL	.	.	.	0.014	0.030	0.127	0.151	0.106
SE	0.010	0.002	0.001	0.023	0.007	0.011	0.133	1.974
TW	.	.	0.024	0.051	0.097	0.034	0.038	0.056
UK	0.042	0.032	0.011	0.028	0.152	0.086	0.235	0.276
US	.	0.028	0.009	0.025	0.027	0.128	0.118	0.146

Table 18: Richness according to medmeanrat

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.925	0.913	0.892	0.872	0.866	0.863
CA	0.911	0.930	0.913	0.905	0.907	.	0.871	0.870
CH	.	.	0.836	.	0.877	.	0.870	.
DE	0.885	0.888	0.905	.	0.902	0.894	0.879	.
DK	.	.	.	0.959	0.967	0.955	0.951	0.950
FI	.	.	.	0.966	0.959	0.930	0.912	0.900
IL	.	.	0.857	0.847	0.843	0.836	0.826	.
MX	.	.	.	0.709	.	.	0.618	0.659
NL	.	.	.	.	0.896	0.932	0.929	.
NO	.	.	0.943	0.942	0.939	0.947	0.910	0.882
PL	.	.	.	0.917	0.874	0.878	0.881	0.850
SE	0.972	0.970	0.973	0.981	0.953	0.952	0.912	0.926
TW	.	.	0.875	0.872	0.872	0.864	0.858	0.844
UK	0.881	0.903	0.920	0.883	0.845	0.840	0.823	0.806
US	.	0.903	0.927	0.885	0.888	0.824	0.827	0.824

Table 19: Richness according to incrich

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.131	0.153	0.188	0.233	0.245	0.239
CA	0.203	0.150	0.146	0.162	0.152	.	0.214	0.224
CH	.	.	0.246	.	0.206	.	0.183	.
DE	0.171	0.159	0.124	.	0.135	0.165	0.178	.
DK	.	.	.	0.100	0.067	0.060	0.067	0.069
FI	.	.	.	0.047	0.052	0.079	0.121	0.133
IL	.	.	0.242	0.269	0.265	0.294	0.310	.
MX	.	.	.	0.496	.	.	0.585	0.527
NL	.	.	.	.	0.146	0.113	0.093	.
NO	.	.	0.078	0.078	0.078	0.082	0.122	0.152
PL	.	.	.	0.125	0.191	0.228	0.199	0.262
SE	0.124	0.046	0.030	0.044	0.074	0.069	0.124	0.098
TW	.	.	0.184	0.189	0.195	0.205	0.226	0.249
UK	0.167	0.140	0.124	0.188	0.266	0.280	0.297	0.304
US	.	0.199	0.168	0.245	0.243	0.312	0.312	0.319

Table 20: Richness according to inct10

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.204	0.213	0.222	0.233	0.238	0.235
CA	0.231	0.214	0.211	0.215	0.214	.	0.242	0.243
CH	.	.	0.274	.	0.251	.	0.232	.
DE	0.222	0.221	0.203	.	0.214	0.219	0.226	.
DK	.	.	.	0.204	0.191	0.186	0.188	0.190
FI	.	.	.	0.177	0.178	0.190	0.212	0.218
IL	.	.	0.235	0.237	0.235	0.254	0.263	.
MX	.	.	.	0.337	.	.	0.398	0.374
NL	.	.	.	.	0.219	0.202	0.194	.
NO	.	.	0.191	0.189	0.193	0.199	0.222	0.244
PL	.	.	.	0.206	0.223	0.258	0.238	0.260
SE	0.213	0.176	0.169	0.179	0.188	0.187	0.212	0.200
TW	.	.	0.221	0.226	0.224	0.227	0.234	0.244
UK	0.219	0.214	0.204	0.226	0.252	0.258	0.270	0.280
US	.	0.232	0.217	0.235	0.238	0.278	0.280	0.281

Table 21: Richness according to inct05

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.115	0.124	0.131	0.136	0.143	0.140
CA	0.136	0.125	0.122	0.126	0.126	.	0.151	0.151
CH	.	.	0.186	.	0.160	.	0.146	.
DE	0.134	0.136	0.121	.	0.130	0.132	0.138	.
DK	.	.	.	0.122	0.113	0.110	0.111	0.112
FI	.	.	.	0.101	0.101	0.112	0.132	0.137
IL	.	.	0.140	0.140	0.140	0.155	0.164	.
MX	.	.	.	0.207	.	.	0.274	0.256
NL	.	.	.	.	0.134	0.116	0.112	.
NO	.	.	0.110	0.109	0.116	0.123	0.145	0.169
PL	.	.	.	0.121	0.133	0.165	0.148	0.164
SE	0.125	0.098	0.093	0.102	0.108	0.109	0.131	0.120
TW	.	.	0.132	0.137	0.134	0.137	0.141	0.149
UK	0.132	0.129	0.119	0.135	0.157	0.161	0.173	0.185
US	.	0.139	0.124	0.138	0.140	0.180	0.182	0.183

Table 22: Richness according to inct01

	1970	1975	1980	1985	1990	1995	2000	2004
AU	.	.	0.030	0.036	0.040	0.042	0.045	0.045
CA	0.039	0.035	0.034	0.035	0.038	.	0.054	0.052
CH	.	.	0.078	.	0.064	.	0.055	.
DE	0.042	0.046	0.034	.	0.042	0.039	0.045	.
DK	.	.	.	0.036	0.038	0.036	0.036	0.036
FI	.	.	.	0.028	0.028	0.035	0.048	0.053
IL	.	.	0.045	0.041	0.043	0.051	0.057	.
MX	.	.	.	0.076	.	.	0.092	0.102
NL	.	.	.	.	0.047	0.031	0.032	.
NO	.	.	0.033	0.031	0.039	0.046	0.064	0.086
PL	.	.	.	0.035	0.041	0.062	0.052	0.056
SE	0.036	0.025	0.023	0.029	0.030	0.032	0.047	0.039
TW	.	.	0.038	0.043	0.042	0.041	0.043	0.047
UK	0.043	0.041	0.034	0.041	0.056	0.054	0.066	0.074
US	.	0.042	0.032	0.037	0.040	0.065	0.062	0.068

B ECHP EU-SILC

Table 23: Richness according to p50

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	14211	15154	14855	15009	15012	15827	16110	19156	17341	17313
BE	13538	14353	15153	15337	14905	15228	15584	16803	17614	15343	16717
CY	.	.	.	.	.	.	.	.	.	8942	9934
CZ	.	.	.	.	.	.	.	.	.	8138	8594
DE	13055	12702	13844	14340	14016	14396	15205	15604	.	15330	14820
DK	13998	14829	15106	15772	16517	16822	17445	18301	18954	17013	17338
EE	.	.	.	.	.	.	.	.	4481	5428	6367
ES	9044	8655	8326	8846	9113	9986	11135	12237	10617	11298	12170
FI	.	.	13079	13155	14037	13794	14393	14973	16551	15271	15978
FR	11300	12585	13189	13573	14115	14451	14948	15921	15902	14070	14892
GR	9633	9506	9133	9421	9921	9458	10058	10360	13000	11494	11868
HU	.	.	.	.	.	.	.	.	.	5766	6273
IE	8193	9490	9673	10887	12603	12419	13116	15163	17763	15774	16340
IS	.	.	.	.	.	.	.	.	17651	18500	19205
IT	9386	9723	8929	9988	10491	11105	11823	12423	15730	13964	14079
LT	.	.	.	.	.	.	.	.	.	4308	5174
LU	.	18869	20420	19947	19762	20439	21763	22146	27889	25449	27208
LV	.	.	.	.	.	.	.	.	.	4567	5030
NL	11831	11930	12471	13066	12949	13476	13666	14204	.	15516	16138
NO	.	.	.	.	.	.	.	.	20063	20308	21651
PL	.	.	.	.	.	.	.	.	.	4938	5316
PT	7238	7003	7344	7681	7561	7793	8399	8584	9675	8582	8877
SE	.	.	.	12584	12885	13143	13896	14723	16970	14712	15181
SI	.	.	.	.	.	.	.	.	.	12444	13115
SK	.	.	.	.	.	.	.	.	.	5604	6320
UK	11375	12280	12593	13913	14754	14241	15402	16568	.	16799	17245
EU	10183	11068	11301	11971	12324	12526	13278	14038	14925	12912	13231

Table 24: Richness according to incT01

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.038	0.039	0.032	0.029	0.040	0.034	0.033	0.037	0.038	0.037
BE	0.051	0.050	0.052	0.043	0.039	0.059	0.062	0.056	0.033	0.037	0.043
CY	.	.	.	.	.	.	.	.	.	0.043	0.049
CZ	.	.	.	.	.	.	.	.	.	0.045	0.045
DE	0.037	0.039	0.036	0.035	0.035	0.034	0.036	0.037	.	0.048	0.049
DK	0.037	0.039	0.043	0.029	0.030	0.031	0.034	0.030	0.043	0.037	0.043
EE	.	.	.	.	.	.	.	.	0.055	0.047	0.043
ES	0.045	0.041	0.056	0.046	0.041	0.042	0.041	0.045	0.049	0.041	0.041
FI	.	.	0.039	0.033	0.033	0.037	0.037	0.041	0.053	0.048	0.055
FR	0.094	0.049	0.043	0.047	0.043	0.067	0.047	0.037	0.046	0.043	0.043
GR	0.062	0.048	0.053	0.057	0.057	0.053	0.043	0.041	0.043	0.043	0.052
HU	.	.	.	.	.	.	.	.	.	0.058	0.075
IE	0.057	0.065	0.079	0.079	0.096	0.068	0.037	0.036	0.061	0.065	0.064
IS	.	.	.	.	.	.	.	.	0.042	0.049	0.048
IT	0.046	0.046	0.044	0.039	0.040	0.041	0.042	0.039	0.057	0.060	0.047
LT	.	.	.	.	.	.	.	.	.	0.046	0.042
LU	.	0.035	0.032	0.035	0.032	0.036	0.033	0.033	0.035	0.037	0.035
LV	.	.	.	.	.	.	.	.	.	0.056	0.060
NL	0.035	0.061	0.064	0.041	0.039	0.049	0.035	0.043	.	0.042	0.045
NO	.	.	.	.	.	.	.	.	0.072	0.082	0.089
PL	.	.	.	.	.	.	.	.	.	0.056	0.045
PT	0.055	0.051	0.047	0.043	0.051	0.053	0.044	0.050	0.057	0.063	0.060
SE	.	.	.	0.031	0.036	0.033	0.042	0.046	0.028	0.034	0.033
SI	.	.	.	.	.	.	.	.	.	0.032	0.031
SK	.	.	.	.	.	.	.	.	.	0.045	0.071
UK	0.037	0.067	0.042	0.043	0.045	0.049	0.049	0.046	.	0.064	0.051
EU	0.054	0.050	0.050	0.045	0.046	0.049	0.045	0.044	0.051	0.056	0.051

Table 25: Richness according to incRich

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.152	0.115	0.097	0.089	0.115	0.100	0.095	0.122	0.141	0.118
BE	0.172	0.158	0.137	0.143	0.153	0.163	0.181	0.161	0.116	0.153	0.130
CY	.	.	.	.	.	.	.	.	.	0.173	0.176
CZ	.	.	.	.	.	.	.	.	.	0.145	0.130
DE	0.173	0.154	0.129	0.116	0.119	0.123	0.116	0.132	.	0.137	0.141
DK	0.080	0.076	0.073	0.060	0.049	0.056	0.052	0.060	0.090	0.074	0.081
EE	.	.	.	.	.	.	.	.	0.341	0.276	0.255
ES	0.304	0.318	0.317	0.353	0.313	0.273	0.290	0.272	0.335	0.242	0.227
FI	.	.	0.082	0.087	0.076	0.099	0.099	0.102	0.126	0.122	0.134
FR	0.270	0.196	0.195	0.187	0.168	0.189	0.162	0.158	0.169	0.182	0.165
GR	0.286	0.285	0.277	0.293	0.289	0.275	0.254	0.239	0.232	0.264	0.276
HU	.	.	.	.	.	.	.	.	.	0.175	0.245
IE	0.272	0.262	0.256	0.233	0.234	0.216	0.171	0.144	0.200	0.205	0.231
IS	.	.	.	.	.	.	.	.	0.100	0.121	0.143
IT	0.239	0.248	0.213	0.191	0.197	0.189	0.161	0.152	0.247	0.233	0.224
LT	.	.	.	.	.	.	.	.	.	0.322	0.281
LU	.	0.145	0.115	0.134	0.132	0.164	0.170	0.192	0.168	0.149	0.188
LV	.	.	.	.	.	.	.	.	.	0.290	0.348
NL	0.151	0.177	0.195	0.133	0.131	0.138	0.134	0.137	.	0.135	0.148
NO	.	.	.	.	.	.	.	.	0.127	0.129	0.155
PL	.	.	.	.	.	.	.	.	.	0.309	0.276
PT	0.347	0.324	0.315	0.327	0.330	0.335	0.315	0.347	0.346	0.364	0.364
SE	.	.	.	0.073	0.095	0.073	0.102	0.118	0.070	0.090	0.067
SI	.	.	.	.	.	.	.	.	.	0.101	0.102
SK	.	.	.	.	.	.	.	.	.	0.121	0.166
UK	0.230	0.251	0.209	0.200	0.210	0.213	0.206	0.191	.	0.281	0.230
EU	0.255	0.245	0.233	0.209	0.205	0.206	0.199	0.200	0.214	0.250	0.240

Table 26: Richness according to medmeanrat

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	0.897	0.915	0.927	0.948	0.920	0.913	0.913	0.914	0.901	0.910
BE	0.907	0.904	0.911	0.915	0.899	0.884	0.867	0.890	0.934	0.902	0.922
CY	.	.	.	.	.	.	.	.	.	0.880	0.880
CZ	.	.	.	.	.	.	.	.	.	0.887	0.903
DE	0.895	0.903	0.919	0.920	0.918	0.909	0.913	0.897	.	0.904	0.904
DK	0.935	0.947	0.929	0.949	0.960	0.950	0.943	0.959	0.937	0.948	0.943
EE	.	.	.	.	.	.	.	.	0.823	0.841	0.858
ES	0.837	0.831	0.824	0.821	0.826	0.853	0.856	0.849	0.851	0.872	0.886
FI	.	.	0.920	0.924	0.935	0.912	0.916	0.916	0.903	0.906	0.901
FR	0.836	0.870	0.877	0.875	0.889	0.869	0.890	0.911	0.883	0.879	0.891
GR	0.846	0.847	0.841	0.836	0.825	0.841	0.860	0.871	0.870	0.848	0.846
HU	.	.	.	.	.	.	.	.	.	0.881	0.847
IE	0.815	0.825	0.819	0.839	0.828	0.858	0.903	0.942	0.869	0.871	0.848
IS	.	.	.	.	.	.	.	.	0.919	0.907	0.889
IT	0.876	0.874	0.886	0.907	0.885	0.896	0.913	0.933	0.860	0.864	0.880
LT	.	.	.	.	.	.	.	.	.	0.825	0.851
LU	.	0.901	0.916	0.901	0.903	0.890	0.879	0.871	0.884	0.892	0.881
LV	.	.	.	.	.	.	.	.	.	0.833	0.801
NL	0.895	0.880	0.870	0.894	0.900	0.896	0.908	0.899	.	0.909	0.892
NO	.	.	.	.	.	.	.	.	0.898	0.898	0.878
PL	.	.	.	.	.	.	.	.	.	0.833	0.843
PT	0.818	0.824	0.828	0.825	0.813	0.808	0.823	0.785	0.805	0.778	0.779
SE	.	.	.	0.941	0.939	0.946	0.938	0.921	0.945	0.920	0.955
SI	.	.	.	.	.	.	.	.	.	0.923	0.922
SK	.	.	.	.	.	.	.	.	.	0.916	0.885
UK	0.897	0.859	0.881	0.890	0.884	0.881	0.889	0.887	.	0.829	0.870
EU	0.866	0.871	0.876	0.889	0.889	0.885	0.895	0.896	0.888	0.874	0.882

Table 27: Ranking mean

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	11	12	12	10	11	11	11	13	22	21
BE	10	12	13	14	12	13	13	13	9	18	19
CY	.	.	.	.	.	.	.	.	.	8	8
CZ	.	.	.	.	.	.	.	.	.	7	7
DE	9	7	10	10	9	9	9	9	.	17	15
DK	11	10	11	13	14	14	14	14	11	20	20
EE	.	.	.	.	.	.	.	.	1	5	6
ES	4	2	3	2	2	3	4	4	3	10	10
FI	.	.	6	7	7	8	8	8	8	16	17
FR	8	9	9	9	11	12	10	10	6	14	16
GR	5	4	4	4	4	2	2	2	4	12	11
HU	.	.	.	.	.	.	.	.	.	6	5
IE	2	5	5	5	8	6	5	7	12	21	22
IS	.	.	.	.	.	.	.	.	10	24	24
IT	3	3	2	3	3	4	3	3	7	15	14
LT	.	.	.	.	.	.	.	.	.	1	1
LU	.	13	14	15	15	15	15	15	15	26	26
LV	.	.	.	.	.	.	.	.	.	2	2
NL	7	6	8	8	6	7	7	5	.	19	18
NO	.	.	.	.	.	.	.	.	14	25	25
PL	.	.	.	.	.	.	.	.	.	3	3
PT	1	1	1	1	1	1	1	1	2	9	9
SE	.	.	.	6	5	5	6	6	5	13	13
SI	.	.	.	.	.	.	.	.	.	11	12
SK	.	.	.	.	.	.	.	.	.	4	4
UK	6	8	7	11	13	10	12	12	.	23	23

Table 28: Ranking p50

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	10	13	12	13	12	13	11	13	23	22
BE	10	11	12	13	12	13	12	13	9	18	20
CY	.	.	.	.	.	.	.	.	.	9	9
CZ	.	.	.	.	.	.	.	.	.	7	7
DE	9	9	10	11	8	10	10	9	.	17	14
DK	11	12	11	14	14	14	14	14	12	22	23
EE	.	.	.	.	.	.	.	.	1	4	6
ES	3	2	2	2	2	3	3	3	3	10	11
FI	.	.	8	8	9	8	8	7	7	16	17
FR	6	8	9	9	10	11	9	10	6	14	15
GR	5	4	4	3	3	2	2	2	4	11	10
HU	.	.	.	.	.	.	.	.	.	6	4
IE	2	3	5	5	5	5	5	8	11	20	19
IS	.	.	.	.	.	.	.	.	10	24	24
IT	4	5	3	4	4	4	4	4	5	13	13
LT	.	.	.	.	.	.	.	.	.	1	2
LU	.	13	14	15	15	15	15	15	15	26	26
LV	.	.	.	.	.	.	.	.	.	2	1
NL	8	6	6	7	7	7	6	5	.	19	18
NO	.	.	.	.	.	.	.	.	14	25	25
PL	.	.	.	.	.	.	.	.	.	3	3
PT	1	1	1	1	1	1	1	1	2	8	8
SE	.	.	.	6	6	6	7	6	8	15	16
SI	.	.	.	.	.	.	.	.	.	12	12
SK	.	.	.	.	.	.	.	.	.	5	5
UK	7	7	7	10	11	9	11	12	.	21	21

Table 29: Ranking HCR200

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	4	3	4	4	4	4	2	7	11	6
BE	2	2	4	6	8	7	7	7	6	12	8
CY	.	.	.	.	.	.	.	.	.	15	14
CZ	.	.	.	.	.	.	.	.	.	10	7
DE	4	3	6	5	5	5	5	5	.	8	10
DK	1	1	1	1	1	1	1	1	2	1	2
EE	.	.	.	.	.	.	.	.	15	22	21
ES	10	13	13	15	15	13	14	14	14	19	20
FI	.	.	2	3	2	3	3	3	5	6	5
FR	5	7	8	9	9	8	9	10	8	16	13
GR	8	11	12	13	13	14	13	13	12	21	22
HU	.	.	.	.	.	.	.	.	.	14	16
IE	9	10	11	12	10	11	10	8	10	17	17
IS	.	.	.	.	.	.	.	.	4	5	9
IT	6	9	10	10	11	10	8	9	11	18	18
LT	.	.	.	.	.	.	.	.	.	25	23
LU	.	5	5	8	7	9	11	12	9	13	15
LV	.	.	.	.	.	.	.	.	.	23	25
NL	3	6	7	7	6	6	6	6	.	9	12
NO	.	.	.	.	.	.	.	.	3	2	3
PL	.	.	.	.	.	.	.	.	.	24	24
PT	11	12	14	14	14	15	15	15	13	26	26
SE	.	.	.	2	3	2	2	4	1	3	1
SI	.	.	.	.	.	.	.	.	.	4	4
SK	.	.	.	.	.	.	.	.	.	7	11
UK	7	8	9	11	12	12	12	11	.	20	19

Table 30: Ranking HCR300

	1993	1994	1995	1996	1997	1998	1999	2000	2003	2004	2005
AT	.	6	4	3	1	4	3	4	4	13	5
BE	4	5	6	12	8	12	11	8	3	17	4
CY	.	.	.	.	.	.	.	.	.	11	11
CZ	.	.	.	.	.	.	.	.	.	12	7
DE	3	4	2	5	5	6	5	10	.	8	6
DK	2	1	3	2	2	2	1	1	2	1	3
EE	.	.	.	.	.	.	.	.	14	22	21
ES	10	12	13	14	14	14	14	14	13	18	15
FI	.	.	1	4	3	5	4	6	7	6	8
FR	8	7	8	11	9	8	9	7	9	16	12
GR	9	9	12	13	13	13	13	13	10	20	22
HU	.	.	.	.	.	.	.	.	.	14	20
IE	7	11	11	9	12	9	7	2	11	15	18
IS	.	.	.	.	.	.	.	.	5	7	13
IT	6	10	9	8	10	10	8	9	12	19	19
LT	.	.	.	.	.	.	.	.	.	25	24
LU	.	2	5	7	6	7	10	11	8	5	16
LV	.	.	.	.	.	.	.	.	.	23	25
NL	1	3	7	6	7	3	6	3	.	10	10
NO	.	.	.	.	.	.	.	.	6	4	9
PL	.	.	.	.	.	.	.	.	.	24	23
PT	11	13	14	15	15	15	15	15	15	26	26
SE	.	.	.	1	4	1	2	5	1	3	1
SI	.	.	.	.	.	.	.	.	.	2	2
SK	.	.	.	.	.	.	.	.	.	9	14
UK	5	8	10	10	11	11	12	12	.	21	17