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European Schemes of Social Assistance: An Empirical Analysis of Set-Ups and Distributive Impacts

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Abstract

This paper analyses the distributive impacts of various regulatory and institutional settings of European schemes of social assistance. For this purpose, two sets of classifications of European schemes of social assistance are introduced that classify the systems according to regulatory arrangements and degree of centralisation, respectively. Subsequently, the distributive impacts of five selected EU systems are calculated on the basis of LIS data and their relationship to class assignment is investigated.

JEL: I32, I38, H53
Keywords: Social Assistance, Classification, Centralisation, Inequality, Redistribution

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1 Introduction

The issue of means-tested social assistance has attracted more and more public attention in recent years. One reason is that the discussion about social assistance is closely connected to other social security settings because the end of eligibility for other transfers, such as unemployment benefits, may lead to eligibility for social assistance. Consequently, if other parts of the transfer system are not suitably designed or are unable to cope with social problems, the social assistance system is challenged with them. When recession hit most of the European countries in the first half of the 1990s, the social security systems were confronted with increasing unemployment.[2] Accordingly, a rising number of social assistance recipients was observed in the 1990s in European countries.[3]

In view of the increasing importance of social assistance in the presence of rising long term unemployment, the question arises how effective social assistance programs are in achieving their goals of removing inequality, poverty and insecurity of existence. While discussions have frequently focused on the possible adverse effects of social assistance schemes for labour supply and savings behaviour (thus addressing the problem of the economy's *productive* efficiency),[4] the present issue concerns the *distributive* effectiveness and efficiency of the social assistance system itself.

Until the seminal contribution of Esping-Anderson (1990), most empirical work on distributive impacts of social security systems has relied on comparing the amount of social security expenditures with distributive outcomes. However, in view of the manifold nature of social assistance regulations, the size of the social assistance budget alone is unlikely to explain the multifaceted distributive impacts the systems produce. Consequently, in this paper a multidimensional approach is adopted that takes into account not only the amount of social assistance expenditures but also the instruments that are employed to allocate social assistance payments to their target population as well as the institutional setting with regard to the systems' degree of centralisation.

Drawing on previous studies that have examined the relationship between welfare state settings and distributive outcomes from a more general point of view,[5] this paper analyses various schemes of social assistance in EU countries with respect to their distributive impacts. For this purpose, after defining and explaining the concept of "distributive efficiency" in

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2 Cf. e.g. EUROSTAT/European Commission 2000.
3 Cf. e.g. Puide/Minas 2001: 41f.
4 Cf. e.g. Atkinson 1998, Chap. 2.
5 See esp. Esping-Anderson 1990, Korpi/Palme 1998 and Castles/Mitchell 1992.

section 2, some hypotheses from socio-economic literature are presented that deal with the relationship between different social assistance settings, concerning regulatory arrangements and degrees of centralisation, and their distributive outcomes. Subsequently, in section 3 we establish two systems of classifications of EU social assistance schemes. To this end, we invoke two sets of indicators designed to capture the main characteristics of social assistance schemes concerning their regulatory arrangements and their degree of centralisation, respectively. In section 4, an empirical analysis of the impact of social assistance benefits on income inequality in five selected EU countries is presented, giving both figures of effectiveness and efficiency calculated from Luxembourg Income Study data on the basis of various measures of inequality. In section 5, the linkage between the class assignments of the social assistance schemes established in section 3 and their distributive impacts is investigated, and the hypotheses presented in section 2 are discussed in the light of these results.

2 Distributive Impacts in Social Assistance Systems

2.1 Assessing Social Transfer Systems: Effectiveness and Efficiency

When discussing the distributive impacts of social transfer systems, analysis is often limited to measuring the inequality or poverty of post transfer income distributions.[6] As Castles and Mitchell (1992) have pointed out, this approach does not measure up to the problem of assessing the effectiveness of social transfer systems. Rather, the initial, pre-transfer inequality must be taken into account. Especially when pre-transfer inequalities vary greatly, a mere comparison of post-transfer inequalities may yield a grossly misleading picture, as post-transfer inequalities tell nothing about the magnitude by which the initial inequality has been reduced. Consequently, the appropriate measure for assessing effectiveness is the percentage reduction of the inequality measure considered, which is commonly referred to as the *redistribution effect.*

In interpreting results on distributive effectiveness, it should be taken into account that the share of social assistance expenditures in GDP varies substantially between the countries considered. The effectiveness of the systems should therefore be judged in the light of the total amount of expenditure spent in social transfers. For this purpose we introduce a set of measures of distributive efficiency: Dividing the redistribution effect of the respective inequality measure by the share of social assistance expenditures in GDP, we obtain a

[6] Cf. e.g. Gouyette/Pestieau 1999.

measure of distributive efficiency that expresses the amount of redistribution achieved by investing one percent of GDP in social assistance expenditure.[7]

Analyses of distributive efficiency deal with the question *which income groups* are beneficiaries of the social transfers. Distributive efficiency must therefore be distinguished from administrative efficiency, which deals the question, *which share* of the transfers actually reach the recipients, rather than getting lost in the administrative process. Likewise, distributive efficiency has to be distinguished from allocative efficiency. In the latter case, adverse effects on labour supply, savings behaviour and the trade off between equality and efficiency in general are the main areas of concern. We caution that distributive efficiency is an efficiency measure in the classical sense of relating outcome (redistribution) to input (expenditure) and tells nothing about the quality of social assistance schemes with respect to pareto efficiency or other welfare economic concepts.

Distributive efficiency may be analysed with respect to reducing either inequality or poverty. While inequality analyses are concerned with the entire income distribution, analyses of poverty concentrate on a special part of the income distribution, namely the fraction of the population with income below the poverty line. In this paper, research is concentrated on distributive efficiency in terms of inequality measures, while the issue of poverty reduction is postponed to a subsequent investigation.

2.2 Causes of Differences in Distributive Impacts: Some Hypotheses

In socio-economic literature, the differences in distributive effectiveness and efficiency of social transfer systems detected by empirical investigations have been discussed at length and various arguments have been put forward that deal with their possible causes. In this paper, we examine two groups of hypotheses, that deal with the relationship of the distributive impacts to the regulatory arrangements and the degree of centralisation of social assistance schemes.

With regard to the regulatory arrangements, several hypotheses concerning the relation between social assistance scheme settings and distributive outcomes may be considered. An obvious hypothesis would be that the higher the social assistance budget and the more generous benefit levels, the more income inequality could be reduced. On the other hand,

[7] More specifically, the figure obtained is a measure of average efficiency. Of course, for issues of interpretation the possibility must be considered that the reduction of inequality may be subject to increasing marginal costs.

higher social assistance budgets may well achieve a greater extent of redistribution, but it is possible that this goes at the expense of declining distributive efficiency. It thus seems reasonable to examine the relationship between the size of the social assistance budget as well as the level of social assistance benefits and the effectiveness and efficiency of income redistribution. Additionally, it has been argued that in the presence of limited budgets, targeted benefits can enhance distributive efficiency as payments are better directed to those in need.[8] While means tests are a common measure of targeting in all European social assistance schemes, systems differ with respect to other targeting measures such as the fraction of the population eligible for benefits and the time-span for which benefits are warranted. Consequently, from the viewpoint of the targeting argument it may be hypothesised that more targeted systems may achieve higher figures of distributive efficiency.

Concerning the issue of centralised versus decentralised systems, it is frequently argued that decentralised decisions on social security programs encourage migration flows of social security beneficiaries towards regions with more generous benefits, thus overburdening these regions' fiscal budgets. As a consequence, the degree of redistribution is reduced to a sub-optimal level when judged from a welfare theoretical perspective.[9] This leads to the hypothesis that more centralised systems are more effective with regards to redistribution. Conversely, as an argument in favour of decentralizing distributive politics, the point has been made that more decentralised systems are better informed about the neediness of the beneficiaries and should therefore be more efficient in allocating benefits to the recipients.[10]

3 Classifying Schemes of Social Assistance

3.1 Cluster Analysis as a Method for Classification

To examine how European schemes of social assistance differ with respect to the above mentioned characteristics, we attempt to classify these systems into several groups according to their regulatory arrangements and degree of centralisation, respectively. In socio-economic literature, several attempts have been made to classify welfare states in general,[11] but to our knowledge no study has focused on the differences and common features of social assistance schemes specifically. Moreover, in establishing classifications of welfare systems, quantitative methods have rarely been employed. This is mainly due to the fact that statistical

[8] Cf. e.g. Cuyler 1980, Tullock 1997.
[9] vgl. z.B. Wildasin 1991, Sinn 1995.
[10] See Schwager 1997.
[11] Cf. e.g. Esping-Anderson 1990, Korpi/Palme 1998, Castles/Mitchell 1992, Kangas 1994.

inference is impeded by the small number of observations that do not permit any sensible regression analysis. Instead, several heuristic and semi-quantitative investigations have been conducted. However, with all purely qualitative assessments there is the danger of misjudging class assignments by overvaluing highly conspicuous features on the cost of neglecting the less obtrusive traits. A quantitative analysis of class assignments is therefore highly desirable.

As Kangas (1994) has noted, cluster analysis may be the method of choice to determine class assignments in cases where regression analysis must be ruled out for lack of observations. Cluster analysis is a descriptive instrument of explorative data analysis designed to identify "natural groupings" of cases by simultaneously comparing multiple characteristics depicted by a set of input variables.[12] To this end, measures of distances for the values of the input variables are computed. Subsequently, grouping algorithms are employed to classify the cases into groups. As cluster analysis is a tool of descriptive statistics, sources of error and variation are not formally considered. To check for the stability of the results, various clustering methods based on different distance measures and grouping algorithms should be conducted.

The results of hierarchical cluster analyses can be graphically displayed by so-called dendrograms.[13] In those tree diagrams, the clusters are represented by branches that merge together when junctions of clusters occur. The positions of these mergers along the distance axis indicate the level of the aggregate distance measure at which the cases are grouped together: Mergers close to the left-hand side of the diagram indicate that the respective countries are very similar, whereas mergers close to the right point to considerable dissimilarities. Accordingly, with respect to the case list on the left hand side of the diagram cases are listed according to their similarity: Countries exhibiting very similar characteristics are listed close to each other, whereas more differing countries are listed further apart. Consequently, from the successive junctions of the branches, groupings and sub-groupings exhibiting different levels of homogeneity may be identified.

To form the basis for an empirical investigation of the above mentioned hypotheses, we develop two systems of indicators suitable for classifying social assistance schemes according to their regulatory arrangements and their degree of centralisation. These indicators are subsequently employed as input variables for different methods of cluster analysis in order to establish classifications for regulatory arrangements and degree of centralisation of social assistance schemes.

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[12] Cf. e.g. Johnson/Wichern 1998.
[13] Cf. Johnson/Wichern 1998.

3.2 Classifying According to Regulatory Arrangements

To develop a system of indicators for social assistance schemes according to their arrangements, the major social assistance regulations as well as data on social assistance expenditures were examined. For the reporting year, for reasons of data availability with respect to the complementary empirical investigation presented in section 4, the year 1995 has been choosen. In 1995, in all EU13 countries social assistance was found to be tax funded and granted on the basis of means tests only. Apart from significant differences in the amount of social assistance budgets, the main differences were found with respect to the degree of coverage, the time period for which benefits are granted and the level of benefits compared to median equivalent income.[14] Keeping the above mentioned hypotheses in mind, the following indicators were chosen to represent the main differences in regulatory arrangements:[15]

1. With regard to the level of social assistance system the *share of social assistance expenditures in GDP* and *an indicator for the generosity of social assistance benefits.*
2. With regard to targeting an *indicator for the degree of coverage* and *an indicator for time period for which the benefits are granted.*

As different scales of measurement may greatly affect the results of cluster analyses, all variables were normalised to the range of [0;1].[16] To check for the stability of our results, Ward Linkage, Median Linkage and Average Linkage with quadratic Euclidean distances as well as Average Linkage with Minkowski(1) distances has been run. The results of our calculations are shown in the following dendrograms:

[14] Data on median equivalent income were taken from EUROSTAT 1999 and refer to the year 1995.

[15] Details on the variables and indicators employed are given in Appendix A. Data on regulatory arrangements are taken from MISSOC 1995, data on social assistance expenditures stem from Gough et al 1997.

[16] As the Ward algorithm is based on the presence of differences in variances, which are cancelled out by the more common z-transformation, the [0;1]-transformation is preferred.

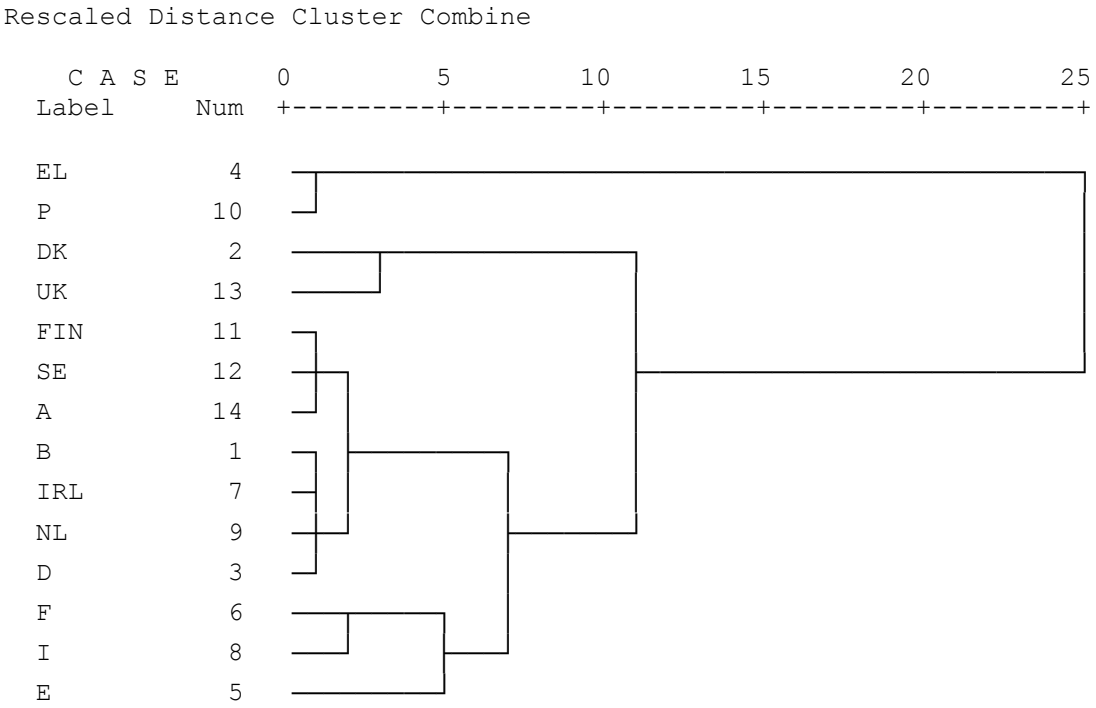

Figure 1a: Dendrogram, Average Linkage, Quadratic Euclidean Distance

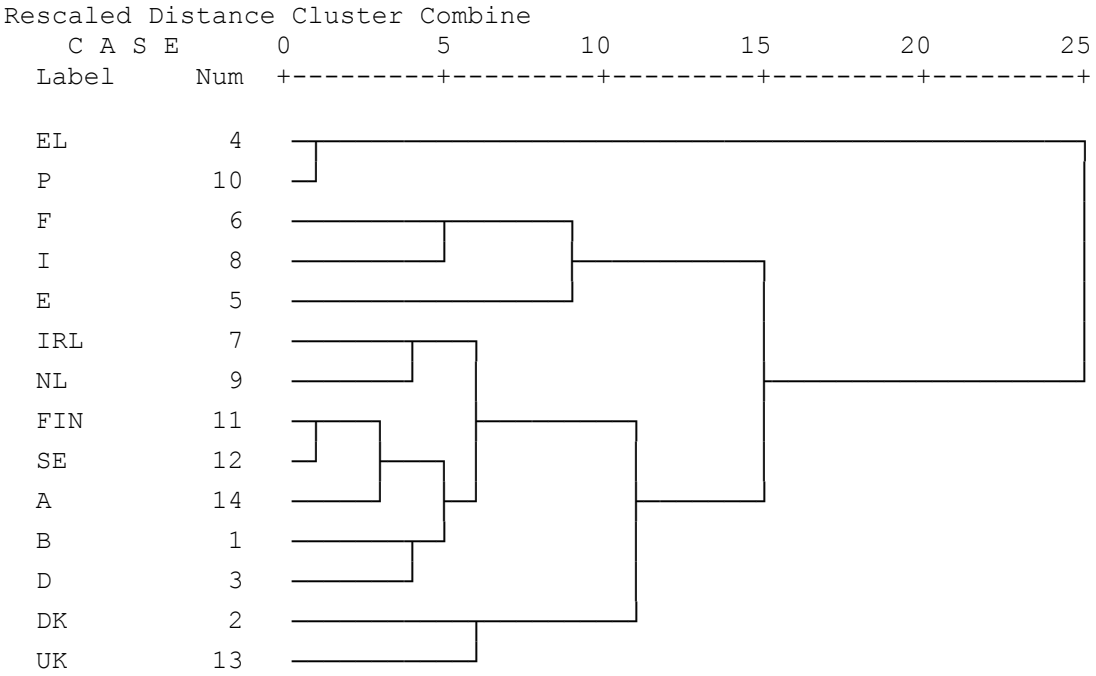

Figure 1b: Dendrogram, Average Linkage, Minkowski(1) Distance

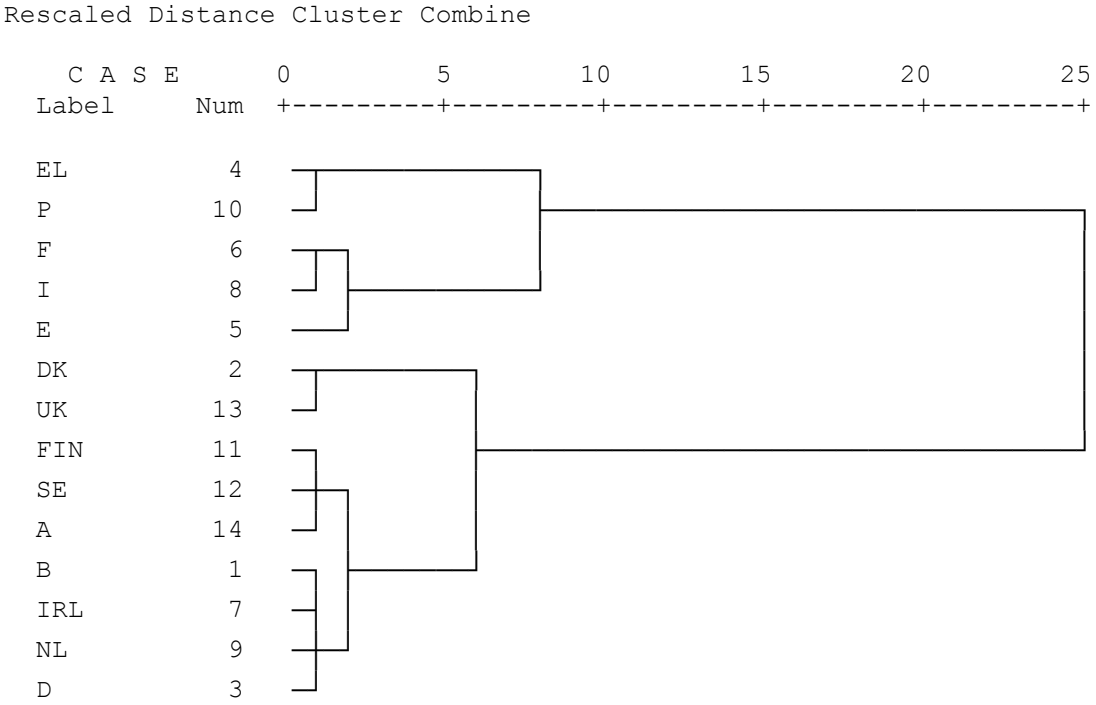

Figure 1c: Dendrogram, Ward Linkage, Quadratic Euclidean Distance

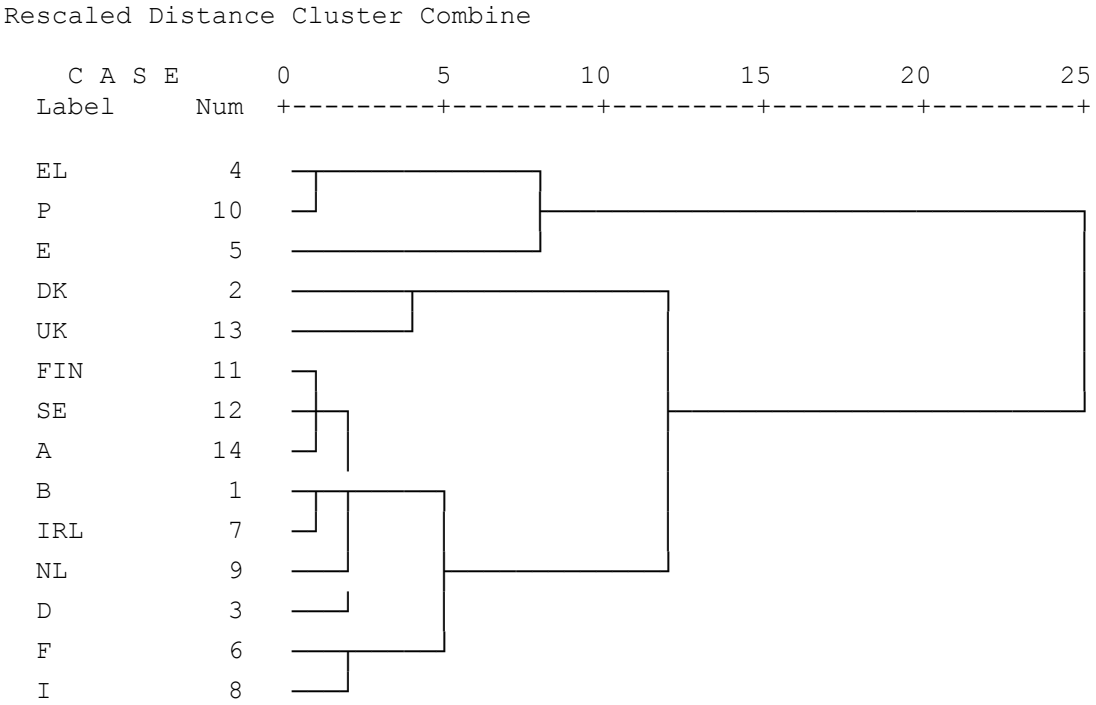

Figure 1d: Dendrogram, Median Linkage, Quadratic Euclidian Distance

From these dendrograms, we can see that apart from Greece and Portugal, where no nation wide social assistance scheme existed in 1995, with respect to regulatory arrangements we may distinguish two distinctly different groups: [17]

- The first group consists of Spain, France and Italy. In these countries, a general scheme of social assistance existed but it was regionally fragmented and benefits were granted for limited time periods only.
- The second group comprises Belgium, Ireland, the Netherlands, Germany, Finland, Sweden, Austria, Denmark and the UK. In all of these countries a universal system of social assistance existed and benefits were granted for an indefinite period. Within this group, Denmark and the UK are separated from the remaining countries due to their distinctly higher degree of coverage and social assistance budgets.

As the diagrams show, these classifications prove stable with all clustering methods except for Median linkage, where France and Italy are split from the first group and added as an additional subgroup to the second major group.

3.3 Classifying According to Centralisation Degrees

To develop a system of indicators suitable to capture the degree of centralisation, the administrative settings, regulations concerning funding liabilities and decision responsibilities were investigated. The main differences were found to relate to the funding shares of the various federal levels, the assignment of formal decision competence and the degree of uniformity of benefit levels over the nation state. Accordingly, as input variables for cluster analysis, *an indicator for funding liability*, *an indicator for formal decision responsibility* and *an indicator for regional differences in benefit levels* were employed.[18] Again all variables were normalised to the range of [0;1]. Running the above mentioned four different methods of cluster analysis we obtained the dendrograms shown in figure 2a to 2d:

[17] It should be noted that in Portugal a general system of social assistance has been introduced in 1996.

[18] Details on the variables and indicators employed here are given in Appendix B. Data for these indicators are taken from MISSOC 1995. We note that administrative responsibility is assigned to the local level in all countries investigated and has therefore not been taken into account for the purpose of indicator construction.

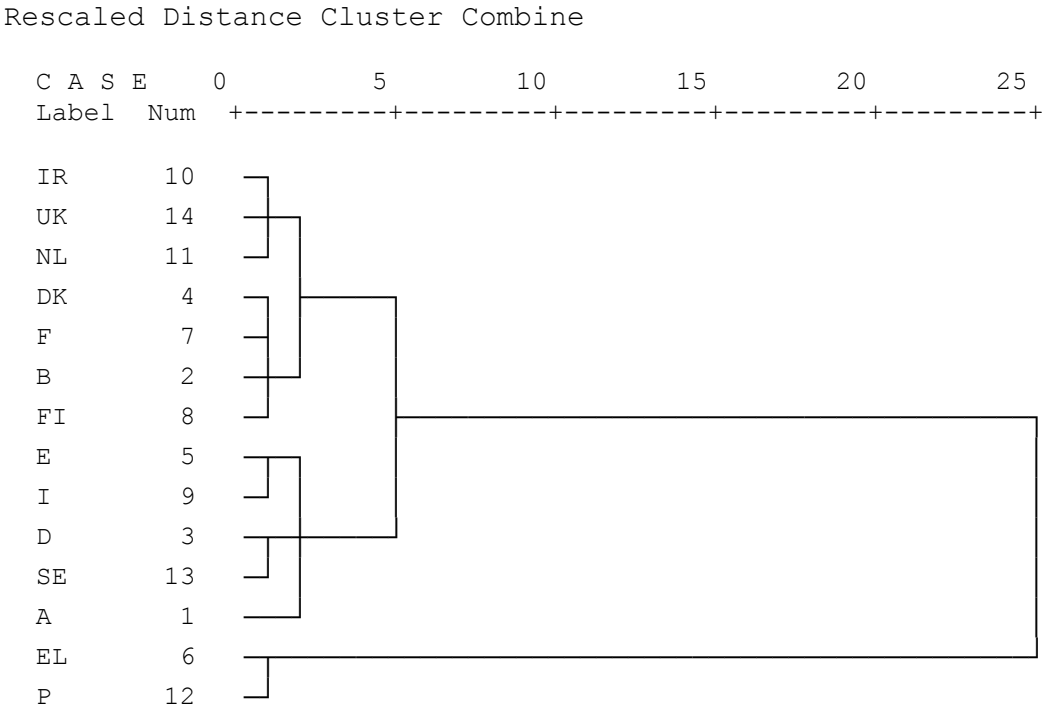

Figure 2a: Dendrogram, Average Linkage, Quadratic Euclidian Distance

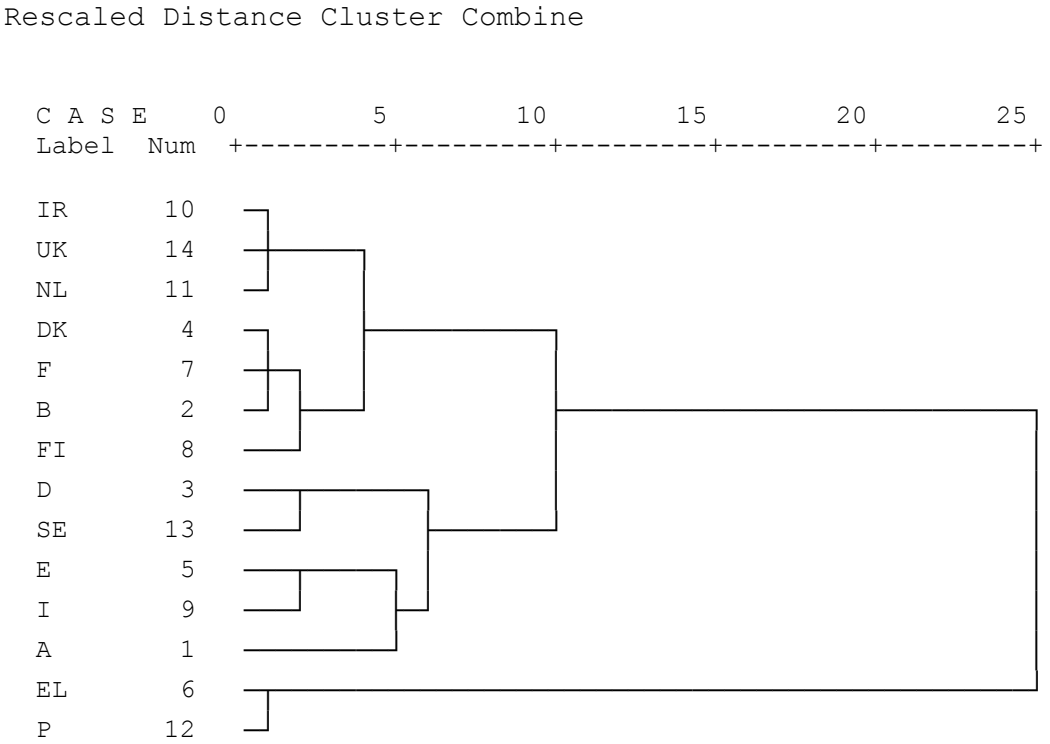

Figure 2b: Dendrogram, Average Linkage, Minkowski(1) Distance

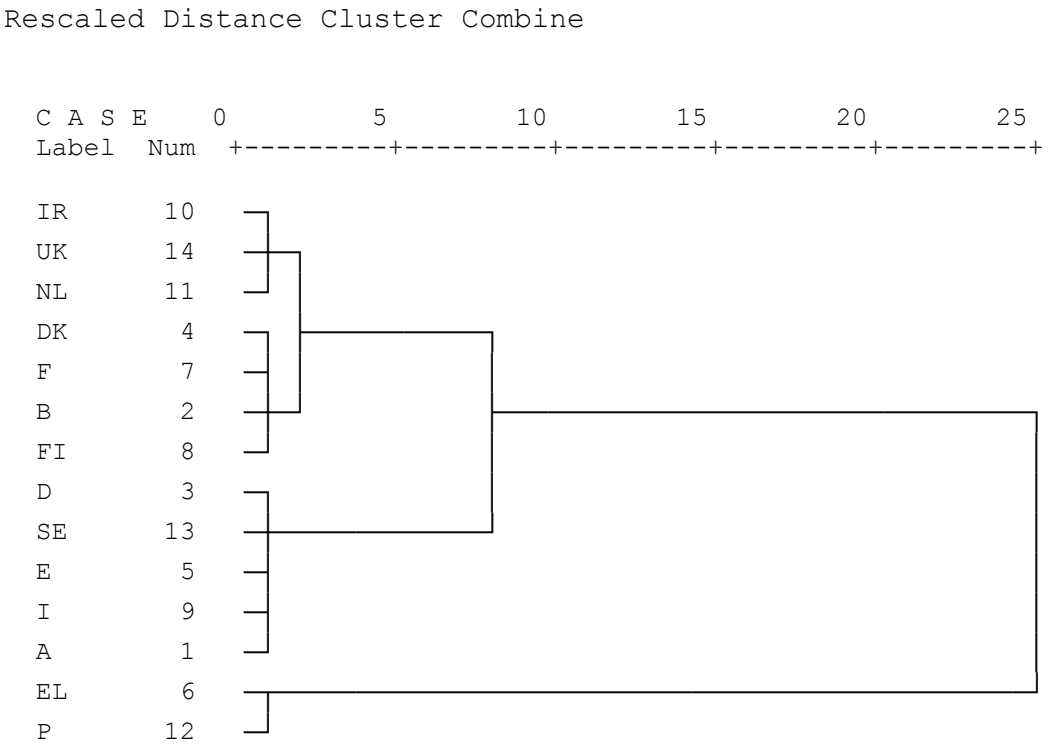

Figure 2c: Dendrogramm, Ward Method, Quadratic Euclidian Distance

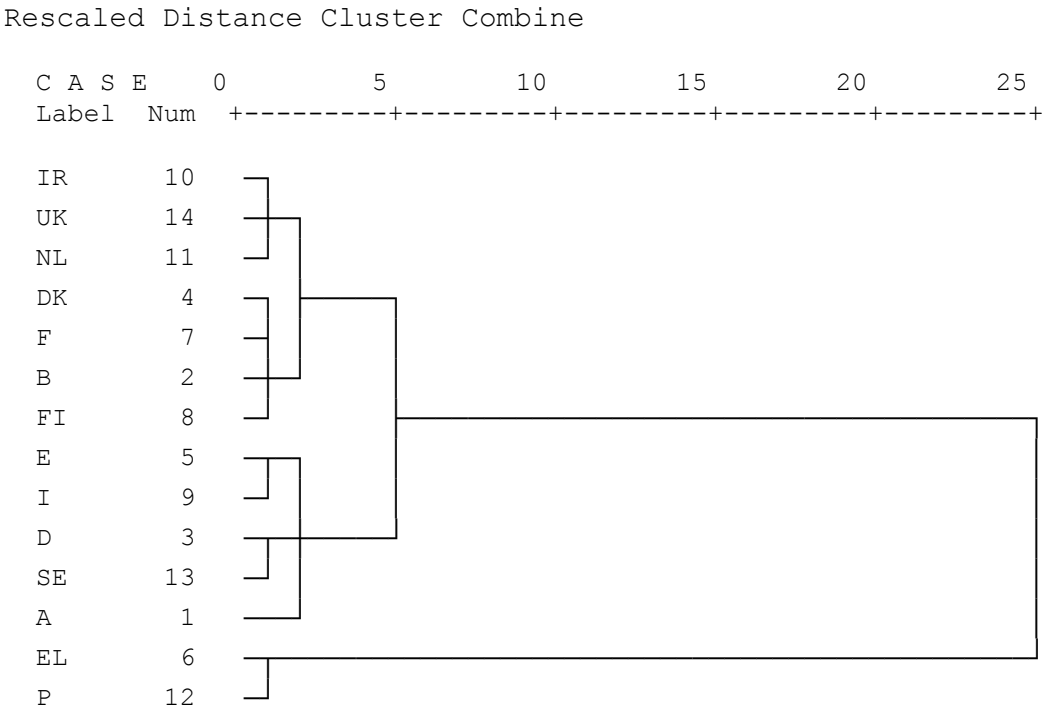

Figure 2d: Dendrogramm, Median Linkage, Quadratic Euclidian Distance

As the dendrograms show, with respect to their degree of centralisation we may distinguish three broad categories of systems (apart from Greece and Portugal, where no nation wide system of social assistance existed in the reporting year 1995):

- The first group showing a comparatively high degree of decentralisation comprises Germany, Sweden, Spain, Italy and Austria. In these countries, benefits are funded by municipalities, benefit levels are established by regional or local authorities and vary across regions.
- In the second group, we find Belgium, Denmark, France and Finland. In these countries, benefit levels are set by the central government and are largely uniform across regions. Funding, however, is provided by regional or local authorities.
- The third group, which features the highest degree of centralisation, consists of Ireland, the United Kingdom, closely followed by the Netherlands. In these countries, benefit levels are established by the central government and are completely uniform across regions. In addition, benefits are funded (almost) completely by the central state.

As with the analysis of regulatory arrangements, apart from a few minor changes of position within the first group, the obtained classifications prove valid for all clustering methods employed.

The two classifications obtained with respect to regulatory arrangements and degree of centralisation thus yield fairly different groupings of countries. In the following section, an analysis of distributive impacts in selected countries classified into different groups is presented to gain some insight as to which aspect might be more important in regards to redistribution and distributive efficiency.

4 Distributive Impacts of Social Assistance Payments: Empirical Analysis

4.1 Methodological issues

In this section, the impact of social assistance benefits on income inequality in selected European countries exhibiting different characteristics with regard to regulatory arrangements and degrees of centralisation is investigated on the basis of Luxembourg Income Study (LIS) data. The LIS database is a collection of household income surveys that are harmonized in

order to enable comparative studies for different countries.[19] For the reporting years of 1994/95 usable data sets are available for Italy, Germany, France, Finland and the United Kingdom. [20]

As units of analysis, households have been selected. The relevant definition for *disposable income (dpi)* used here is the yearly disposable income as defined by LIS,[21] net of pensions. We use the concept of equivalent household income here which makes it possible to compare households of different sizes: Equivalent household income is obtained by dividing household income through the equivalent number of household members which is calculated applying an equivalence scale.[22] By means of this concept, the presence of economies of scale due to fixed costs in household consumption is taken into account.

It has been well known in income inequality analyses that different measures of income inequality assess a given income redistribution differently. For instance, it has been noted by Atkinson (1970) and Sen (1973) that the Gini coefficient is most sensitive to changes in the middle ranges of the income distribution. By contrast, the Atkinson measure for $\varepsilon=1$ (subsequently referred to as A1) reacts most sensitively to changes in the lower ranges of income distributions.[23] To obtain a reasonable picture of the distributive impacts, three measures of inequality have been invoked:[24] The Gini coefficient, A1 and the income share ratio S80/S20, giving the ratio of the income share of the 20% richest to the income share of the 20% poorest in total income. S80/S20 only registers changes affecting the top and bottom quintile but does not react to changes in the medium range of the income distribution. [25] The Gini coefficient and A1 both have a lower limit of zero, which applies if income is equally distributed. Higher values for these measures indicate a higher level of inequality with a maximum value of unity. For S80/S20 a minimum value of unity (income equality) and no natural upper limit applies.

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[19] For more information on the LIS data see http://www.lisproject.org and e.g. Smeeding 2002.

[20] For closer information on the arrangements concerning social assistance in these countries see e.g. Weber/Leienbach 2000.

[21] See for definition of disposable income http://www.lisproject.org/techdoc/summary.pdf.

[22] The equivalence scale employed here is the square root of the household size. Cf. e.g. Biewen 2000: 3f, Atkinson/Rainwater/Smeeding 1995: 18ff for further information on equivalence scales.

[23] A1 is a special case of the family of Atkinson measures. The sensitivity of these measures depends on the parameter ε, $\varepsilon = 1$ indicates a sensitivity in the lower parts of the income distribution. Additional technical details on the measures employed are given in Appendix C. Cf. also e.g. Atkinson 1970, Hauser 1999: 92, Cowell 1995: 137 ff.

[24] Effectiveness and efficiency figures have been calculated on the basis of a number of further measures of inequality, but no distinctively different patterns have been found.

[25] S80/S20 as applied by EUROSTAT, see e.g. EUROSTAT 1998.

In most countries, social assistance payments are supplemented by payments of housing benefits. As housing costs vary greatly between countries, to complete the picture, distributive impacts for social assistance plus housing benefits were also calculated and compared to the results obtained for social assistance payments alone.

To take differences in social assistance budgets into account, apart from the redistribution effect as a measure of effectiveness, the corresponding figures for distributive efficiency as defined in section 2.1 are calculated. Unfortunately, reliable data on social assistance expenditures suitable for inter-country comparisons are unavailable for the reporting year of 1995.[26] Accordingly, data provided by Gough et al. (1997) referring to the reporting year of 1992 had to be employed. Consequently, we caution that the efficiency figures calculated are not to be taken as an exact measure of distributive efficiency but rather as an indicator variable that points to the relative efficiency of the social assistance schemes considered.

4.2 Results on Distributive Effectiveness and Efficiency

To investigate the distributive impacts of social assistance, the three inequality measures mentioned have been calculated for *disposable income* and *disposable income less social assistance* for each country. In order to compare the effects of social assistance in the different countries, the percentage reduction of the values of the applied measures for *disposable income less social assistance* to *disposable income* have been computed. The results obtained are shown in figure 3.a to 3.c:

[26] Data provided by regularly published EUROSTAT statistics do not include the category of social assistance as defined by MISSOC, but only a subcategory named „social exclusion“ which is not congruent with the notion of social assistance used here. In MISSOC, by contrast, data on social expenditure are unavailable for Italy, while for some of the remaining countries only estimates referring to different reporting years are provided.

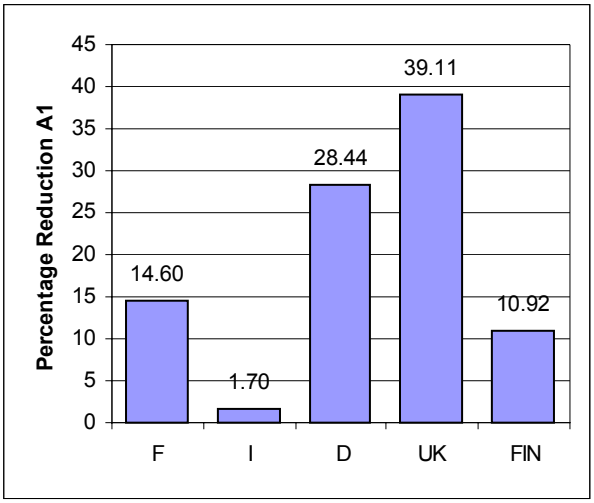

Figure 3a: Percentage reduction A1

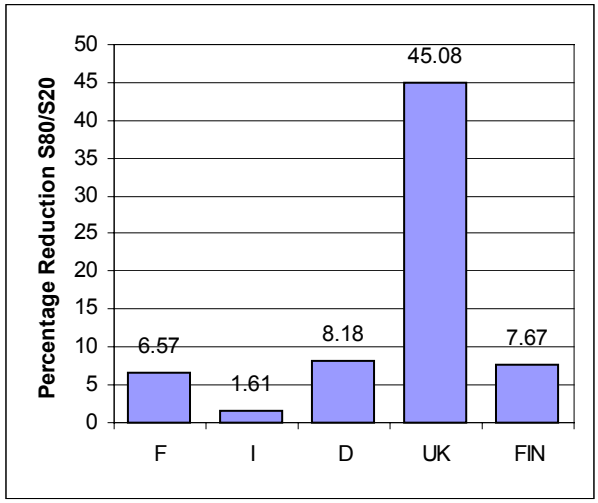

Figure 3b: Percentage reduction S80/S20

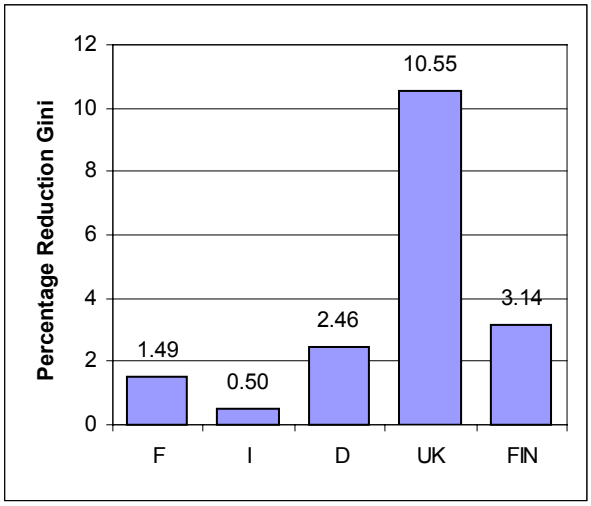

Figure 3c: Percentage reduction Gini coefficient

The diagrams clearly show that the impact of social assistance payments on income inequality differs considerably between countries: While in the UK social assistance has a strong impact on inequality with very high effectiveness figures, in Italy almost no effect is visible. Considering the rank position for the countries, the results for the remaining countries depend on the measure employed. For effectiveness with respect to A1 or S80/S20, the UK shows the highest reduction of income inequality, followed by Germany, while Finland and France have still lower percentage reductions. By contrast, when calculating effectiveness on the basis of the Gini coefficient, Finland takes the second position, followed by Germany and France.

The results presented so far take only account of the percentage reduction of income inequality after social assistance. They neglect the fact that this reduction of inequality is obtained at different expenditure levels for this transfer. Shifting the focus from effectiveness to efficiency, the distributive efficiency of social assistance has been calculated by means of

dividing the percentage reduction as defined above by the share of social assistance expenditures in GDP.[27] Employing the effectiveness figures for the three inequality measures in questions for the numerator, we obtain the results displayed in figure 4.a to 4.c:

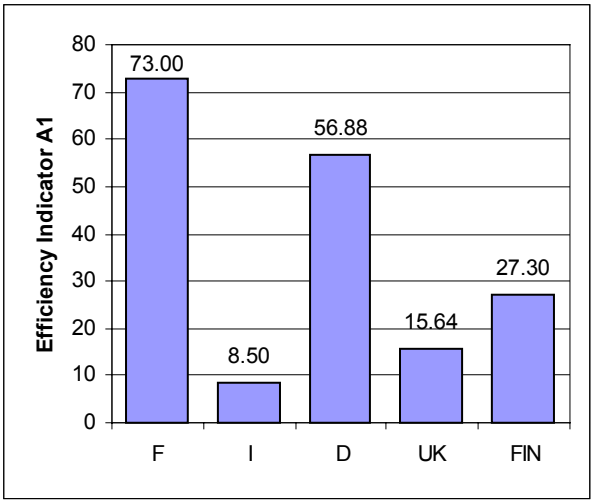

Figure 4a: Efficiency values A1

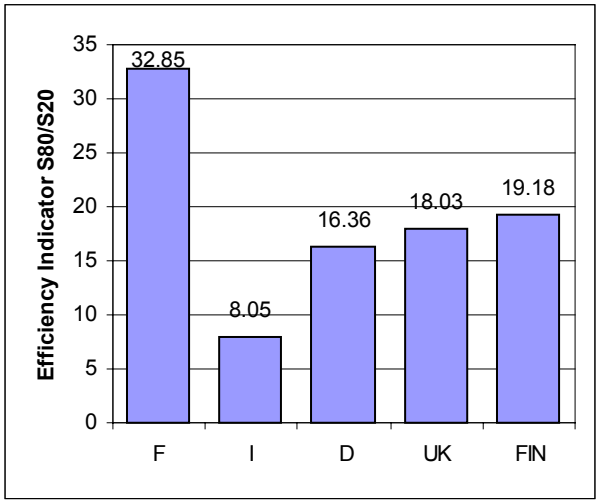

Figure 4b: Efficiency values S80/S20

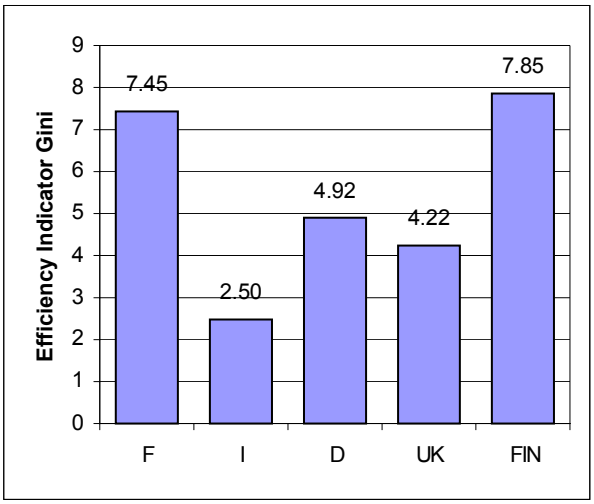

Figure 4c: Efficiency values Gini coefficient

As the diagrams show, when the size of the social assistance budget is taken into account, the picture changes considerably with regard to the rank positions of the countries. The only exception is Italy, who cannot compensate for her weak effectiveness results by her low expenditure level. The performance of the four remaining countries again depends on the inequality measure applied.

[27] As noted above, as suitable data on social assistance expenditures are unavailable for the reporting year of 1995, the data provided by Gough et al (1997) referring to the reporting year of 1992 had to be employed. Specifically, the data provided under the category [1]: General Assistance in Gough et al. (1997) were employed for calculations on social assistance alone. For calculations including housing benefits expenditures listed in category [3]: Housing Assistance were added. Cf. Gough et al 1997: 25.

For efficiency with respect to A1 France (who took the third position with respect to effectiveness) achieves the highest figure, which is due to her comparatively low social assistance budget. She is followed by Germany (who thus holds the same rank position as for effectiveness) and Finland (who with regard to effectiveness was at the next to last position). Interestingly, the UK, whose effectiveness figures were the highest with all three measures of inequality, does not perform that convincing when evaluated from an efficiency perspective: The efficiency indicator on the basis of A1 places her at the next to last position only.

When calculating efficiency figures with respect to S80/S20, France again achieves the highest figures, this time improving from the next to last position when compared with effectiveness. The Finnish social assistance system seems to be more efficient than both the British and the German system, which for effectiveness had the top positions.

Calculations based on the Gini coefficient again yield somewhat different results. This time the Finish social assistance scheme is indicated to perform more efficiently than the French, albeit the difference is very small. Germany takes the third position (which she also took with respect to effectiveness), followed by the UK (who clearly had the top position for effectiveness figures).

To summarise, it is clear from the results just discussed that when taking the size of the social assistance budget into account, the distributive impacts yield a very different picture. In particular, considering the UK, the impressive results with respect to effectiveness cannot compensate for the comparatively high expenditure figures this system takes up. By contrast, the French and Finish systems with lower expenditures improve their positions when compared to the calculations for effectiveness, while Germany holds its position for A1 and the Gini coefficient. Considering Italy, the opposite reasoning than for the UK applies: Although effectiveness results are weak, the low level of social expenditure cannot compensate for the poor results in effectiveness.

It is interesting to compare these results with the calculations carried out for social assistance *plus housing benefits*.[28]. The results are shown in direct comparison in table 1 and 2:

[28] That means that the effectiveness and efficiency figures are calculated on the basis of *disposable income less the sum of social assistance and housing benefits* and the expenditure figures for social assistance and housing benefits as indicated in table 2.

	France	Italy[29]	Germany	UK	Finland
A1					
dpi – social assistance	14.60	1.70	28.44	39.11	10.92
dpi – (social assistance + housing benefits)	26.54	-	42.94	64.44	17.58
S80/S20					
dpi – social assistance	6.57	1.61	8.18	45.08	7.67
dpi – (social assistance + housing benefits)	19.12	-	11.78	79.83	14.44
Gini coefficient					
dpi – social assistance	1.49	0.50	2.46	10.55	3.14
dpi – (social assistance + housing benefits)	5.33	-	3.49	17.36	5.96

Table 1: Effectiveness measures for social assistance and housing benefits
dpi: disposable income

	France	Italy	Germany	UK	Finland[30]
A1					
dpi – social assistance	73.00	8.50	56.88	15.64	27.3
dpi – (social assistance + housing benefits)	26.54	-	61.34	17.42	-
S80/S20					
dpi – social assistance	32.85	8.05	16.36	18.03	19.18
dpi – (social assistance + housing benefits)	19.12	-	16.83	21.58	-
Gini coefficient					
dpi – social assistance	7.45	2.50	4.92	4.22	7.85
dpi – (social assistance + housing benefits)	5.33	-	4.99	4.69	-

Table 2: Efficiency measures for social assistance and housing benefits
dpi: disposable income

[29] The variable including housing benefits is not available for Italy in the LIS dataset. Only a few Italian regions provide specific housing benefits mainly for elderly people.

[30] Expenditures for housing benefits are not available for Finland in Gough et al 1997.

Since an additional transfer is included in the present calculations, it is to be expected that effectiveness figures are generally higher. Considering the rank order of the countries, the only difference between the cases with and without housing benefits concerns the results obtained for the Gini coefficient and S80/S20, for which France and Germany switch positions. This is probably due to the fact that in France 8.8 % of population receive housing benefits and 1.1 % social assistance whereas in Germany 2.8 % are recipients of housing benefits and 4.5 % receive social assistance.[31]

With regard to efficiency, data on expenditures for housing benefits are not available for Finland. If they were available and included, it is likely that the ranking would be a little bit different. Considering the efficiency calculated on the basis of the Gini coefficient only, rank positions remain unchanged. By contrast, with respect to A1 and S80/S20 considerable changes take place. For efficiency numbers for A1, Germany, who was ranked second best before housing benefits, switches positions with France and is now at the top position. This high efficiency performance of Germany may be explained by the low additional cost for housing assistance, especially in comparison to France, whose expenditures for housing assistance are four times as high as the costs for social assistance alone. In the UK, the expenditures for housing benefits are higher than even the French costs for social assistance and housing benefits taken together. As a result, these two countries rank lower from an efficiency perspective compared to their position with regard to effectiveness.

The effectiveness and efficiency indicators based on A1 seem to be particularly important when considering social assistance because of its high sensitivity in the lower parts of the income distribution which contains the primary target group for social assistance payments. The Gini coefficient, on the other hand, places the highest weight on the middle range of the income distribution. Despite its popularity, it may thus not be the most desirable standard in evaluations of social assistance schemes. In comparison to S80/S20, we wish to point out that calculations of A1 are based on the entire income distribution. A1 thus takes into account for the possibility that social assistance benefits may also be targeted on part of the second income quintile and registers changes in inequality achieved by improving the income situation of this group, which is not true for S80/S20. In the presence of ambiguous rank orders for the countries when applying different measures of inequality these considerations should be taken into account.

[31] Cf. Eardley et al 1996.

5 Distributive Impacts and Class Assignments: An Evaluation

The results just presented offer some interesting evidence with respect to the hypotheses on causes of differences in distributive performance as discussed in section 2. To begin with, concerning regulatory arrangements the principle "the more, the better" does not seem to hold generally. With regard to effectiveness, the UK with her exceptionally high social assistance budget admittedly scores unambiguously higher than the other countries investigated. However, for France, Finland and Germany no clear-cut connection between either the extent of the social assistance budget or the level of benefits can be found. While Italy is ranked last with regard to effectiveness figures, her social assistance budget is about the same size as France's, who is ranked at the third best position when judged by A1. Likewise, when considering the benefit level, again the UK with the highest benefit levels is ranked best and Italy with the lowest level is ranked last, but for the remaining countries, no unambiguous connection between benefit level and distributive effectiveness shows up. The Finish scheme with its much lower benefit levels is even ranked before the comparatively high level German system when judged by the Gini coefficient.

When considering distributive efficiency, the connection between social assistance budget and/or benefit levels and distributive outcomes completely dissolves: The French fixed-term scheme despite its comparatively low level of benefits and coverage proves distinctly more efficient when compared to either the encompassing but expensive UK system, the middle range German system or the fragmented and low-level Italian system. The results thus lend some support to the hypothesis that targeting, in this case in the sense of granting benefits for a limited period only, enhances the efficiency of social transfer schemes.

With respect to the degree of centralisation, again there is no support for the hypothesis that the more centralised a system, the more effective redistribution will be. Apart from the extreme cases of Italy and the UK, the results on effectiveness do not show any clear-cut connection between the degree of centralisation and distributive effectiveness. Taking the previous arguments into account, the effectiveness figures of Italy and the UK seem to be spurred by the high degree of fragmentation of the Italian and the exceptionally high budget of the British scheme, rather than by different degrees of centralisation. The mixed results on effectiveness in connection to centralisation degrees for the remaining countries point to the same conclusion. Considering distributive efficiency, there is no evidence that more decentralised systems are more efficient in redistribution. Considering that France, Finland and Germany are ranked higher than either the extremely centralised British and the highly decentralised Italian system, some support is lend to the reasoning that from an efficiency

perspective, a medium degree of centralisation is preferable to any extreme centralisation degrees.

6 Conclusion

In this paper, the linkage between social assistance schemes, centralisation, inequality and efficiency in Europe has been examined. After stating some hypotheses on the causes of redistribution effects, classifications of European social assistance schemes according to regulatory arrangements and centralisation were developed. Subsequently, an empirical analysis of the distributive effectiveness and efficiency of five selected schemes of social assistance was carried out.

The results suggest that social assistance reduces inequality especially in the UK, whereas the Italian social assistance scheme does not seem to have much influence on inequality. If the size of social assistance budgets is taken into account, the picture changes considerably: The UK does not score that well anymore, whereas France, Finland and Germany can improve their position. The inclusion of housing benefits implicates that France does not perform as good with respect to efficiency in comparison to the results without housing benefits. This is due to the fact that in France expenditures for housing benefits are much higher than expenditures for mere social assistance.

When contrasting these findings with the hypotheses on the causes of redistribution effects, we find that a higher social assistance budget or higher benefit levels do not necessarily yield a better performance with respect to either distributive effectiveness or efficiency. Some support is lend to the hypotheses that targeting enhances distributive efficiency, considering the efficiency figures of the French system with its fixed-term benefits and moderate degree of coverage. Concerning centralisation, the results suggest that a medium degree of centralisation is preferable to any extreme degrees of decentralisation or centralisation from a distributive efficiency perspective.

We wish to emphasize that social security benefits are not designed solely to reduce inequality. When additional important objectives, such as reducing poverty and social exclusion, are considered, results may yield a different picture. To enhance the information on effectiveness and efficiency of social assistance schemes, further investigations including these aspects are therefore highly desirable.

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Appendix A: Indicators for Classification According to Regulatory Arrangements

The following indicators were used as input variables for the cluster analyses concerning regulatory arrangements:

Level of social assistance system:

1. *The share of social assistance expenditures in GDP:*
   This variable was introduced to capture the total effort invested in social assistance. As data suitable for inter-country comparisons are unavailable for the reporting year 1995, data provided by Gough et al (1997), referring to the reporting year 1992 had to be used.

2. *An indicator for the generosity of social assistance benefits:*
   This variable captures the level of benefits as intended by the social assistance directive. The indicator was calculated using the ratio of social assistance benefits to the median income both for a single adult (MIA). Data on the level of social assistance benefits are given in Bundesministerium für Arbeit und Soziales (1996) and report total monthly benefits including additional allowances in 01/01/1995. Data on MIA for all countries with the exception of Finland and Sweden are given in EUROSTAT (1999) and refer to the reporting year 1994. As data on MIA were unavailable for Finland and Sweden, they were estimated as 60% of per capita income in 1994. The 60% ratio was chosen on the basis of an evaluation of the ratio of MIA to per capita income for all countries where data were available and a comparison of inequality figures in these countries given in LIS keyfigures.[32] In this comparison for all countries with comparable figures for income inquality, the MIA to per capita income was found to be in the range of 0.58 to 0.63. All data have been extrapolated to 1995 using the GDP the growth rate.

Degree of targeting:

3. *An indicator for the degree of coverage:*
   The indicator for the degree of coverage intends to the degree to which the social assistance safety net applies for the entire population equally. It is constructed from information on the fraction of population eligible for social assistance benefits and the degree to which benefit levels differ regionally. For the indicator for fraction of population eligible for benefits (I1) eligibility conditions were evaluated with respect to age limits and conditions concerning ability and readiness to work. According to the restrictions imposed on eligibility, countries were assigned integer values 1 to 10. For the construction of the indicator for regional differentiation (I2) see App. B. The overall coverage indicator was calculated according to the formula I=(I1 + I2)/2.

4. *An indicator for time period for which the benefits are granted*:
   This indicator is invoked to account for the fact that in some countries social assistance benefits are not granted for an unlimited time period. Data on benefit duration are given in MISSOC (1995). Countries were classified into five categories and assigned the integer values 1 to 3, depending on whether there was no nation-wide system at all (1), benefit duration was limited (2) or unlimited (3).

[32] See http://www.lisproject.org/keyfigures/ineqtable.htm

The values of the indicator variables, normalised to [0,1], are given in the table below. Countries are listed in descending order.

Share of Soc. Ass. Exp.in GDP		Indicator for Benefit Levels		Indicator for Degree of Coverage		Indicator for Benefit Duration	
UK	1.00	D	1.00	D	1.00	B	1.00
DK	0.56	I	0.95	I	0.95	DK	1.00
NL	0.32	B	0.86	A	0.88	D	1.00
D	0.20	DK	0.86	B	0.85	IRL	1.00
SE	0.20	UK	0.86	DK	0.85	NL	1.00
FIN	0.16	FIN	0.80	UK	0.85	FIN	1.00
IRL	0.12	SE	0.80	FIN	0.80	SE	1.00
F	0.08	F	0.74	SE	0.80	UK	1.00
I	0.08	IRL	0.74	IRL	0.74	A	1.00
B	0.04	NL	0.74	NL	0.74	E	0.50
A	0.04	E	0.44	F	0.68	F	0.50
E	0.01	A	0.43	E	0.44	I	0.50
EL	0.00	EL	0.00	EL	0.00	EL	0.00
P	0.00	P	0.00	P	0.00	P	0.00

Appendix B: Indicators for Classification According to Degree of Centralisation

The following indicators were used as input variables for the cluster analyses concerning the degree of centralisation:

1. *An indicator for funding liability:*
   This indicator captures the degree to which social assistance expenditures are financed by the central government, by regional authorities/federal state or by local authorities. For this purpose, three partial indicators were constructed that recorded the percentage to which expenditures were funded by the central government (I1), by regional authorities/federal states (I2) or by local authorities (I3). The overall indicator I was calculated according to the formula I=(3*I1 + 2*I2 + I3)/6.

2. *An indicator for formal decision responsibility*:
   This indicator reflects the federal level (central government, federal states or regional authorities, local authorities) at which basic-rate benefits are established. Using information from MISSOC (1995), countries were classified into five categories and assigned the integer values 1 to 5, depending on whether there was no nation wide system at all (1) or regular benefit levels were established by local authorities (2), regional authorities or federal states (3), local or regional authorities were bounded through nation-wide coordination (4) or benefit levels were established by the central government (5).

3. *An indicator for regional differences in benefit levels:*
   This indicator captures the degree to which benefit levels actually vary between regions. Data on the percentage variation are given in MISSOC (1995) for all countries with the exception of Finland and Sweden, where benefit levels differ regionally according to costs of living. As no estimates for the amount of this variation was obtainable, a sensitivity for the cluster analyses was carried out, in which the classifications obtained proved stable for an indicator range of 0,76 to 1,00 for these two countries.

The values of the indicator variables, normalised to [0,1], are given in the table below. Countries are listed in descending order.

indicator for funding liability		indicator for formal decision resonsibility		indicator for regional differences in benefit levels	
IR	1,00	B	1,00	B	1,00
UK	1,00	DK	1,00	DK	1,00
NL	0,93	F	1,00	F	1,00
B	0,67	FI	1,00	IR	1,00
DK	0,67	IR	1,00	NL	1,00
F	0,67	NL	1,00	UK	1,00
A	0,65	UK	1,00	D	0,95
FI	0,61	D	0,75	FI	0,76-1,00
D	0,42	SE	0,75	SE	0,76-1,00
E	0,33	A	0,50	I	0,85
I	0,33	E	0,50	E	0,75
SE	0,33	I	0,50	A	0,70
EL	0,00	EL	0,00	EL	0,00
P	0,00	P	0,00	P	0,00

Appendix C: Inequality Measures

With

n	number of households considered
y_i	income of i-th household
μ	arithmetic mean of income,

the *Gini coefficient* is defined as

$$G = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_i - y_j\right|}{2n\mu} = 1 + \frac{1}{n} - \frac{2}{n^2\mu}\sum_{i=1}^{n}\left[(n-i+1)y_i\right]$$

The Gini coefficient can take on values in [0,1], where the lower bound of 0 applies in the case when all incomes are equal. It is most easily understood as the average distance between all possible pairs of incomes in the population, divided by total income. As the second part of the above definition shows, changes in inequality only depend on the rank order the affected households take in the income distribution but not on the amount by which their incomes differ. Accordingly, as income distributions are most densely ranked in the lower middle realm, the Gini coefficient reacts very sensitively to changes in this part of the income distribution but considerably less if changes occur in the upper or lower realms.

The family of *Atkinson measures* is defined as

$$A_\varepsilon = \begin{cases} 1 - \left[\frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i}{\mu}\right)^{1-\varepsilon}\right]^{\frac{1}{1-\varepsilon}} & \text{for } \varepsilon \geq 0 \text{ and } \varepsilon \neq 1 \\ 1 - \prod_{i=1}^{n}\left(\frac{y_i}{\mu}\right)^{\frac{1}{n}} & \text{for } \varepsilon = 1 \end{cases}$$

This family of measures has been constructed by Atkinson (1970) under explicit consideration of welfare aspects. The parameter ε is commonly referred to as the "inequality aversion parameter", its magnitude determines the weight assigned to downward deviations from the mean income. The higher the value of ε, the higher the importance attributed to income deviations. With ε=0, society is indifferent about the income distribution, whereas with $\varepsilon \to \infty$ society is concerned only with the lowest income group.[33] The Atkinson measure can take on values in [0,1], where again a value of 0 applies if income is distributed equally. The figure calculated at a given value of ε may be interpreted as "the proportion of present total income that would be required to achieve the same level of social welfare as at present if incomes

[33] Cf. Atkinson 1975: 48 f.

were equally distributed".[34] E.g. a value of A1=0.2 would imply that at given ε, if distributed equally only 80% of present total income would suffice to achieve the same welfare level. The measure applied in this investigation is the Atkinson measure for $\varepsilon = 1$, which indicates a moderate sensitivity in the lower parts of the income distribution.

The income share ratio *S80/S20* is defined as

$$S80/S20 = \frac{\sum_{i=m4+1}^{n} y_i}{\sum_{i=1}^{m1} y_i}$$

where

m_1 household at quintile 1

m_4 household at quintile 4

S80/S20 is a measure commonly used in investigations on income inequality published by EUROSTAT and other statistical institutions. Albeit intuitive, it has the obvious disadvantage that it only registers income transfers that cause a change in the total income of the 20% poorest or the 20% richest in the income distribution. No transfers occurring within these groups or in the middle range of the income distribution are registered. Moreover, all transfers registered are assigned equal weight.

[34] Atkinson 1975: 48.