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THE EFFECT OF SOCIAL TRANSFERS IN EUROPE:

AN EMPIRICAL ANALYSIS USING GENERALISED LORENZ CURVES

by

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The Effect of Social Transfers in Europe:

An Empirical Analysis

Using Generalised Lorenz Curves

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Abstract

This paper aims at examining the impact of different transfers on the income distribution in European countries. Therefore an empirical analysis using generalised Lorenz curve comparisons is carried out. The obtained results are investigated by relating them to a classification of European social transfer systems.

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1   Introduction

The discussion about European social security takes place with unbroken intensity as is documented by many sources (cf. e.g. Boeri et al. 2001: 9). The public interest is due to the fact that European social security systems play an important role for the life of everybody and, simultaneously, they are faced with serious problems and challenges now and in the future (cf. European Commission 1999: 3ff.). This paper analyses the effect of different social transfer arrangements in Europe. The concept of the so called generalised Lorenz curve will be used to compare the impact of social transfers graphically. As Kraus (2000: 2) stated 'that the redistributive pattern of social transfer systems is heavily influenced by the adopted mixture of social security strategies', this study aims at identifying a ranking for the considered transfers and to connect these findings with the classification of social security systems developed by Kraus.

The structure of the paper is as follows: The next section describes the theoretical background. The first step is to explain the nature of generalised Lorenz dominance. This technique provides a partial welfare ranking which means that for some pairs of income distributions no decision about a ranking can be made. The second part of this chapter is dedicated to the different types of European social transfer systems. The classification developed by Kraus (2000) is briefly explained including a short characterisation of the identified four groups.

The third section is dedicated to the empirical results. First we have a look at the methodology followed by the presentation of the actual results. As we want to reveal a welfare ranking for the social transfers in each of the considered countries we present a pairwise generalised Lorenz curve comparison of the income distributions minus the concerning transfers. Afterwards, the results are summarised in so called Hesse diagrams and are connected with the underlying classification. Thus we can check if the different elements of the classification are reflected in the presumed way by the examined transfers.

Finally we summarise our findings and give some ideas for further studies in this field.
An Appendix includes all generated pairs of generalised Lorenz curve comparisons in detail.

2 Theoretical Background

2.1 The Concept of Generalised Lorenz Dominance

The Lorenz curve is a widespread graphical instrument for the inequality analysis of income distributions introduced by Lorenz (1905). It plots cumulative proportions of total income $L(p)$ against cumulative population shares p.[1] When we want to compare income distributions we switch to Lorenz dominance. One of the initial papers which dealt with Lorenz dominance orders was Atkinson (1970).[2] Atkinson stated that, assumed that two distributions have the same mean, one distribution is preferred to another by all additive, concave, symmetric and increasing social welfare functions $W = W(x_1, ..., x_n)$[3], with x_i being the income of the i-th individual, if and only if the Lorenz curve for the first distribution lies completely above the curve for the other distribution:

$$L_X(p) \geq L_Y(p) \text{ for all } p \in [0,1] \Leftrightarrow W(x_1, ..., x_n) \geq W(y_1, ..., y_n),$$

with $\mathbf{X} = (x_1, ..., x_n)$ and $\mathbf{Y} = (y_1, ..., y_n)$ being two different income distributions with the same mean.

The restriction of equal means causes problems for empirical research because in empirical work we often want to compare income distributions with unequal means (e.g. when comparing countries). Atkinson remarked that the dominance relationship between social welfare and Lorenz curves is also valuable when the dominating distribution has the higher mean. But as two Lorenz curves often cross in practical research and no decision about a ranking can be made (cf. e.g. Shorrocks 1983) Atkinson's additional statement does not really remove the difficulty. Shorrocks (1983) proposed another methodology to solve part of this problem. He used the concept of the generalised Lorenz curve (GLC) which allows to compare income distributions with different means. It is constructed by scaling up the ordinary Lorenz curve by average income. The GLC plots cumulative shares of mean income $GL(p)$ against cumulative population shares p. Thistle (1989: 1) remarked that 'the height of

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[1] Income has to be ordered in increasing terms for this procedure.
[2] Other important work has been done by Dasgupta et al. (1973) or Rothschild/Stiglitz (1973).
[3] For a closer look at social welfare functions and their attributes see e.g. Boadway/Bruce (1984), Lambert (1989) or Cowell (1995).

the generalized Lorenz curve reflects the level of incomes, while the convexity of the generalized Lorenz curve reflects degree of income inequality', so it incorporates the wish for higher income and more income equality.[4] Shorrocks proved that generalised Lorenz dominance is corresponding to preference by all additive, symmetric, increasing and S-concave[5] social welfare functions:

$$GL_X(p) \geq GL_Y(p) \text{ for all } p \in [0,1] \Leftrightarrow W(x_1,...,x_n) \geq W(y_1,...,y_n)$$

with $\mathbf{X} = (x_1,...,x_n)$ and $\mathbf{Y} = (y_1,...,y_n)$ being two different income distributions where the means are not necessarily equal.

So if two GLCs do not cross, the one with the higher mean income can be ranked higher in a welfare comparison. But if the curves intersect there is at least one possibility for two welfare functions as defined above which would not be unambiguous. Thus the GLC dominance check also yields an incomplete ranking like the ordinary Lorenz dominance but there are more cases for GLC where the curves do not cross (cf. e.g. Lambert 1989: 61f. or Kakwani 1984).

In chapter 3 the GLC dominance criterion will be used to compare the impact of different transfers. For this purpose a pairwise comparison of the considered benefits is made and the results will be described and presented using Hesse diagrams.

2.2   European Social Security Systems

Kraus (2000) develops a classification of social security systems in the European Union. Her study concentrates on monetary transfers others than pensions (T^{op}). The classification was generated by applying cluster analysis[6] on a set of indicators. These indicators are (Kraus 2000: 8):

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[4]   Shorrocks (1983: 3) calls these aspects 'efficiency preference' and 'equity preference'.
[5]   An increasing social welfare function is one interpretation of 'efficiency preference' and Sconcavity corresponds to 'equity preference' (cf. Shorrocks 1983: 15).
       The different types of concavity are described e.g. by Wagenhals (1981).
[6]   Cluster analysis is a statistical method used to identify groupings of cases. For further information see e.g. Johnson/Wichern (1998).

- The share of transfers others than pensions (T^{op}) in GDP

- The ratio of funding by state to funding by contributions

- The ratio of minimum income guaranteed to median equivalent income for single adults

- An indicator for income replacement rates of T^{op}

- The share of means tested benefits in social expenditures

- An indicator for the degree of coverage of T^{op}

Kraus detects four clusters for the EU15 countries without Luxembourg.[7] They are presented with their main characteristics and the countries belonging to the clusters in *table 1*.

	Southern European Cluster	**Central European Cluster**	**British Cluster**	**Northern European Cluster**
Expenditures T^{op}	medium/low	medium/high	medium/low	high
Funding of expenditures	contributions, additional state support	contributions, minor state support	more than 50% state funding	state funding to large degree
Earnings replacements	small	medium/high	flat-rate	comparatively high
Guaranteed minimum income	limited/local or regional variation	medium/high	high	comparatively high
Coverage	fragmented	medium/low	medium/high	high
Significance of means tests	medium	varying	high	varying
Affiliation of countries	Greece, Portugal, Italy	Germany, Belgium, Austria	Ireland, UK	Finland, Sweden, Denmark
	France, Spain		Netherlands	

table 1: The four clusters for EU15 without Luxembourg

Kraus shows that the four types of systems make use of various traditions and strategy mixes.[8] The dominant strategy for the *Southern European Cluster* is Bismarck-type social insurance. This strategy implies that the claim on and extent of benefits depend on past contributions, i.e. only a specific group of people receives benefits, particularly workers. This Bismarck social insurance is complemented by additional measures of social assistance or allowances. The social assistance strategy aims at mitigating poverty and providing those in need with a socially acceptable minimum support whereas in the social allowance strategy benefits are granted because of certain demographic criteria like childhood or age.

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[7]   Luxembourg has been excluded because of inadequate data.
[8]   See Dixon (1999) or Hill (1996) for more information about social security strategies.

Dominance of the Bismarck-type social insurance can also be shown for the *Central European Cluster*. It is accompanied by social assistance measures to guarantee a minimum income for people who are not covered by social insurance and some social allowance strategy benefits regarding family.

In the *British Cluster*, the predominant strategy is Beveridge-type social insurance together with the social assistance tradition. In contrast to Bismarck-type social insurance Beveridge-type social insurance provides people with mainly flat-rate benefits. That means that the right to receive benefits also depends on past contributions but they do not determine the benefit level.

The countries of the *Northern European Cluster* provide recipients with measures of Beveridge-type social insurance accompanied with relatively high non-contribution-based social allowances.

The following empirical analysis does not account for all 14 European Union countries included above but restricts its number of examined countries to five. Four of these countries are chosen as representatives for the four identified clusters, namely Italy, Germany, the United Kingdom and Finland. France is also included as a borderline case.

3   Empirical Analysis

3.1   Methodological Aspects

The database used is the Luxembourg Income Study (LIS). The LIS database is a collection of harmonised household income surveys and can be used for comparative purposes.[9] The countries of interest are Italy, Germany, the UK, Finland and France (cf. chapter 2.2). The latest available LIS data for a comparison of these countries is wave IV so that we work with data from 1994/95.

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

Households are selected as units of analysis. The concerning income definition for *disposable income (dpi)* employed here is yearly disposable income as defined by LIS[10] without pensions. Furthermore, we apply the concept of equivalent household income which allows to compare households of different sizes. Equivalent household income is calculated by dividing household income through the equivalent number of household members which is determined by an equivalent scale.[11] This concept takes account of economies of scale in household consumption.

The social transfers we focus on are cash-transfers that are received in unexpected situations which are not a 'normal' part of the life cycle. Therefore we include:

- *unemployment insurance*: cash social insurance benefits in case of unemployment which are not means-tested
- *unemployment assistance*: means-tested cash benefits in case of unemployment
- *sick pay*: cash sickness insurance benefits
- *disability benefits*: long-term cash benefits for partial or total permanent disability or permanent injury (including war benefits except of Germany where data for war benefits are not available)
- *social assistance*: means-tested minimum income for living

We have to be cautious when interpreting disability pay in connection with underlying strategies because the used variable in LIS gives us only long-term cash benefits in case of a partial or total permanent disability or injury i.e. we cannot really distinguish benefits for invalidity and occupational accidents.

Not all variables are included for every country in the LIS data. *Table 2* gives an overview of the availability of the concerned variables.

As the aim of this paper is to rank these social transfers, the GLCs for the disposable income distribution minus the concerning transfers are compared for each country. In order to assure the clarity of the GLC comparisons only pairwise comparisons will be carried out.

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[10] See for definition of disposable income http://www.lisproject.org/techdoc/summary.pdf.
[11] The applied equivalence scale here is the square root of the household size. Cf. e.g. Biewen (2000: 3f.), Atkinson et al. (1995: 18ff.) for further information on equivalence scales.

	Italy 1995	France 1994	Germany 1994	UK 1995	Finland 1995
Unemployment insurance	+	+	+	+	+
Unemployment assistance	-	n.a.	+	-	+
Sick pay	n.a.	+	n.a.	+	+
Disability benefits	+	+	+	+	+
Social assistance	+	+	+	+	+

table 2: Availability of variables for social transfers in LIS
   +   variable available
   n.a.   variable not available
   -   transfer does not exist

3.2   Empirical Results

The first step for evaluating the results is to compare the pairs of GLCs for the distribution of disposable income less the social transfers for each country. Analysing the graphs we have two possible results: the two curves cross or do not intersect. *Figure 1* shows an example for a clear dominance relation using LIS data for the UK whereas in *figure 2* the two curves, generated on the basis of Finish data, cross and we cannot state a dominance relation[12]:
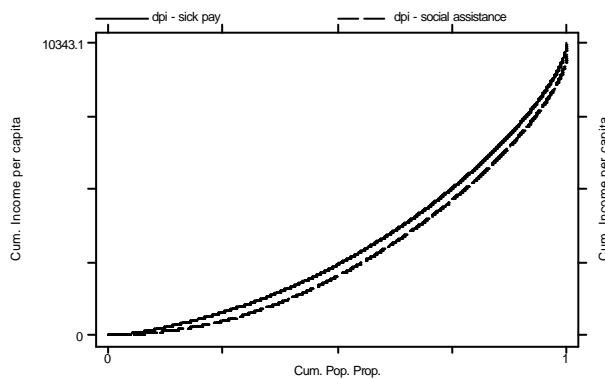
fig. 1: GLC comparison UK, dpi – sick pay vs.   *fig. 2: GLC comparison Finland, dpi – disability pay*
     dpi – social assistance   *vs. dpi – unemployment insurance*
                                    Source: Own calculations from LIS data

As we can see in *figure 2* the intersection of the two GLCs is not very clearly visible. Especially when we want to compare the impact of transfers in one country it is quite possible that we are not able to distinguish which curves cross and which do not with the naked eye

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[12]   The GLC graphs have been generated using the module 'glcurve7' programmed by P. Van Kerm and S.P. Jenkins for the statistical package STATA7. For more details see Van Kerm/Jenkins (2001).

because the analysed income distributions less the transfers do not differ very distinctly. In order to represent graphically if there is a crossing point of two curves we can plot the differences of the ordinates of the two concerning GLCs against the quantiles of the population i.e. the cumulative population proportions. The differences are calculated by subtracting the ordinates of the distribution with the lower from the ordinates of the distribution with the higher mean. Thus we have only positive values for the differences if the two curves do not cross (cf. *figure 3* which is based on German LIS data), if they intersect we also find negative values as shown in *figure 4* for disposable income less unemployment insurance and disability pay in France.
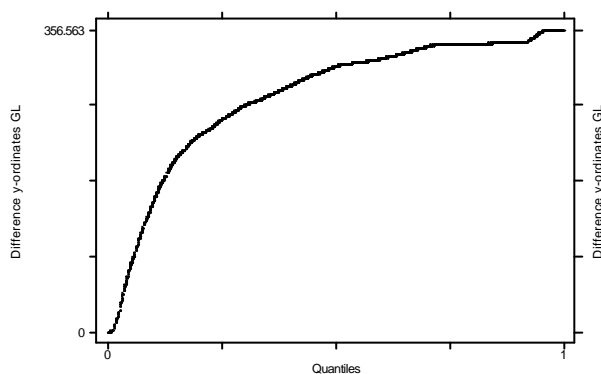
fig. 3: difference plot Germany, dpi – unemployment assistance vs. dpi – disability pay	*fig. 4: difference plot France, dpi – unemployment insurance vs. dpi – disability pay*
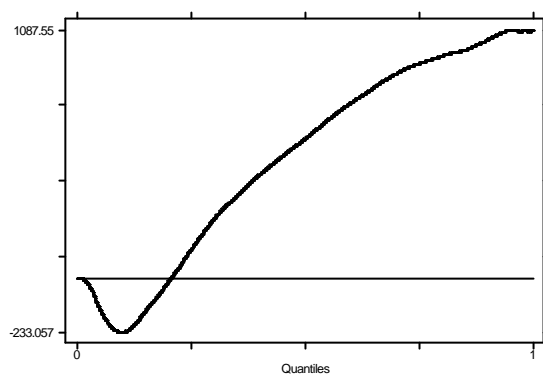
Source: Own calculations from LIS data

Thus we use two graphical options of showing existing or non-existing GL dominance. All pairs of GLCs are depicted in the Appendix as long as it is visible if there exists a dominance relationship or not. The unclear cases are mapped as difference plots.

After examining all possible pairwise combinations we are able to depict the resulting partial orderings in form of Hesse diagrams for every country. The connected lines flowing downwards from higher ranked income distributions indicate a dominance relation. The following Hesse diagrams (*fig. 5* to *9*) give an overview of the effects of the different transfers.
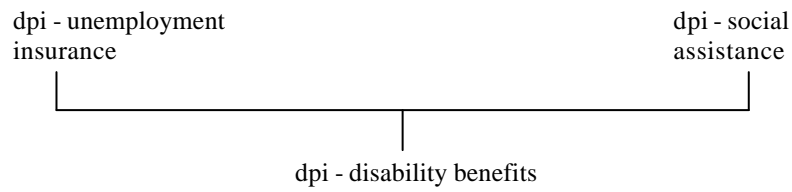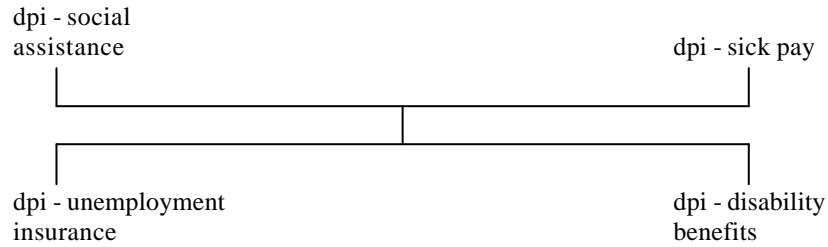
```
           dpi - unemployment                                    dpi - social
           insurance                                             assistance
                    |                                                 |
                    └────────────────────┬────────────────────────────┘
                                         |
                             dpi - disability benefits
```

fig.5: Hesse diagram Italy


```
           dpi - social
           assistance                                            dpi - sick pay
                 |                                                    |
                 └───────────────────────┬────────────────────────────┘
                 |                                                    |
           dpi - unemployment                                  dpi - disability
           insurance                                           benefits
```

fig.6: Hesse diagram France


```
                             dpi - disability benefits
                                         |
                 ┌───────────────────────┼────────────────────────────┐
                 |                        |                            |
           dpi - social            dpi - unemployment          dpi - unemployment
           assistance              insurance                   assistance
```
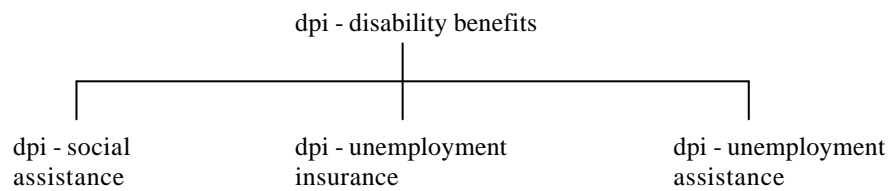
fig.7: Hesse diagram Germany


```
           dpi - unemployment
           insurance                                            dpi - sick pay
                    |                                                 |
                    └────────────────────┬────────────────────────────┘
                    |                                                 |
           dpi - disability                                    dpi - social
           benefits                                            assistance
```
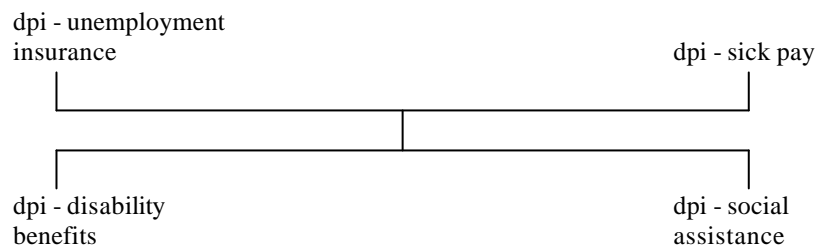
fig.8: Hesse diagram United Kingdom


```
           dpi - social assistance                              dpi - sick pay
                    |                                                 |
                    └────────────────────┬────────────────────────────┘
                    |                                                 |
           dpi - unemployment                                   dpi - disability
           assistance                                           benefits
                    |
           dpi - unemployment
           insurance
```
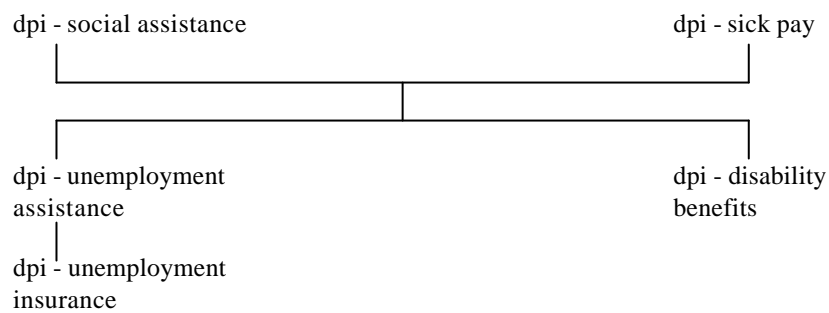
fig.9: Hesse diagram Finland

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When interpreting the resulting incomplete orderings we have to be careful because we look at the dominance of the distribution of disposable income *minus* a special transfer. So if we can state e.g. that in Germany the distribution of *disposable income minus disability benefits* dominates the distributions of disposable income minus all other transfers this does not mean that disability benefits have a strong impact but that they have the *least* impact in regards to increasing welfare.

Now the influence of the transfers as indicated by the GL dominance check will be examined more closely for the analysed countries.

The Hesse diagram for Italy shows that the distribution of *disposable income minus disability benefits* is clearly dominated by the other two available transfers. Thus we can state a considerable degree of influence for disability benefits whereas no differentiation for social assistance and unemployment insurance can be made. The clear impact of disability benefits suits the fact that the Italian expenditures for disability are much higher than for the other two transfers.[13] Disability benefits in Italy are an instrument of Bismarck insurance as long as they are paid dependent on past contributions. But these payments are complemented by transfers for those who do not have claims on insurance benefits (cf. e.g. Balandi/Renga 2000: 127-131). Thus the impact we could state is not only the impact of a mere Bismarck insurance instrument but of a combination with the social assistance component typical for the Southern European Cluster.

For the French social system which is a borderline case of the Southern and Central European Cluster, *unemployment insurance* and *disability benefits* seem to have more power in increasing welfare than *sick pay* and *social assistance*. Unemployment insurance and disability payments are elements of a Bismarck-type insurance in France to a prevailing part whereas there also exists a minimum invalidity benefit for those who do not fulfil the required contribution record (cf. e.g. Greiner 2000: 50f. and 60).

The only clear result for Germany is that *disability benefits* have least influence in comparison to all the other considered benefits. The comparison of the means of the different income distributions without transfers shows that the numbers do not differ clearly and a crossing of

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[13] The percentage of expenditures for disability benefits at GDP in Italy is 1.6% in contrast to 0.5% for unemployment insurance in 1995 (cf. Eurostat 1999) and 0.2% for social assistance in 1992 (cf. Gough et al. 1997, reliable data on later years were not available).

the GLCs is not that surprising.[14] Thus we cannot draw many conclusions about the influence of a certain strategy. We can only state that disability benefits which are in the tradition of Bismarck-type insurance as they are contribution-dependent in Germany (cf. e.g. Weber/ Leienbach 2000: 34f.) seem to be not very powerful in comparison to the other transfer payments.

The Hesse diagram for the UK shows, that the distributions for *disposable income minus unemployment insurance* and *disposable income less sick pay* dominate the distributions of *disposable income less disability benefits* and *disposable income minus social assistance*. Thus we conclude that disability pay and social assistance are more welfare increasing than the other considered transfers. Social assistance is a main element of the British Cluster with its characteristically high guaranteed minimum income. Disability benefits as flat-rate amounts are also a typical element of the British Cluster. This high impact is paid with relatively high costs: 3% of GDP is spent for these payments in contrast to 0.6% for unemployment payments or 1% for sick pay (cf. Eurostat 1999). In the mid-nineties the UK had to fight with fast rising beneficiary numbers: 570,000 in 1980/81 and 1,809,000 in 1994/95 (cf. Kalisch et al 1998: 52). So the influences of social assistance and disability pay might be assumed quite expected for the British Cluster.

In Finland, unemployment insurance seems to have most influence with regards to the increase of welfare because the distribution of *disposable income less unemployment insurance* is dominated by all other possible distributions of disposable income minus transfer. We can also state that *unemployment* and *disability benefits* have a stronger impact than *social assistance* and *sick pay*. In the mid-nineties, rising unemployment could be stated for all countries in the European Union – the unemployment rate for the EU15 amounted to 11.1% in 1994 (cf. Eurostat/European Commission 2001: 10). Finland was one of the most affected countries with 16.6% unemployed in 1994 – only Spain topped this figure with 24.1%. This fact helps to explain the very high impact of unemployment payments on the income distribution which would perhaps not be that clear when working with more recent data. Comparable to the unemployment benefits, the disability payments provide a combined system of basic allowances and earnings-related transfers (Weber/Leienbach 2000: 100-107). Thus we cannot exactly assign these measures to a specific tradition or strategy but we are in

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[14] Cf. synopsis of means for the five considered countries in the Appendix, *table A1*.

the position to state that the typical Northern European mix of social insurance and relatively high non-contribution based social allowances is represented by these measures.

When comparing the five countries we find some analogies but also considerable differences concerning the impact of different transfers. Disability benefits show an impact in all countries except Germany so that we may conclude that this is not a special instrument of a certain strategy. But we must take into account here that the variable used includes transfers arranged quite differently. Moreover we have to bear in mind that disability pay may be granted as substitute for other benefits like unemployment transfers (cf. OECD 1997: 37). Social assistance is powerful in the United Kingdom where it is part of the traditional strategy, in Germany it performs at least better than disability benefits. Unemployment benefits are important in France, Germany and Finland, but the reasons for this might be quite different when we consider for example the high unemployment rate in Finland at the moment of observation. As might be anticipated, sick pay does not seem to play a prominent role in comparison to the other transfers in all countries.

4   Conclusion

This study analysed the impact of different transfers on the income distributions in five countries of the European Union. Therefore we applied the technique of generalised Lorenz dominance and performed a pairwise comparison for all possible pairs of transfers in each country. The examined countries are Italy, France, Germany, the United Kingdom and Finland which were chosen because they represent four types of European social transfer systems identified by Kraus (2000). Finally we evaluated the results of the GLC comparison and related it to the underlying classification of social transfer systems. The GLCs provide partial orderings meaning that some transfers cannot be ordered unambiguously; more concretely, we obtain twenty unambiguous cases out of thirty-one pairwise comparisons. But nevertheless we could state that some transfer effects reflected special attributes of the associated clusters. The GLCs accompanied by difference plots and Hesse diagrams allow us to make these effects visible.

The present paper can only give some first ideas of the effects of transfers in the analysed countries. For further examination we would have to consider
- more aspects of and more calculations on the income distribution and

- more details on the arrangements in the different social systems.

The first point could contain a further inequality analysis with scalar measures like the Atkinson family of inequality measures or the family of generalised entropy measures etc. Another possibility would be to include a poverty analysis i.e. how the transfer systems are connected with this aspect. That would entail the application of various poverty measures.

The second prospect involves more details on the way the social transfer systems are arranged in the countries examined. This implies the historical development and statutory regulations in every country. Thus we could possibly reveal more influence factors on the results like the high unemployment rates we identified for Finland (cf. p.11). Another aspect is the consideration of the costs for the benefits. We recognized e.g. for the United Kingdom and Italy that the visible influence of disability benefits are 'bought' at a comparatively high price (cf. p.10/11). Thus it would be useful to consider also the costs for the benefits in a measure of distributive efficiency.[15]

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[15] Cf. e.g. Hölsch/Kraus (2002) who analysed distributive efficiency in European countries for social assistance.

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Appendix

	Italy 1995	France 1994	Germany 1994	UK 1995	Finland 1995
dpi - unemployment insurance	23172	97396	34200	10355	69978
dpi - unemployment assistance	-	-	34405	-	72396
dpi - sick pay	-	99916	-	10343	74101
dpi - disability benefits	22348	98483	34761	10026	73331
dpi - social assistance	23095	100104	34646	9930	73948

table A1:   Means of income distributions without transfers (in national currency; Italian numbers in thousands of national currency units)
Source: Own calculations from LIS data

Generalised Lorenz curve comparisons

The following figures show the pairwise comparison of the generalised Lorenz curves for the income distributions without transfers ordered by countries. If the difference of two curves is not visible, difference plots have been generated and are depicted instead of GLCs; the distribution of dpi – transfer with the higher mean is named first in the description. When looking at some GLCs it appears to the observer that there might perhaps be a crossing point in the lowest income regions; these cases have been checked for crossing points and if the curves intersected a difference plot would be shown instead of the GLCs. The source for all these figures are own calculations on basis of the LIS data.

Italy (n=4513)
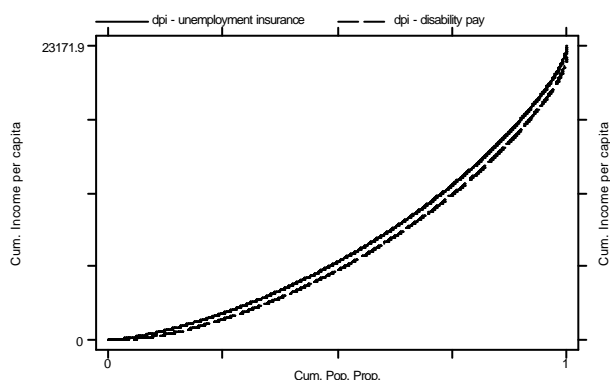
fig. A1: GLC comparison Italy, dpi – unemployment insurance vs. dpi – disability pay
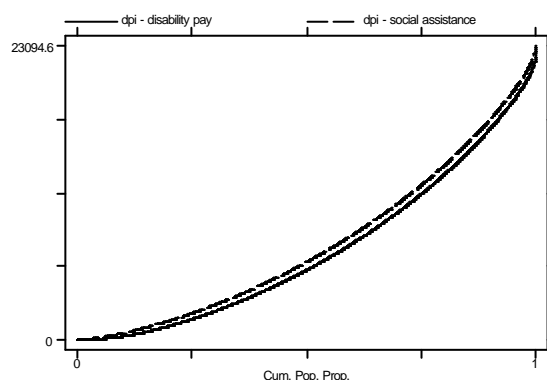
fig. A2: GLC comparison Italy, dpi – disability pay vs. dpi – social assistance
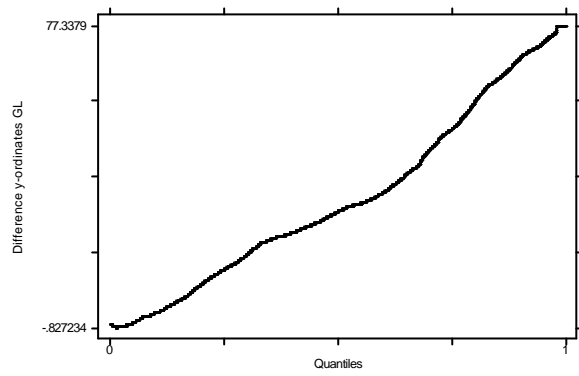
*fig. A3: Difference plot Italy, dpi – unemployment
insurance vs. dpi – social assistance*

France (n=8095)
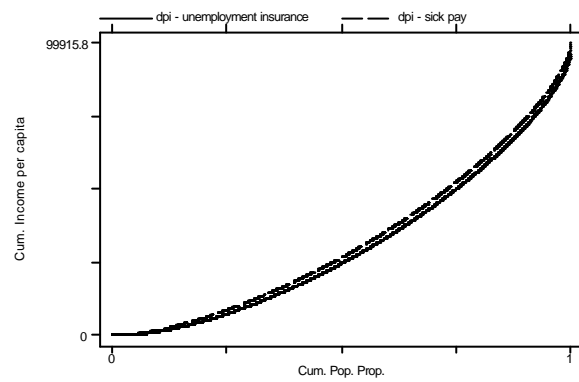
*fig. A4: GLC comparison France, dpi – un-
employment insurance vs. dpi – sick pay*
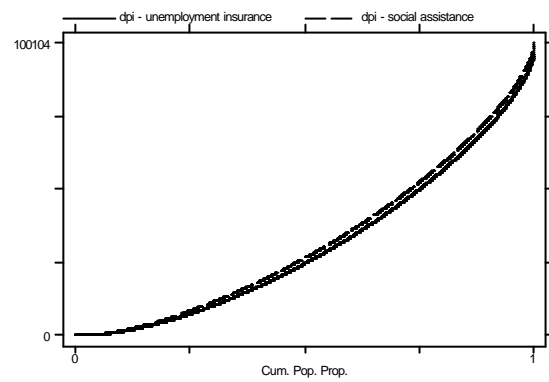
*fig. A5: GLC comparison France, dpi – unemployment
insurance vs. dpi – social assistance*
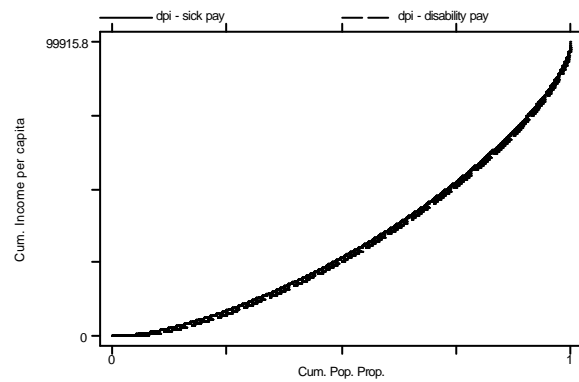
*fig. A6: GLC comparison France, dpi – sick pay
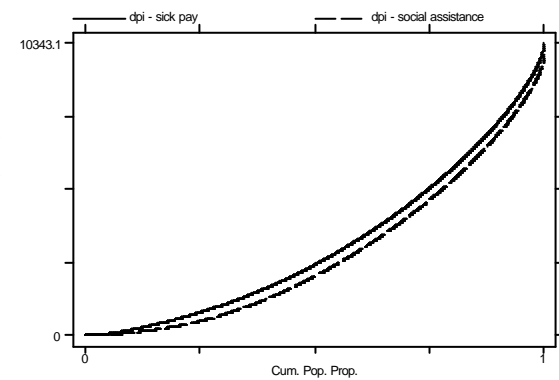vs. dpi – disability pay*
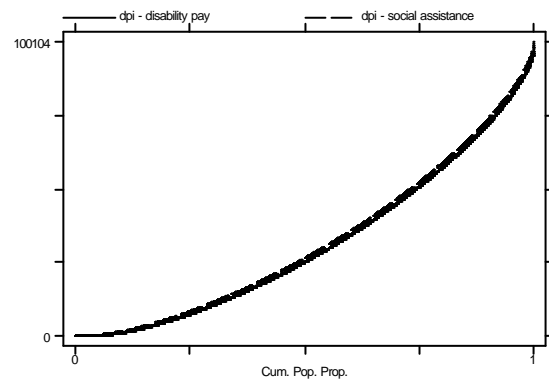
*fig. A7: GLC comparison France, dpi – disability pay
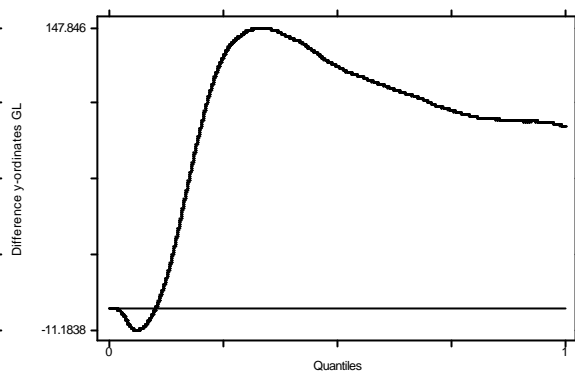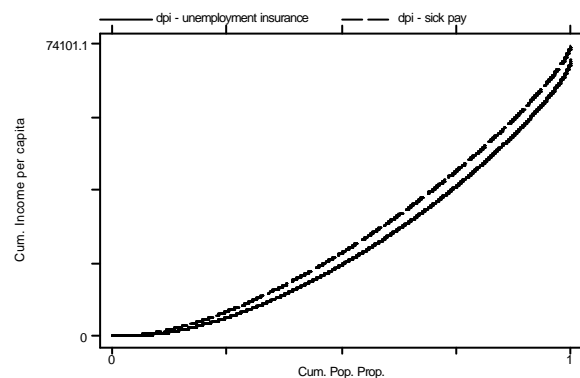vs. dpi – social assistance*
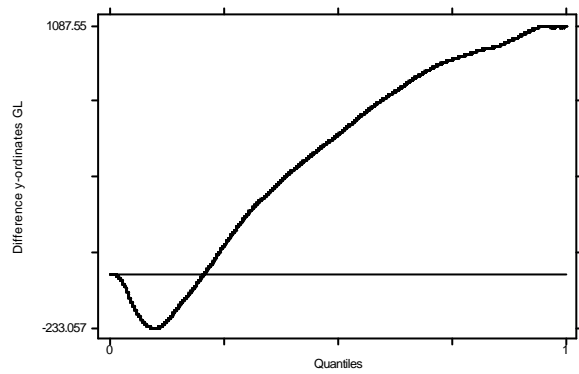
*fig. A8: Difference plot France, dpi – disability
pay vs. dpi – unemployment insurance*
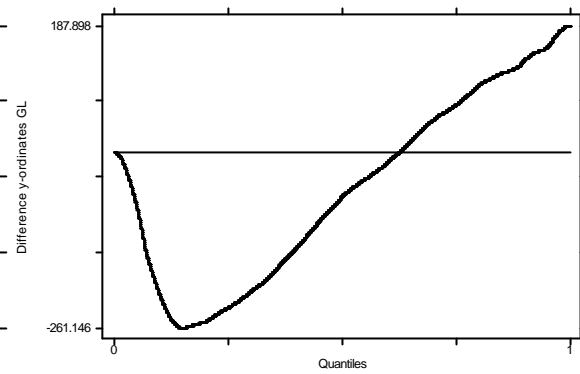
*fig. A9: Difference plot France, dpi – social
assistance vs. dpi – sick pay*

Germany (n=4299)

*fig. A10:GLC comparison Germany, dpi – un-
employment insurance vs. dpi – disability pay*
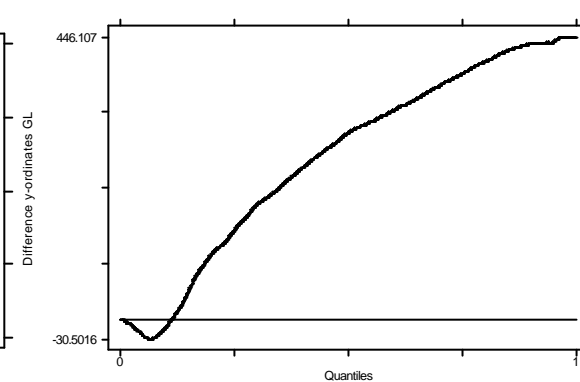
*fig. A11:Difference plot Germany, dpi – social
assistance vs. dpi – unemployment insurance*
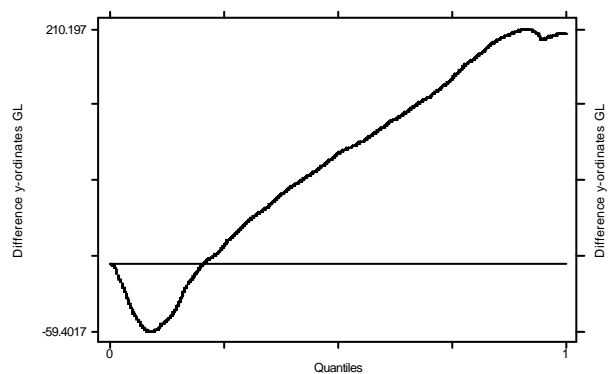
*fig. A12:Difference plot Germany, dpi – un-
employment assistance vs. dpi – un-
employment insurance*
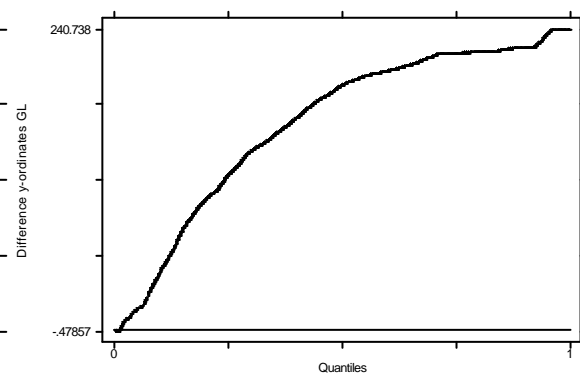
*fig. A13:Difference plot Germany, dpi – social
assistance vs. dpi – unemployment assistance*
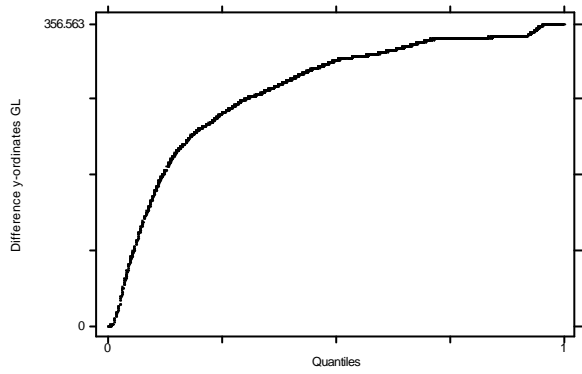
fig. A14:Difference plot Germany, dpi – disability pay vs. dpi – unemployment assistance
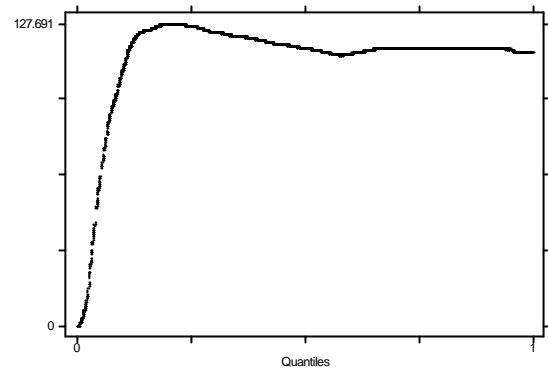
fig. A15:Difference plot Germany, dpi – disability pay vs. dpi – social assistance

UK (n=4788)
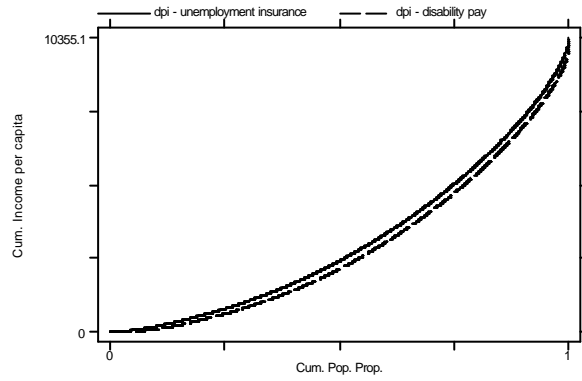
fig. A16:GLC comparison UK, dpi – unemployment insurance vs. dpi – disability pay

fig. A17:GLC comparison UK, dpi – unemployment insurance vs. dpi – social assistance
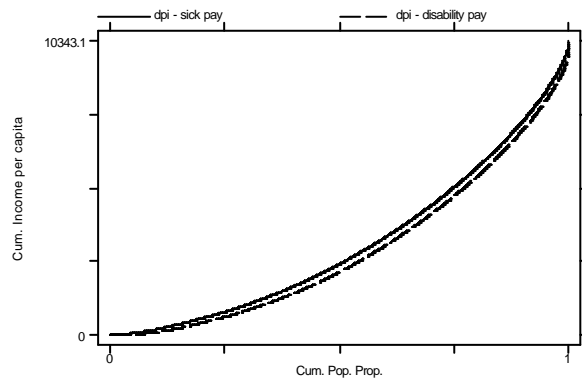
fig. A18:GLC comparison UK, dpi – sick pay vs. dpi – disability pay

fig. A19:GLC comparison UK, dpi – sick pay vs. dpi – social assistance
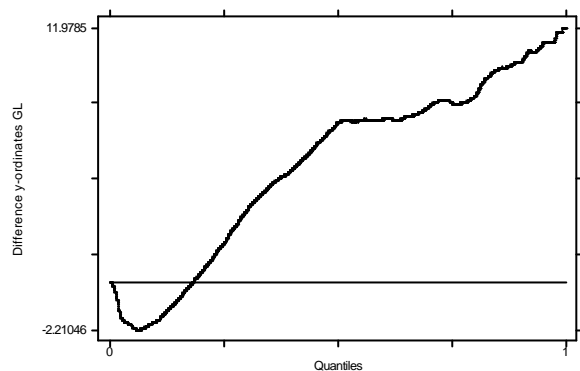
fig. A20:Difference plot UK, dpi – unemployment insurance vs. dpi – sick pay

fig. A21:Difference plot UK, dpi – disability pay vs. dpi – social assistance

Finland (n=7467)

fig. A22:GLC comparison Finland, dpi – unemployment insurance vs. dpi – sick pay

fig. A23:GLC comparison Finland, dpi – unemployment insurance vs. dpi – disability pay

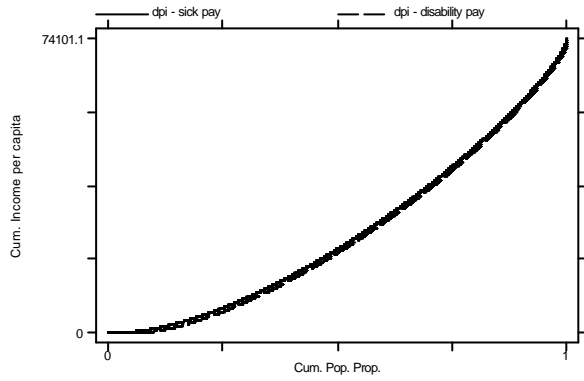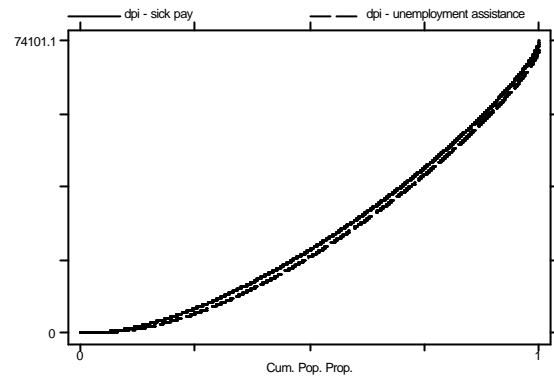*fig. A24:GLC comparison Finland, dpi – unemployment insurance vs. dpi – social assistance*

fig. A25:GLC comparison Finland, dpi – unemployment insurance vs. dpi – unemployment assistance

fig. A26:GLC comparison Finland, dpi – sick pay vs. dpi – disability pay

fig. A27:GLC comparison Finland, dpi – sick pay vs. dpi – unemployment assistance
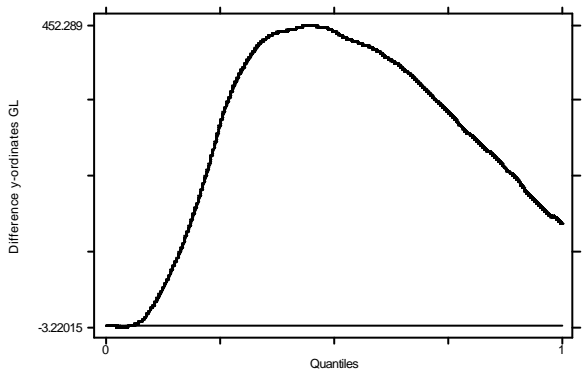
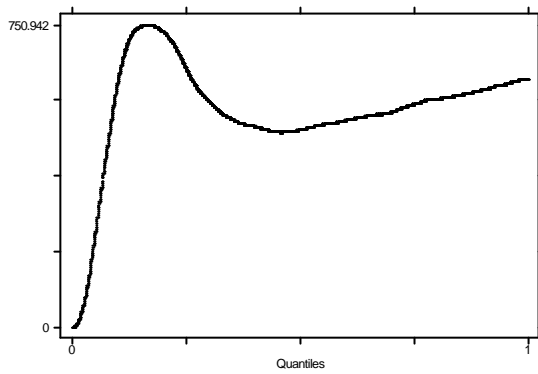*fig. A28:Difference plot Finland, dpi – sick pay vs. dpi – social assistance*

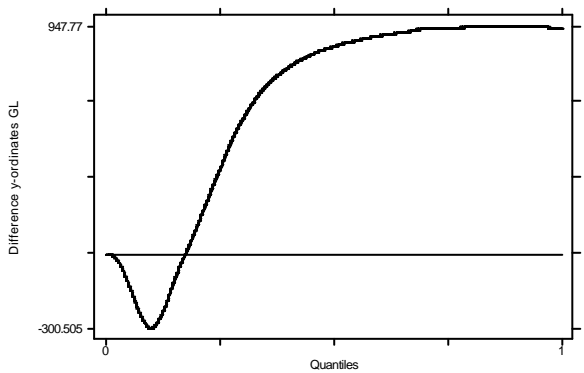*fig. A29:Difference plot Finland, dpi – social assistance vs. dpi – disability pay*

fig. A30:Difference plot Finland, dpi – disability pay vs. dpi – unemployment assistance
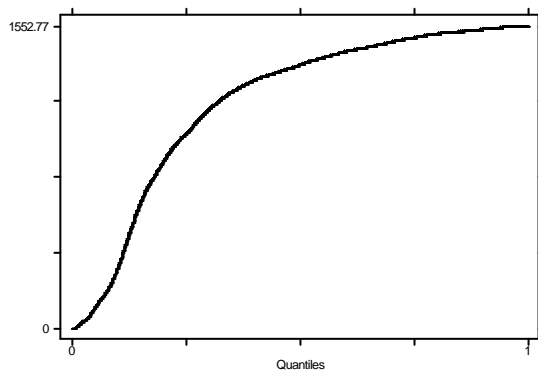

fig. A31:Difference plot Finland, dpi – social assistance vs. dpi – unemployment assistance

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