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Robert Hagfors

ON ECONOMIC WELFARE EQUALITY AS
A POLICY GOAL AND SOCIAL TRANSFERS
AS INSTRUMENTS*

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ABSTRACT: The aim of this paper is to consider the effects of the social
transfers to households in Finland in 1981 from an economic welfare point
of view. The so-called equivalent income concept is applied. For this income
concept equivalence scales are needed. General household equivalence scales
are estimated from a 1981 survey of households. Using the demand system based
equivalence scales the households are ranked according to economic welfare
and concentration curves are drawn for different household types. Concentration
indexes are also calculated. It is concluded that child benefits do not
redistribute economic welfare between households with children. On the other
hand they have an effect between households with children and other households.
Some social transfers do have an equalizing effect and some household types
seem to be in need for social aid from the public authorities. At the disaggre-
gate level the effects of the social transfers differ from those attained at
aggregate level.

KEY WORDS: Equivalence scales, Social transfers, Economic welfare

TIIVISTELMÄ: Tässä paperissa pyritään tarkastelemaan sosiaalisten
tulonsiirtojen kohdistumista kotitalouksiin Suomessa 1981 taloudellisen
hyvinvoinnin näkökulmasta. Vertailuissa käytetään ekvivalentin tulon
käsitettä. Tämän käsitteen muodostamiseen tarvitaan ekvivalenssiskaaloja.
Yleiset kotitalouksien ekvivalenssiskaalat estimoidaan Kotitaloustiedustelun
1981 aineistosta. Kysyntäjärjestelmään perustuvia ekvivalenssiskaaloja
käyttämällä kotitaloudet asetetaan järjestykseen taloudellisen hyvinvointitason
mukaan. Tämän jälkeen sosiaalisten tulonsiirtojen vaikutuksia tarkastellaan
konsentraatiokäyrien ja -indeksien avulla. Johtopäätöksissä todetaan, että
lapsilisät eivät jaa uudelleen taloudellista hyvinvointia lapsiperheiden
kesken. Konsentraatiotarkastelulla voidaan löytää kotitaloustyyppejä, jotka
ovat ilmeisiä sosiaalipoliittisia kohderyhmiä. Sosiaalisten tulonsiirtojen
vaikutukset osoittautuvat disaggregoidulla tasolla toisenlaisiksi kuin
kokonaistasolla on arvioitu.

ASIASANAT: Ekvivalenssiskaalat, Sosiaaliset tulonsiirrot, Taloudellinen
hyvinvointi

Contents

1. INTRODUCTION

In empirical income distribution and poverty research done lately in Finland the great variation of results can be explained with differences in the definitions which have been used.

Usually, but not self-evidently, a household's disposable income after taxes and transfers has been chosen as an income concept. This definition does not take into account the fact that households differ in size and other characteristics. In order to adjust the disposable income by differences in household size, per capita measures has been used. This definition has the weakness that it counts adults and children alike. The third income definition used in research is the disposable income adjusted by using an equivalent number of household members. Here the so-called equivalence scales are used.

By using equivalence scales the disposable income of the household can be seen as adjusted, in a way, on a needs corrected basis. The household as a unit and the number of household members are the two extremes between which the equivalence scale settles. The reason for this is that there exist returns to scale in consumption when the size of the household is growing. There are of course also other factors, such as the age structure, which may have an opposite effect. The effect of the returns to scale is, however, dominating (Hagfors 1988).

The other concept which has relevance from the point of view of income distribution studies is the income receiving unit. In principle there are three possibilities: a household, an individual or the number of equivalent members in the household.

The choice of an individual or a household member has been justified on the grounds that only the individuals are consistent with a well defined social welfare function. (For references see Grootaert 1982 and van Ginneken 1981.) On the other hand, the choice of the household as an income receiving unit has been based on the argument that the household is the smallest unit which has its own budget to make decisions on. Individuals do not necessary have one. As a result households are assumed to behave in the same way as individuals when maximizing a household social welfare function (Jorgenson and Slesnick 1986).

The problem that remains is to determine the equivalence scales for different types of households. There has been already some scales in use in Finland. These are the so-called "calory scales" and OECD-scales introduced by the Central Statistical Office of Finland (Household Surveys) and TASKU-scales (Hagfors and Koljonen 1984).

1. Calorie scales

Age	Man	Woman
0 - 1	0.30	0.30
2 - 3	0.40	0.40
4 - 6	0.50	0.50
7	0.70	0.50
8	0.70	0.70
9 -10	0.80	0.70
11 -12	0.83	0.80
13	1.00	0.80
14 -15	1.00	0.83
16 -19	1.20	0.83
20 -64	1.00	0.83
65 -	0.75	0.65

2. OECD scales

Adult	= 1.00
Additional adults	= 0.70
Children	= 0.50

3. TASKU scales

Age of head	Single
-45	1.00
45-54	0.90
55-64	0.80
65-69	0.70
70-74	0.60
75-	0.50

	Additional members
Second adult	0.60
Other adults	0.50
1. child	0.50
2. child	0.40
Other children	0.30

All of these scales suffer from serious shortcomings. (Hagfors 1987)

   -The definitions are too narrow for household's welfare comparisons in
    a developed country (calorie need).
   -The returns to scale in consumption are neglected (OECD).
   -The differences between urban and rural households are neglected.
   -There is no time dimension in the scales (TASKU, OECD). If the scales are
    implemented at two points of time, the equivalent income concept should
    take into account the changes in the price structure.
   -The effects of the income level of the reference household are neglected.

It has been found out in several research done lately, that the results are
highly sensitive to the equivalence scales applied.(Buhmann, Rainwater,
Schmaus, Smeeding,(1988), Hagfors, Koljonen ,(1984), Saunders, Hobbes, Stott,
(1989))

In this paper an effort is made to construct household equivalence
scales for Finland for the year 1981. Also commodity specific scales
for different commodity groups are computed.

2. DATA AND ESTIMATION

2.1. Data

In this paper we utilize the household survey data collected by the
Central Statistical Office of Finland. There were sample-based consump-
tion studies already at the beginning of the century, but the first
"complete" household survey was made in 1966. Since then a survey has
been made every fifth year. The data we are using represent all house-
holds in Finland in 1981.

In the 1981 survey 7368 households kept books on their expenditures for
two weeks. They were then interviewed at monthly and yearly levels. Also
other data registers, like the tax register, were used.
The concepts in household surveys in Finland are based on U.N. recom-
mendations (Provisional Guidelines on Statistics of the Distribution of
Income, Consumption and Accumulation, 1977, and System of National
Accounts, 1968).

The ELES demand system has been estimated for households
of one to six or more persons. (From ELES-system, see Kakwani, 1977, 1980)
We do not present here the regression equations in order to save space.
(See Hagfors, 1989) The demand equations were estimated for the following
commodity groups:

1. **Food**
2. **Beverages and tobacco**
3. **Clothing and footwear**
4. **Dwelling, heating, light and power**
5. **Household furniture, fitments and services**
6. **Medical and health care**
7. **Transport**
8. **Recreation, education, cultural services**
9. **Other goods and services.**

2.2. Commodity specific scales

The equivalence scales depend on the commodity group. The reason for this
is mainly that the returns to scale in consumption are different for
different commodity groups. This is one of the main reasons to use a complete
demand system. Here we weight different commodity specific scales together in
one general equivalence scale. We present the commodity specific equivalence
scales for the year 1981 in table 1.

Table 1. Commodity specific equivalence scales from the ELES demand
system for households of different size in the year 1981

Commodity group	Estimation method	Scales					
		m_{1i}	m_{2i}	m_{3i}	m_{4i}	m_{5i}	m_{6+i}
1	OLS	1.000	1.970	2.634	3.234	4.019	4.646
	GLS	1.000	1.891	2.622	3.081	3.802	4.956
2	OLS	1.000	1.706	2.494	2.987	3.271	3.092
	GLS	1.000	1.803	2.514	3.065	3.330	3.534
3	OLS	1.000	1.518	2.635	3.855	4.279	5.201
	GLS	1.000	1.291	2.432	3.152	3.510	4.205
4	OLS	1.000	1.245	1.714	2.178	2.065	1.867
	GLS	1.000	1.329	1.877	2.240	2.102	1.889
5	OLS	1.000	1.739	2.335	2.933	3.182	3.650
	GLS	1.000	1.818	2.297	2.620	3.008	3.686
6	OLS	1.000	1.694	1.936	2.201	2.353	2.690
	GLS	1.000	2.005	2.375	2.515	2.829	3.248
7	OLS	1.000	1.723	3.171	3.980	4.543	5.549
	GLS	1.000	2.185	3.998	4.785	5.373	6.477
8	OLS	1.000	1.342	2.483	3.488	3.342	3.126
	GLS	1.000	1.505	2.759	3.526	3.476	3.765
9	OLS	1.000	1.097	1.705	2.121	2.147	2.239
	GLS	1.000	1.430	2.072	2.460	2.199	2.794

In table 1 the returns to scale are strongest in commodity groups (4), (6)
and (9). In food consumption the returns to scale are rather weak.
In all commodity groups except clothing and footwear the GLS scale numbers
are greater than the OLS scale numbers.

The commodity specific scales are not increasing monotonically in com-
modity group (2), where in the OLS estimation the scale number decreases
while moving from a five-member household to a six or more member house-
hold. The same thing is happening in commodity group (4), where the
decrement begins already with a household of four members. This happens
for both OLS and GLS scale numbers. The decrement of the scale numbers
occurs also in commodity group (8) and in the GLS numbers of the
commodity group (9).

All in all it can be concluded that there exist returns to scale in consumption when the size of the household is growing and that the scale effect is different in different commodity groups. From this it follows that by basing the equivalence scale calculations on some commodity group, there is a danger that the general scale will be over or under-estimated, depending on the commodity group chosen. It seems to be that at least in developed countries the equivalence scales should be based on all commodity groups. This supports the use of the complete demand systems. (See Deaton, 1981, Nicholson, 1976 and Hagfors, 1988).

Next we present the general household equivalence scales for the year 1981 for different household types.

2.3. General equivalence scales

The household equivalence scale in this paper is defined as a relation between the two cost functions:

$$(1) \qquad m = \frac{c(u,p,a)}{c(u,p,a_0)}, \text{ where}$$

u = the chosen utility level,

p = prices of the commodities,

a = the vector of the characteristics of household a,

a0 = the vector of the characteristics of a reference household.

The interpretation of (1) is that mO gives the relative minimum costs that household a needs in order to be at the same utility level u as the reference household when the prices p are prevailing. Here again the equivalence scale is a function of the income level of the reference household.

The values of the cost functions were computed for 1981 for different household types. The general household equivalence scales were then calculated by using formula (1) and the computations made by Hagfors (1989). The scales applied here are called RH II-scales. The equivalence scales are presented for low, medium and high income reference households in the year 1981. The 1976 RH I-scales were introduced by Hagfors (1988), but they were calculated only for an average income reference household. The scales which do not take into account the income level of the reference household favor large households.

The general household equivalence scales in this paper are calculated by using the ELES model. (See Van der Gaag, Smolensky, 1982). As is well known, the scale numbers based on the ELES model are functions of the income level of the reference household. Therefore we have chosen a one-member household for different income levels as a reference household. A single person less than 45 years old was selected and the income levels were 20000, 40000 and 80000 FIM.

Table 2. Constant utility RH-II equivalence scales in Finland in 1981

Income	Household size	Age of head –45					45–65					65–				
		Number of children														
		0	1	2	3	4+	0	1	2	3	4+	0	1	2	3	4+
Low income	1	1.000					0.987					0.775				
	2	1.665	1.398				1.648	1.384				1.443	1.172			
	3	2.015	2.063	1.715			1.998	2.045	1.709			1.793	1.840	1.497		
	4	2.365	2.413	2.389	1.930		2.348	2.395	2.370	1.904		2.143	2.190	2.165	1.692	
	5	2.665	2.763	2.739	2.603	2.080	2.643	2.745	2.720	2.565	2.034	2.443	2.540	2.515	2.360	1.822
	6+	2.965	3.063	3.089	2.953	2.753	2.948	3.045	3.070	2.915	2.695	2.743	2.839	2.865	2.710	2.490
Medium income	1	1.000					0.961					0.723				
	2	1.543	1.333				1.498	1.294				1.270	1.056			
	3	1.893	1.876	1.599			1.848	1.831	1.558			1.620	1.603	1.320		
	4	2.243	2.226	2.142	1.767		2.198	2.181	2.095	1.703		1.970	1.953	1.867	1.465	
	5	2.543	2.576	2.492	2.310	1.887	2.498	2.301	2.445	2.240	1.813	2.270	2.303	2.217	2.012	1.575
	6+	2.843	2.876	2.842	2.660	2.430	2.798	2.831	2.775	2.590	2.350	2.570	2.603	2.567	2.362	2.122
High income	1	1.000					0.943					0.689				
	2	1.460	1.270				1.396	1.232				1.154	0.978			
	3	1.810	1.750	1.516			1.746	1.685	1.457			1.504	1.443	1.203		
	4	2.160	2.100	1.976	1.652		2.096	2.035	1.910	1.567		1.854	1.713	1.668	1.313	
	5	2.460	2.450	2.326	2.112	1.752	2.376	2.385	2.260	2.020	1.657	2.154	2.143	2.018	1.778	1.403
	6+	2.760	2.750	2.676	2.402	2.212	2.696	2.685	2.619	2.370	2.110	2.454	2.443	2.368	2.128	1.868

It can be seen from table 2 that there exist strong returns to scale when the size of the household is growing. The age structure of household has also an influence on the scale numbers.

When the age of the head of the household is increasing, the equivalence scales are decreasing. It should be noticed, however, that the age classification in this application is quite rough. For instance, in the group of the old-aged households there is a difference between those people with good health and the very old ones, who are not able to consume as much anymore due to physical reasons even though they could afford it, so the scale numbers might be different with a tighter age classification. Here the large share of very old women is pressing the scale numbers of the pensioners down. The growth of the level of the income of the reference household is decreasing the scale numbers. In the next chapter we present an application which follows Hagfors and Sullström, 1989.

3. APPLICATION

3.1. Income definitions

One useful way to study how the government is trying to distribute the economic welfare or wellbeing of the households is to concentrate on the income formation process at different stages.

When we are trying to describe how the government affects the incomes of a household, the factor income could be the best starting point. The next step would then be to study the transfers received and the transfers paid by the household. In this way we would end up with the disposable income of the household. We follow this commonly used practice in this paper with the exception that we concentrate here only on the transfers received by households. In this respect our analysis is clearly lacking. A more complete stydy should include, in addition to the cash transfers which we are considering, transfers in kind, price subsidies, publicly provided merit goods and pure public goods. Though we are bypassing the problems of the effects of taxes and other transfers paid by households, upon which several differing opinions exist in public debate, we do not consider the issue unimportant.

The conclusions in this paper concern the short-run period. This means, that the reactions of the households to the actions of the government are not present. A satisfactory framework to do that kind of analysis would be a general equilibrium model. Though this approach has been little by little adopted also in Finland and the construction of models is on the way, we have to wait a few years for reasonable results and even then the cases which can be considered are probably quite rough and oversimplifyed.

Although the factor income is a good starting point for studying the effects of the government on the disposable income of the households, some adjustments for structural differences of the households are needed. This is done by using equivalence scales. The economic welfare point of view is present in adjustments, because we have deflated the relevant income concept of a household with an index which has been constructed so that it reflects the relative income needs of households of differing characteristics in order to be at the same utility level as the reference household.

3.2. Social transfers

The effects of government policies can, of course, occur via several different ways. On the expenditure side the effects depend on the instrument chosen. In principle there are three different routes to follow, namely direct cash payments to households, in-kind gifts of commodities and subsidies of prices. The following general conclusions are derived from the theory of consumer behavior. (See Call and Holahan 1983.)

First, if the household has preferences which are weak for the in-kind commodity in question, for instance food, then the household may end up at a lower level of utility if resale of the commodity is restricted. Secondly, subsidies work basically in the same way as do indirect taxes. Therefore the effects are also here dependent on the preferences of the households.

The direct cash transfer payments to the households are basically equiv-
alent to direct taxes. They provide larger choice sets to the households
than do the other two alternatives, and in that way give possibilities
to households to reach a higher utility level than before. We are concentrating
in this paper on the transfer payments. The figures for the year 1981 are
presented in table 3.

Table 3. The current transfers received by households according to the 1981 Household survey

			Bill.FIM
I. Social security benefits			21.2
	NP	National pension	6.5
	OP	Occupational pension	11.1
	-	Sickness and injury insurance	1.4
	CB	Child benefits	1.7
	UB	Unemployment benefits	0.4
II. Social assistances			4.2
	SB	Social and housing benefits	0.8
	OTHER	Other social security	3.4
I+II. Current transfers received			25.3

The current transfers received by households in table 3 are divided
into two main categories. Social security benefits cover 84 per cent of
transfers and the rest goes to social assistance purposes. National and
occupational pensions are the major groups of social security. The
share of pensions is going to increase in Finland for two reasons.
First, the demographic structure of the population is changing so that
the share of pensioners is increasing. Secondly, the share of small
national pensions of all pensions is decreasing.

3.3 General picture

In this chapter we are taking a closer look at the social transfers of
table 3. In what follows we have proceeded so that we have arranged house-
holds according to the factor income per equivalence scale in ascending
order. Next we draw some concentration curves and compute concentration
indexes in order to see if the social transfers redistribute economic
wellbeing as they are supposed to do. We present the general behavior of
the transfers to all households in table 4 and figure 1.

Table 4. Concentration measures of some social transfers to households
          in the year 1981

	Transfer	Mean	G*
NP	National pension	3144	-0.534
OP	Occupational pension	5162	-0.452
CB	Child benefit	1234	0.056
UB	Unemployment benefits	269	-0.064
SB	Social and housing benefits	1937	-0.362
OTHER	Other social security	400	0.403

The pensions form the largest share of the social transfers. National
pensions are concentrated strongly in low welfare households. This is also
true with occupational pensions, but to a slightly lesser degree. In order
to estimate the economic consequences of pensions a more detailed analysis
should be done, with for instance intertemporal saving behavior and
precautionary motives which we do not have. Social and housing bene-
fits are also efficient economic welfare distributers when we look at all
households. Child benefits and unemployment benefits follow the diagonal,
which represents the egalitarian line. The concentration curve of the
other social security has a different behavior from the other transfers.
This follows partly from the make-up of the group. Here the transfers from
households to other households are included, and these are of course
negative for some households. It looks like the households with negative
shares are concentrated to second and third deciles in the economic
welfare ranking.

Figure 1. Social transfers in the year 1981
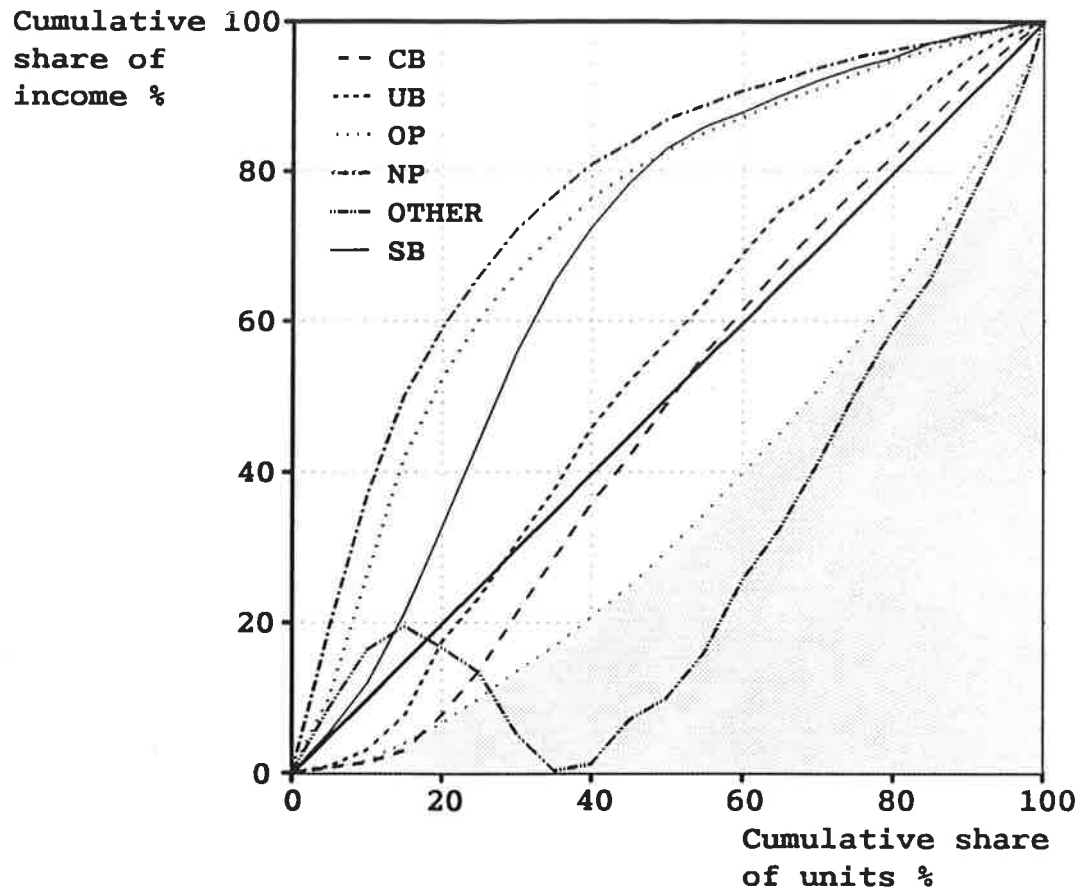
Altogether the results of the table 4 and figure 1 give a consistent picture of the behavior of the social transfers to all households. Next we will see if the picture remains as clear as before when we consider some specific household types and how some social transfers are concentrated among them at a more disaggregated level.

3.4. The effects on some household types

We have drawn concentration curves and calculated concentration indexes for child benefits to different household types. As relevant types we have chosen couples with children and single providers. The concentration curves are presented in the figure 2. Table 5 contains the corresponding concentration indexes.

Table 5. The concentration measures of child benefits in different
household types in the year 1981

Household type	Age of head	Mean	G*
Couple with children	-24	1382	0.201
	25-44	2075	-0.193
	45-64	967	-0.051
Single provider	-24	2255	-0.015
	25-44	2877	-0.081
	45-64	1424	-0.065
All households		1234	0.056

Figure 2. The concentration curves of child benefits in some household
types in the year 1981. a) single providers, b) couples with
children
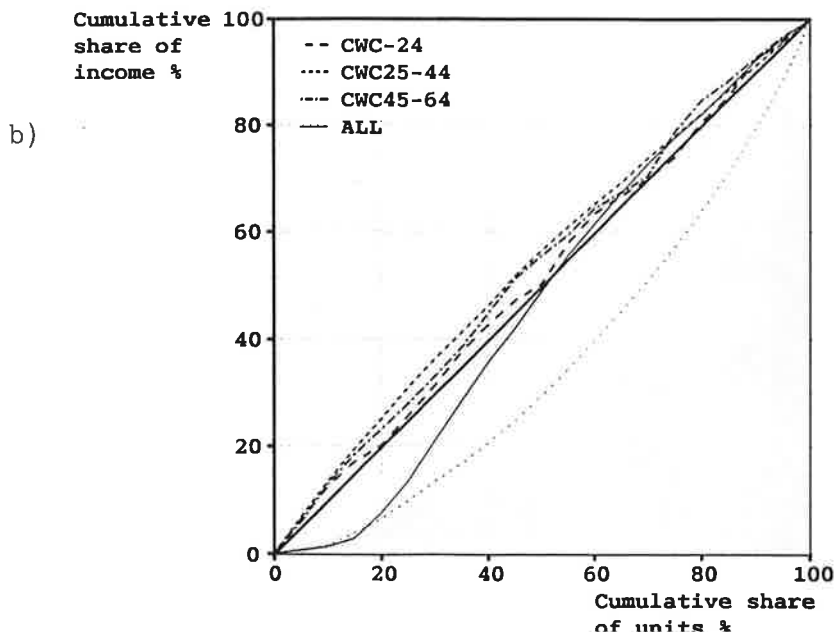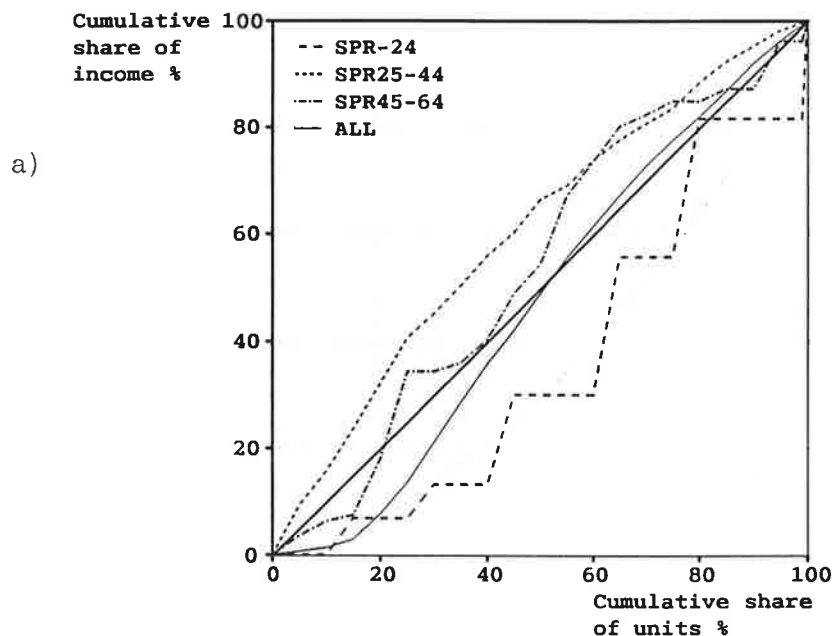
In the figure 2 a) some features should be noticed. The curve for young single providers is stepwise increasing, which is due to too few observations in the sample. The other curves in figure 2 a) seem to be located above the diagonal. When we look at figure 2 b) we see that the concentration curves for the couples with children closely follow the egalitarian line.

When the households are arranged according to the factor income deflated with an index which reflects the characteristics of the household, the child benefits are inefficient in redistributing the economic wellbeing among the households with children. Of course, they change the relative income levels of the households with children and other households.

The second social transfer we are considering is the social and housing benefits. This presents the social assistances side of the social transfers. The concentration indexes for some household types are presented in table 6 and the corresponding concentration curves in figure 3.

Table 6. The concentration measures of social and housing benefits in different household types in the year 1981

Household type	Age of head	Mean	G^*
Couple with children	-24	7511	-0.414
	25-44	2131	-0.561
	45-64	1356	-0.443
Single provider	-24	7779	0.224
	25-44	6994	-0.285
	45-64	2702	-0.231
Single person	45-64	716	-0.619
All households		1937	-0.362

Also here the concentration curves vary significantly. The curves for couples with children follow relatively closely the form of the curve for all households. There is one clear exception: the group of elderly single persons in the upper part of figure 3. The social assistances are among those most strongly concentrated among low economic welfare persons.

Figure 3. The concentration curves of social and housing benefits to certain household types in the year 1981
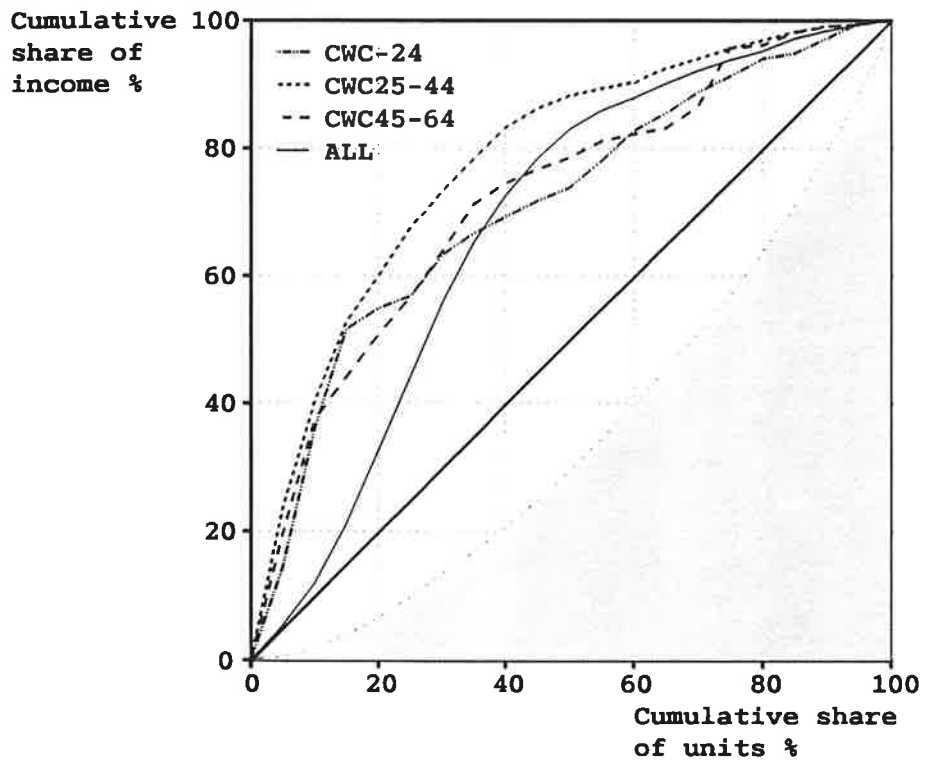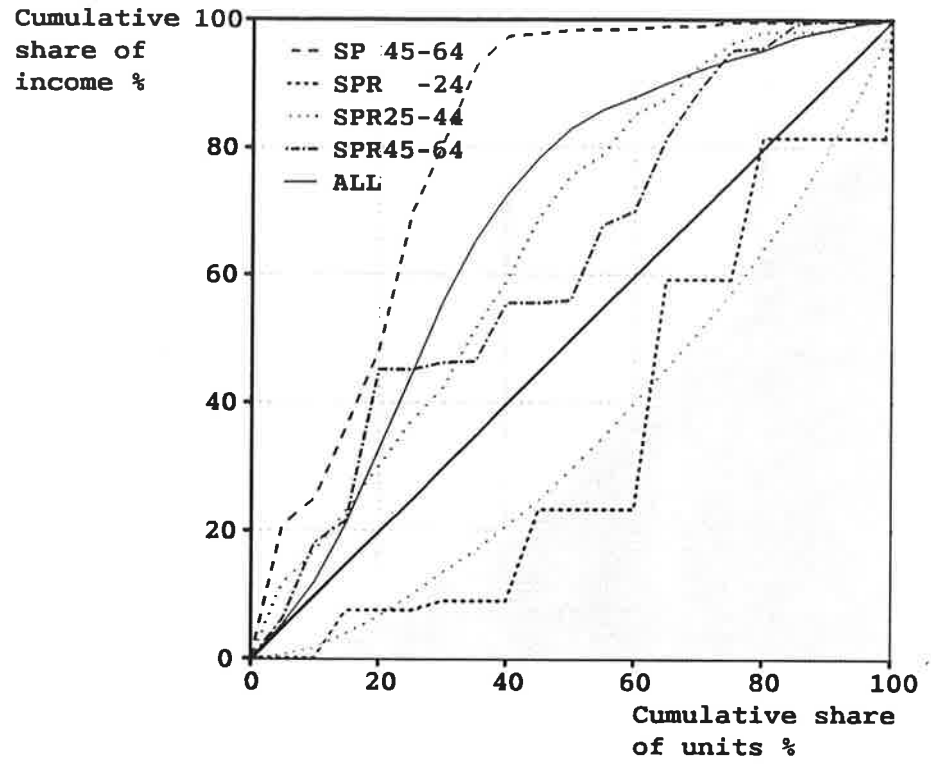
4. CONCLUDING REMARKS

There are several ways to compute household equivalence scales. The scales
also differ when they are derived by using different methods. Some scales
do take into account the characteristics of the households from many
points of view, in some cases the only possibility is to classify the
households by the number of members because of the lack of data. The
economic behaviour of the households is but one of the approaches. With
all its weaknesses it has the remarkable feature that now it is possible
to implement the theory of consumer choice and in this way get a theoret-
ical background which can be tested.

In this paper we have chosen a demand system approach. The household
equivalence scales were computed with ELES-model for the year 1981. From the
results we can conclude, that

- **there exist returns to scale in consumption when the size of the
  household is growing,**

- **the returns to scale differ in different commodity groups,**

- **adults and children bring different additions to scales,**

- **additions differ by the age structure of the children,**

- **scale numbers decrease when the head of the household is aging,**

- **the growth of the income level will bring a diminishing addition to
  the scale numbers when the size of the household is growing,**

- **there are changes in the scales from one time point to another.**

It should be noticed that there are several weaknesses in the
method that has been applied above. First, the ELES model is derived
from the Stone and Geary utility function, which is additive. The restrictions
of additive preferences in empirical research has a price. (See Deaton 1974).
Secondly it has been found out (Hagfors 1987,1988) that the scale
numbers in urban and rural areas in Finland differ from each other.

Our main interest was to see how the social transfers affect the distribution of economic welfare. We were able to draw the following conclusions:

- National pensions, occupational pensions and social and housing benefits are most effective in redistributing economic welfare. These results are conditional on the assumptions concerning inter-temporal behavior of the households.

- Child benefits are inefficient in redistributing economic welfare among households with children. However, they have an influence on the relative levels of incomes of households with children and other households.

- Single persons approaching the pension age is the group where social assistances concentrate most strongly at the lower end of the welfare distribution. Here we obviously have one of the central target groups of the social policy.

- Starting from the aggregate level we found out that by disaggregating both the income and transfer concepts on the one hand and households on the other, some new features could be found out and some conclusions based totally on aggregate observations could be called into question.

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