

REDISTRIBUTION OF INCOME IN DENMARK BEFORE AND AFTER THE WAR

by Kjeld Bjerke

I. INTRODUCTORY REMARKS

THIS study has the same purpose as the two previous studies¹ (from 1938/39 (1937) and 1949, respectively), namely that of throwing light on the redistribution of income effected through taxation and social welfare schemes in Denmark. This has been done by comparing the taxes paid and the social benefits received by the different social groups with the amounts they would have paid and received if the social policy and the tax policy had been neutral. This means that it is assumed that the social policy and the tax policy have not been income-transferring, i.e. that the persons who receive social benefits also pay for them by way of taxes, and that the remaining taxes are assumed to have been paid as a fixed percentage of total personal income. It is obvious that the income redistribution will be influenced by the inclusion of more or fewer items in taxes and social benefits. As was done in Ussing's study, I have divided the population into four social main groups: self-employed farmers, other self-employed, employees and persons outside the labour force, each of these groups being subdivided into two income groups: above and below the health insurance limit.²

The fourth group of persons outside the labour force also comprises groups of tax-payers who may be gainfully occupied, but who do not indicate any occupation in their income-tax returns. On the other hand, it is not quite certain whether, for instance, all old-age pensioners are to be found in the group of persons outside the labour force, since it may be expected that a number of such persons will not use the description of old-age pensioner but will describe themselves by means of their previous

¹ (a) Poul Bjorn Olsen og Viggo Kampmann: 'Indkomstudjaevningen i Danmark', *Socialt Tidsskrift* 24 Argang, nr. 2, February 1948.

(b) Niels Ussing: 'En fordeling af skatter og sociale ydelser i 1949 pa sociale grupper', *Socialt Tidsskrift*, nr. 7-8, July-August 1953; cf. also Allan T. Peacock: 'Income Redistribution and Social Policy', Chapter III, *Redistribution of Income in Denmark* (K. Lemberg, N. Ussing, and F. Zeuthen).

² To be a beneficiary member of a health insurance society one's income must not exceed what is here called the health insurance limit.

occupation. Since the statistics available for the solution of the problem in hand are extremely defective in many respects, the results of the present study will, at most, throw light on certain magnitudes and certain trends.

II. THE TRENDS IN POPULATION AND NATIONAL PRODUCT

Before going into a detailed analysis of the redistribution of income, we shall first look at the development during the years from 1938/39 (1937) to 1949 and 1955 in various macro-economic aggregates which form the background of the actual study.

It will be seen from the table below that the population increased by 12 per cent from 1938 to 1949, and in 1955 the population was 18 per cent larger than in 1938. The table also shows that the so-called productive age-groups, i.e. persons from 15 to 64 years of age, did not grow at the same rate. The rate for these groups is 7 per cent from 1938 to 1949 and 10 per cent from 1938 to 1955.

TABLE I
Population

	Total	15-64 years	Under 15 years	65 years and over
1938 ¹	3,777,100	2,563,000	925,600	288,500
1949	4,231,100	2,749,600	1,105,700	375,800
1955	4,439,000	2,827,600	1,178,200	433,200
1938 = 100				
1949	112	107	119	130
1955	118	110	127	150
1949 = 100				
1955	105	103	107	115

¹ No breakdown is available for 1937. In 1937 (1 July) the population figure was 3,749,000.

However, as will be seen from Table II, the Danish national product during the years from 1938 to 1955 grew at a somewhat faster rate than the population.

Real income *per capita* in 1949 and 1955 was 12 and 25 per cent respectively, higher than in 1937, and total income for 1949 and 1955 was 26 and 47 per cent respectively, higher than the 1937 level. Whereas the average annual growth in net national income (at constant prices) *per capita* from 1937 to 1949 was only 0.9 per cent. Owing to the war, the economic growth from

TABLE II
Net national income at constant prices

	Net national income in 1955 prices		Annual increase per cent	
	Total mill. kr.	Per capita kr.	Total	Per capita
1937	16 354	4 362	1.95	0.93
1949	20 623	4 874	2.64	1.82
1955	24 113	5 432		
1937=100				
1949	126	112		
1955	147	125		

1949 to 1955 was quite rapid, viz. 1.8 per cent. Together with this growth in real income there was a shift in the relative share of wages and that of income from other sources, as will appear from the below table:

TABLE III
Wages and income from other sources

Current prices	Wages and salaries (mill. kr.)	Income from other sources (mill. kr.)	Total (mill. kr.)	Wage share (per cent)
1938	3,225	3,387	6,612	49
1949	8,667	7,769	16,436	53
1955	13,483	10,704	24,187	56

Whereas the wage share in 1938 was 49 per cent, it was 56 per cent in 1955. To sum up: Real earnings in 1955 were at a considerably higher level than before the war, and at the same time wages and salaries have tended to take up an increasing share of national income.

This tendency must be ascribed *inter alia* to a higher rate of employment after the war than before the war.

III. THE TRENDS IN INCOMES, TAXES AND SOCIAL WELFARE EXPENDITURE

Before presenting the results of the calculations concerning the redistribution, it may also be of interest to compare total personal income including social transfers as recorded on the basis of the income-tax returns with the assessment of taxes and

TABLE IV

Population, income, taxes, and social benefits

	1938/39 ¹	1949	1955	1949 1938/39 = 100	1955 (1938/39 = 100)	1955 1949 = 100
Number of persons	under 15 years (1,000)	926	1,106	1,178	119	127
	15-64 years (1,000)	2,563	2,750	2,828	107	110
	65 years and over (1,000)	288	375	433	130	150
Total	3,777	4,231	4,439	112	118	105
Number of persons	under 15 years (per cent)	24.5	26.1	26.5		
	15-64 years (per cent)	67.9	65.0	63.7		
	65 years and over (per cent)	7.6	8.9	9.8		
Total	(per cent)	100.0	100.0	100.0		
Number of tax-payers	(1,000)	1,734	2,055	2,162	119	125
Assessed income	(mill. kr)	3,712	10,620	15,266	286	411
Total estimated income ²	(mill. kr)	5,147	16,000	23,558	311	458
Taxes, etc. ³	(mill. kr)	1,148	3,943	6,398	343	557
Taxes, etc., ³ as per cent of total income		22.3	24.6	27.2		
Social expenditure, etc. ³	(mill. kr)	450	1,617	2,282	359	507
Social expenditure, etc., ³ as per cent of total income: of which old-age and disablement pensions	(mill. kr)	8.7	10.1	9.7		
Old age and disablement pensions, ³ as per cent of social expenditure		141	528	905	374	642
		31.3	32.7	39.7		171

¹ Population in 1938.² For the calculation of this income, see Appendix.³ For the amount of taxes and social expenditure, see Tables II and XIV.

social welfare expenditure, etc. The figures for taxes and social welfare expenditure are the figures used in the calculations of redistribution. From Table IV can be seen what has been included in taxes and social welfare expenditure.

The development is thus characterized by a considerably greater increase in taxes than in income. However, social-welfare expenditure accounts for a relatively larger share of total income after the war than it did before the war; but the share is lower in 1955 than in 1949. It will also be seen how the productive age groups constitute a smaller share than before the war (see Table IV), and that the older age groups have grown rapidly after the war. The expenditure on old-age and disablement pensions has, for that reason alone, accounted for a rising share of social welfare expenditure.

IV. MAXIMUM EQUALIZATION

Another aspect which it is also important to examine before going over to the calculations concerning redistribution is the degree of equalization of income during the period.

Whereas in the following calculations the health insurance limit is used, we shall here, on the basis of total assessed income (i.e. income less personal taxes and insurance), and this income with addition of personal taxes and insurance (income before tax), give a few data on the maximum equalization percentages. The maximum equalization percentage is found by calculating the amounts which are to be transferred if everybody is to get the same average income. The ratio of the amount transferred to total income is then the maximum equalization percentage. These percentages are as follows:

TABLE V
Maximum equalization percentages

	Before tax	After tax
1939	34.8	33.0
1949	28.1	28.1
1955	28.2	27.9

The table shows that there was a distinct drop in the equalization percentages between 1939 and 1949, but that there do not seem to have been any substantial changes from 1949 to 1955.

Now, this percentage cannot be said to be a very differentiated measure of the income equalization, therefore we have, on the basis of total assessed income (income after tax), illustrated the equalization in the income distribution by calculating how large a share of the assessed income the last (lowest) tenth of the number of income-tax payers has, the next tenth etc. The result is shown in Table VI below.

TABLE VI
Distribution of total assessed incomes by deciles of number of income-tax payers

Number of income-tax payers	Assessed income per mille				
	1939	1944	1949	1952	1955
1st decile	14	14	15	16	14
2nd decile	30	28	33	32	31
3rd decile	40	42	45	44	47
4th decile	50	55	60	58	59
5th decile	60	69	72	73	75
6th decile	75	86	91	95	94
7th decile	74	102	107	109	113
8th decile	127	124	127	133	131
9th decile	158	156	155	154	162
10th decile	352	324	295	286	274
of which:					
10th decile { 1st quintile	39	40	41	40	38
2nd quintile	42	41	40	44	39
3rd quintile	50	50	46	44	47
4th quintile	67	61	52	50	50
5th quintile	154	132	116	108	100
Total	1,000	1,000	1,000	1,000	1,000
1st-7th decile	134	139	153	150	151
5th-9th decile	514	537	552	567	575
10th decile	352	324	295	286	274
Total	1,000	1,000	1,000	1,000	1,000

It will be seen from this table that the distribution of personal income was a good deal more even in 1949 than in 1939, and that in the years after 1949 also there has been a tendency in the direction of a more even income distribution.

V. POPULATION AND INCOMES DISTRIBUTED ABOVE AND BELOW THE HEALTH INSURANCE LIMIT

After these introductory remarks we shall now consider, for the population above and below the health insurance limit, the development in the relevant aggregates: population, income,

taxes, and public services. Details of calculations are shown in the Appendix.

Whereas in the 1949 survey and the 1955 survey the health insurance limit (which relates to the assessed income) was chosen, a kroner 3,000 limit for the assessed income was chosen for the survey in 1938/39 (1937). An assessed income of kr. 3,000 was somewhat above the average, which was kr. 2,574 (adjusted: 2,141, cf. below), but below the health-insurance limit which may be estimated to have averaged about kr. 3,700. The following comparison has been made of the development in average income and in the health insurance limits.

	Average assessed income		Corresponding health insurance limits	
	kr.	1949 = 100	kr.	1949 = 100
1938/39	2,574	50	3,700 (3,000) ¹	45 (37) ¹
adjusted	2,141	41		
1949	5,168	100	8,200	100
1955	7,061	137	11,700	143

¹ The limit used in 1938/39.

It will be seen that there is a fair amount of agreement between the change in health insurance limits and in average assessed income. The figures used in the 1938/39 survey are not directly comparable with the following two surveys. Thus the 1938/39 survey does not cover persons with incomes below kr. 800 (including 0-incomes). If the figures are roughly adjusted for this, the assessed income, which in 1938/39 (1937) amounted to kr. 3,547 million must be increased by an estimated kr. 165 million to kr. 3,712 million, and the number of assessments, which was 1,377,000 must be increased by an estimated 357,000 to 1,734,000. Average assessed income, which can be compared with the 1949 and 1955 incomes, will be kr. 2,141 for 1938/39 (1937).

It will appear from what has been stated above that for number of assessments and for total assessed income we cannot compare the distributions above and below the health-insurance limits in 1949 and 1955 with the distributions above and below the kr. 3,000 limit. As I have estimated the health insurance limit in 1938/39 at about kr. 3,700, a rough adjustment of the figures for 1938/39 can be made by inter-polation so that the distributions will relate to the health insurance limit in 1938/39. Such adjustments have been made in Tables VII-X.

TABLE VII
Number of tax-payers (income assessments)

	Numbers (000's)					Percentage distribution				
	1938/39			1949	1955	1938/39			1949	1955
	Published figures (kr. 3,000 limit)	Adjusted for assessment below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit			Published figures (kr. 3,000 limit)	Adjusted for assessment below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit		
Above health insurance limit	342	342	228	274	293	25	20	13	13	14
Below health insurance limit	1,035	1,392	1,506	1,781	1,869	75	80	87	87	86
Total	1,377	1,734	1,732	2,055	2,162	100	100	100	100	100

TABLE VIII
Population

	Numbers (000's)				Percentage distribution			
	1938		1949	1955	1938		1949	1955
	per kr. 3,000 limit	Adjusted up to health insurance limit			per kr. 3,000 limit	Adjusted up to health insurance limit		
Above health insurance limit	982	662	794	852	26	18	19	19
Below health insurance limit	2,795	3,115	3,432	3,566	74	82	81	81
Total	3,777	3,777	4,226	4,418	100	100	100	100

TABLE IX
Assessed Income

	Million kr.					Percentage distribution				
	1938/39			1949	1955	1938/39			1949	1955
	Published figures (kr. 3,000 limit)	Adjusted for assessed income below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit			Published figures (kr. 3,000 limit)	Adjusted for assessed income below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit		
Above health insurance limit	1,935	1,935	1,559	3,564	5,140	55	52	42	34	34
Below health insurance limit	1,612	1,777	2,153	7,056	10,126	45	48	58	66	66
Total	3,547	3,712	3,712	10,620	15,266	100	100	100	100	100

TABLE X
Total income

	Million kr.					Percentage distribution				
	1938/39 ¹			1949 ²	1955 ²	1938/39			1949	1955
	Published figures (kr. 3,000 limit)	Adjusted for total insurance below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit			Published figures (kr. 3,000 limit)	Adjusted for total insurance below kr. 800 (kr. 3,000 limit)	Adjusted up to health insurance limit		
Above health insurance limit	2,273	2,273	1,840	4,735	7,107	56	54	44	36	37
Below health insurance limit	1,781	1,946	2,379	8,330	12,363	44	46	56	64	63
Total	4,054	4,219	4,219	13,065	19,470	100	100	100	100	100

¹ Excluding real property taxes, including social contributions.

² Including real property taxes, excluding social contributions.

The number of income assessments – shown in Table VII – increased by 19 per cent from 1937 to 1949, and thereafter by 5 per cent from 1949 to 1955. There seems to have been relatively the same share above the health insurance limit in the three years. This also seems to hold good of the total population, cf. Table VIII. Both assessed income and total income rose rapidly during the war, but the increase continued also after the war. The equalization of the income distribution is reflected in the fact that the share of total personal income earned by tax-payers with an average income above the health-insurance limit was more than 40 per cent in 1937, whereas the corresponding percentage in 1949 and 1955 had dropped to little more than one-third, cf. Tables IX and X.

VI. TAXES AND SOCIAL WELFARE EXPENDITURE

Table XI illustrates the distribution of taxes, etc. It will be seen that the greatest increase in taxes occurs in personal taxes. As both Kampmann, Bjorn Olsen and Ussing have included social welfare contributions in taxes, I have done so, too, in order to facilitate comparisons, cf. Appendix. If taxes above and below the health insurance limit (1938/39 the kr. 3,000 limit) are compared with the corresponding assessed incomes inclusive

TABLE XI
Distribution of taxes, etc.

	Mill. kr.			Index 1938/39 = 100		
	1938/39	1949	1955	1938/39	1949	1955
Personal taxes	394	1,738	2,974	100	441	755
Indirect taxes, real property taxes, etc.	641	1,996	3,148	100	311	491
Social contributions	113	209	276	100	185	244
Taxes, etc., total	1,148	3,943	6,398	100	343	557

TABLE XII
Taxes as per cent of total income

	1938/39	1949	1955
Above health insurance limit	30.7	34.5	40.0
Below health insurance limit	27.1	27.7	28.8
Total	29.0	30.2	32.9

of taxes and insurance, the result will be a rough measure of the increase in the progression of taxes. The following table will show that the progression seems to have been intensified during the period. This must be chiefly ascribed to personal taxes. The following table and comments from *Income and Wealth*, Series VI,¹ will give an impression of the steepening of the tax progression for personal taxes.

It will be seen from Table XIII that as a consequence of the rising level of nominal incomes a certain modification appears in the taxation of incomes below 15,000 kr., whereas for incomes above that amount the taxation percentage increased heavily in spite of the increase in nominal incomes. However, on account of the rule that all paid personal income taxes may be deducted, the taxation percentages for the highest income groups, as shown here, are considerably lower in Denmark than in most of the other west European countries. As the reduction in taxation percentages for incomes below 15,000 kr. do not correspond to the increase in the nominal income level, there has, from the point of view of real income, been an increase in the taxation percentage of all income groups.

To illustrate this, Col. (3) in the table shows the taxation percentage adjusted for change in income level from 1939 to 1952. If these taxation percentages are compared with the percentages in 1939, with due regard to the inaccuracy of the calculations, it will be seen that the incidence of taxation for the individual income groups has gone up by from 50 to 100 per cent from 1939 to 1952, and that it seems to have increased relatively most for the lowest and medium income groups. This may be explained by the following factors: (1) that the so-called personal allowances have not been changed at a rate corresponding to the increase in average incomes; (2) that during the years after 1940/41 there has been a tendency to keep the scales of taxation unchanged in spite of the increase in the level of nominal incomes; and (3) that the system of deducting paid personal taxes places a ceiling on the taxation percentage for the upper income brackets.

As a result of the special deductions which are made (in 1952) in the taxable incomes of old-age pensioners, etc., and the increasing importance of the allowances for the part of the income earned by married women introduced in 1946, the

¹ Kjeld Bjerke: *Changes in the Danish Income Distribution, 1939-52.*

TABLE XIII

Personal income tax as a percentage of personal income¹ in the individual income groups, 1939 and 1952

Assessed income (kroner)	1939 (1)	1952 (2)	1952 adjusted for change in income level (3)	Col. (3) as a percentage of Col. (1) (4)
	%	%	%	%
0-1,000	1.0	1.0	(2.8)	
1-2,000	3.5	2.8	(6.9)	
2-3,000	5.9	4.1	(10.9)	
3-4,000	7.7	6.3	12.6	164
4-5,000	9.9	7.7	20.5	207
5-6,000	12.0	8.8	21.9	183
5-7,000	13.8	10.2	23.9	173
7-8,000	15.3	11.6	25.2	165
8-9,000	16.5	12.8	27.7	168
9-10,000	17.8	14.1	30.7	172
10-15,000	20.2	17.6	32.3	160
15-20,000	22.8	22.9	36.2	159
20-30,000	25.2	28.6	42.3	168
30-40,000	27.6	33.6	43.5	158
40-50,000	29.3	36.0	45.6	156
50-75,000	31.1	39.0		
75-100,000	33.1	41.8	47.2	139
100-200,000	35.4	44.8		
200,000--	38.3	48.9		

¹ Estimated by adding taxes paid to taxable income.

TABLE XIV

Distribution of social welfare expenditure, etc.

	Mill. kr.			Index 1938/39 = 100		
	1938/39	1949	1955	1938/39	1949	1955
Old-age and disablement pensions	141	528	905	100	374	642
Expenditure of health insurance societies	64	162	228	100	253	356
Unemployment benefits	97	185	283	100	191	292
Other social welfare expenditure proper	100	112	203	100	112	203
Expenditure on health services	48	264	451	100	550	940
Other	—	366 ¹	212 ²	—	—	—
Social welfare expenditure, total	450	1,617	2,282	100	359	507
Social welfare expenditure, excl. 'Other'	450	1,251	2,070	100	278	460

¹ Subsidies and deficits of Government enterprises.

² Family allowances and deficits of Government enterprises.

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taxation percentages for 1952 will presumably be somewhat too high for the low incomes, and accordingly the figures tend to overestimate the increase in taxation which has taken place since 1939.

For the social welfare expenditure, shown in Table XIV, it has already been mentioned that the greatest absolute increase occurs in old-age and disablement pensions, whereas the greatest relative increase occurred in health expenditure.

Among the social benefits, such benefits as unemployment benefit and municipal relief will be of a somewhat different nature than the other social benefits. The amount of unemployment benefits naturally varies with the employment situation. It must therefore be borne in mind that, e.g., unemployment benefits in 1938/39 constituted a greater share of all social benefits than during the two post-war years, cf. the following table.

Unemployment benefit as a percentage of all social benefits

	per cent
1938/39	22
1949	11
1955	12

VII. REDISTRIBUTION

To illustrate how the use of the health insurance limits influence the amount of redistribution, the following table shows the maximum equalization percentages and the percentages that result when the health insurance limits are used.

Under these circumstances full equalization thus becomes somewhat lower than maximum equalization, and this, of

TABLE XV
Maximum and full equalization (at health insurance limit)

	Assessed income plus taxes, etc. (mill. kr.)	Maximum equalization		Assessed income plus taxes, etc. (mill. kr.)	Full equalization at health insurance limit			
		Mill. kr.	Per cent		Mill. kr.	Per cent		
1939	5,029	1,750	34·8	4,054	{ 1,266 1,151	31·2 28·4	Kr. 3,000 limit 1938/39 health ins. limit	
1949	12,800	3,595	28·1	13,065	2,993	22·9		1949
1955	19,000	5,354	28·2	19,470	4,468	22·9		1955

course, also influences actual redistribution where the health insurance limits are used. The rather rough estimate made for 1938/39 does not seem to change the amount of redistribution very much; nor was this to be expected. In calculating actual redistribution I have used the same method as in the two previous surveys. The method will appear from Table XVI.

The figures for personal income which have been used in the calculations for 1949 and 1955 – and which have been used as a distribution criterion – have been adjusted for the fact that the relation between declared income and actual income is not the same for the different social groups. Hereby the declared incomes have been raised by an average of just above 20 per cent. A corresponding adjustment was not made in the calculation of the redistribution for 1938–39.

The table shows how the above-mentioned principle of neutrality has been carried through. It is accordingly assumed that the part of taxes not spent on social services is distributed in proportion to income, so that the difference between the total amount of taxes and the taxes calculated in this way is an expression of the taxes available for the financing of social services. The difference between social benefits received and the amounts of tax spent on social services calculated above will thus be an expression of total redistribution by way of social policy and tax policy.

If social benefits are then distributed in proportion to income, the difference between these amounts and the actual social benefits received will constitute an expression of redistribution by way of social policy, whereas the rest of the redistribution must be ascribed to tax policy and consequently be an expression of the influence of tax progression on redistribution.

It will be seen from Table XVII that the amount of redistribution in proportion to full equalization seems to have been the same before the war and in 1949. In 1955, however, redistribution seems to have made up a relatively larger share of the maximum equalization percentage. Compared with personal income the relative share of redistribution does not seem to have changed. There seems to have been an appreciable change in the part of redistribution that took place by way of social policy compared with the part attributable to tax policy. Before the war redistribution could almost exclusively be ascribed to social policy.

TABLE XVI

Redistribution 1938/39, 1949 and 1955 (mill. kr.)

	Above health insurance limit (1938/39: assessed income above kr. 3,000)			Below health insurance limit (1938/39: assessed income below kr. 3,000)			Total population		
	1938/39	1949	1955	1938/39	1949	1955	1938/39	1949	1955
Total estimated income ¹ ²	2,273	5,800	8,764	1,781	10,200	14,794	4,054	16,000	23,558
Taxes, total	697	1,632	2,840	527	2,311	3,558	1,224 ³	3,943	6,398
Taxes less total expenditure on social services, by total income ¹	434	843	1,531	340	1,483	2,585	774	2,326	4,116
Difference (taxes for social services)	263	789	1,309	187	828	973	450	1,617	2,282
Social services received	19	162	156	431	1,455	2,126	450	1,617	2,282
Taxes for social services	263	789	1,309	187	828	973	450	1,617	2,282
Redistribution by way of social policy and tax policy	- 244	- 627	- 1,153	244	627	1,153	0	0	0
Social services received	19	162	156	431	1,455	2,126	450	1,617	2,282
Social services distributed by income	252	586	849	198	1,031	1,433	450	1,617	2,282
Redistribution by way of social policy	- 233	- 424	- 693	233	424	693	0	0	0
Social services (taxes) distributed by income	252	586	849	198	1,031	1,433	450	1,617	2,282
Taxes for social services	263	789	1,309	187	828	973	450	1,617	2,282
Redistribution by way of tax policy	- 11	- 203	- 460	11	203	460	0	0	0

¹ For the calculation of total income, see Appendix.² For 1938/39 the income has not, in this estimate, been increased to allow for tax evasion, etc.³ Including company taxes kr. 76 million.

TABLE XVII
The extent of redistribution

	Assessed income plus taxes, etc. (mill. kr.)	Full equalization (mill. kr.)	Redistribution (mill. kr.)	Redistribution in proportion to	
				Full equalization	Assessed income plus taxes, etc.
1938/39	4,054	1,266 ¹ 1,151 ²	244	19 ¹ 21 ²	6
1949	13,065	2,993	627	21	5
1955	19,470	4,468	1,153	26	6

¹ Kr. 3,000 limit.

² Health insurance limit.

TABLE XVIII
Above health insurance limit (1938/39: kr. 3,000 limit)

	1938/39		1949		1955	
	Mill. kr.	Per cent	Mill. kr.	Per cent	Mill. kr.	Per cent
Redistribution by way of social policy	233	95.5	424	67.6	693	60.1
Redistribution by way of taxes	11	4.5	203	32.4	460	39.9
Total redistribution	244	100.0	627	100.0	1,153	100.0

TABLE XIX
Net redistribution

	1949 (mill. kr.)	As per cent of total personal income	1955 (mill. kr.)	As per cent of total personal income
Self-employed farmers	- 100	4.7	- 235	8.0
Other self-employed persons	- 315	8.3	- 495	10.6
Employees	- 135	1.6	- 128	1.0
Persons outside the labour force	550	35.3	858	30.3

In 1949 almost 70 per cent of the redistribution of income actually carried out could be ascribed to social policy and in 1955 only 60 per cent. The steep progression in personal income taxes explains why redistribution by way of tax policy has become increasingly important.

For 1949 and 1955 it is possible to make certain comparisons of net redistribution in the four social groups referred to above.

It has primarily been persons outside the labour force who

have benefited from the redistribution, and it may be added that this redistribution has taken place almost exclusively by way of social policy. Compared with these incomes, redistribution seems to have accounted for a smaller share in 1955 than in 1949 for these groups. This is due to the fact that for these the income and taxes for social benefits make up a considerably greater share of total income in 1955 than in 1949.

It will be seen that both in absolute terms and in proportion to their income, self-employed persons contribute most to redistribution (net), and that their contributions have grown from 1949 to 1955, whereas the contributions of employees have declined.

For 1955 it is possible to give a further illustration of redistribution by way of social policy and tax policy, respectively, for the individual social groups above and below the health insurance limit.

It is interesting to see from Table XX how also self-employed farmers below the health insurance limit contribute considerable amounts; this is due to the fact that they pay a relatively large amount of tax compared with their incomes, i.e. they have average incomes just below the health insurance limit. It may also be due to the fact that the special calculation of indirect taxes has resulted in too large amounts for farmers. For employees the net redistribution is relatively inconsiderable, persons above the health insurance limit contributing kr. 481 million and persons below the limit receiving kr. 353 million. All three groups contribute to persons outside the labour force through redistribution by way of social policy, whereas only self-employed persons make net contributions to redistribution by way of tax policy. Through the tax system both employees and persons outside the labour force benefit from redistribution. As already mentioned, persons outside the labour force receive most of the redistribution by way of social policy.

It was mentioned in the introduction that the same method of calculation is used in this study as in the two previous studies. It may be asked whether these calculations are correct in all respects. In the breakdown in Table XVI of taxes not spent to pay for social benefits the income concept used is assessed income, including taxes and insurance (increased by just above 20 per cent as already mentioned); but these incomes are redistributed incomes, a large part of the social benefits

TABLE XX

Redistribution above and below the health insurance limit for the individual social groups (mill. kr.)

	Self-employed farmers	Other self-employed	Employees	Persons outside the labour force	Total
Redistribution by way of social policy					
Above health insurance limit	— 76	— 270	— 312	— 35	— 693
Below health insurance limit	— 75	— 67	16	819	693
Total	— 151	— 337	— 296	— 784	—
Redistribution by way of taxes					
Above health insurance limit	— 59	— 210	— 169	— 22	— 460
Below health insurance limit	— 25	52	337	96	460
Total	— 84	— 158	168	74	—
Total redistribution					
Above health insurance limit	— 135	— 480	— 481	— 57	— 1,153
Below health insurance limit	— 100	— 15	353	915	1,153
Total	— 235	— 495	— 128	858	—

Point of departure: Neutral policy, i.e. taxes not spent on social services are assumed to have been paid as a fixed percentage of total personal income.

received being included in assessed income. In the mentioned redistribution it probably cannot be correct to use the redistributed income as a criterion of distribution, since this presumably involves that, e.g., an old-age pensioner will not only 'contribute' the transfer he has received, but also a proportional tax on it. Therefore earnings should be used as a criterion of distribution (neutral distribution), and an approximate expression of this concept will be obtained by deducting from the incomes used some of the social benefits included in the assessed incomes. Not all social services are included, thus expenditure on health services and on municipal relief, etc., are not to be deducted.¹

¹ In the neutral distribution of the social expenditure the above-mentioned income concept has also been used, which is consistent if the object is to isolate the influence of the progression (i.e. the tax policy) on the redistribution. Purely from the point of view of social policy it might be valuable to compare the actual expenditure on social services with a distribution by the size of the population and not by personal income. However, I shall not press this point.

In the following the mentioned change in the calculations has been made; in the calculations of the importance of the redistribution I have based the neutral distribution on 'earnings' rather than on the redistribution incomes.

Both calculations will appear from Tables XXI and XXII.

There is no appreciable difference in total redistribution; but naturally the change influences the distribution between the part of the redistribution that is attributable to tax policy and the part that is attributable to social policy. Because earnings rather than redistribution incomes are used as a basis for the estimates of redistribution of income, the relative share of redistribution by way of social policy will rise because particularly persons outside the labour force, who are mainly recipients of the social benefits, will have a lower income as a basis. For 1955 the percentage goes up from about 60 to about 68.

Finally, a calculation has been made of redistribution in 1955

TABLE XXI

Redistribution 1949 and 1955 (mil. kr.)

	Above health insurance limit				Below health insurance limit			
	1949		1955		1949		1955	
	I ¹	II ²	I ¹	II ²	I ¹	II ²	I ¹	II ²
Redistribution by way of social policy	- 448	- 424	- 723	- 693	+ 448	+ 424	+ 732	+ 693
Redistribution by way of tax policy	- 145	- 203	- 350	- 460	+ 145	+ 203	+ 350	+ 460
Total redistribution	- 593	- 627	- 1,082	- 1,153	+ 593	+ 627	+ 1,082	+ 1,153

¹ Taxes not spent on social services, distributed by total income, less the part of social service included in the income.

² Taxes not spent on social services, distributed by total income.

TABLE XXII

Redistribution 1949 and 1955 (percentage distribution)

	1949		1955	
	I ¹	II ²	I ¹	II ²
Redistribution by way of social policy	75.5	67.6	67.7	60.1
Redistribution by way of tax policy	24.5	32.4	32.3	39.9
Total	100.0	100.0	100.0	100.0

¹ Taxes not spent on social services, distributed by total income, less the part of social services included in the income.

² Taxes not spent on social services, distributed by total income.

for the four social groups, cf. Table XXIII. If the result of this table is compared with the corresponding results in Table XX, it will be seen that, as was to be expected, employees receive more by way of tax policy according to this new (neutral) distribution by income, and that persons outside the labour force now contribute an amount (kr. 121 million) by way of tax policy, whereas according to the original (neutral) distribution by income they received an amount (kr. 74 million).

TABLE XXIII

Redistribution above and below the health insurance limit for the individual social groups (mill. kr.)

	Self-employed farmers	Other self-employed	Employees	Persons outside the labour force	Total
Redistribution by way of social policy					
Above health insurance limit	- 81	- 285	- 329	- 37	- 732
Below health insurance limit	- 84	- 75	+ 1	+ 890	+ 732
Total	- 165	- 360	- 328	+ 853	—
Redistribution by way of taxes					
Above health insurance limit	- 46	- 167	- 121	- 16	- 350
Below health insurance limit	+ 1	+ 74	+ 380	- 105	+ 350
Total	- 45	- 93	+ 259	- 121	—
Total redistribution					
Above health insurance limit	- 127	- 452	- 450	- 53	- 1,082
Below health insurance limit	- 83	- 1	+ 381	+ 785	+ 1,082
Total	- 210	- 453	- 69	+ 732	—

Point of departure: Neutral policy, i.e. taxes not spent on social services are assumed to have been paid as a fixed percentage of total income, less the part of social services included in the income.

In conclusion, it should be pointed out that however valuable studies of redistribution may be, it seems that more and more people in the various countries have come to realize that we are approaching the limits of redistribution – and that in future it

must be of greater interest to create favourable conditions for an increase of the national product. The main emphasis in future economic policy must therefore be placed on, e.g., improved education and training and an increase of investments in order to further the growth of production. After that comes the question of how to redistribute the cake.

APPENDIX

This appendix gives an outline of the statistical basis for the estimates which are contained in the text.

Number of persons

From the 1955 breakdown of number of income-tax payers by main social groups and on the basis of information from 1947/48 concerning the average number of children per bread-winner for the individual social groups, an estimate has been made of the number of children within each of these groups. The total number of children, etc., has been determined as follows on the basis of information from the 1955 population census.

	1955
Total population	4,448,000
Married women	1,032,000
Number of tax-payers	2,162,000
Handicapped persons under special care	30,000
	3,224,000
Difference - children, etc.	1,224,000

Married women have been distributed by number of tax-payers; however, special account has been taken of information from the 1955 population census concerning number of married women for the group of persons outside the labour force. In this way, a distribution by industry for the total population is obtained. For income-tax payers a distribution can be made for 1955 by persons above and below the health insurance limit on the basis of information concerning the income distribution for the tax-payers broken down by assessed income (income after taxes, etc.).

This distribution for number of tax-payers above and below the health insurance limit has then been used as a basis of distribution for married women and children (subsidiary persons). This gives the result shown in Table I for the four social groups.

Health insurance limits

In estimating the health insurance limits interpolation has first been made to health insurance limits for the calendar year 1955. Then account has been taken of variations in the average number of children in the individual social groups. The health insurance limits for the individual social groups estimated in this way are as follows:

	kr.
Self-employed farmers	11,300
Other self-employed persons	11,700
Employees	11,980
Persons outside the labour force, etc.	11,100

TABLE I

The population above and below the health insurance limit, 1955 (thousands)

	Above health insurance limit	Below health insurance limit	Total
<i>Tax-payers</i>			
Self-employed farmers	29	154	183
Other self-employed persons	68	133	201
Employees	181	1,136	1,317
Persons outside the labour force	15	446	461
Total	293	1,869	2,162
<i>Subsidiary persons</i>			
Self-employed farmers	69	317	386
Other self-employed persons	129	209	338
Employees	351	1,058	1,409
Persons outside the labour force	10	113	123
Total	559	1,697	2,256
<i>All persons</i>			
Self-employed farmers	98	471	569
Other self-employed persons	197	342	539
Employees	532	2,194	2,726
Persons outside the labour force	25	559	584
Total	852	3,566	4,418

Incomes

On the basis of data for 1956 concerning the number of tax-payers, their assessed income and total income¹ by income groups (assessed income), an estimate can be made for 1955 of the total income broken down by income groups (assessed income). Assessed income was kr. 15,266 million and the amount added for personal taxes and insurance was about kr. 3,734 million. The breakdown by social groups will be found in Table II.

TABLE II

Assessed income plus taxes and insurance above and below the health insurance limit, 1955

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	598	1,269	1,867
Other self-employed persons	2,264	1,156	3,420
Employees	3,761	7,710	11,471
Persons outside the labour force, etc.	319	1,923	2,242
Total	6,942	12,058	19,000

¹ The difference represents taxes paid (excl. excise taxes), contributions to health and unemployment insurance, etc., payments on life insurance policies, etc., and a special allowance of up to kr. 400 granted to employees.

Now, it will be known that there is a considerable difference between the estimates of personal income which can be made on the basis of the income assessed by the tax authorities and the actual personal income.

	Per cent
Self-employed farmers	45
Other self-employed persons	35
Employees	13
Persons outside the labour force, etc.	25

To ensure continuity I have used the same percentages as Ussing did in his study and I have also used the same percentages irrespective of size of income. Finally, real property taxes have been added to these figures in accordance with the distribution which will be discussed in the following.

The final total incomes should accordingly be as follows:

TABLE III

Total income

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	942	1,989	2,931
Other self-employed persons	3,104	1,569	4,673
Employees	4,314	8,804	13,118
Persons outside the labour force	404	2,432	2,836
Total	8,764	14,794	23,558

According to the national income estimates personal incomes in 1955 amounted to kr. 25,200 million. There is thus a difference of kr. 1,600 million, which may, *e.g.*, be due to the inaccuracy of the calculations and to the fact that the *cost concept* of tax statistics is a wider one than that used in the national income estimates. It may be added that a discrepancy of approximately the same magnitude was found in the estimates for 1949 made by Ussing.

Taxes

The following taxes and contributions have been included for 1955:

	mill. kr.
Personal taxes	2,974
Real property taxes	470
Indirect taxes and profits from public utilities	2,678
Social contributions	276
Total	6,398

Personal taxes paid in 1955 have been estimated on the basis of the above-mentioned information from 1956 concerning the difference between total income and assessed income: for insurance, the biggest non-tax item, we have used some data from older sources. The total distribution of personal taxes by the four social groups becomes as follows:

TABLE IV

Taxes on income and wealth

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	129	178	307
Other self-employed persons	647	167	814
Employees	762	792	1,554
Persons outside the labour force, etc.	76	223	299
Total	1,614	1,360	2,974

A breakdown of taxes on real property by self-employed farmers and others is made by the Statistical Department. For 1955 this breakdown was as follows:

	1955 mill. kr.
Farmers	224
Others	246
Total	<u>470</u>

On the basis of information derived from a study of the consumption and saving patterns of wage and salary earners, the real property taxes paid by the non-farm groups have been distributed on the basis of total personal income, after adjustment has been made for tax evasion.

On the basis of the previous two Danish studies it has only been possible to make a very rough distribution of indirect taxes; but, thanks to the consumer survey for wage and salary earners for 1955, already mentioned, the possibilities for making a distribution of these taxes by income groups are now somewhat better. The calculations do not comprise all indirect customs and excise duties and cover only wage and salary earners. Customs duties have only been included in so far as they constitute fiscal duty on coffee, tea, tobacco and beverages. Also, only the part of taxes on motor vehicles falling on private passenger transport has been included. The exchange tax which, as part of the dollar premium scheme, which was still in force in 1955, was payable on the imports of, *e.g.*, most passenger cars, has been included as an excise tax. If we apply the percentages available for indirect taxes compared with the income of wage and salary earners to all social groups, a procedure which may be dubious, the result totals just over kr. 1,700 million.

At a rough estimate the result should have been about kr. 2,000 million, so that the grossed-up figures are rather too low.

In the calculations Ussing made he included the total amount of customs duties and the total amount of taxes on motor vehicles. To ensure comparability I think that it is necessary to do the same thing here, although from a theoretical point of view it might be argued that these excise taxes should not be included in an estimate of this kind. The result for 1955 will then be a total amount of just over kr. 2,600 million. (2,631 million). The difference between the kr. 2,600 million and the kr. 1,700 million, *i.e.* kr. 900 million, I have distributed in the same way as total income.

As in Ussing's study for 1949, taxes also include employers' contributions to social security schemes. These contributions have also been distributed in proportion to income.

Concurrently with the indirect taxes the profits of municipal enterprises have been included. These profits have been distributed in the following way: The part of the profits derived from business consumption of gas and electricity, an estimated 60 per cent, has been distributed on the basis of total personal income. The remaining 40 per cent has been distributed by number of persons in urban industries, which have first and foremost contributed to these profits. For the direct taxes, including profits of public enterprises and taxes on real property, we then get the following total distribution for the four social groups:

TABLE V

All excise duties, including real property taxes 1955

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	186	368	554
Other self-employed persons	406	191	597
Employees	566	1,073	1,639
Persons outside the labour force, etc.	55	303	358
Total	1,213	1,935	3,148

Finally, there is the distribution of the social contributions. For 1955 these contributions total kr. 276 million. Contributions to health and disablement insurance have been distributed by number of adult persons in the groups below the health insurance limit, and contributions to unemployment insurance funds have been distributed by number of taxpayers above and below the health insurance limit in the group of employees. Table VI shows the resulting distribution of social contributions:

TABLE VI

Social contributions, 1955

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	—	20	20
Other self-employed persons	13	16	16
Employees	13	189	202
Persons outside the labour force, etc.	—	38	38
Total	13	263	276

The following social benefits and subsidies have been included:

Social benefits and subsidies, 1955

	mill. kr.
Old-age and disablement pensions	905
Expenditure of health insurance funds	228
Milk subsidy, mother's help, other assistance to mothers, school lunches, etc.	43
Unemployment insurance	283
Municipal and poor relief, and other assistance to single mothers	160
<hr/>	
Total	1,619
Health services	451
Family allowances	156
Deficit of public enterprises	56
<hr/>	
Grand total	2,282

Concerning the distribution of these items, the following should be mentioned: For old-age and disablement pensioners the main part of the expenditure has been posted to persons outside the labour force, etc., below the health insurance limit; however, married women whose husbands do not receive old-age or disablement pension have been taken into account. Of the total amount of kr. 905 million, kr. 33 million has been distributed by number of adult members of the health insurance societies who are economically active. The expenditure of health insurance societies has been distributed by the number of persons in the individual industrial groups who are below the health insurance limit. The same thing has been done for the expenditure on milk, free milk and other assistance to families with small children. The expenditure on the school-lunch scheme is distributed by number of children above and below the health insurance limit. Practically all the payments made under the unemployment insurance system have been allocated to employees with an average income below the health insurance limits.

In the distribution of expenditure on municipal and poor relief, assistance to single mothers and other emergency relief by the individual social groups the same procedure as the one Ussing used has been used for reasons of comparability. The distribution is thus made by number of breadwinners having an assessed income below kr. 5,000 within certain sub-groups of employees (workers in agriculture, shop personnel and workers in urban industries) and persons outside the labour force, etc., excluding old-age and disablement pensioners.

For health services, the distribution has been made by number of persons.

Family allowances have been included under social welfare expenditure, the allowances paid in 1955 amounting to kr. 156 million. This amount has been distributed by the individual social groups by number of children, allowance being made for the fact that, under the rules in force in 1955, the allowance per child declined as taxable income rose, falling away completely at a taxable income of kr. 16,000.

For public enterprises the deficit has been distributed by total income less personal taxes (i.e. by disposable income).

The total distribution of social expenditure above and below the health insurance limit will be seen from the following table.

TABLE VII

Social benefits and subsidies received

	Above health insurance limit (mill. kr.)	Below health insurance limit (mill. kr.)	Total (mill. kr.)
Self-employed farmers	15	118	133
Other self-employed persons	31	85	116
Employees	106	869	975
Persons outside the labour force, etc.	4	1,054	1,058
Total	156	2,126	2,282