

CHANGES IN DANISH INCOME DISTRIBUTION 1939-52¹

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INTRODUCTORY REMARKS

THE upheavals brought about by the war and the events of the early post-war years have, in Denmark as in most other countries, inevitably exerted a considerable influence upon the distribution of income, and these changes have quite naturally created a need for a closer study of the problems concerned with the distribution of income by size.

In spite of the fact that there seems to have been a considerable levelling in the distribution of personal incomes since before the war, they nevertheless continue to be rather unevenly distributed, and this produces social and political contrasts. Apart from the social tensions created, the problems raised by an uneven income distribution are normally considered to be closely related to the rate of saving and consequently to total personal saving. Further attention will also be drawn to the role of government intervention in the field of income distribution by way of fiscal policy, etc.

However, on account of the peculiarities of the Danish system of taxation, it has only been possible in this study to illustrate this complex of problems in part. The Danish taxation statistics have been based on data for assessed incomes, which – as a consequence of the special rules in Danish taxation legislation concerning deduction of paid personal taxes from declared incomes – corresponds fairly closely to disposable incomes.

In this paper I have attempted a study, on the basis of assessed incomes only, of the changes in total income distribution as well as of the changes for individual industrial groups; in order to get an idea of how structural changes affect income distribution, I have also attempted an evaluation of the influence which the redistribution of income by way of fiscal policy, etc., has had on income distribution.

However, a very important aspect of the whole problem

¹ I am indebted to Mr. Ussing of the Statistical Department for valuable assistance in the compilation of this paper.

discussed in this paper, viz. the relation between total output and total consumption and changes in the distribution of income, has been ignored. The main reason for this deliberate exclusion is that I have considered the period surveyed to be too short to give meaningful results with regard to this basic relationship.

I. THE STATISTICAL BASIS

1. *Taxable income*

An analysis of the changes in the distribution of personal incomes and the causes of these changes will, naturally, depend on the statistical material available. By way of introduction it should be mentioned that the changes in income distribution may be illustrated on the basis of total income including and excluding personal taxes. Only if both income distributions are available will it be possible to illustrate the extent of the redistribution of income by way of fiscal policy, etc.

Since this analysis must be based on the available income statistics, it will be necessary to examine the concept of income used in the statistical publications on the distribution of income. The basis of the Danish statistics of income distribution is taxable income. Under the existing legislation, tax-payers are entitled to deduct all direct taxes and rates paid, certain expenses on life assurance, and interest on debt; at the moment, wage-earners are further entitled to a fixed allowance of kr. 400. It will be seen that the income concept derived in this way comes close to the concept of personal disposable income used in national accounting; in practice, however, there will, on account of the importance of tax evasion, be considerable difference between these two aggregates.

To illustrate the content of this income concept, an extract from the income tax return is annexed.¹ As will be seen, net income is made up of four categories: (1) salaries, wages or other remuneration for work done, and incomes of proprietors and owners; (2) dividends and interest on investments, etc.; (3) transfers received (disablement and old-age pensions, relief payments, etc.); and finally (4) item 9: profits derived from speculative sales of real property, securities or other property, and profits derived from sales of businesses, patents and trade marks, machinery and equipment, etc. This last group consists

¹ Addenda A, p. 149 below.

primarily of payments labelled as capital gains in national income statistics. The deductions have already been mentioned.

Disregarding for the moment tax evasion, which will be discussed later, we may now ask how close assessed income comes to the concept of personal disposable income normally used in national income statistics. This depends partly on the taxable income concept and partly on the content of the deductions. It has been mentioned, for example, that some items of capital gains are included in income. This means that a close correspondence between an income distribution by disposable income and one by assessed income cannot be expected, since capital gains may well be distributed very differently from the distribution of income apart from capital gains. With regard to the capital gains included there has been some change in Danish legislation during the period under review. Prior to 1939, the taxation of capital gains—apart from the cases where the sale of real property and securities was the profession of the persons concerned—was confined to cases where the sale was made for the purpose of speculation. This was construed to mean that, in the case of sales of real property, shares, and similar negotiable instruments, speculation was considered to exist when the sale was effected within two years after the acquisition unless there was satisfactory evidence to the contrary.

In the Provisional Act of 22nd December 1939, which is still in force to a great extent, important changes were made in these rules. In the first place it broadened the scope of what was to be regarded as income when a property was realized. Thus it may be mentioned that with certain exceptions profits derived from the sale of machinery and equipment, goodwill, patents and trade marks were regarded as income. Secondly, the qualification that the profits were to be regarded as income only when shares were sold for the purpose of speculation was rescinded, though only for the war years. Proceeds from the sale of shares were therefore to be included in income whether the shares were bought for speculation or for permanent investment.

With regard to the fixing of depreciation allowances for income-tax purposes, it may be mentioned that the method of calculation deviates considerably from the principles used in the Danish national income statistics, which are based on the replacement cost and allow for the (varying) annual real wear and tear. According to the rules followed by the tax authorities

depreciation is usually written off in equal parts of the price of acquisition during the period of use. The taxation authorities have approved certain rates of depreciation which allow for the presumed periods of use for the different capital goods.

Apart from these rules for ordinary depreciation, Danish taxation legislation has, since 1942/43, contained rules governing extraordinary tax-free depreciation on the acquisition of ships, new machinery, etc. These rules have been of importance particularly to companies, but also many proprietors and owners, especially in agriculture and handicrafts, have benefited from them. As, however, no material is available for a detailed analysis of the influence of these fast write-offs on the changes in the income distribution, we have not been able to allow for them in the subsequent estimates. Finally, during the period 1942-48, proprietors and owners were permitted to make tax-free appropriations, proportionate to the amounts which, on account of the difficult supply situation, could not be used in the normal way for maintenance and modernization of the enterprises; the amounts were then taxed later when they were used for this purpose.

In the national income statistics inventory changes are stated at constant prices whereby capital gains - or losses - are not included. In making their returns tax-payers have been permitted - since the war years - to choose among the following valuations of the inventories: at market prices, at invoice prices, or at 1939 prices with the addition of a fixed percentage, and it is not necessary to use the same prices at the beginning and end of the year or for the whole inventory. On the other hand, the prices which have been used at the end of the year must be used at the beginning of the following year. These principles of valuation do not eliminate capital gains or losses in cases where the same price was not used at the beginning and end of the year. In this way the taxable incomes are affected by the valuations made by business.

As regards the deductions and the transfers received, which play a part in the determination of the assessed income, the following should be mentioned. The rule that insurance premiums may be deducted only up to a certain amount will, of course, involve that - quite apart from what has been mentioned above - complete agreement between assessed income and disposable income is not to be expected. Moreover, certain

capital transfers are regarded in the tax returns as income and consequently included in the assessed income: terminable and reversionary annuities are examples. If we want to approach the concept of assessed income to that of disposable income, these capital transfers should not be included, but in return the corresponding premiums should not be deducted.

There seems to be agreement between the national income estimates and the tax returns as regards pensions to retired civil servants, etc. In both of them these pensions are regarded as income, whereas insurance premiums are deducted. Actually, pensions might be regarded to some extent in the same way as terminable and reversionary annuities. Private pensions are, in fact, regarded in this way. However, where the person entitled to the pension does not pay the whole premium (and this applies to government pensions) part of the pension may be regarded as a transfer proper.

Finally, it should be mentioned that declared income includes the value of payments in kind (such as free board and lodging, farmers' consumption of own produce, rent of owner-occupied houses, etc.). These imputed values have generally been estimated very conservatively.

2. *Tax evasion*

It was mentioned above that complete agreement is not to be expected between disposable income and assessed income because they differ conceptually. Essential as this factor is, it is undoubtedly overshadowed by another factor, namely tax evasion. It is well known that people generally under-estimate their incomes in the tax returns, and that this is especially true of proprietors, owners, etc. This difference in the relative importance of tax evasion will affect the income distribution because the income distribution of proprietors, owners, etc., deviates from that of other social groups. On the whole there may be a tendency for the upper income brackets to be recorded with too small amounts in the distribution indicated by the statistical data. If so, the income distribution will appear to be more equal than it actually is. If the ratio between the individual industries or social groups should be shifted, the fact that tax evasion is not of the same importance in all the groups will influence the result of such a change as recorded in taxation statistics.

So far it has been assumed that tax evasion is unchanged over

time; however, this does not seem to be a very realistic assumption. Should the rate of evasion change in time this will also affect the income distribution shown by the tax statistics. Let us assume, for instance, that an increase in the progressiveness of the income tax causes tax-payers in the upper income brackets to increase their rate of evasion; this will, *ceteris paribus*, have the result that the income distribution will show a tendency towards a levelling of incomes which does not exist. It is therefore desirable to have reliable estimates on a national income basis, which would make possible a closer study of changes in total personal income within industrial groups; but even on this basis it would not be possible to evaluate accurately the distribution of transfer and interest payments. However, it will be seen from the table given at the beginning of Chapter 3 that the trends in net national income and income before taxes estimated on the basis of taxation statistics seem to have been largely parallel during the period from 1939 to 1952, so that the volume of tax evasion as a whole must be supposed to have been of very much the same relative importance at the beginning and the end of the period under review; on the other hand, behind this apparent parallelism in the trends of these two series there may, of course, be great differences for the individual industrial groups. In discussing the causes of the changes in the income distribution the effects of tax evasion must, therefore, be borne in mind.

3. *The persons assessed*

It was mentioned above that the survey is concerned with individuals. The units are persons liable to income tax, i.e. all persons above the age of 16 excluding married women, who are taxed with their husbands. A distinction is also made between heads of households and dependants.¹ Heads of households are defined, for taxation purposes, as married men and such widowers, widows, and judicially separated or divorced men and women, as have a separate establishment or are under a duty to support children under 16, and unmarried men or women being under a duty to support children who live with them and having a separate establishment. All others are recorded as dependants.

The tax-payer has certain shortcomings as a unit designed to illustrate the income distribution comprising heads of households

¹ Literally, supporters and non-supporters.

as well as dependants. If we aggregate heads of households and dependants without weighting them – as is usually done – we get a misleading impression of the income distribution from the point of consumption and saving. On the other hand, it is natural to use assessed persons without weighting when considering the income distribution from the point of the earner's income.

Finally, it should be noted that because the taxation authorities are relatively less interested in tax-payers in the very low income brackets, the data for 1939, when prices and incomes were low, covers a comparatively small number of persons.

II. THE INCOME DISTRIBUTION 1939, 1944, 1949 AND 1952

1. *Choice of years*

In order to study changes in income distribution since before the war, we have chosen to consider in considerable detail four different years and to leave the rest of the years largely out of account.

The first complete survey of the income distribution published by the Statistical Department covered the year 1938, and from 1939 onwards the scope of the surveys has been extended to include a fairly detailed breakdown of tax-payers by professions; accordingly, 1939 seems to be the most suitable starting point for these studies. The next year chosen was 1944. The original idea had been to choose 1945 as the last of the war years, but the exchange of bank notes and an extraordinary declaration of property combined with a compulsory registration of bank deposits, bonds and shares which took place during the summer of 1945 had the effect that tax evasion seems to have been much smaller in 1945 than before and after, and therefore, paradoxical as it may seem, the year is not quite suitable for comparisons with other years. 1949 was chosen because in a way that year marks the end of the first part of the post-war period. Finally, 1952 was chosen as the last year for which data in sufficient detail are available.

It should be noted that although compared with other inter-war years, 1939 was a prosperous year, agricultural incomes were at a rather low level, if higher than at the beginning and middle of the thirties. The rate of unemployment in the non-

agricultural industries was considerably higher than in the other three years chosen. When comparing urban industries and agriculture we must bear in mind, however, that before the war the difference in price levels was presumably greater than it is now, so that the fact that there is a considerable difference in nominal income does not mean that there is a corresponding difference in real income.

Of the other years 1944 was strongly influenced by war conditions; both 1949 and 1952 were characterized by relatively favourable trade conditions, especially for agriculture, and although the rate of unemployment during these two years was somewhat higher than during the other post-war years, the number of unemployed was still at a much lower level than during the pre-war years.

We are here concerned only with the income distribution of individuals, and with the distribution of assessed incomes only. During the period 1939 to 1952 incomes have increased considerably; in 1939 the average assessed income was 2,300 kroner and in 1952, 6,300 kroner, which means that there has been a total increase of 170 per cent. Of this increase, however, only a minor part reflects an increase in real incomes; thus the net national income per capita in constant prices went up by only 8 per cent from 1939 to 1952. But there seems to be little doubt that, on the whole, prosperity was more widespread in 1952 than in 1939.

The general increase in nominal incomes naturally affects the income distribution so that an appreciable number of assessed incomes have been shifted into higher income brackets (see Table XXIX). The distribution is also influenced by the fact that increases in the incomes earned in different industries have not been the same and that the number of tax-payers has not been constant in the different industries (there has been a decline in the agricultural labour force, for example). We can, therefore, distinguish between what might be called increase of level changes, and changes caused by redistribution of income through fiscal policy. In the following pages we shall attempt to illustrate the influence which each of these factors has exerted.

2. The income distribution for 1939

Before going into the changes in income distribution, we might consider the total income distribution as an aggregate

of the income distributions of the individual industries or classes of society. For this purpose an estimate has been made for 1939 of the income distributions of twenty-five industries based on the forty-two industrial groups for which data are available. The results of these estimates show an appreciable difference in the income distributions from one industry to the other and from one social group to the other.

The total distribution for 1939 will be seen from Table I below.

TABLE I
Distribution of Income-Tax Payers by Income Groups in 1939

kroner	%
0	22
0-1,000	250
1,000-2,000	335
2,000-3,000	160
3,000-4,000	105
4,000-5,000	56
5,000-6,000	27
6,000-7,000	14
7,000-	31
	1,000

It will be seen that the mode is as low as between 1,000 and 2,000 kroner (corresponding to an annual income of £50-£100) whereas the average assessed income was 2,300 kroner. It can be seen that the total income distribution covers widely different distributions. We have therefore attempted in the following pages not only to give an analysis of the changes in the total income distribution, but also to consider the changes within the individual industries and social classes.

3. *Changes in the income distribution*

Several methods are available to illustrate the changes in income distribution. One method is to draw a Lorenz curve. If this is done it will be seen at once that there has been a considerable levelling of the income distribution from 1939 to 1944 and that this development has continued to quite an appreciable extent after the war.

On the basis of the curves we can find by graphic interpolation

what proportions of the total income in the years stated correspond to different decile groups of tax-payers. For the tenth decile, i.e. tax-payers with the highest incomes, a break-down by fifths has also been made, see Table II. Naturally, this table shows the same thing as the Lorenz curve, namely that the income distribution has become more even during the period.

TABLE II
*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
	^{0/100}	^{0/100}	^{0/100}	^{0/100}
1st decile	14	14	15	16
2nd "	30	28	33	32
3rd "	40	42	45	44
4th "	50	55	60	58
5th "	60	69	72	73
6th "	75	86	91	95
7th "	94	102	107	109
8th "	127	124	127	133
9th "	158	156	155	154
10th "	352	324	295	286
of which:				
10th decile { 1st quintile	39	40	41	40
2nd "	42	41	40	44
3rd "	50	50	46	44
4th "	67	61	52	50
5th "	154	132	116	108
Total	1,000	1,000	1,000	1,000

At the same time, as the table shows, the income distribution is still uneven. There seems to be some difference in the trends from 1939 to 1944 and from 1944 to 1952.

From 1939 to 1944 assessed income for the two lowest deciles of income-tax payers amounted to almost the same per mille, and the increase in medium incomes fell in the interval from between the 3rd and 7th decile groups. The decline in total income was moderate for the following decile groups, and even in the 10th group it was only in the very biggest incomes (4th and 5th fifths) that there was an appreciable decline in the percentage share of the income amount. Accordingly, the levelling took place chiefly through a heavy decline for the high incomes.

From 1944 to 1949 the decline in the share of total income continued for the high incomes, but the decline spread to the 3rd fifth of the tenth decile. At the same time there was a relative increase in total income for the 8th decile group and also for the 2nd group; that is to say that the interval in which the levelling takes place was increased.

From 1949 to 1952 this development was superseded by a new development as the interval in which the levelling took place narrowed at the lower end and remained unchanged at the upper. Finally, in the 10th decile group practically the only decline in the percentage share of total income was for the highest income group.

These changes are also illustrated in Table III, which shows

TABLE III
*Average Assessed Incomes by Deciles of Number of
Income-Tax Payers*

Number of Income-Tax Payers	Average Assessed Income				Index 1939=100			
	1939	1944	1949	1952	1944	1949	1952	
1st decile	kr. 321	kr. 511	kr. 774	kr. 1,004	159	241	313	
2nd „	691	1,021	1,708	2,004	148	247	290	
3rd „	925	1,532	2,326	2,757	166	251	298	
4th „	1,153	2,001	3,100	3,639	174	269	316	
5th „	1,387	2,512	3,723	4,577	181	268	330	
6th „	1,730	3,129	4,706	5,956	181	272	344	
7th „	2,170	3,716	5,528	6,832	171	255	315	
8th „	2,931	4,513	6,565	8,339	154	224	285	
9th „	3,644	5,682	8,010	9,656	156	220	265	
10th „ {	1st quintile	4,514	7,275	10,585	12,531	161	234	278
	2nd „	4,841	7,453	10,341	13,787	154	214	285
	3rd „	5,765	9,112	11,899	13,787	158	206	239
	4th „	7,723	11,104	13,432	15,682	144	174	203
	5th „	17,785	24,019	29,978	33,851	135	169	190
Total	2,308	3,641	5,169	6,269	158	224	272	

the changes in average assessed income by decile groups. It appears that the increase in income generally culminates in the 5th and 6th decile groups, corresponding to an income of around kr. 1,500 in 1939 and kr. 5,300 in 1952. These changes may also be illustrated in another way; namely by calculating the increase in average incomes from 1939 to the respective years for all income-tax payers and after that 'deflating' the first left-hand

column (the intervals) in the income distribution for the individual years by these increases. In this way, the distributions are adjusted to 1939 income levels.

Lorenz curves illustrate the levelling of incomes. On the basis of these curves – or rather on the basis of their distribution functions—the percentages of the number of income-tax payers falling within the 1939 krone intervals can be determined as in Table IV.

TABLE IV
Distribution of Income-Tax Payers by Income Group
(1939 Krone Level)

1939 Krone Intervals	1939	1944	1949	1952
	‰	‰	‰	‰
0	22	18	18	17
0-1,000	250	243	207	223
1,000-2,000	335	284	300	270
2,000-3,000	160	222	233	232
3,000-4,000	105	120	129	138
4,000-5,000	56	47	63	65
5,000-6,000	27	25	19	23
6,000-7,000	14	19	15	18
7,000	31	22	16	14
	1,000	1,000	1,000	1,000

This table illustrates a point brought out by the preceding tables computed on the basis of the Lorenz curves, namely that there has been a levelling of income. It is interesting to note the change in the general trend, viz. that the groups 5,000-7,000 have increased relatively from 1949 to 1952. A corresponding illustration of the changes in total assessed income has also been attempted, see Table V. This table shows a different aspect of the results shown in Table IV. But whereas the change in the number of assessed incomes is chiefly interesting from the point of view of social policy, the change in the distribution of total assessed income will be of more interest from the point of view of consumption and saving.

Tables IV and V shows that the decline in the share of number of assessed incomes and the amount of total assessed income, respectively, for the two lowest income groups from 1939 to 1952 has been almost the same, viz. from 272 to 240 per cent and

For the group below kr. 2,000 there was from 1939 to 1952 a decline in the number of assessed incomes from 61 per cent to 51 per cent and for total income from more than 27 per cent to more than 23 per cent. Also here there is almost the same relative decline in number of assessed incomes as in total income, which need not be the case.

For the group earning kr. 5,000 and over there is a decline in the number of assessed incomes from 7.2 per cent to 5.5 per cent and in total income from nearly 30 per cent to 17 per cent. Here, the relative decline in total income is appreciably greater than in the number of assessed incomes.

A further measure of the changes in the income distribution may be given, namely a figure showing – in per cent of total income – the income amounts which, with a given income distribution, should be re-distributed to give an even income distribution; the result of such an estimate is presented in Table VII. By comparison the corresponding figures for Sweden have been given, the estimates for Sweden are based on a concept of a disposable income 'broadly similar to the concept of "assessed income" on which Danish taxation statistics are based.'

TABLE VII
Inequality Index

Denmark		Sweden	
	%		%
1939	34	1940	35
1944	31	1945	32
1949	28	1948	28
1952	28		

These figures seem to indicate a striking similarity between the trend in the two countries.

III. THE CAUSES OF THE CHANGES IN THE INCOME DISTRIBUTION FOR 1939, 1944, 1949 AND 1952

In an analysis of the causes of the changes in the income distribution it seems appropriate to take the following factors into account.

1. Changes which can be traced back to defects in the statistical material.

2. Changes in the industrial structure.
3. Re-distribution of income by way of fiscal policy.
4. Differences with regard to changes in average incomes of the individual industrial groups.
5. Levelling of income within the individual industries.

1. *Defects in the statistical material*

There are two factors which render the material defective. That is tax evasion and changes in the efficiency of the assessment with regard to the relative number of persons assessed. It has been noted above that the amount of tax evasion varies with different industrial groups and that it probably changes from year to year. For the period 1921 to 1931 Mr. H. C. Jørgensen¹ has made a special study of the influence of tax evasion. His conclusion was that the percentage of the income not declared may be estimated at almost 30 per cent for agriculture and just below 20 per cent for manufacturing and handicrafts; for other industries, including public servants, the professions, domestic servants, etc. tax evasion may be estimated at just over 10 per cent. In making these estimates it was assumed that tax evasion by manual workers amounts to only 5 per cent. According to Mr. Jørgensen, 5 per cent should also be the maximum tax evasion for salaried people and public servants, while he is of opinion that for professional people the evasion percentage probably exceeds 10 per cent.

Subsequent, but less detailed, studies made by Mr. Viggo Kampmann² and Mr. Niels Ussing³ seem to indicate that during recent years tax evasion may in times of prosperity be estimated at around 15 per cent, or somewhat higher than estimated by Mr. H. C. Jørgensen. This difference is due partly to a tendency on the part of proprietors and owners to withhold a greater part of their incomes from assessment when the income level is rising, and partly to the fact that Mr. Jørgensen may have underestimated the chances of wage-earners of withholding from taxation various extra incomes (such as incomes derived from the work of their wives or from interest on capital).

¹ H. C. Jørgensen: *Hvor stor en del af indtægten unddrager skattesnyderne det offentlige?* 1946.

² Viggo Kampmann: *Ligelig indkomstfordeling* *Nationaløkonomisk Tidsskrift*, 1944.

³ Niels Ussing: *En fordeling af skatter og sociale ydelser i 1949 på sociale grupper.* *Socialt Tidsskrift*, Nos. 7-8, 1953.

It is clear, however, that the amount of tax evasion is considerable and that it varies from one social group to the other. If it is assumed that a higher proportion of the incomes of proprietors and owners and certain professions is withheld from taxation, the question arises how this difference has affected the distribution of income during the period under consideration.

As the average income of proprietors and own account workers is higher than the average income of the tax-payers in general, the income distribution will appear more even than it actually is. Moreover, changes in the relative number of proprietors and own account workers combined with tax evasion will also influence the form of the income distribution. During the period 1939-52 the income statistics showed a marked tendency to a comparatively small increase in the number of proprietors and owners, etc. If this change is considered exclusively from the point of tax evasion, it must have checked a levelling of incomes, because these groups, which consequently weigh relatively less than the other industrial groups, have the greatest amount of tax evasion. But, of course, the decline in the relative numbers of proprietors and owners, etc. must, by itself, result in a more even distribution of income.

To illustrate possible changes in tax evasion a comparison has been made between net national income and the income as shown in taxation statistics before taxes and insurance premiums

TABLE VIII

Net National Income and Total Personal Income Before Taxes

	Net national income index 1949=100	Income before taxes
1939	42	38
1944	66	65
1949	100	100
1952	130	125

paid have been deducted. Although these two quantities are not identical conceptually, it is considered permissible to make a comparison of them to ascertain whether there have been essential changes in tax evasion as a whole. The totals for each year as a percentage of the 1949 totals are shown in Table VIII.

There do not seem to have been any great changes in the trend

of the two quantities, which may indicate that the relative amount of tax evasion has been more or less unchanged. It must be pointed out, however, that this rough comparison does not tell us anything about possible changes in tax evasion within the individual industrial and social groups.

As the changes in income distribution have been quite considerable, we may perhaps conclude from what has been stated here, that available statistics do not seem to indicate that tax evasion has been a factor of major importance as explanation of the changes in the distribution of income.

A comparison between the number of persons aged 16 and over excluding married women (which corresponds roughly to the number of assessed persons) as recorded by the 1940 and 1950 population censuses and as recorded by the tax returns gives the results shown in Table IX.

TABLE IX
*The Population Aged Sixteen and Over Excluding
Married Women*

	Population Census			Tax Returns		
	1940	1950	Difference	1940	1950	Difference
Copenhagen .	494,500	509,600	15,100	501,100	528,200	27,100
Provincial towns	466,500	528,500	62,000	465,900	553,200	87,300
Rural districts .	924,900	952,700	27,800	892,300	1,008,400	116,100
The whole country .	1,885,900	1,990,800	104,900	1,859,300	2,089,800	230,500
Agricultural population:						
Owners, proprietors, etc..	216,500	211,300	-5,200	203,300	196,700	-6,600
Workers .	248,000	205,700	-42,300	230,500	232,400	1,900

It will be seen that whereas according to the population censuses the number of persons increased by more than 100,000 from 1940 to 1950, according to the tax returns the increase in the number of assessed persons was 230,000. The reason must be that the assessment in 1939 did not include all the incomes which ought to have been included. This is especially true of the rural districts, where there is a great difference between the changes for agricultural workers as shown by the population censuses and by the income statistics.

Consequently, the industrial distribution of the numbers of assessed incomes cannot be used to draw conclusions concerning changes in the industrial structure. Some adjustment is necessary. The fact that too few incomes were assessed for income tax purposes in 1939, moreover, made the income distribution for that year too even, since it is presumably chiefly the low incomes which have not been included. It should be noted that on account of a marked decline in the marrying age in the years since 1939, it is the number of heads of households that has gone up during the period mentioned.

These circumstances, moreover, have the effect that the increases ascertained in average incomes, especially for agricultural workers, are somewhat smaller than the actual ones because too few zero incomes are included for 1939.

2. Changes in the industrial structure

It is difficult to make an exact comparison between the data for the individual industries as found in the population censuses and the tax returns, respectively; but certain rough calculations seem to indicate that the changes in the non-agricultural industries as recorded by the two sources of available statistics are nearly of the same order.

Among the notable differences it may be mentioned that the increase in the number of proprietors, owners, etc., in the non-agricultural industries is smaller according to the income statistics than according to the population censuses; whereas the increase in the number of unoccupied or retired persons seems, if anything, to be too great. On the other hand, the trend shown by the income statistics in the number of agricultural workers gives, as already mentioned, a wrong impression. The same seems to be true of domestic servants.

Two calculations are shown below to illustrate how income distribution has been affected by changes in the industrial structure. First we estimated the shape of the 1952 income distribution as it would have been if it had been based on the 1939 industrial distribution as shown by the tax statistics. Then we estimated the 1952 income distribution which would have emerged if the 1939 standard had been adjusted for incomplete assessment as regards agricultural workers and domestic servants.

The comparison between the actual income distribution in 1952 and the first of these estimated distributions is shown in Table X, which reveals that the changes in the industrial distribution recorded in the income statistics have not resulted in a levelling.

TABLE X

Comparison Between the Actual Distribution of Income-Tax Payers by Average Assessed Income in 1952 and an Estimated 1952 Distribution Standardized by the 1939 Industrial Distribution

1939 krone intervals	Actual	Standardized	Difference
- 1,200 .	123,709	109,302	-14,407
1,200- 2,500 .	312,802	299,717	-13,085
2,500- 5,000 .	562,527	579,731	17,204
5,000-10,000 .	793,379	808,818	15,439
10,000 and over .	318,259	313,108	- 5,151
Total .	2,110,676	2,110,676	0

If an adjustment is made for 1939 of agricultural workers etc. and domestic servants allowing for the actual development in the agricultural labour force, the effect will be considerably greater, as will be seen from Table XI.¹

TABLE XI

Comparison Between the Actual Distribution of Income-Tax Payers by Average Assessed Income in 1952 and an Estimated 1952 Distribution Standardized by the Adjusted 1939 Industrial Distribution

1939 krone intervals	Actual	Standardized	Difference
- 1,200 .	123,709	111,686	-12,023
1,200- 2,500 .	312,802	315,769	2,967
2,500- 5,000 .	562,527	607,185	44,658
5,000-10,000 .	793,379	778,064	-15,315
10,000 and over .	318,259	297,972	-20,287
Total .	2,110,676	2,110,676	0

¹ In making the adjustment we have used the experience gained from the censuses of agricultural labour and increased the 0-assessments for agricultural workers in 1939 by 47,000 and for domestic servants by 5,000.

In both cases, but especially after the adjustment, the estimated distribution for 1952 gives a greater levelling than the actual distribution. This may seem strange since the migration from country to town from 1939 to 1952 might have been expected to cause the persons concerned to pass from a low income bracket into a higher one, which would have tended to equalize incomes. A great increase over the period 1939-52 in the number of unoccupied or retired persons explains why the estimated number of low incomes is somewhat smaller than the actual number.

TABLE XII
*Number of Income-Tax Payers and Average Assessed
Income 1939 and 1952*

	1939		1952	
	Number of Income-Tax Payers (adjusted)	Average Assessed Income	Number of Income-Tax Payers	Average Assessed Income
		kr.		kr.
I. Agriculture, gardening, and fishing:				
Proprietors, owners, etc.	213,235	2,165	204,608	8,240
Workers, etc.	266,575	1,284	218,341	5,267
II. Handicrafts, manufacturing, wholesale and retail trade, transport:				
Proprietors, owners and managers	183,088	4,312	182,718	10,110
Salaried employees	123,862	2,838	142,732	7,589
Workers (including domestic servants and apprentices)	666,510	1,791	671,045	5,172
III. Public servants, etc., and clerical staff	149,129	3,732	199,725	8,898
IV. Professions	52,916	4,359	68,125	8,882
V. Other industries	280,334	1,495	423,382	3,400
Total	1,935,649	2,245	2,110,676	6,109

The high estimated figures in the group 2,500-5,000 kr. reflect the fact that a considerable number of agricultural workers would have entered that group in 1952 if the decline in the agricultural labour force had not occurred, and the high figures in the actual distribution for the upper income groups may be explained by the considerable rise which took place, from 1939

to 1952, in the number of salaried employees, public servants, and professional people, which are all in relatively high income groups, c.f. Table XII showing the number of income-tax payers in 1939 (adjusted) and 1952, and average assessed income.

It may thus be concluded that there has been no net change in the direction of equalization. Accordingly, the levelling of incomes must be due to varying increases in the average assessed incomes as between the industries or to a change in the deviation of the income distributions of the individual industries. It should be added, however, that since information is available only for assessed incomes, the 'residual change' depends also upon the re-distribution of income through fiscal policy.

3. *Re-distribution of income through fiscal policy*

It was mentioned in the introductory remarks that no exact calculations are available of the influence which the re-distribution of income through fiscal policy has had on the distribution of income. However, some studies are available which may give an indication of the effect of this re-distributing effort. This is dealt with below on the basis of two studies,¹ published in the *Socialt Tidsskrift*.

Fiscal policy influences the distribution of income partly by means of direct taxation, including members' contributions to social security, and partly by means of a number of transfers to persons. In the latter group of public expenditure three different types of transfers may be distinguished: (1) interest on public debts; (2) social transfers; (3) subsidies to private hospitals, schools, etc.

In the case of the interest on public debt, a very substantial part is paid to banks, insurance companies, etc., thus only indirectly influencing the distribution of personal income. The unknown proportion paid to individuals is presumably paid to individuals in the higher income groups. In consequence of the large increase in nominal incomes from 1939 to 1952 there is reason to presume, since the amount of interest payable on public debt has not gone up correspondingly, that this re-distribution of income has been less important in 1952 than in

¹ P. Bjørn Olsen and V. Kampmann: 'Indkomstudjevningen i Danmark', *Socialt Tidsskrift*, 1948, and Niels Ussing: 'En fordeling af skatter og sociale ydelser på sociale grupper i 1949', *Socialt Tidsskrift*, 1953.

1939, in which year it seems to have been very moderate.

Of the social transfers, it is only the transfers paid in cash or in kind and included in the calculation of the taxable income which have any direct influence on the distribution of income. Accordingly, the most important items are: old-age and disablement pensions, unemployment relief, and various payments under the Public Assistance Act. In this connection it should be pointed out, however, that the most important of these payments in terms of their amount, namely the so-called municipal relief, is normally not regarded as taxable income as the recipients are generally under an obligation to repay amounts received under the municipal relief scheme.

Since the rate of unemployment was at a considerably lower level during the post-war years than at the end of the 1930's, the need for social transfers was smaller in 1949 and 1952 than in 1939. A calculation of social transfers as a percentage of total income plus personal taxes etc. shows that they were about 6 per cent both in 1939 and in 1949, whereas there was a minor increase from 1949 to 1952, primarily as a result of the relatively high rate of unemployment in 1952. That the social transfers have amounted to a fairly constant percentage of personal incomes notwithstanding the improved rate of employment, must be seen as a reflection of the improvement in the real value of a number of these payments and, secondarily, as a reflection of the relatively great increase in the number of old-age pensioners. As regards the old-age pension, which is now by far the most important of all social benefits in amount, the annual payments per recipient have gone up at a greater rate, compared to the pre-war level, than hourly wages in manufacturing and handicrafts. As a percentage of total personal income the payments under the old-age and disablement pension scheme have gone up by one-third from 1939 to 1952. The conclusion seems to be that although the social benefits have not, numerically, been of much greater importance during the post-war years than during the last years before the war, there has been a relative improvement in the payments, which has counteracted the tendency to increased unevenness of the distribution of income which would have been the result of the relative increase in the number of persons above the age of 65.

For the third group of transfers, which is a very mixed one, we have not made any estimate of the effect on the distribution

of income, these transfers being to a great extent made in kind to patients at different institutions and students at private schools etc. by whom they are not regarded as personal income.

It has been mentioned above that, as a result of the rule peculiar to Danish taxation legislation that tax-payers are entitled to deduct in their returns all personal taxes paid, the incomes recorded in the statistics on taxation correspond in principle to disposable income, i.e. that the changes in the relative importance of the taxation of personal income influence the figures of the changes in income distribution.

In assessing the changes in the influence of personal taxation on the distribution of income it will be appropriate to consider the following categories of taxation.

- (1) Taxation of personal income; it may be mentioned here that in Denmark income tax is paid to the state as well as to local authorities and the church.
- (2) General property tax, which is paid only to the state.
- (3) Taxes on land and buildings, which are paid to the state as well as to the local authorities; in this connection it may be pointed out that the major part of the taxation of land and buildings in the Danish rural districts is regarded as a substitute for income tax, and, because of the position of Danish agriculture as an export industry, the incidence of this tax in many respects comes closer to that of personal income taxation than to that of other kinds of taxes on land and buildings.
- (4) Members' contributions to social security, i.e. sick-benefit associations, disablement insurance, and unemployment funds.

Of these taxes the personal income tax is the most important as a source of revenue, and it is, moreover, together with the general property tax, whose incidence is more uncertain, the only clearly progressive of the personal taxes mentioned. The total proceeds of the income tax have gone up by 500 to 600 per cent from 1939 to 1952, and its share of total personal income rose from about 10 per cent to about 15 per cent from 1939 to 1952; nearly the whole of this increase in the relative importance of income taxation took place during the period 1939 to 1949. To

illustrate the trend in the incidence of taxation the following table shows the income tax as a percentage of total assessed income in the individual income groups in 1939 and 1952, respectively. As the rates of taxation vary in the different parts of the country, the taxes computed do not correspond to the scales used in the computation of the taxes of the individual tax payers.

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
6- 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.

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 for all income groups.

To give an impression of 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 part of the income earned by married women introduced in 1946, the 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.

To illustrate the relation between the changes in the income distribution and the direct personal taxation, a breakdown is given in the table below of the number of assessed incomes, total assessed income, income taxes, etc. for three income groups.

As average incomes in 1952 were about 2.8 times as high as in 1939, we have, roughly speaking, adjusted the income intervals used in the breakdown by the same ratio. It will be seen from the table that, in spite of the increases in tax scales and of the increase in incomes and because tax rates have not, relatively, increased so much for the high as for the low incomes, the taxation of the high incomes was of far less importance in total tax proceeds in 1952 than in 1939. On the other hand, it will be

seen that in 1952 the low incomes contributed far more to total tax proceeds than in 1939.

TABLE XIV

Relative Distribution of the Number of Income-Tax Payers, Total Assessed Income, Personal Income Tax, and Total Income Tax as a Percentage of Total Assessed Income in 1939 and 1952

Kroner	Number of Income Tax Payers	Total Assessed Income	Personal Income Taxes Paid	Personal In- come Taxes Paid as a Percentage of Total Assessed Income
	%	%	%	%
			1939	
- 4,000	87.3	57.2	27.5	5.0
4,000-15,000	12.0	31.3	40.9	13.5
15,000-	0.7	11.5	31.6	28.4
			1952	
-10,000	85.0	59.7	37.7	9.7
10,000-40,000	14.7	35.0	47.9	21.0
40,000	0.3	5.3	14.4	41.6

As the proceeds of the income tax almost quintupled from 1939 to 1952, whereas total assessed incomes during the same period went up by slightly more than 300 per cent, one might still have expected the taxation of personal income to cause a levelling of the distribution of disposable income. To give an total changes in the income distribution, Lorenz curves were drawn for total assessed income, and total assessed income including paid personal income taxes, in 1939 and 1952. The curves seemed to show that the change in taxation has contributed only to a small extent to the levelling. This impression is confirmed by a calculation of the maximum equalization percentages for total assessed income with and without addition of income tax in 1939 and 1952, respectively.

The proceeds of the general property tax, less than 1 per cent of total personal income, have been of decreasing importance

during the period under review; no statistics are available on the incidence of this tax, but it must be presumed that it is chiefly paid by persons in the high income groups. Since earned incomes have increased at a considerably greater rate than incomes from property, there is every reason to believe that the property tax has a less progressive incidence now than before the war.

The proceeds of the taxes on land and buildings seem to have amounted to a rather constant share of total assessed income; as a substantial part of these taxes is paid by agriculture, and as agricultural incomes have increased at a relatively greater rate from 1939 to 1952 than the incomes of other population groups, it must be presumed that in 1952 these taxes were largely paid by the median incomes and the upper median incomes, whereas before the war a notable part of these taxes was paid by the lowest income groups.

The relative importance of the social security contributions has been decreasing since 1939; in that year they amounted to about 2.3 per cent of total personal income, but in 1949 and 1952 this share was reduced to 1.6 per cent. Both before and after the war this tax has been paid chiefly by income groups with relatively low average incomes.

If we try to evaluate the changes in the importance of total personal taxation to the development in the distribution of the disposable incomes, it seems to be beyond doubt that there has been an appreciable increase in the progressiveness of the tax system between 1939 and 1952. As a result of the changes in the scales for the income tax payable to the state there seems, moreover, to have been an increase of progressiveness between 1949 and 1952. It should be added, however, that in terms of real incomes the progression seems, if anything, to have been reduced between 1939 and 1952.

On the whole the re-distribution of income through fiscal policy seems to have tended towards a levelling of the income distribution as estimated on the basis of disposable income, especially in view of the influence which the increase in total employment has exerted on social expenditure; but there is reason to believe that only a small share of the equalization which occurred in the income distribution between 1939 and 1952 can be put down to re-distribution through fiscal policy. For the social transfers the main effect has been that the increase in the payments to old-age and disablement pensioners

has, to some extent, counteracted the tendency to increased inequality in the income distribution which would have been a result of the relatively rapid increase in the number of persons over 65 years of age, but there seems to be no doubt that a certain, if limited, amount of equalization of the income distribution has been effected through personal taxation.

Accordingly, there seems to be reason to suppose that the differences in the relative increase in average income among the individual industrial groups or a levelling of the income distribution within the individual industrial groups seem to have been the most important factors in the levelling of the distribution of income which has taken place. It is obvious that these income changes conceal a number of different factors, such as changes in the distribution of property, in employment, reductions in wage differentials, changes in the proportion of company profits distributed, and changes in the productivity of the individual industries.

4. *Difference in increase in average incomes*

If the forty-two industries about which information is available are arranged vertically in order of average assessed income for 1939, and if across the top of the table the industries are arranged in order of the percentage increase from 1939 to 1952, we can show the marked inverse correlation between the size of the average income and the increase in income. Owners, proprietors, etc., in the non-agricultural industries, doctors, solicitors, barristers and other professionals – executive and clerical employees in government and private service, clergymen, teachers, etc. – all having relatively high assessed incomes, show small increases in income, whereas manual workers (especially workers in agriculture) and shop assistants, etc., i.e. persons with medium incomes, show relatively high increases in income.

Agricultural labour, fishermen, gardeners, and small-holders show very considerable increases. The tendency to inverse correlation in the agricultural industries is broken, however, by a few important groups: the increase in incomes for unoccupied or retired persons, who have a relatively low average income in 1939, is comparatively low; whereas on the other hand landowners and owners of large farms, who already, in 1939, had a

comparatively high average income, are among the groups with the highest increase in incomes.

This development must naturally lead to a levelling of incomes. The development in average assessed incomes has been illustrated in more detail in Table XXXI where the years 1944 and 1949 are also included.

As already mentioned the average increases in incomes are influenced by the defects of the income statistics, and this is especially true in the case of agriculture where the increases in incomes from 1939 are probably too small because too few zero incomes were included in 1939. With the point of departure in this main table the changes in average assessed income are illustrated below, partly in terms of the industries (Table XV) and partly in terms of the type of income receivers, i.e. owners, proprietors, etc. and employees etc. (Table XVI).

Average assessed incomes in agriculture, gardening, and fishing have shown far greater increases than in the non-agricultural industries. 1952, however, was a very prosperous year for agriculture, whereas the volume of production in most other industries was influenced by the recession following the inflationary boom during 1950-51. In the non-agricultural industries the increases in average assessed incomes have been highest in manufacturing and handicrafts, trade, transport, etc. and for domestic servants, apprentices, etc. and lowest in the professions.

From Table XVI, showing increases in average incomes as compared with the 1939 level for owners, proprietors, etc. and employees etc., will be seen that the difference in the increases in assessed incomes from 1939 until 1952 has, as already mentioned, led to a levelling of incomes since the greatest increase has been in the lower and medium incomes. This applies to all employees, and among them particularly agricultural labourers etc., but also to farmers.

If we look at the individual time intervals, we find that there seems to have been some difference in the development in the three periods 1939-44, 1944-49, and 1949-52. The highest increase in average incomes occurred from 1939-44, the annual average increase for all industries coming close to 12 per cent. In the following two periods the annual average increase was slightly more than 8 per cent (1944-49) and 7 per cent (1949-52) respectively.

TABLE XV
Increase in average Assessed Income Within the Individual Industries 1939-1952

Industries	Average Assessed Income				Index 1939=100				Increase		
	1939	1944	1949	1952	1939	1944	1949	1952	1939/44	1944/49	1949/52
Agriculture	kr. 1,720	kr. 3,544	kr. 4,703	kr. 6,219	100	206	273	362	% 106	% 33	% 32
Gardening	2,049	4,522	5,526	6,633	100	221	270	324	121	22	20
Fishing	1,601	4,769	5,475	6,389	100	298	342	399	198	15	17
Handicrafts, manufacturing, whole- sale and retail trade, transport, etc.	2,950	4,698	6,620	8,027	100	159	224	272	59	41	21
Public servants and clerical staff .	3,732	4,869	7,235	8,910	100	130	194	239	30	49	23
Professions	4,359	5,574	7,731	8,867	100	128	177	203	28	39	15
Unoccupied and retired persons .	1,490	1,827	2,758	3,393	100	123	185	228	23	51	23
Domestic servants, apprentices, and unspecified industries	981	1,446	2,315	2,667	100	147	236	272	47	60	15
Total	2,308	3,641	5,169	6,269	100	158	224	272	58	42	21

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TABLE XVI
Increase in Average Assessed Income for Proprietors, Owners, etc. and Employees 1939-1952

Industries	Average Assessed Income				Index 1939=100				Increase		
	1939	1944	1949	1952	1939	1944	1949	1952	1939/44	1944/49	1949/52
	kr.	kr.	kr.	kr.					%	%	%
<i>Proprietors, owners, etc. in</i>											
Agriculture etc.	2,165	4,721	5,904	8,052	100	218	273	372	118	25	36
Non-agricultural industries	4,312	7,258	9,103	10,779	100	168	211	250	68	25	18
Total	3,157	5,905	7,425	9,338	100	187	235	296	87	26	26
<i>Employees;</i>											
Workers in agriculture etc.	1,293	2,656	3,711	4,503	100	205	287	348	105	40	21
Workers in non-agricultural industries	2,372	3,743	5,669	6,963	100	158	239	294	58	51	23
Domestic servants	913	1,285	2,160	2,409	100	141	237	264	41	68	12
Apprentices	747	1,206	1,757	2,255	100	161	235	302	61	46	28
Salaried employees	2,838	4,109	6,175	7,892	100	145	218	278	45	50	28
Public servants and clerical staff	3,732	4,869	7,235	8,910	100	130	194	239	30	49	23
Total	2,112	3,300	5,015	6,147	100	156	237	291	56	52	23
<i>Professions;</i>											
Doctors, barristers and solicitors	12,753	13,724	19,196	22,162	100	108	151	174	8	40	15
Others	3,530	4,749	6,553	7,552	100	135	186	214	35	38	15
Total	4,359	5,574	7,731	8,867	100	128	177	203	28	39	15
Unoccupied and retired persons	1,490	1,827	2,758	3,393	100	123	185	228	23	51	23
Unspecified industries	1,526	2,049	3,120	3,427	100	134	204	225	34	52	10
Total	2,308	3,641	5,169	6,269	100	158	224	272	58	42	21

Trends within the industries seem also to have been somewhat different in the three periods. The following characteristic features should be mentioned. During the war average incomes rose considerably in agriculture, gardening and fishing, while the increases in the non-agricultural industries were more moderate. In the period 1944 to 1949 the increase in average assessed incomes in the non-agricultural industries was relatively high and higher than in the agricultural industries. During the following period 1949-52, the increase in average incomes was again somewhat higher in agricultural industries than in the non-agricultural industries.

For professional people, such as doctors, solicitors, and barristers, the increase in average incomes was very limited during the war and considerably higher after the war. For unoccupied or retired persons the increase in average incomes was very limited during the war and considerably higher after the war. For unoccupied or retired persons the increase in average income was on the whole moderate and highest during the period 1944-49 because the conditions of old-age and disablement pensioners were improved in 1946/47. As will be seen below, this trend seems to be a reflection of two contrasting tendencies, namely, the very small increases, if any, in the average income of rentiers etc., and the marked increase in the average income of old-age pensioners.

A comparison between proprietors, owners, etc. and employees also shows typical differences. For the former, average incomes rose considerably during the war, while the increase for employees was more moderate. For both groups there is a typical difference between agricultural and non-agricultural industries, the increases being appreciably higher in agriculture than in the non-agricultural industries during this period. During the following period, 1944-49, the increases in the average incomes of owners, proprietors, etc. were on the whole moderate, while the employees were regaining the ground lost during the war. Between 1949 and 1952 the increase in average incomes was the same in both groups, but for owners, proprietors, etc. incomes went up much more in the agricultural industries than in the non-agricultural industries.

These differences in the increase in incomes must, consequently, have contributed to the levelling of the income distribution. To give an impression of this, the distribution of tax-payers

by average assessed income in 1952 adjusted for the differences in the increases in average income between different groups – has been estimated. This has been done in the following way. For seven main industrial or social groups:

- I. Agriculture, gardening and fishing (including employers as well as employees)
- II. Handicrafts, manufacturing, trade, transport, etc.
 1. Wage Earners
 2. Salaried employees
 3. Proprietors and owners
- III. Public servants etc. and clerical staff
- IV. Professions
- V. Unoccupied and retired persons

the 1952 distributions have been deflated to 1939 price level by the same factor. The distributions used are those adjusted for

TABLE XVII
1952 Distribution of Income-Tax Payers by Average Assessed Income in 1939 Kr. (adjusted for change in Industrial Structure from 1939 to 1952)

1939 krone intervals	Allowing for Increase in Average Assessed Incomes from 1939 to 1952 for all Industries	Allowing for Differences in Increases in Average Assessed Income for 7 Industrial Main Groups	Difference
0	27,902	27,902	0
1– 400	60,217	67,222	– 7,005
400– 800	197,922	216,786	–18,864
800– 1,200	319,826	347,019	–27,193
1,200– 1,600	219,979	244,804	–24,825
1,600– 2,000	193,449	181,050	12,399
2,000– 2,500	229,275	214,828	14,447
2,500– 3,000	207,785	180,359	27,426
3,000– 4,000	253,096	225,921	27,175
4,000– 5,000	112,603	110,184	2,419
5,000– 6,000	60,252	50,457	9,795
6,000– 8,000	29,758	38,503	– 8,745
8,000–10,000	10,215	12,622	– 2,407
10,000–15,000	8,286	10,596	– 2,310
15,000 and over	5,084	7,396	– 2,312
Total	1,935,649	1,935,649	0

TABLE XVIII

*Difference Between the 1952 Distribution of Income-Tax Payers by Average Assessed Income (in 1939)
as Estimated on the Basis of the Over-all Increase in Average Assessed Income and the Increase
in Seven Industrial Main Groups*

1939 Krone Intervals	I Agriculture Gardening and Fishing	II. Handicrafts, Manufacturing, Trade, Transport, etc.			III. Public Servants etc. and Clerical Staff	IV. Professions	V. Other Industries (i.e. un- occupied and retired persons and unspecified industries	All Industries
		Workers (incl. Domestic Servants and Employees Apprentices etc.	Salaried Employees	Proprietors, Owners, and Managers				
0.	0	0	0	0	0	0	0	0
400	- 7,197	- 3,999	- 248	366	0	1,270	2,803	- 7,005
400- 800	-24,471	-14,663	991	1,464	745	529	16,541	-18,864
800- 1,200	-52,779	1,333	- 496	3,297	597	953	19,902	-27,193
1,200- 1,600	-21,111	5,332	1,363	2,562	1,342	264	-14,577	-24,825
1,600- 2,000	14,394	- 2,666	372	4,395	4,624	530	- 9,250	12,399
2,000- 2,500	16,793	- 8,665	- 2,106	3,296	5,368	1,164	- 1,403	14,447
2,500- 3,000	26,390	- 1,999	1,486	3,478	2,535	581	- 5,045	27,426
3,000- 4,000	24,950	5,998	- 1,114	- 2,746	4,921	212	- 5,046	27,175
4,000- 5,000	11,036	5,999	495	- 4,577	- 8,798	- 53	- 1,683	2,419
5,000- 6,000	5,614	12,663	- 123	- 2,747	- 4,772	0	- 840	9,795
6,000- 8,000	4,413	734	- 496	- 5,492	- 4,772	- 2,010	- 1,122	- 8,745
8,000-10,000	1,249	- 54	- 124	- 1,465	- 895	- 1,006	- 112	- 2,407
10,000-15,000	575	- 20	87	- 732	- 761	- 1,375	- 84	- 2,310
15,000 and over	144	7	- 87	- 1,099	- 134	- 1,059	- 84	- 2,312
Total	0	0	0	0	0	0	0	0

changes in the industrial structure from 1939 to 1952, i.e. the figures from the above-mentioned standard estimates. If a comparison is made between the sum of these distributions for the seven groups and the 1952 distribution previously roughly deflated to 1939 level, the difference must be an expression of the income levelling (if any) caused by the varying increases in average incomes for these seven groups.¹

The comparisons, as presented in Table XVII show that the net result has been that an income levelling has been brought about by differential increases in the average incomes for the different industrial main groups. To illustrate how the net result has been derived, corresponding comparisons within each of the seven groups are shown in Table XVIII.

The influence which the different increase in incomes from 1939 to 1952 within the mentioned seven groups, will have on the income distribution in 1952 as compared with 1939 must depend on the extent of the income increase and the average income level of the industry in question. As mentioned above, the average assessed incomes in 1939 and 1952 were distributed as follows:

TABLE XIX
Average Assessed Income in Seven Industrial Main Groups

	1939	1952	Increase
I. Agriculture, gardening and fishing	krone 1,676	krone 5,911	% 253
II. Handicrafts, manufacturing, trade and transport:			
Proprietors, owners and managers	4,312	10,779	150
Salaried employees	2,838	7,892	178
Workers	1,791	5,172	189
III. Public servants, etc., and clerical employees	3,732	8,910	139
IV. Professions	4,359	8,867	103
V. Other industries, i.e. unoccupied and retired persons and unspecified industries	1,495	3,400	127
Total	2,245	6,269	172

¹ In the previous adjustment for 1939 for agricultural labour and domestic servants it had been assumed that the persons who were not recorded in the assessment had no incomes and that their incomes were likely to continue to be lower than other incomes in the same industry. As it is unknown how the distribution of these zero incomes would be in 1952, it has been assumed that the incomes in question were distributed, both in 1939 and 1952, in the same way as the other incomes in the two groups: agricultural labour and domestic servants.

A comparison between this table and Table XVI will show that the considerable increase in the incomes of the agricultural industries has contributed considerably to an equalization of income.

The same result – that is, a tendency towards a levelling of income – has been brought about by the fact that the increases in average income for a number of groups, such as professional people, proprietors and owners, etc., and public servants, all having fairly high levels of average income in 1939, have been rather moderate. For workers in the non-agricultural industries the picture is not very clear; there is a tendency to income levelling as well as to the opposite, which, among other things, may be due to domestic servants and apprentices being included in this group. Finally for the group of salaried employees and for the large group of unoccupied and retired persons and unspecified industries as a whole, there seems to have been no tendency towards a levelling of incomes. However, the group of unoccupied and retired persons is very heterogeneous, comprising, among others, rentiers as well as old-age and disablement pensioners. The latter group (old-age and disablement pensioners) has increased steeply both in number and in average income, but from a low 1939 income level so that in spite of the improvement in the standard of living the effect has been to bring about an increase in the relatively low income groups, which has counteracted a levelling of incomes from 1939 to 1952. The number of rentiers, on the other hand, has presumably not gone up very much from 1939 to 1952, nor have their incomes, but as separate data are not available on the average income of this group, it is impossible to say anything certain about the effect of this trend on the income distribution.

The differences in the increases in average assessed income which were mentioned above are due to a change in the economic conditions of the industries. The improvement in marketing conditions and a considerable rise in productivity during the post-war years explain the considerable increases in the incomes of agriculture, which became so considerable because agricultural incomes were rather low in the base year 1939. For the non-agricultural industries the figures are to a great extent influenced by the fact that in spite of a considerable migration of agricultural labour to the cities in 1952 the rate of unemployment was at a lower level than in 1939. The favourable

employment and marketing conditions have contributed to the increases in prices and incomes in the non-agricultural industries. The increases in the incomes of manual workers have been considerable and seem to have been higher than in those of

TABLE XX
Income Levelling Within Industrial and Social Groups

1939 krona intervals	1952 Distribution of Income Tax Payers by Average Assessed Income in 1939 krona Adjusted for Changes in Industrial Structure and for Differences with Regard to Increases in Income from 1939 to 1952 in the Individual Industrial Main Groups	1939 Distribution of Income-Tax Payers by Average Assessed Income	Difference (Col. 1-Col. 2)
0 +	27,902	42,451	-14,549
400 .	67,222	53,710	13,512
400- 800 .	216,786	256,912	-40,126
800- 1,200 .	347,019	376,851	-29,832
1,200- 1,600 .	244,804	311,179	-66,375
1,600- 2,000 .	181,050	170,713	10,337
2,000- 2,500 .	214,828	160,901	53,927
2,500- 3,000 .	180,359	135,564	44,795
3,000- 4,000 .	225,921	193,112	32,809
4,000- 5,000 .	110,184	102,360	7,824
5,000- 6,000 .	50,457	49,056	1,401
6,000- 8,000 .	38,503	39,187	- 684
8,000-10,000 .	12,622	15,717	- 3,095
10,000-14,000 .	10,596	14,666	- 4,070
15,000 and over .	7,396	13,270	- 5,874
Total . . .	1,935,649	1,935,649	0

proprietors, owners, etc. This is also true of salaried employees; whereas the incomes of public servants have not followed suit.

5. *The levelling within the individual industries*

It was pointed out above that besides the variations in income increases as between industries, the income levelling may also be ascribed to a levelling within the individual industries. In conclusion, therefore, we may compare the 1939 income distribution (with the above-mentioned adjustment for agricultural workers and domestic servants and calculated as mentioned in

note 1, page 132) and the 1952 distribution at 1939 level, adjusted for difference in income increases for several main industrial and social groups and for the change in industrial structure from 1939 to 1952.

The difference between these two distributions should then be a reflection either of the income levelling which must be ascribed to the levelling within the individual industrial main groups or of the levelling which has been brought about by the re-distribution through fiscal policy.

It will be recalled that the conclusion drawn above with regard to the effect of fiscal policy was that it had probably tended to render the income distribution more even, but the effect had presumably been rather limited. It may therefore be concluded that the difference stated in Table XX may largely be attributed to a levelling of the income distribution within the individual industries.

It is clear that the result of the estimates indicated in the table will depend on the technique of classification chosen, and that the figures should accordingly be considered with a certain caution. Further, as will be seen from Table XVIII, it should be noted that in order to bring out more clearly the effect of the change in income distribution within the individual industries we have assumed that the number of taxpayers has been unchanged from 1939 to 1952; actually the number of income-tax payers is 200,000 higher in 1952 than in 1939.

As will be seen from the comparison the table seems to indicate that there has been quite a considerable levelling of incomes from 1939 to 1952.

While this comparison gives only a general impression of the end result, an impression which is, moreover, affected by a somewhat problematic technique of calculation, it might be tempting to attempt a verification and an elaboration of the end result through an analysis of the individual industries.

This has been done in the following way.

For all industrial groups Lorenz-curves have been drawn for 1939 and 1952, and on the basis of these curves we have computed the maximum equalization coefficient for 1939 and 1952 and also the amount of the changes (see Tables XVIII and XIX). The industries have been arranged both in the way they are arranged in taxation statistics and by falling maximum equalization coefficient in 1939.

TABLE XXI
Maximum Equalization Coefficient

Industry	Equalization Coefficient		Difference	Col. 2 as a percentage of Col. 1
	1939	1952		
Landowners	0.38	0.29	0.090	76
Farmers	0.19	0.165	0.025	87
Small-holders	0.145	0.13	0.015	90
Farm workers	0.135	0.17	-0.035	126
Unskilled workers in agriculture and forestry	0.155	0.125	0.030	81
Others in agriculture and forestry	0.155	0.24	-0.085	155
Gardeners	0.265	0.205	0.060	77
Employees in gardening	0.25	0.185	0.065	74
Fishermen	0.295	0.21	0.085	71
Managers	0.385	0.345	0.040	90
Manufacturers	0.475	0.40	0.075	84
Master artisans in:				
Food industry	0.265	0.21	0.055	79
Textile industry	0.295	0.245	0.050	83
Construction	0.275	0.205	0.070	74
Engineering, etc.	0.25	0.205	0.045	82
Other industries	0.29	0.23	0.060	79
Wholesale dealers etc.	0.48	0.415	0.065	86
Grocers etc.	0.325	0.235	0.090	72
Drapers	0.375	0.32	0.055	85
Other retail dealers	0.34	0.26	0.080	76
Proprietors of hotels and restaurants	0.34	0.275	0.065	81
Haulage contractors	0.24	0.195	0.045	81
Technical employees	0.18	0.15	0.030	83
Shop assistants etc.	0.295	0.24	0.055	81
Various salaried employees	0.335	0.27	0.065	81
Bakers	0.22	0.16	0.060	73
Bricklayers	0.21	0.15	0.060	71
Joiners, carpenters, etc.	0.185	0.145	0.040	78
Smiths and skilled mechanics	0.175	0.145	0.030	83
Other skilled and semi-skilled workers	0.23	0.18	0.050	78
Unskilled workers	0.22	0.16	0.060	73
Drivers and messengers, etc.	0.23	0.18	0.050	78
Executive and clerical employees in government and private service.	0.285	0.215	0.070	75
Railway and postal employees	0.145	0.12	0.025	83
Teachers, clergymen, etc.	0.235	0.185	0.050	79
Doctors	0.29	0.22	0.070	76
Solicitors and barristers	0.34	0.28	0.060	82
Other professions	0.42	0.40	0.020	95
Domestic servants etc.	0.16	0.16	0.000	100
Apprentices and students	0.25	0.23	0.020	92
Unoccupied and retired persons	0.39	0.235	0.155	60
Unspecified industries	0.385	0.365	0.020	95

TABLE XXII

Maximum Equalization Coefficient by Falling Equalization Coefficient 1939

Industry	Equalization Coefficient		Difference	Col. 2 as a percentage of Col. 1
	1939	1952		
Wholesale dealers etc.	0.48	0.415	0.065	86
Manufacturers	0.475	0.40	0.075	84
Other professions	0.42	0.40	0.020	95
Unoccupied and retired persons	0.39	0.235	0.155	60
Unspecified industries	0.385	0.365	0.020	95
Managers	0.385	0.345	0.040	90
Landowners	0.38	0.29	0.090	76
Drapers	0.375	0.32	0.055	85
Solicitors and barristers	0.34	0.28	0.060	82
Proprietors of hotels and restaurants	0.34	0.275	0.065	81
Other retail dealers	0.34	0.26	0.080	76
Various salaried employees	0.335	0.27	0.065	81
Grocers etc.	0.325	0.235	0.090	72
Master artisans in textile industry	0.295	0.245	0.050	83
Shop assistants etc.	0.295	0.24	0.055	81
Fishermen	0.295	0.21	0.085	71
Master artisans in other industries	0.29	0.23	0.060	79
Doctors	0.29	0.22	0.070	76
Executive and clerical employees in government and private service	0.285	0.215	0.070	75
Master artisans in construction	0.275	0.205	0.070	74
Master artisans in food industry	0.265	0.21	0.055	79
Gardeners	0.265	0.205	0.060	77
Apprentices and students	0.25	0.23	0.020	92
Master artisans in engineering etc.	0.25	0.205	0.045	82
Employees in gardening	0.25	0.185	0.065	74
Haulage contractors	0.24	0.195	0.045	81
Teachers, clergymen, etc.	0.235	0.185	0.050	79
Other skilled and semi-skilled workers	0.23	0.18	0.050	78
Drivers and messengers	0.23	0.18	0.050	78
Bakers	0.22	0.16	0.060	73
Unskilled workers	0.22	0.16	0.060	73
Bricklayers	0.21	0.15	0.060	71
Farmers	0.19	0.165	0.025	87
Joiners, carpenters, etc.	0.185	0.145	0.040	78
Technical employees	0.18	0.15	0.030	83
Smiths and skilled mechanics	0.175	0.145	0.030	83
Domestic servants etc.	0.16	0.16	0.000	100
Others in agriculture and forestry	0.155	0.24	-0.085	155
Unskilled workers in agriculture and forestry	0.155	0.125	0.030	81
Small-holders	0.145	0.13	0.015	90
Railway and postal employees	0.145	0.12	0.025	83
Farm workers etc.	0.135	0.17	-0.035	126

In terms of the 1939 level the tables show that proprietors, owners, etc. generally have greater maximum equalization coefficients than workers and employees. It is also interesting to consider the appreciable maximum equalization coefficient for unoccupied and retired persons, which is an expression of the fact that this group is very heterogeneous, comprising old-age pensioners etc. at the lower end of the distribution and persons living on their capital at the upper end.

From 1939 to 1952 there was a levelling of incomes in all industries, apart from domestic servants, agricultural labour and others under agriculture and forestry. The levelling of incomes seems to have been greater for workers than for proprietors, owners, etc. Especially remarkable is the high degree of levelling which has occurred in the incomes of unoccupied and retired persons, which is attributable partly to the fact that old-age and disablement pensions have been increased to a comparatively large extent and partly to the fact that under a relatively rapidly increasing price level incomes from property have not increased nearly so much as earned incomes. This matter will also be illustrated in connection with an analysis of the changes in the distribution of personal wealth (see Chapter 4). In the appendix an attempt has been made to analyse the changes in the standard deviation for workers and proprietors, owners, etc. For workers the analysis shows that the standard deviation decreased from 1939 to 1952, see the table on page 147. As shown in the Appendix, it has not been possible to apply a corresponding analysis for proprietors, owners, etc.

For workers, and to some extent also for public servants, the levelling of incomes is due to the practice adopted since 1939, according to which the wages of all male workers are regulated by means of a uniform cost-of-living allowance, irrespective of the average hourly pay. Moreover, there is no doubt that the improvement in employment conditions from 1939 to 1952 has contributed towards a levelling of incomes within the groups of manual workers.

For proprietors, owners, etc. the deviation has, as mentioned, also become smaller, see Table XXII. This may, among other things, be due to the fact that on account of the difficult employment conditions during the 1930's a number of wage-earners established themselves as retailers etc.; many of these attempts do not seem to have been successful, and a number of those who

did not succeed appear to have returned to the wage-earning group as employment conditions improved during the 1940's. The smaller deviation may perhaps also be ascribed to the relatively large increases in agricultural incomes from which artisans and retailers in the rural districts have also benefited; this development has accordingly tended to reduce the difference in the level of average income between the cities and the rural districts.

It may also be pointed out that the comprehensive government controls, in the form of price control etc., during the post-war years may have contributed to a greater uniformity in profit margins and thus had a levelling effect on the incomes. And parallel to this development there seems to have been a rise in the influence of trade associations etc. which, probably, has tended to reduce the differences in average income within the ranks of proprietors, owners, etc. Finally, it may be presumed that the rapid depreciation allowances for machinery etc. granted during the post-war years have tended to make the income distribution based on statistics of taxable income in the individual groups of proprietors, owners, etc. more even, but, as already mentioned, we lack statistical material for an evaluation of the importance of this factor.

IV. CHANGES IN THE DISTRIBUTION OF PERSONAL WEALTH, 1939-52

As was mentioned above, the distribution of income will be affected by changes in the distribution of personal wealth and this will be considered here. Through their influence on personal saving the changes in the distribution of income will also influence the distribution of personal wealth.

It will be recalled from what has been stated above that in Denmark a somewhat progressive general property tax is levied; and this means that all tax payers are obliged to fill in a specified account of their property together with their income-tax returns. On the basis of the statistics provided in Table XXXI Lorenz-curves can be drawn. The curves show that there seems to have been a considerable amount of levelling of personal wealth from 1939 to 1952. They suggest also that this levelling occurred especially during the period from 1944 to 1946, and this is confirmed by Table XXIII, which gives a break-down by decile groups. However, this table shows how uneven the distribution

of personal wealth still is; two per cent of all tax payers own almost forty per cent of total personal wealth.

One of the reasons why there have not been any notable changes in the distribution of personal wealth from 1939 to 1944 is that in the period 1939 to 1944 real property was still assessed

TABLE XXIII
Distribution of Total Assessed Personal Wealth

	1939	1944	1946	1949	1950	1952
1 decile	0	0	0	0	0	0
2 "	0	0	0	0	0	0
3 "	0	0	0	0	0	0
4 "	0	0	0	0	0	0
5 "	0	0	0.7	0.2	0.3	0.2
6 "	0	0	2.0	1.8	1.9	1.3
7 "	1.2	1.3	4.3	3.5	4.0	4.2
8 "	3.8	4.2	7.5	7.0	7.3	8.3
9 "	11.0	12.0	13.5	14.0	15.0	15.5
10 "	84.0	82.5	72.0	73.5	71.5	70.5
of which } 1 quintile	5.0	4.5	4.5	5.0	5.2	4.5
} 2 " "	5.0	6.0	6.5	6.0	6.8	6.5
} 3 " "	8.0	8.5	7.7	8.5	8.0	8.5
} 4 " "	13.0	13.5	12.8	12.5	12.5	12.5
} 5 " "	53.0	50.0	40.5	41.5	39.0	38.5

for tax purposes on the basis of a valuation made in 1936. Thus this very important group of assets showed no changes, and mortgage charges also did not change much during this period.¹ In regard to the changes in average personal wealth which occurred from 1939 to 1944 in certain industrial main groups, Table XXIV will show that average properties did not change much from 1939 to 1944 for unoccupied and retired persons, whereas the changes for the other groups ranged from nearly 20 per cent to almost 30 per cent.

With regard to the distribution of personal wealth these changes seem, more or less, to have neutralized each other because a tendency to a relative decline for the large group of unoccupied and retired persons, a group with quite considerable properties, has been counteracted by a tendency to increase for proprietors, owners, etc.

¹ Our knowledge of the composition of personal wealth is rather limited. The following considerations are to some extent based on the results of the study: 'Opsparing, kapitalbevaegelse og formuernes sammensætning i København, 1949', by Kjeld Bjerke.

TABLE XXIV

Relative Changes in Average Assessed Personal Wealth

	1939/44	1944/46	1946/49	1949/50	1950/52
	%	%	%	%	%
Proprietors, owners, etc. in agric. industries . . .	29	22	4	22	12
Handicrafts, manufact. wholesale, retail, trans- port, proprietors, owners managers	25	5	11	16	5
Agricult. labour force . .	29	18	8	10	8
Manual workers, domes- tic servants, apprentices, and students	23	1	5	15	- 2
Salaried employees . . .	28	- 9	12	14	0
Public servants, clerical staff	18	- 8	6	13	- 2
Professions	18	-18	10	9	- 1
Unoccupied and retired persons	3	- 7	- 4	6	- 1
Unspecified industries . .	13	-23	19	22	8

From 1944 to 1946 there seems to have been a considerable levelling of personal wealth. This change is probably to some degree due to the fact that in 1945 a new assessment of land and buildings was made, but must to a great extent be ascribed to the fact that the extraordinary declaration of property combined with a compulsory registration of bank deposits, bonds, and shares, which took place during the summer of 1945, provided the tax authorities with far more detailed information on the distribution of personal wealth than previously. Further, in 1946, more rigorous rules of assessment were introduced. It is therefore very difficult to infer how much of the levelling may be ascribed to the revised assessment of land and buildings in 1945 and how much to other causes.

In view of the new revision, in 1950, of the assessment of land and buildings it is probably justifiable to conclude, on the basis of the columns in Table XXIII showing the distribution of

personal wealth in 1949 and 1950, respectively, that the revised assessment of land and buildings in 1945 has had only a limited influence upon the changes recorded in the distribution of personal wealth from 1944 to 1946.

Concerning the number of tax-payers reporting a positive property, it will be seen from the figures below that the measures taken in 1945-46 meant quite a drastic change.

TABLE XXV
Total Number of General Property Tax Payers

1939	.	.	.	.	.	708,710
1944	.	.	.	.	.	744,732
1946	.	.	.	.	.	1,201,161
1949	.	.	.	.	.	1,152,187
1950	.	.	.	.	.	1,207,587
1952	.	.	.	.	.	1,266,537

Judging from the figures in Table XXXII the increase in recorded personal wealth from 1944 to 1949 was approximately kr. 6,000 million, which tentatively may be distributed with kr. 2,000 million to the change in the assessment of land and buildings and kr. 3,700 million to other causes; however, as mentioned above the effect on the change in the distribution of personal wealth seems to have been greater in the case of other causes than in that of the change in the assessment of land and buildings.

During the period 1946 to 1949 there seems to have been a small tendency for the distribution of personal wealth to become more uneven; this is presumably due to the gradual weakening of the effects of the extraordinary declaration of property in 1945. From 1949 to 1950 a new assessment of land and buildings was made, and the increase in the level of assessment was 30 per cent, compared to an increase of 20 per cent from 1944 to 1945. Changes in the assessment of land and buildings seem to have a slightly levelling influence on the distribution of personal wealth, the assessed value of land and buildings constituting rather an important part of the assets of manual workers, salaried employees and small farmers. The trend from 1950 to 1952 seems to have been characterized by a continued levelling in the distribution of personal wealth.

As a rough expression of the minimum importance of the

levelling the following table gives the difference in the per mille figures of the Table XXIII for 1939-44 and 1946-52. On account of the circumstances mentioned above, the real changes in the distribution of personal wealth from 1944 to 1946 cannot be illustrated. The changes do not seem overwhelming, but the figures are undoubtedly minimum figures.

TABLE XXVI
*Changes in Distribution of Total Assessed Personal Wealth
by Deciles of General Property Tax Payers*

Number of general-property-tax payers	1939 minus 1944	1946 minus 1952	Total
	%	%	%
1 decile	0	0	0
2 "	0	0	0
3 "	0	0	0
4 "	0	0	0
5 "	0	0.5	0.5
6 "	0	0.7	0.7
7 "	-0.1	0.1	0
8 "	-0.4	-0.8	-1.2
9 "	-1.0	-2.0	-3.0
10 "	1.5	1.5	3.0
of which { 1 quintile	0.5	0	0.5
{ 2 "	-1.0	0	-1.0
{ 3 "	-0.5	-0.8	-1.3
{ 4 "	-0.5	0.3	-0.2
{ 5 "	3.0	2.0	5.0
	0	0	0

CONCLUDING REMARKS

From 1939 to 1952 there has been a considerable levelling of the distribution of income, and this may chiefly be ascribed to two factors:

- (1) that the increases in average assessed income from 1939 to 1952 have been different for the individual industries;
- (2) that there has been a levelling of incomes within the individual industries; this applies to employees as well as employers and self-employed.

On the other hand, the redistribution of income by way of fiscal policy does not seem to have been very important in this

respect during the period under review, and the changes in the distribution of the population by industry which occurred from 1939 to 1952 seem on the whole to have counteracted a levelling of incomes.

The causes behind this development in incomes are many. We have pointed out the importance of the fact that unemployment has been lower during the post-war period than before the war. The particularly favourable conditions for agriculture after the war have been emphasized, and the deterioration after the war of the conditions of people living on their capital has been mentioned.

As regards the levelling of incomes within the industries the joint wage policy adopted by the trade unions and the rising rate of employment seem to have been important to the wage-earners. For proprietors, owners, etc. it has been emphasized that the considerable rate of unemployment before the war may have caused a tendency towards overcrowding of the service trades, while this tendency seems to have been reversed under the improved employment conditions in the post-war years. It has further been stressed that the improvement in the economic conditions for agriculture have influenced the incomes of the other social and industrial groups in the rural districts, and this has brought about a reduction in the regional disparities in average income for artisans, retailers, etc. Finally, it has been pointed out that the rising influence of trade associations may also have contributed to an income levelling and that price controls may have had a similar effect.

APPENDIX

The Deviation in the Distributions of Income in the Individual Industries in 1939 and 1952¹

Besides the above-mentioned measures of changes in income distributions, an attempt has also been made to illustrate the changes in the individual income distributions through computations of the standard deviations of a transformed, normally distributed variable.

In view of the shape of the income distributions (frequency curves) for the individual industries it is not surprising that the cumulative distribution curves drawn on arithmetic probability paper do not give straight lines for either of the two industrial main groups considered here, viz. proprietors, owners, etc., and manual workers. The distribution of number of assessed incomes by size of assessed income is not normal. As the frequency curves are skew, it might be imagined that the distribution of the logarithm of the income would be normal. The drawing of the distribution functions on logarithmic probability paper shows, however, that this is not the case. Consequently, we shall have to try other methods of transforming the distribution.²

It is characteristic of the individual industries within the different industrial main groups that the fractile diagrams (probit curves) seem to have the same shape, i.e. the curves for the same year can be derived from a single curve by linear transformations. This seems to hold good for proprietors, owners, etc., as well as for manual workers.

To illustrate the fact that the curves deviate from each other only in this way the standardized normal deviates u -values, corresponding to standardized normal deviates given income limits: up to kr. 400, up to kr. 800, etc., have been calculated for the mentioned industries. Next, for each of the two years (1939 and 1952) and for each of the two main groups we have found a simple average of the u -values of the individual industries corresponding to each income limit. The relation between the income limits and the average u -values represents an empirically determined *transformation function* which serves to transform the income distributions to normal distributions.

After that we have – for each separate industry in the two industrial main groups – marked average u -values (\bar{u}) on the abscissa and the u -values of the individual industries (u) on the ordinate. In this way straight lines are obtained which express the relation between the u -values and the u -values of the individual industries. On the basis

¹ These computations have been planned by Professor A. Hald, University of Copenhagen, statistical adviser to the Statistical Department.

² See A. Hald: *Statistical Theory With Engineering Applications*, Wiley, New York, 1952, Chapters 6, 7, 3.

of these straight lines it is possible to read the means and the standard deviations of the transformed variable. The standard deviations correspond to the inverse ratios of the slopes of the straight lines.

Now, the differences in standard deviations among the industries for *one year* are less interesting than the change in the standard deviations from 1939–1952, and this problem is more difficult because it cannot be presupposed that the only change in the frequency curves from 1939 to 1952 has been a change in the standard deviation while the form of the curves has remained unchanged. For manual workers it appears, however, that the form of the frequency curves has not changed in the course of the period. For proprietors, owners, etc., on the other hand, the form of the frequency curves has changed.

After these introductory remarks we shall now examine the processing of the figures.

It has been mentioned that, as regards manual workers, the basic form of the frequency curves has not changed from 1939 to 1952.

On the basis of computations of u -values for the individual groups of manual workers and average u -values for 1952 (the transformation function mentioned) curves have been drawn on arithmetic probability paper; these curves illustrate the relation between the u -values for the individual groups of manual workers and the average values (\bar{u} -values) for the main group of manual workers. To the extent these lines are straight this is an expression of the fact that the frequency curves of the individual industries have the same form. Moreover, the slope of these straight lines affords a measure of the standard deviation since, as already mentioned, the standard deviation is in an inverse ratio to the slope of the straight lines. It should be added, however, that in a comparison of the deviations for 1939 and 1952 allowance must be made for the difference in income level, so that in order to be comparable to the 1939 standard deviations the standard deviations for 1952 must be divided by the ratio between average assessed incomes in 1952 and 1939.

Considering the defects of the material the diagrams showed a fairly good approximation to straight lines. On the basis of these diagrams we calculated the relative standard deviations shown in the table on page 147.

It will be seen that, apart from workers in agriculture and forestry whose income level is lower than that of the other groups, the 1952 standard deviations differ very little from the standard deviations of the 1952 transformation function. This applies also to 1939. The fact that the increase in assessed income varies a great deal influences the relative standard deviations in Col. (4). This column shows that the standard deviation in 1952 amounts to 60–70 per cent of the standard deviation in 1939. The greatest decline seems to have taken place in

TABLE XXVII

Relative Standard Deviations for Manual Workers

Industry	δ_{52e}	δ_{39e}	\bar{x}_{52}	$\frac{\delta_{52e}}{\delta_{39e}}$
	δ_{52t}	δ_{52t}	\bar{x}_{39}	$\frac{1}{t}$
	(1)	(2)	(3)	(4)
Unskilled workers in agriculture and forestry . . .	0.71	0.30	3.7	0.64
Unspecified unskilled workers . . .	1.00	0.48	3.2	0.65
Employees in gardening . . .	1.05	0.50	3.5	0.60
Bakers	1.05	0.50	3.3	0.64
Bricklayers	1.0	0.45	3.0	0.74
Joiners, carpenters, etc.	1.0	0.50	2.9	0.69
Smiths and skilled mechanics	1.05	0.55	2.7	0.71
Other skilled and semi-skilled workers	1.05	0.59	2.9	0.61
Drivers and messengers	1.11	0.53	3.1	0.68

In the table δ_{52t} indicates the deviation in the transformation function while δ_{52e} and δ_{39e} indicate the deviation for the individual industries. Finally, $\frac{\bar{x}_{52}}{\bar{x}_{39}}$ is the ratio between average assessed income in 1952 and 1939.

the groups of employees in gardening and other skilled and semi-skilled workers, the smallest decline in the groups of bricklayers and smiths and skilled mechanics. However, the differences mentioned should be considered with some caution, while it seems safe to rely on the general impression that the standard deviation is smaller in 1952 than in 1939.

It has been mentioned that a similar comparison cannot be made for the group of proprietors, owners, etc., because the form of the frequency curves has changed from 1939 to 1952. It is therefore possible to get an impression only of the relative deviation of the individual industries in 1939 and 1952 respectively (see the table below).

As was to be expected, it will be seen from Table XXVIII that the variations in standard deviations are appreciably greater than for manual workers, which thus reflects the fact that there are greater differences in standard deviation among the industries. The greatest standard deviation is to be found in the groups in the high income brackets, such as managers, landowners, manufacturers, and wholesale dealers; the smallest standard deviation is to be found in the groups of farmers and smallholders. In the case of the remaining groups: salaried employees, etc., professions, and unoccupied and retired persons, etc., it has not been possible to obtain meaningful results by applying the methods described here.

TABLE XXVIII

Relative Standard Deviations for Proprietors and Owners

Industry	$\frac{\delta 52e}{\delta 52t}$	$\frac{\delta 39e}{\delta 39t}$
	Managers	1.4	1.7
Landowners	0.7	1.0
Farmers	0.8	0.7
Small-holders	0.5	0.9
Gardeners	0.9	0.8
Fishermen	0.8	0.8
Manufacturers	1.4	1.4
Wholesale dealers	1.4	1.3
Master artisans in:		
Food industry	0.9	0.8
Textile industry	1.0	0.9
Construction	0.8	0.8
Engineering etc.	0.8	0.8
Other industries	0.8	1.3
Haulage Contractors	0.8	0.8
Grocers etc.	0.9	1.1
Drapers	1.0	1.1
Other retail dealers	1.0	1.0
Proprietors of hotels and restaurants	1.0	1.1

ADDENDA

A. *Extract from the Income-Tax Return*

Kroner

1. Income as per officially authorized account books (enclosed profit and loss account. (Consumption of goods from own stock to be included)
- OTHER INCOME
2. Agriculture, gardening, and forestry, etc. (consumption of own goods and value of owner-occupied buildings to be included).
3. Manufacturing, commerce, handicraft, shipping, fishing, and other economic activity (consumption of goods from own stock to be included)
4. Profit derived from real estate, cf. enclosed schedule
5. Wages and salaries including all supplementary payments, such as holiday allowance, bonuses, fees, unemployment benefit, relief during military service, relief during illness (sick benefits etc.) other than those mentioned below under 6, etc.
6. Old-age pension, disablement pension and relief paid under the Public Assistance Act to persons chronically ill
7. Value of free residence or quarters, board and lodging, payments in kind, free uniform, etc.
8. Retirement pension, allowances, annuities, survivorship annuity, alimony, etc.
9. Speculative profit derived from sale of real estate, securities and other property and profit derived from sale of business, copyright, patents, machinery, fixtures and fittings, etc. (enclose statement)
10. Scholarships, grants, etc., gifts which do not fall within the Death Duty Act, prizes and other income from gambling and betting
11. Interest on deposits with banks and savings banks, bonds and other amounts outstanding in this or other countries, compulsory savings, dividend from shares (including bonus shares), and tithes and other permanent fees and dues
12. Income of wife:
 - (a) Income from work as an employee in firm other than that of husband (wages, salaries, holiday allowance, unemployment benefits)

(b) Income from work as an employer or self-employed (specify: _____)	. . . . .
(c) Other income (including income from separate property)	.	
13. Income of children	. . . . .
14. Other income (specify: _____)	. . . . .
ALLOWANCES		
15. Personal taxes paid to central and local authorities, church tax, children's allowances deducted from taxes payable may be deducted	. . . . .	kr.
16. Deductible expenditure on insurance	. . . . .	kr.
	Total	
	Total income	

B. TABLE XXIX

The Distribution of Income-Tax Payers by Income Brackets, 1939, 1944, 1949 and 1952

	1939	1944	1949	1952
kr.				
0	40,652	35,028	36,167	36,028
400	51,115	24,267	22,702	16,774
400- 800	238,818	104,257	35,447	27,355
800- 1,000	170,657	78,359	25,641	18,794
1,000- 2,000	616,233	435,372	259,314	182,539
2,000- 3,000	294,378	348,540	311,607	307,749
3,000- 4,000	192,738	294,136	266,052	218,110
4,000- 5,000	102,247	239,557	243,768	191,689
5,000- 7,000	74,126	228,102	402,571	372,979
7,000- 10,000	29,758	99,722	285,340	420,400
10,000- 15,000	14,660	41,671	117,475	233,525
15,000- 20,000	5,455	13,612	24,617	49,155
20,000- 30,000	4,086	9,276	14,165	22,421
30,000- 50,000	2,294	4,575	6,403	8,887
50,000-100,000	1,088	1,857	2,722	3,228
100,000 and over	344	527	887	1,043
Total	1,838,649	1,958,858	2,054,878	2,110,676

C. TABLE XXX

The Distribution of Total Assessed Income by Income Brackets

	Total assessed income in the intervals			
	1939	1944	1949	1952
kr.	1,000 kr.	1,000 kr.	1,000 kr.	1,000 kr.
400	12,522	5,965	4,704	3,000
400- 800	144,661	65,084	20,946	16,000
800- 1,000	149,324	68,563	22,309	16,000
1,000- 2,000	860,570	625,969	397,324	283,000
2,000- 3,000	715,126	847,620	757,818	756,000
3,000- 4,000	657,787	1,012,059	916,004	748,000
4,000- 5,000	449,766	1,057,477	1,082,119	852,000
5,000- 7,000	425,385	1,315,184	2,362,485	2,207,000
7,000- 10,000	242,552	808,767	2,332,205	3,474,000
10,000- 15,000	175,920	500,052	1,393,290	2,788,000
15,000- 20,000	92,735	231,404	418,040	833,000
20,000- 30,000	98,350	222,072	337,398	535,000
30,000- 50,000	86,038	169,421	239,049	330,000
50,000-100,000	73,208	120,560	181,845	215,000
100,000 and over	59,105	81,980	155,446	176,000
Total	4,243,049	7,132,177	10,620,982	13,232,000

D. TABLE XXXI

*Average Assessed Income for the Individual Industries,
1939, 1944, 1949 and 1952*

Industry	Average Assessed Income			
	1939	1944	1949	1952
	kroner	kroner	kroner	kroner
<i>I. Agriculture</i>				
1. Landowners	9,231	22,679	24,567	30,149
2. Farmers	2,766	5,874	7,038	9,835
3. Small-holders	1,474	2,931	4,214	5,731
4. Skilled workers in agriculture	1,196	2,254	3,239	3,796
5. Unskilled workers in agriculture and forestry	1,469	3,260	4,285	5,434
6. Others in agriculture and forestry	1,423	2,987	4,122	5,306
7. Gardeners	2,309	6,083	6,504	7,529
8. Employees in gardening	1,699	3,244	4,714	5,965
9. Fishermen	1,601	4,769	5,475	6,389
<i>II. Handicrafts, Manufacturing, Commerce and Transport</i>				
<i>(a) Proprietors, owners, and managers</i>				
10. Managers	20,158	22,966	28,509	31,965
11. Manufacturers	11,437	14,976	16,341	16,836
Master artisans in:				
12. Food industry	3,677	7,639	8,702	10,562
13. Textile industry	1,972	3,482	5,048	5,920
14. Construction	3,183	5,582	7,256	9,063
15. Engineering etc.	3,240	5,809	7,691	9,582
16. Other industries	2,928	4,980	7,009	8,383
17. Wholesale dealers etc.	15,907	17,353	20,141	20,848
18. Grocers etc.	4,430	7,258	8,977	10,457
19. Drapers etc.	4,322	7,629	10,050	10,495
20. Other retail dealers	3,416	6,367	7,448	9,031
21. Proprietors of hotels and restaurants	4,499	10,077	6,013	8,909
22. Haulage contractors etc.	2,595	6,350	6,191	7,998
<i>(b) Salaried employees</i>				
23. Technical employees	4,477	5,796	8,653	10,714
24. Shop assistants etc.	2,554	4,176	5,960	7,151
25. Various salaried employees	2,539	3,244	5,098	6,668
<i>(c) Manual workers</i>				
26. Bakers	2,141	3,872	5,720	7,011
27. Bricklayers	2,601	3,974	6,226	7,756
28. Joiners, carpenters, etc.	2,574	3,988	5,947	7,428
29. Smiths and skilled mechanics	3,046	4,235	6,732	8,158
30. Other skilled and semi-skilled workers	2,411	3,696	5,658	6,924
31. Unskilled workers	2,062	3,624	5,255	6,501
32. Drivers and messengers, etc.	2,184	3,711	5,478	6,757
<i>III. Public Servants etc. and Clerical Employees</i>				
33. Executive and clerical employees in government and private service	3,805	5,009	7,435	9,089
34. Railway and postal employees, etc.	3,216	4,369	6,453	8,125
35. Teachers, clergymen, etc.	4,215	5,183	7,721	9,418
<i>IV. Professions</i>				
36. Doctors	11,874	12,733	18,095	21,762
37. Solicitors and barristers	14,478	15,907	21,792	23,112
38. Others	3,530	4,749	6,553	7,552
<i>V. Other Industries</i>				
39. Domestic servants	913	1,285	2,160	2,409
40. Apprentices and students	747	1,206	1,757	2,255
41. Unoccupied and retired persons	1,490	1,827	2,758	3,393
42. Unspecified industries	1,526	2,049	3,120	3,427
Total	2,308	3,641	5,169	6,269

TABLE XXXI (continued)

Industry	Index Figures 1939=100			Increase in %		
	1944	1949	1952	1939/44 %	1944/49 %	1949/52 %
<i>I. Agriculture</i>						
1. Landowners	246	266	327	146	8	23
2. Farmers	212	254	356	112	20	40
3. Small-holders	199	286	389	99	44	36
4. Skilled workers in agriculture	188	271	317	88	44	17
5. Unskilled workers in agriculture and forestry	222	292	370	122	31	27
6. Others in agriculture and forestry	210	290	373	110	38	29
7. Gardeners	263	282	326	163	7	16
8. Employees in gardening	191	277	351	91	45	27
9. Fishermen	298	342	399	198	15	17
<i>II. Handicrafts, Manufacturing, Commerce and Transport</i>						
<i>(a) Proprietors, owners, and managers</i>						
10. Managers	114	141	159	14	24	12
11. Manufacturers	131	143	147	31	9	3
Master artisans in:						
12. Food industry	208	237	287	108	14	21
13. Textile industry	177	256	300	77	45	17
14. Construction	175	228	285	75	30	25
15. Engineering etc.	179	237	296	79	32	25
16. Other industries	170	239	286	70	41	20
17. Wholesale dealers etc.	109	127	131	9	16	4
18. Grocers etc.	164	203	236	64	24	16
19. Drapers etc.	177	233	243	77	32	4
20. Other retail dealers	186	218	264	86	17	21
21. Proprietors of hotels and restaurants	224	134	198	124	÷ 40	48
22. Haulage contractors etc.	245	239	308	145	÷ 3	29
<i>(b) Salaried employees</i>						
23. Technical employees	130	193	239	30	49	24
24. Shop assistants etc.	164	233	280	64	43	20
25. Various salaried employees	128	201	263	28	57	31
<i>(c) Manual workers</i>						
26. Bakers	181	267	327	81	48	23
27. Bricklayers	153	239	298	53	57	25
28. Joiners, carpenters, etc.	155	231	289	55	49	25
29. Smiths and skilled mechanics	139	221	268	39	59	21
30. Other skilled and semi-skilled workers	153	235	287	53	53	22
31. Unskilled workers	176	255	315	76	45	24
32. Drivers and messengers, etc.	170	251	309	70	48	23
<i>III. Public Servants etc. and Clerical Employees</i>						
33. Executive and clerical employees in government and private service	132	195	239	32	48	22
34. Railway and postal employees, etc.	136	201	253	36	48	26
35. Teachers, clergymen, etc.	123	183	223	23	49	22
<i>IV. Professions</i>						
36. Doctors	107	152	183	7	42	20
37. Solicitors and barristers	110	151	160	10	37	6
38. Others	135	186	214	35	38	15
<i>V. Other Industries</i>						
39. Domestic servants	141	237	264	41	68	12
40. Apprentices and students	161	235	302	61	46	28
41. Unoccupied and retired persons	123	185	228	23	51	23
42. Unspecified industries	134	204	225	34	52	10
Total	158	224	272	58	42	21

E. TABLE XXXII

The Distribution of Personal Wealth

	Number of Assessed Properties			
	1939	1944	1949	1952
krone				
0	1,129,939	1,214,126	902,691	844,144
4,000	348,713	301,672	449,900	453,819
4,000- 10,000	158,599	186,095	302,879	301,987
10,000- 20,000	88,645	108,277	175,123	213,812
20,000- 30,000	38,269	48,430	74,764	98,853
30,000- 50,000	34,603	44,907	67,123	88,066
50,000-100,000	24,201	34,287	52,497	69,439
100,000-200,000	9,525	13,075	19,907	27,532
200,000-500,000	4,611	5,959	7,595	9,957
$\frac{1}{2}$ mill.- 1 mill.	1,039	1,389	1,693	2,110
1 mill. and over	505	641	706	957
Total	1,838,649	1,958,858	2,054,878	2,110,676

	Total Assessed Wealth in the Intervals			
	1939	1944	1949	1952
krone				
0				
4,000	561,270	539,091	752,648	712,000
4,000- 10,000	1,006,338	1,184,200	1,920,850	1,930,000
10,000- 20,000	1,231,666	1,502,759	2,438,054	2,996,000
20,000- 30,000	924,686	1,168,090	1,803,847	2,386,000
30,000- 50,000	1,320,574	1,712,989	2,562,621	3,355,000
50,000-100,000	1,657,356	2,343,058	3,593,822	4,763,000
100,000-200,000	1,305,310	1,769,597	2,687,757	3,705,000
200,000-500,000	1,378,187	1,758,766	2,240,073	2,921,000
$\frac{1}{2}$ mill.-1 mill.	707,938	919,856	1,145,121	1,429,000
1 mill. and over	979,387	1,260,772	1,421,419	1,969,000
Total	11,072,712	14,159,178	20,566,212	26,166,000