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THE STRUCTURE AND DISTRIBUTION OF INCOME IN ESTONIA AND FINLAND

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ABSTRACT: This paper is part of a research project organized by the Research Institute of the Finnish Economy and the Institute of Economics of Estonian Academy of Sciences. In the Paper the development of the level, structure and distribution of income is compared on the basis of the data available in both countries.

KEY WORDS: Structure of Income, purchasing power, income distribution

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TIIVISTELMÄ: Tämä työ on osa Elinkeinoelämän Tutkimuslaitoksen ja Viron Tiedeakatemian Taloustieteen Laitoksen organisoimaa yhteisprojektia. Työssä vertaillaan Suomen ja Viron tulojen tasoja, rakennetta sekä jakautumista ja näissä tapahtuneita muutoksia käytävissä olevan tilastoaineiston pohjalta.

ASIASANAT: Tulojen rakenne, ostovoima, tulonjako

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RESÜMEE: See uurimus on osa Soome Majandusuuringute Instituudi ja Eesti Teaduste Akadeemia Majanduse Instituudi ühisprojektist. Uurimuses on võrreldud tulude taseme, struktuuri ja jaotuse arengut Eestis ja Soomes tuginedes kasutada olevaile statistilistele andmetele.

MÄRKSONAD: Tulude struktuur, ostujõud, tulujaotus

1. Level of Income and the Purchasing Power of Wages

This paper is part of a research project organized by the Research Institute of the Finnish Economy (ETLA) and the Institute of Economics of Estonian Academy of Sciences. In this section we are trying to compare the levels of household income per capita in Estonia and Finland in 1938-1988. However, the statistical data, especially the Estonian data, is not sufficient for a comprehensive comparison between the two countries. On the other hand, because the income level is one of the most important indicators of the standard of living, we should not neglect any information that can shed some light on it.

This section focuses on the following intriguing question: "Who was better off in 1938, and who was better off in 1988, after fifty years of development under different socio-economic systems?" How big was the difference and how has it changed? There has been some speculation around these questions before, but up till now not much empirical evidence has been provided. The answers to these questions cannot be easily found, but it seems to be possible to look for the facts that could limit the space for guessing.

The possibilities to compare the levels of income in 1938 are strictly limited by the data which is available. Before World War II no such aggregate indicators as the household income per capita were provided by the national accounts. But wage data is available and wages have been the main source of income for working people then as it is now. Since wages in agriculture, given as daily, weekly or monthly wages, depend on the hours worked, we have used in the present study the average hourly wages of industrial workers to achieve a better comparability.

It is possible to compare directly the wage levels in both countries by applying the exchange rate between national currencies. In 1938 the average hourly wage of an industrial worker was 668 pennies in Finland and 37,9 cents in Estonia*. The sales rate of the Finnish mark (FIM) at the Tallinn exchange was 8,10 Estonian crowns (EKR) per 100 marks. Thus, the direct conversion of the wage levels gives a result that the average hourly wage of an Estonian industrial worker was about 70 percent of the level of a Finnish worker, in other words Finnish wages were about 1,4 times higher. Approximately the same would be the result if the prices of US dollars in Tallinn and Helsinki would be used (8,06 EKR per 100 FIM)**.

However, the currency exchange rate used above cannot be taken for granted for the purpose of comparing the living standards. For a more adequate picture of the real income levels it is necessary to compare the purchasing power of the wages in both countries. There is a possibility to compare the purchasing power of wages (PPW) with respect to foodstuffs using the data on food prices which are available in statistical yearbooks for 1938-39. Since the expenditures on food formed a major share of the consumption expenditures of workers households at that time, the comparison also reflects well the differences in the living standards. The Finnish price data refers to the average prices of food collected from 36 localities and the Estonian price data is calculated on the basis of prices collected from 13 towns (see Appendix 1).

* The Estonian figure refers to the hourly wage of workers in large-scale industry. The large-scale industry included enterprises with 20 or more workers. It is interesting to note that in 1938 the average hourly wage of female workers was considerably lower compared with male workers: in Estonia it was 62,5 percent and in Finland 58 percent of the level of male workers.

** Suomen tilastollinen vuosikirja 1939; Suomen pankki, vuosikirja 1947; Eesti statistika 1939; Eesti statistika 1940

The results of the comparison are presented in figures 1 and 2. For a better comparability the level of the PPW (amounts of goods that can be bought with the hourly wage) of the Estonian worker is taken as 100. The figures show that out of 24 items of foodstuffs for which we have comparable data the PPW of an industrial worker for 13 items it was greater in Estonia and for 10 items Finland held the edge. However, the differences are not big and, in practice, industrial workers were approximately in the same position in both countries. In the case of non-meat foodstuffs the PPW varied slightly more than in the case of meat foodstuffs.

What was the situation fifty years later, in 1988? This can be studied on the basis of the PPW of employees in that year. But before the study some notes should be added. Firstly, the share of foodstuffs in the consumption basket of working people has changed during fifty years. The share of food expenditures in total expenditures of employees households was only 17,8 % in Finland (1985) and 38,3 % in Estonia (1988)*. Therefore, the PPW with respect to foodstuffs is no longer as good an indicator of the general standard of living as it was fifty years ago.

Secondly, the comparability of the PPW with respect to foodstuffs is lower in 1988 than it was 1938 due to the difference in the price system in Estonia and Finland in 1988. While prices in Finland, in principle, follow the changes in the supply and demand, the food prices in Estonia have been fixed by the state. It has been the Soviet price policy in Estonia after World War II to keep the prices of foodstuffs relatively stable and lower than the cost of production with the help of significant subsidies to agriculture. This has been possible because of the monopolistic position of the public sector in Estonia. Although there exist subsidies also in Finland, they affect the price level indirectly and not to the same extent. Thus, the following comparison obviously puts an Estonian employee in a more favourable position.

* Suomen tilastollinen vuosikirja 1990; Töölise, teenistuja ja kolhoosniku perekonna budzett, Tallinn, 1989.

Thirdly, the quality of foodstuffs should be also taken into account. While the quality was approximately the same in 1938, we cannot make a similar assumption automatically for 1988. Since we do not have any estimates of the quality levels of foodstuffs we have used in the comparison the unadjusted prices of nominally identical foodstuffs. This also favours the Estonian side, because the quality of food is to a certain extent lower there.

Figure 1. Comparative levels of the PPW of industrial workers with respect to non-meat foodstuffs in 1938 (Estonia = 100)

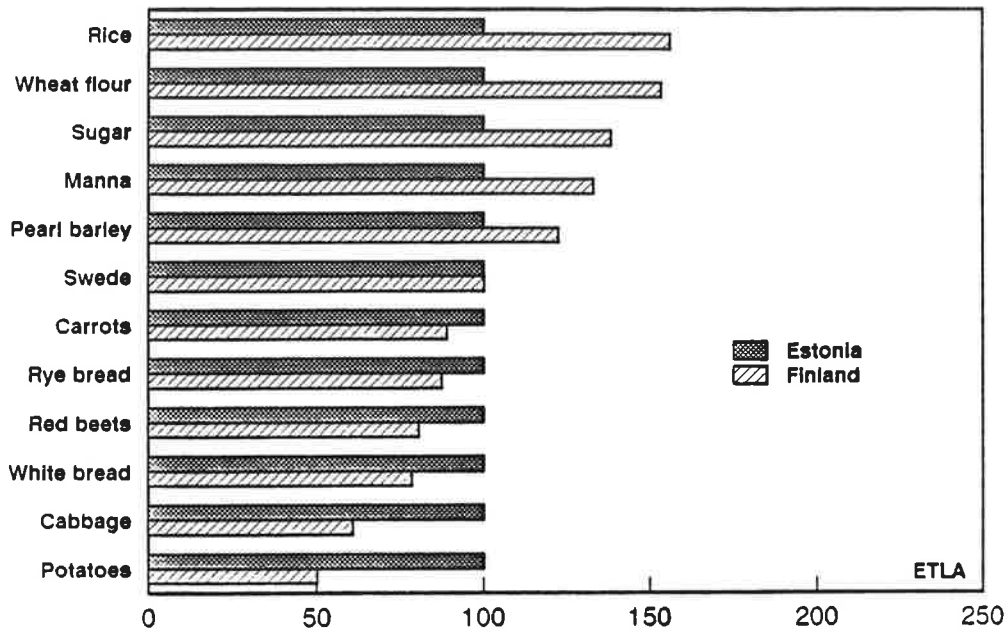
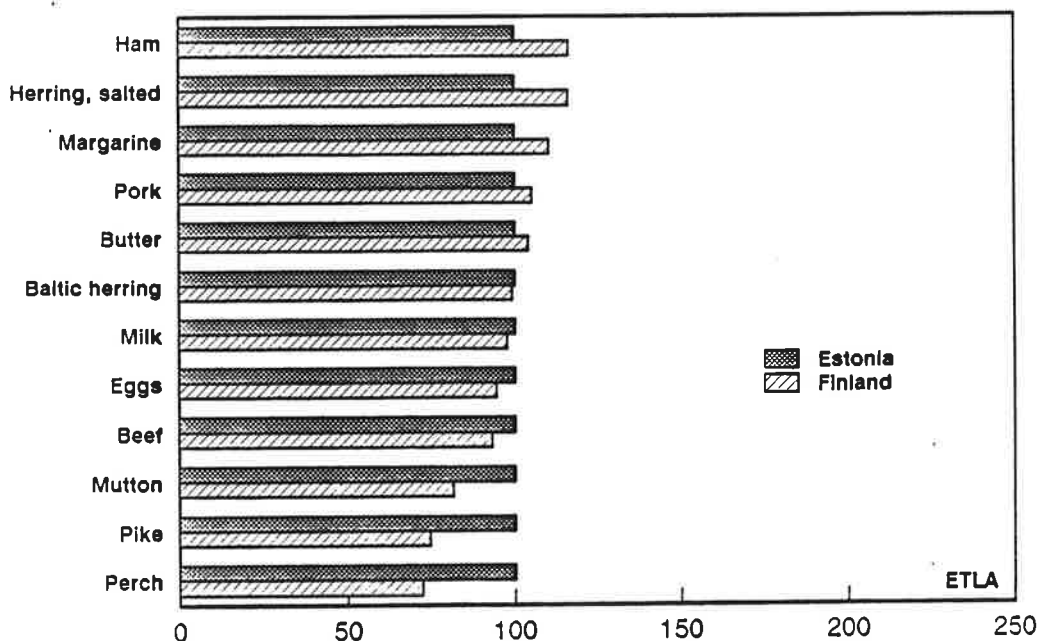


Figure 2. Comparative levels of the PPW of industrial workers with respect to meat foodstuffs in 1938 (Estonian level= 100)

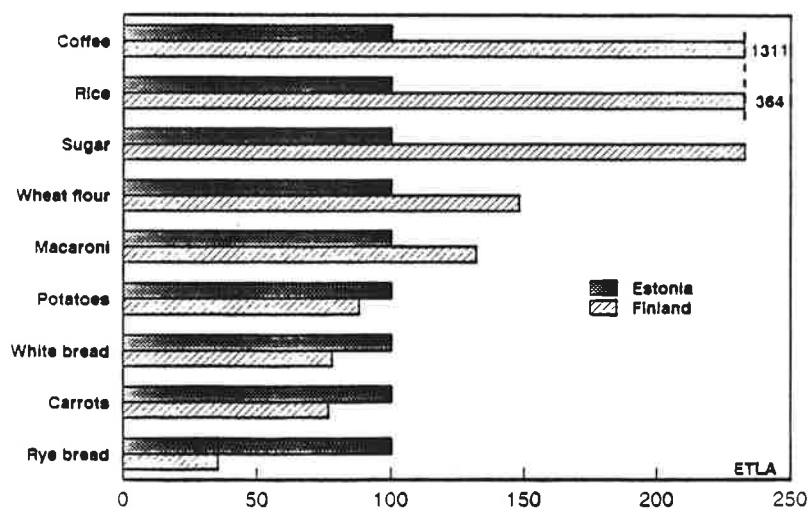


Fourthly, although the prices of foodstuffs in Estonia which have been used in the comparison are the actual purchasing prices derived from the Household Budget Survey, it cannot be assumed that all these items of foodstuffs were always available in shops. The degree of food shortages has been varying and it increased significantly in 1989 and 1990. In 1988, however, the food situation was still reasonable and the majority of these foodstuffs to which we have referred were more or less permanently available. Therefore, the comparison is, perhaps, not too distorted.

The wage data for 1988 is based on the average monthly wages of employees. It was 249,2 roubles in Estonia and 7243 marks in Finland.* To get the hourly wages we have applied the conversion rates which are used in both countries for that purpose: 173,1 in Estonia and 170 in Finland.

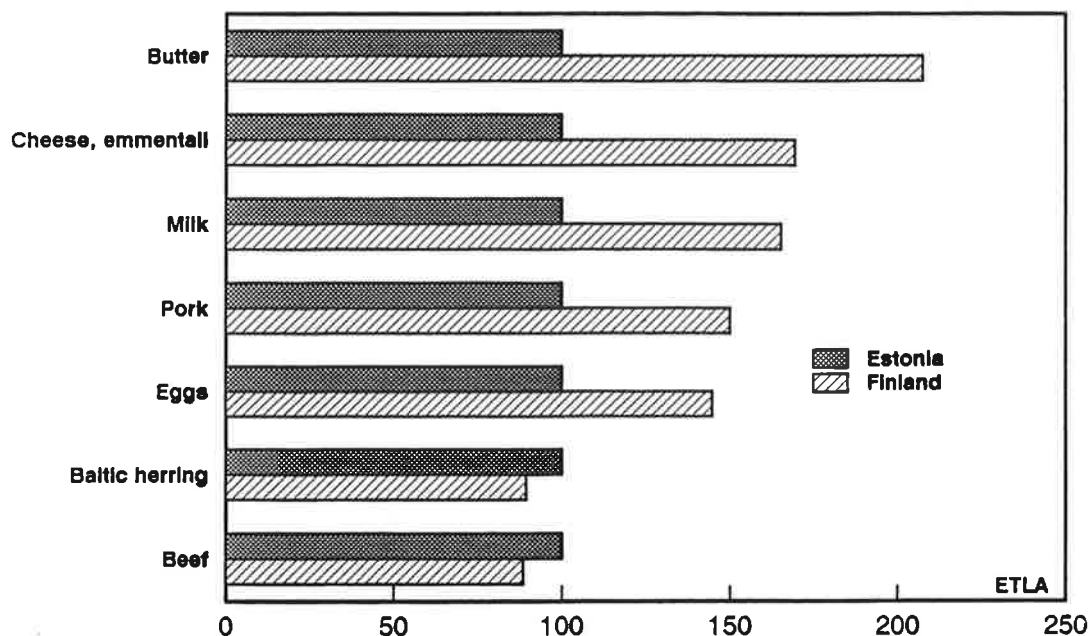
The average net wage seems to be relevant for the comparison of the PPW in 1988 rather than gross wage, because we are trying to measure the disposable income that people actually had to buy goods. Taxation has been quite different in Estonia and Finland (see subsection 7.2 about personal taxation). In the estimation of net wages we have used the rate of direct taxes of gross income of employees: in Estonia it was 8,7 percent and in Finland 28,3 percent. The average hourly net wages would be accordingly 1,31 roubles and 30,55 marks. Relative levels of the PPW of employees with respect to foodstuffs are presented in figures 3 and 4.

Figure 3. Comparative levels of the PPW of employees with respect to non-meat foodstuffs in 1988 (Estonian level = 100)



*See tables 5 and 6 in subsection 2.

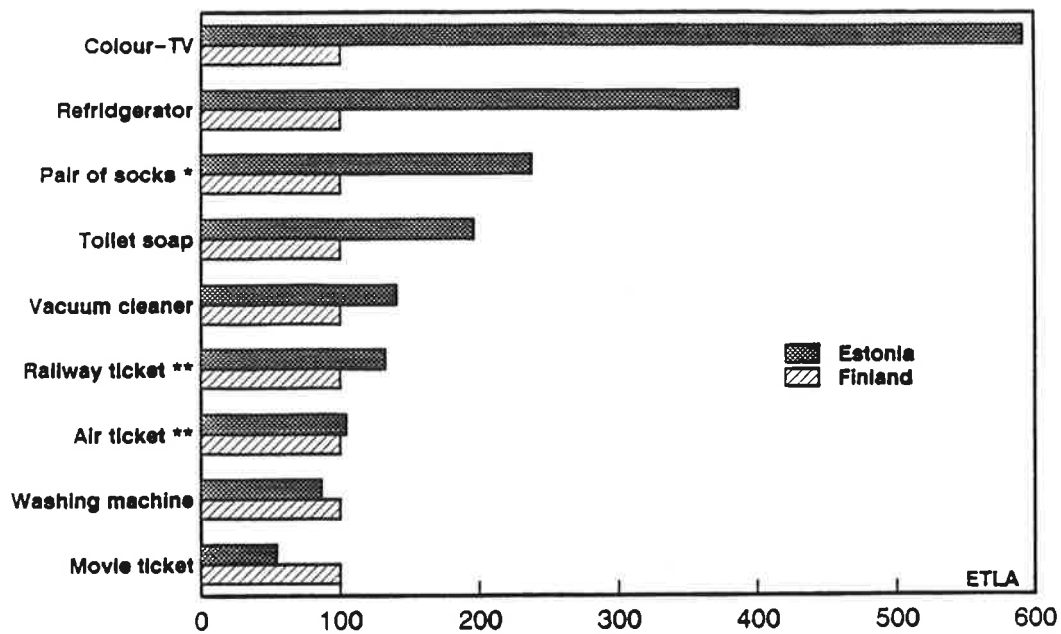
Figure 4. Comparative levels of the PPW of employees with respect to meat foodstuffs in 1988 (Estonia = 100)



Compared with 1938 some changes have occurred. In 1988 for the majority of meat products the PPW of a Finnish employee appears to be 1,45-2,1 times higher than that of an Estonian employee, though there were two products that were relatively cheaper for an Estonian employee: beef and Baltic herring. In general, however, it should be admitted that a Finnish employee can be considered to be better-off. As regards the non-meat products, the results of the comparison depend on the item of foodstuff which we compare. The extreme cases are rye bread and coffee: while the first one was about 3 times cheaper for an Estonian employee, the second one was 13,1 times more expensive. Thus, rather different price structures in the two countries can be found. In general, figure 4 seems to suggest that this sample of non-meat products for which we have data was cheaper for a Finnish employee. Unfortunately, the data is not sufficient for a better comparison based on a comprehensive basket rather than on separate items of goods.

It is also possible to compare the PPW of employees with respect to some manufactured goods and services (see figure 5). Instead of comparing how much of a good can be bought with the hourly wage we have made the reverse comparison: how much worktime is needed to buy a unit of a good or service.

Figure 5. Comparative lengths of worktime needed to buy some goods and services (Finnish level = 100)



* Estonia: a pair of socks or stockings

** Comparison is based on the following distances: Tallinn-Tartu (Estonia) and Helsinki-Tampere (Finland), appr. 180 km each.

Figure 5 suggests that the differences in the PPW with respect to manufactured goods are bigger than they were in the case of foodstuffs. An Estonian employee had to work approximately six times longer to buy a colour TV, about four times longer to buy a refridgerator and 2-2,4 times longer to buy a pair of socks or a bar of soap. In the case of transportation services the differences were smaller and a movie ticket was even two times cheaper in Estonia than in Finland. However, there are two factors which seriously affect the comparability of data on the consumer durables and semidurables.

First, the prices on which the comparison is based do not reflect the different quality of goods. In case of foodstuffs a simplifying assumption was made that the quality of goods in Estonia and Finland is close to each other, but similar assumption cannot be used for manufactured goods. If the prices were adjusted to take into account the differences in the quality of goods, the differences of the PPW would be several times bigger in favour of Finland. The "quality factor" varies with items of goods being more significant in consumer durables. In some cases goods can even belong to a different technical generation in spite of the nominal identity of goods.

Secondly, also the "shortage factor" should be taken into account, i.e. the shortage of goods in Estonia. This means that the state prices which are used in the present comparison do not lead to a correct estimate of the real PPW. In 1988 the shortage of consumer durables was much sharper than the shortage of food. Therefore, if correctly adjusted equilibrium prices were available, the PPW in Estonia would be considerably lower. Because the present comparison fails to take into account the quality and shortage factors, the comparison of the PPW with respect to consumer durables and semidurables is less reliable than with respect to foodstuffs. But in spite of the factors which cause the deviation of results that favour an Estonian employee, the PPW appears to be bigger in Finland.

However, the comparison of the PPW with respect to various items of goods and services does not present an aggregate estimate of the income level unless the basket of goods and services which is used is representative of the actual consumption. Since a correct and comprehensive comparison of the purchasing power parities of national currencies would go beyond the scope of the present study we have to look for some alternative ways to compare the income levels.

Next we try to estimate the levels of household income per capita with the help of some conceivable and available conversion rates between the Finnish mark (FIM) and Soviet rouble (SUR). First we follow the development of income levels in both countries converting the Estonian income level from roubles to marks by the official exchange rate. The results are presented in table 1 and figure 5.

Table 1. Household income per capita in Finland and Estonia in 1960-1988

Year	Finland FIM	Estonia SUR	Official exchange rate FIM per SUR	Estonia, converted FIM
1960	2811,8	594,9	8,025*	4774,1
1970	7962,6	1135,9	4,680	5316,0
1980	34469,9	1731,1	5,701	9869,0
1985	60297,2	2076,3	7,163	14872,5
1988	76435,1	2413,1	6,861	16556,3

* November 1960

Sources: "Kansantalouden tilinpito 1981: Aikasarjat vuosilta 1960-1981", Tilastokeskus, Helsinki, 1984; "Kansantalouden tilinpito 1984-1989", Tilastokeskus, Helsinki, 1990; Statistical yearbooks of Finland from the years 1988 and 1990; "Bank of Finland Monthly Bulletin No.1, 1961", Bank of Finland, Helsinki, 1961; "Eesti rahvamajandus 1988. aastal", Olion, Tallinn, 1989.

Figure 6. Differences of the levels of household income per capita in Estonia and Finland in 1960-1988; the Estonian income level is converted from SUR to FIM by the official currency exchange rate

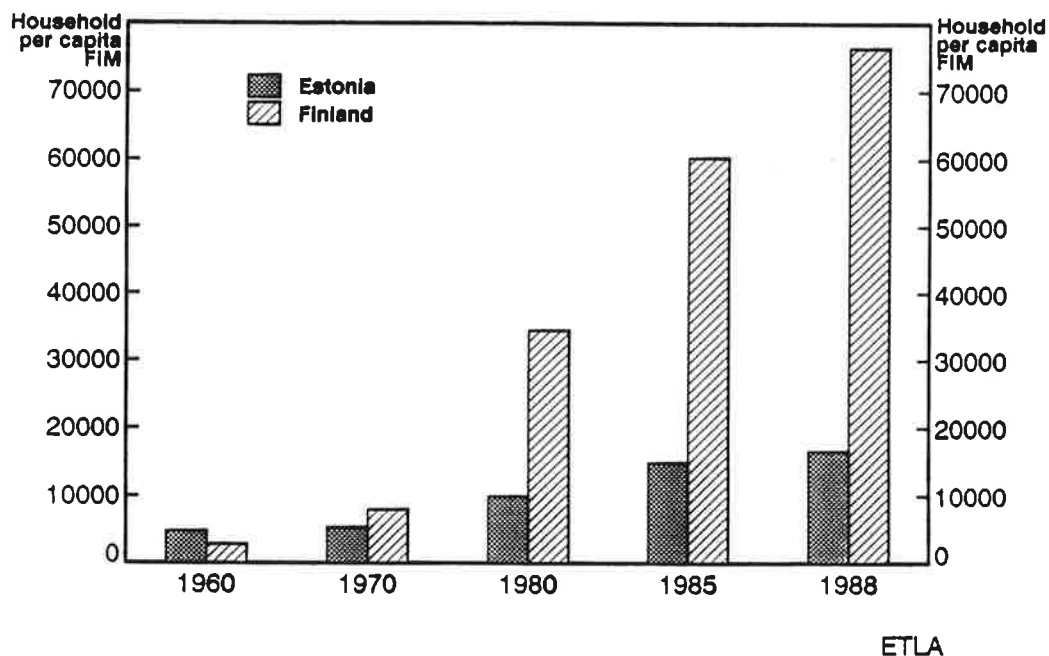


Figure 6 shows that the difference of income levels between the two countries has grown during 1960-1988. Since the figure is drawn on the basis of nominal income, the income levels in different years are not comparable in real terms. Real household income per capita in Finland in that period has grown less than nominal income, about 3,4 times. We do not know what has been the real income growth in Estonia, because the collection of data for calculating the consumer price index started in 1989. The difference between the two countries in the same year can nevertheless be estimated. According to the latest observation household income per capita was in Finland 4,6 times higher than in Estonia in 1988.

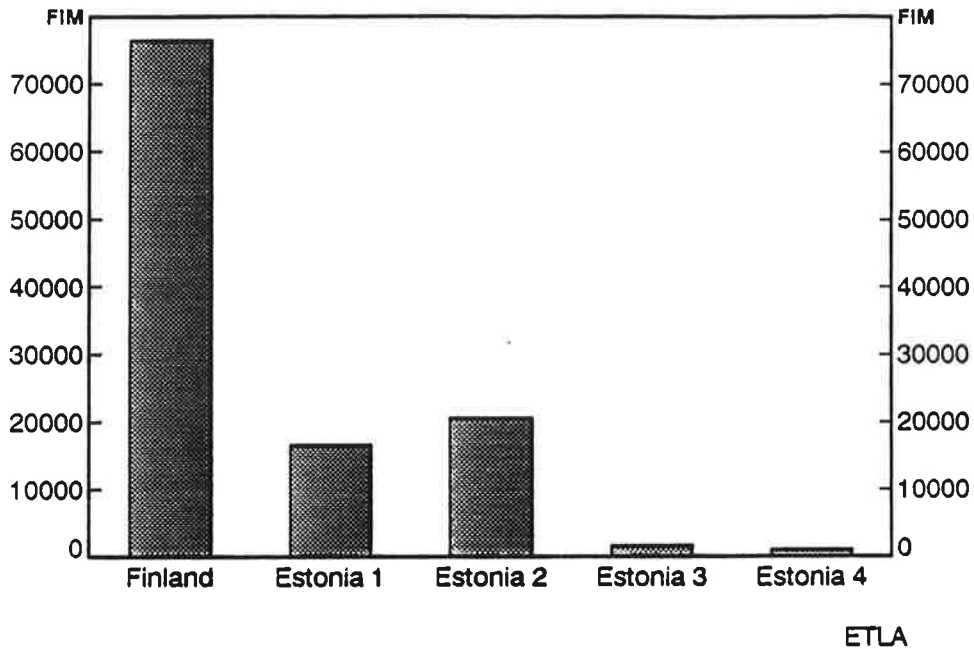
However, the assumption that the official exchange rate reflects the purchasing power parity of the Finnish mark and Soviet rouble is incorrect. In fact, the relationship between the official exchange rate and the purchasing power parity of the currencies has been weak or non-existent. The rouble has been considerably overvalued during 1960-1988. Thus, it is justified to take into account also some alternative conversion rates to get more correct estimate of income levels in real terms. Figure 7 presents household income per capita in Estonia and Finland in 1988 using the following conversion rates (FIM per SUR).

1. Official exchange rate (6,861): Estonia 1 in the figure.
2. "Food rate", calculated as the average ratio of foodstuff prices used in the comparison of PPW in present study (8,501): Estonia 2 in the figure.

Since the quality differences and the shortage factor explained above would have affected considerably the results in the case of other goods and services, we have calculated only the ratio of foodstuff prices.

3. Tourist rate, used in Estonia and in the Soviet Union when selling foreign currency to Soviet citizens who have planned and received permission to undertake a tourist trip abroad. It is ten times lower than the official exchange rate, in our calculations thus 0,6861. The amount permitted to exchange was limited to 2000 roubles per person per year. Estonia 3 in the figure.
4. Black market rate in Estonia (0,4 - estimate by Kalev Kukk): Estonia 4 in the figure. Since 1988 the price of the Finnish mark in the black market has risen rapidly and in January 1991 it was already about 6 SUR per 1 FIM, or 0,16 FIM/SUR.

Figure 7. Household income per capita in Finland and Estonia according to different conversion rates between the Soviet rouble and Finnish mark



These conversion rates give rather different estimates of the income level in Estonia. According to the "food rate" it was 3,7 times lower than in Finland, but according to the black market rate even 79,2 (!) times lower. While these extreme estimates hardly tell anything about the real income level in Estonia compared with Finland - its estimation implies the use of a purchasing power parity rate - they can indicate the range within which it lies. Since the official exchange rate certainly overvalues the rouble while the tourist rate which is ten times lower, on the contrary, tends perhaps to undervalue it, the mistake in estimating income levels would be smaller if the arithmetic average of these rates is used: 1 SUR=3,77 FIM. In that case the household income per capita in Estonia in 1988 was 9097,3 FIM or approximately 8,4 times lower than in Finland. Since taxes are different - in Estonia the gross tax rate was 7 and in Finland 26,3 percent of all household income - the difference of disposable income levels is somewhat (1,3 times) smaller. Nevertheless, it does not change the picture much.

There are two factors which account for the difference of income levels in Estonia and Finland in real terms: the amount of goods and services that can be consumed and the quality of these goods and services. During the last few decades the Estonian economy has failed to keep pace with the qualitative shifts that have taken place in world economy. Since the prices in the world market can serve as a basis for calculating comparable income levels, it is even possible that the total value of production (real income level) can decrease in spite of the growth of the volume of production if the latter is not sufficient to compensate the increasing quality lag of production. Thus, it is mainly the technical and technological lag of goods produced in Estonia that accounts for the growing gap between the real income levels in the two countries.

Table 4. Comparison of the PPW of employees with respect to some manufactured goods and services in 1988

Item of good or service	Prices		Working hours needed to buy a good or service	
	Estonian roubles	Finnish marks	Estonia	Finland
Colour-TV	717	2825	547,33	92,47
Refridgerator	290	1750	221,37	57,28
Washing machine	110	3000	83,97	98,20
Vacuum cleaner	51	850	38,93	27,82
Pair of socks	2,63*	25,82	2,01	0,85
Bar of soap (kg)	2,9	34,5	2,21	1,13
Railway ticket**	3	53	2,29	1,73
Air ticket**	8	180	0,38	0,70

* A pair of socks or stockings

** Comparison is based on the following distances: Tallinn-Tartu (Estonia) and Helsinki-Tampere (Finland), approximately 180 km each

Sources: "Eesti NSV rahvamajandus 1988. aastal", Olion, Tallinn, 1989; "Töölise, teenistuja ja kolhoosniku perekonna budzett", Eesti NSV Riiklik Statistikakomitee, Tallinn, 1989; "Suomen tilastollinen vuosikirja 1990", Tilastokeskus, Helsinki, 1990; "Kulutajatilasto 1988"; Suomen Radioliikkeiden liiton tilastot

2. Structure of Income and Personal Taxation

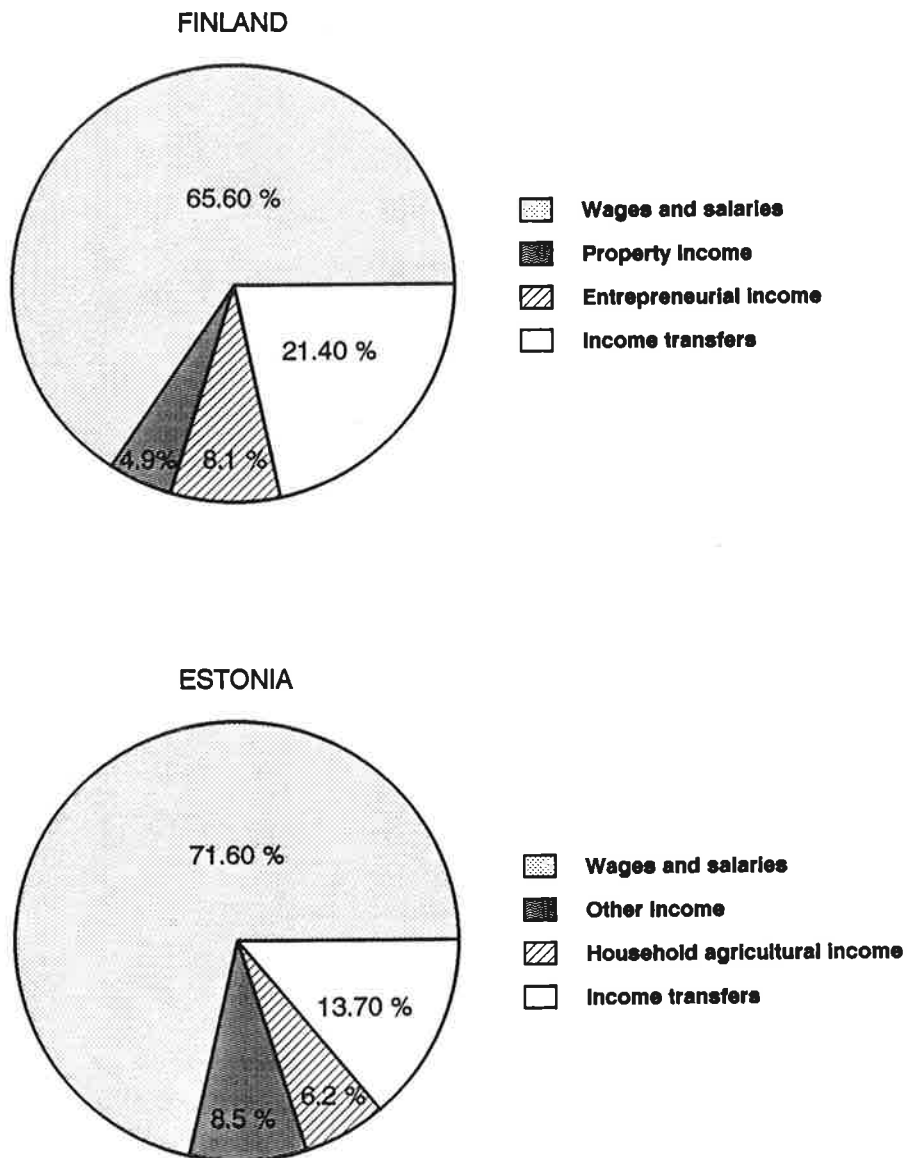
The Estonian data on the structure of income presented in this study has two sources. The first source is the statistics of the Balances of National Economy which provides data for the total population since 1960. The second source is the Household Budget Surveys which provide data for employees for 1988. The classifications of income types which are used in both cases can be regarded as identical although there might be slight differences.

The Finnish data on the structure of income is derived from the Household Budget Surveys and Income Distribution statistics and is available since 1966. There is also data available from the System of National Accounts for a longer period, but the categories of income used there are not entirely comparable with the Estonian ones and also with the Finnish data from other sources. It should not be inferred, however, that the categories used in Estonia and Finland were properly comparable for the study. In order to achieve desired comparability it was necessary to make some aggregation of the structural elements of the Estonian data.

The data on the structure of household income in Estonia and Finland in 1988 is presented in figure 8. The development of the structure of income can be followed in tables 5 and 6. On the basis of that data the following main differences can be noticed.

First, the taxation plays a significantly more important role in the income formation of households in Finland than in Estonia. In 1988 the share of direct taxes in gross income was 26,3 per cent in Finland, but only 7,0 per cent in Estonia. Accordingly, the share of disposable income in gross income was lower in Finland.

Figure 8. Structure of household income in 1988



**Table 5. Income structure in Finland in 1966-1988,
income/household**

Income item	1966	1971	Per cent				1988	1988*
			1976	1981	1985	1988		
Wages and salaries	66,5	66,2	67,9	69,5	65,9	65,6	85,0	
Income transfers	9,7	14	16,5	17,4	21,2	21,4	9,5	
Entrepreneurial	18,3	13,6	11,2	9,9	9,6	8,1	2,4	
Property income	5,5	6,2	4,4	3,3	3,5	4,9	3,1	
Gross income	100	100	100	100	100	100	100	
Direct taxes	-16,2	-19,6	-25	-23,4	-25,2	-26,3	-28,3	
Disposable income	83,2	80,4	75	76,6	74,8	73,7	71,7	

Table 6. Income structure in Estonia in 1960-1988

Income item	1960	1970	Per cent			1988*
			1980	1985	1988	
Wages and salaries	79,3	78,7	75,7	72,7	71,6	80,0
Income transfers	8,9	10,9	13,2	13,6	13,7	8,5
Household agri- cultural income	8,1	6,4	4,5	6,2	6,2	2,2
Other income	3,7	4,0	6,6	7,5	8,5	9,3
Gross income	100	100	100	100	100	100
Direct taxes	-6,2	-6,8	-7,2	-7,0	-7,0	-8,7
Disposable income	93,8	93,2	92,8	93,0	93,0	91,3

* Families of employees

Sources: Uusitalo, H. "Income Distribution in Finland", Tilastokeskus, Helsinki, 1989; "Tulonjakotilasto 1988", Tilastokeskus, Helsinki, 1990; "Eesti rahvamajandus 1988. aastal", Olion, Tallinn, 1989.

The gross tax ratio has increased more in Finland during the period. In 1966 roughly one sixth of gross income was used to pay taxes, but in 1988 a bit more than one fourth. The increase was particularly rapid in 1966-1976 reflecting the expansion of the welfare state. During the following five years there was a small setback, but in 1980s the welfare state recovered and the share of taxes in gross income has increased again. In Estonia the share of taxes has changed very little during 1960-1988, by only 0,8 percentage points.

The above-mentioned difference indicates the different role which has been assigned to direct and indirect taxation in the two countries and reflects the difference of the economic systems. Direct taxation is more important in Finland and indirect taxation in Estonia. Consequently, the ratio between final income, which includes also the value of public services, and gross income should be lower in Finland. This is in accordance with the observation that in 1981 the ratio between final income and gross income was 88,1 percent in Finland, but the same figure for Estonia was about 125 per cent in 1988 (estimate for employees).

Secondly, **income transfers** are a considerably more important source of income for the Finnish households than for the Estonian households: the share of this type of income was 21,4 per cent in Finland and 13,7 per cent in Estonia in 1988. This difference is also connected with the development of welfare state: redistribution of income is more extensive in Finland. In both countries the share of income transfers has increased, but considerably more in Finland. The share of **wages and salaries** has declined in both countries, but has remained higher in Estonia. In the case of employees, on the contrary, the share of wages and salaries is higher in Finland.

Thirdly, there are two income categories in Finland which have been insignificant or missing and not reported for Estonia: **entrepreneurial income** and **property income**. This is due to the difference of the economic systems in the two countries. Although in Finland the shares of entrepreneurial and property income have decreased, together they formed still one seventh of gross income in 1988. In Estonia one can find a quite specific type of income, viz. the **household agricultural income**. Since the public agricultural sector has not always been able to supply the amount or quality of foodstuffs that is needed, many households have been engaged in growing vegetables, livestock etc. for their own use and selling a part of their products on markets or to the state. During 1960-1980 the share of this type of income

decreased, but in 1980s this process was reversed and in 1988 it formed 6,2 per cent of gross income. This figure refers to all households; for many households, especially in the countryside, this type of income has been much more important. In general, the structure of income has changed more in Finland. In Estonia it has been quite stable.

Since taxes play an important role in the formation of disposable income of households it is interesting to compare briefly the tax systems which are operating in Finland and Estonia. Data on the structure of direct taxes in the two countries is presented in tables 7 and 8.

Table 7. Structure of direct taxes in Finland 1970-1988

Tax	1970	Per cent		
		1980	1985	1988
State income tax	35,9	39,3	40,4	42,8
Municipal inc. tax	52,7	51,2	48,5	47,4
Property tax	1,0	0,4	0,4	0,2
Social security fees	10,4	9,1	10,7	9,6
Total	100	100	100	100

Table 8. Structure of direct taxes in Estonia 1960-1988

Tax	1960	1970	Per cent		
			1980	1985	1988
Income tax	78,7	87,8	90,7	90,8	92,2
Childlessness tax	13,5	8,5	6,0	5,2	4,4
Agricultural tax	3,6	1,0	0,4	0,4	0,3
Other taxes	4,2	2,7	2,9	3,6	3,1
Total	100	100	100	100	100

Sources: "Tulojen ja varallisuuden perustella maksuunpannut verot vuodelta (*) toimitetussa verotuksessa", Verohallituksen julkaisu, Helsinki; "Tulo- ja omaisuustilasto", Tilastokeskus, Helsinki; Unpublished statistical tables from the Estonian Statistical Office. (*) years 1980, 1988

In Finland direct taxes include the state income tax, the municipal income tax, the property tax and social security fees. The first two types of taxes formed about 90 per cent of direct taxes in 1988. Since 1970 the share of the state income tax has increased a little bit and the share of the municipal income tax decreased, but the latter has still the biggest share. The share of the property tax has been quite small and it has fallen during 1970-1988 up to 0,2 per cent. The social security fees have formed about one tenth of all direct taxes during 1970- 1988.

In Estonia direct taxes include the income tax, the childlessness tax, the agricultural tax and some less important taxes. The income tax is the most important of these taxes: its share was 92,2 per cent of all taxes in 1988. During 1960-1988 its share has continuously increased. The childlessness tax ranks in second place and it formed 4,4 per cent of all taxes in 1988. During 1960-1988 its share has fallen approximately threefold. The agricultural tax is to a certain extent analogous to the property tax in Finland and it is paid by those people who own land. Its share has fallen during 1960-1988 and it constituted 0,3 per cent of all direct taxes in 1988.

The main features of the tax systems in Finland and Estonia can be described as follows. In Estonia the income tax is paid usually on monthly basis from wages and salaries, stipends and also sickness allowances. It is not paid from pensions and other types of income. The tax scale is progressive, but the marginal tax rate has been quite low, only 13 per cent on income higher than 500 roubles per month. The progression varies: tax scale is highly progressive for lower levels of income of 70-100 roubles per month, and slightly progressive or nearly proportionate for income over 100 roubles. The scale has not been changed since 1973 when it was introduced and with the growth of average income level the progression is, thus, decreased. Initially it was more progressive. There is also a separate, slightly modified tax scale with lower tax rates for persons who have four or more dependents.

Income tax at some levels of income in Estonia (1973-1990):

Taxable income roubles	Tax roubles	Tax rate %
71	0,25	0,4
80	3,41	4,3
90	6,81	7,6
100	8,20	8,2
150	14,70	9,8
200	21,20	10,6
300	34,30	11,4
400	47,20	11,8
500	60,20	12,0
501 and above	60,20 + 13 per cent of the income above 500 roubles	

The childlessness tax has a constant tax rate, 6 per cent of income. In Finland there are two types of income taxes: the state income tax and the municipal income tax. Both taxes are paid on a yearly basis, but have different tax schedule: the state tax schedule is common for all taxpayers, but each municipality has its own tax rate. The tax schedules are changed every year, since otherwise the progression would rise along with the rise of general income level. However, the marginal tax rates have remained the same

since 1979. Up to 1973 all taxpayers were divided between three different categories depending on their marital status and the presence of children, but since 1975 all taxpayers have formed one common category.

State income tax schedule in Finland in 1988:

Taxable income mk	Tax at the lower frontier of interval mk	Tax from the income above the lower frontier of interval %
15900-22200	10	6
22200-27500	388	13
27500-32800	1077	19
32800-42400	2084	23
42400-54000	4292	28
54000-78000	7540	29
78000-104000	14500	33
104000-162000	23080	38
162000-270000	45120	45
270000-485000	93720	50
485000-	201220	51

Also the property tax has a progressive scale in Finland (1988):

Taxable property mk	Tax at the lower frontier of interval mk	Tax from the property above the lower frontier of interval %
845000-1580000	200	1,0
1580000-3170000	7550	1,5
3170000 -	31400	1,7

Source: Onikki, E. (toim.) "Verolait 1988", Suomen Lakimiesliitto, Helsinki, 1988.

3. Distribution of Disposable income

While the international comparisons of income levels are usually made using aggregate data from national account statistics, the concentration to distributional issues is more demanding in this respect. Clearly some more detailed information concerning the income formation of the households in both countries is needed. Additional difficulties are faced because of the differing economic systems in question. This matter is highlighted especially when one is trying to find comparable income definitions to be used in income distribution analysis.

In this section we use data collected from individual households. In Finland data on the disposable income of households is available from the Household Budget Surveys for the years 1966, 1971 and 1976. Since the year 1977 Central Statistical Office of Finland has carried out Income Distribution surveys annually. The population consists of all noninstitutional households in Finland. (In 1988 the sample was 12200 households, while earlier it was around 10000). Most income data was collected from administrative records, but interviews were also carried out. The sample information was transformed to the basic population level by using coefficients, which depend on the sampling probability of the household in the sample. The Income Distribution Statistics are representative for all households in Finland. We are using here surveys from the years 1986 and 1988.

Household data in Estonia is available from two types of household surveys. The Family Budget Survey has been carried out annually since the year 1952. The sample size has been around 1000 households (1150 since the year 1988). The Income Survey was carried in 1967, 1972, 1975, 1978, 1981, 1984 and 1989. The latest income survey sample consisted of 3230 households. Until 1989 the results from household or income surveys were secret and part of them could be used only for official use.

The structure of the household budget survey and the income survey is determined by the instructions of the Statistical Central Bureau of the Soviet Union. The number of households from different industries and population groups to be included in the sample is determined so that it represents the population of the whole Soviet Union. Similarly the coefficients to raise the results to the basic population level follow the structure of the Soviet Union. These restrictions are serious and therefore we have decided to use only Household Budget Survey sample data from the years 1986 and 1989 here. There are no coefficients for taking the results to the Estonian population level and the sampling method does not lead to a representative sample. This should be kept in mind while evaluating the results of this section.

Another difficulty is the definition of the income to be used. From the point of view of economic welfare, the **disposable income** of the household would be the best indicator for its ability to allocate expenditures. In this definition transfers received are added and transfers paid subtracted from factor incomes following the recommendations of the United Nations provisional guidelines (1977).

In the Estonian Household Budget Survey data evaluated here the income of the household includes transfers received. Taxes are not excluded. We maintain, that from the distribution point of view this is not of great importance, because the tax system in Estonia is approximately proportional. (See also section 2 concerning taxation.) Later when we discuss income distribution, we mean **gross income** with respect to the Estonian side.

When income distributions are compared, the frequently faced question is the trade off between equity and efficiency. This issue is especially important when the difference between the average income of the households is big, as it is between Finland and Estonia. Handling this problem properly would demand rank ordering techniques and will not be done here. To give some idea of the difficulties involved we can try to convert average monthly

per capita income in Estonia (197,7 SUR in the Household Budget Survey 1989) into FIM. In Finland the average monthly disposable income per capita was 3725 FIM in 1988. There are numerous exchange rates available. At the official rate the average monthly income would be 1347,7 FIM. At the tourist rate it would be 134,8 FIM, ten times lower. By using black market rates estimated in Estonia (Kalev Kukk), the average income per month is even smaller, 49,4 FIM. From 1990 commercial and auction rates by the Bank of Estonia could also be used. Purchasing power parities for a more proper conversion are not available.

Before the comparison of the household income in Estonia can be made with the corresponding Finnish income on the purchasing power basis it seems to be reasonable to concentrate only on distributions and leave the level comparisons to later stages of this common research project. (See, however, section 2 on this subject.)

Table 9. Average income, population and households in Finland and Estonia according to Income Distribution Statistics (Finland) and Household Budget Survey (Estonia)

Finland:		
Year	1986	1988
disposable income, FIM/month		
-per household		8633
-per member	3200	3725
population (1000)	4925,6	4954,4
households (1000)		2102,3
Estonia:		
Year	1986	1989
gross income, SUR/month		
-per household		405,4
-per member	167,3	197,7
population (1000)	1549,1	1570,4
households (1000)		600,9

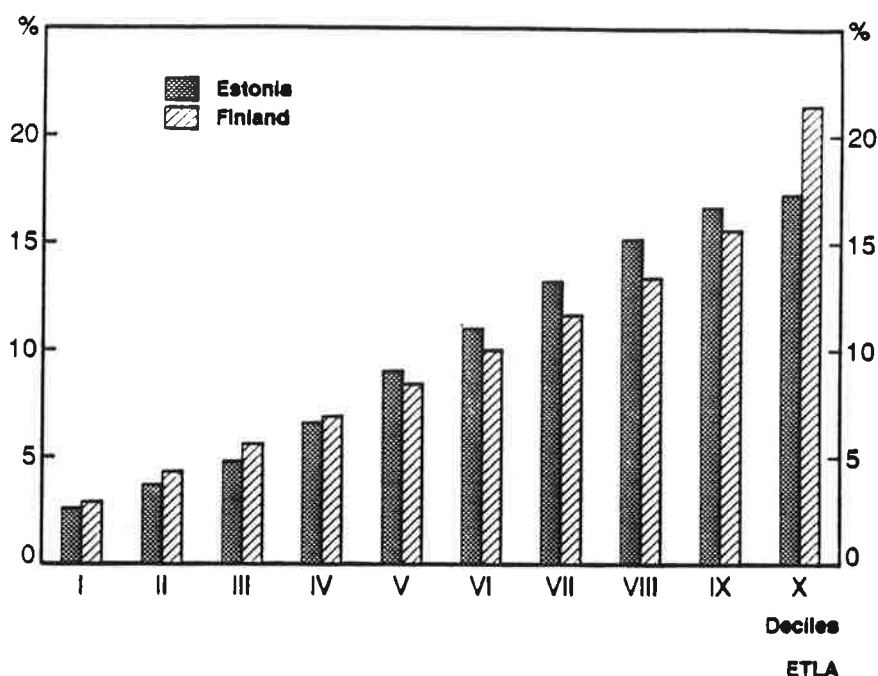
We find it convenient to make the income distribution comparison by using income shares in deciles. These tell how large a share of the relevant income is allocated to different deciles. The number of units (households or household members) in different deciles is the same. The Estonian data was given in income class intervals and frequencies. Moreover the upper interval was open. The Finnish data was published in the Income Distribution Statistics for households in January 1991. The data for household members for the years 1986 and 1988 was processed in the Central Statistical Office of Finland for this study. In table 10 we present the distribution of income between households in Finland and Estonia

Table 10. The shares of disposable income per household (Finland) 1988 and gross income per household (Estonia) 1989 in household deciles

	1988	1989
DECILES	SF	E
I	2.9	2.6
II	4.3	3.7
III	5.6	4.8
IV	6.9	6.6
V	8.4	9.0
VI	10.0	11.0
VII	11.6	13.2
VIII	13.4	15.2
IX	15.6	16.7
X	21.4	17.3

As a first rough estimate of income differences in both countries we calculate the relation between the highest and lowest deciles: Finland $X/I=7.4$ and Estonia $X/I=6.7$. This of course does not give the definite answer to the question, in which country the distribution is more unequal. However, it appears to be the share at the upper level is higher in Finland. This observation is also confirmed with the following figure:

Figure 9. Shares of disposable income (Finland 1988) and gross income (Estonia 1989) per household in household deciles



Source: Finland, "Income Distribution Statistics 1988", Official Statistics of Finland, Central Statistical Office of Finland, Income and consumption 1990:6.

Estonia, unpublished files of the Household Budget Survey 1989 carried out by Statistics Estonia.

The distribution of income between households has the unpleasant feature that the size of the household is not constant in household deciles. In order to take this matter into account we have repeated the calculations using household members as a relevant unit. In this way we try to adjust the distribution with the differences in the household size in both countries.

We present also results from two different years in order to see if any noteworthy changes have happened during the short period we are observing. The household member deciles are presented in table 11 for Finland and Estonia in the years 1986 and 1988/89.

Table 11. Shares of disposable income per household member (Finland 1966, 1988) and gross income per household member (Estonia 1986, 1989) in household member deciles

DECILES	1986		1988	1989
	SF	E	SF	E
I	4.51	5.2	4.53	4.6
II	6.23	6.9	6.18	6.3
III	7.18	7.5	7.05	7.3
IV	7.96	8.7	7.87	8.0
V	8.78	9.1	8.69	9.1
VI	9.66	10.5	9.60	10.1
VII	10.72	11.2	10.63	11.6
VIII	11.96	12.9	11.89	11.8
IX	13.83	14.1	13.87	13.1
X	19.16	14.1	19.69	18.0

In the year 1986 the relation of the highest to the lowest decile was 4.3 in Finland and 2.7 in Estonia. In the year 1988 the figure in Finland was unchanged, but in Estonia it increased to 3.9. So that while it looks like the distribution is somewhat more equal in Estonia than in Finland, the development was towards a more unfavourable direction in the sense of equality in Estonia during 1986-1989. We present the deciles in figures 10 and 11.

Figure 10. Shares of disposable income (Finland) and gross income (Estonia) per capita in household member deciles 1986

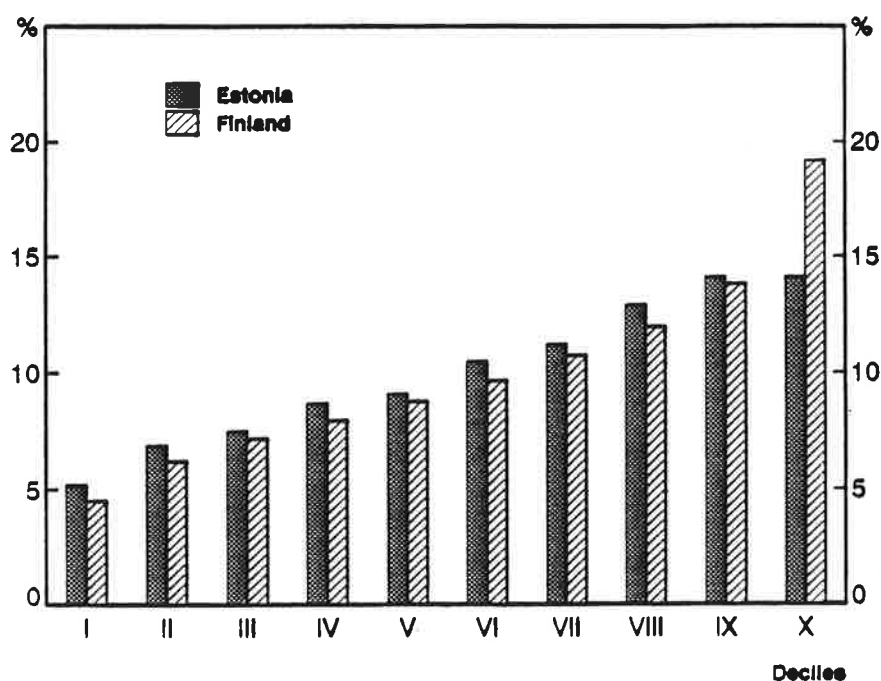
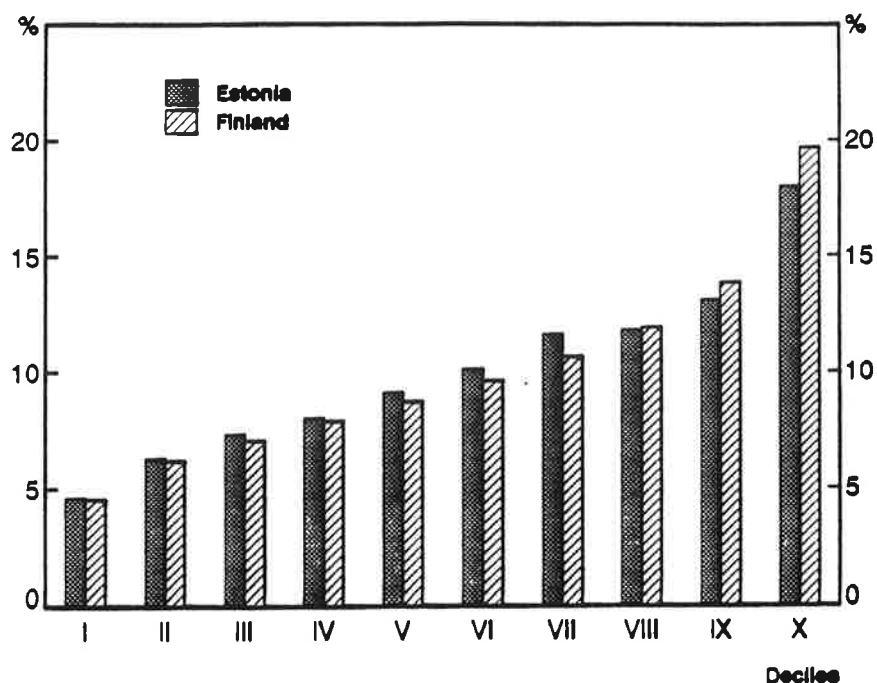


Figure 11. Shares of disposable income (Finland 1988) and gross income (Estonia 1989) per capita in household member deciles



Source: Finland, Central Statistical Office of Finland, Income distribution statistics unpublished data bases.

Estonia, unpublished files of the Household Budget Survey carried out by Statistics Estonia.

Finally we present some gini coefficients from Finnish and Estonian data in the table 12. The ginis are calculated from the decile data and give therefore the lower limit of the index.

Table 12. Gini coefficients in Finland and Estonia

Finland:

Year	1986	1988
disposable income per household member	0.218	0.224
disposable income per household		0.300

Estonia:

Year	1986	1989
gross income per household member	0.166	0.203
gross income per household		0.297

4. Summary

The availability of statistical data limits the possibilities for the comparison of income levels in Estonia and Finland before World War II. Comparison of the purchasing power of wages in 1938 shows that industrial workers in both countries could buy approximately the same amounts of foodstuffs for their hourly wage and it is likely that they had similar living standards.

Comparison based on the statistical data of 1988 indicates that the purchasing power of wages of employees appears to be bigger in Finland, especially with respect to consumer durables. The possibilities to compare the levels of household income per capita are limited unless the purchasing power parity rate between the Finnish mark and Soviet rouble is calculated. However, it is likely that this rate lies between the official exchange rate and so-called tourist rate. The arithmetic mean of these rates would give an estimate of household income per capita in Estonia that is about eight times lower than in Finland.

The main difference between tax systems in Finland and Estonia lies in the fact that in Finland the tax system is more progressive and is more designed to redistribute the gross income of households than in Estonia.

In the year 1988/89 there was no difference in the distribution of income between households in Finland and Estonia.

In the year 1988/89 the distribution of income between household members was more equal in Estonia than in Finland. This may be partly due to the differences in the structure of households in both countries.

From 1986 the distribution of income between household members in Estonia has become relatively more unequal than the corresponding distribution in Finland.

Appendix 1. Prices of foodstuffs in Estonia and Finland in 1938-1988

Foodstuff item	Unit	1938		1988	
		Estonian cents	Finnish pennies	Estonian roubles	Finnish marks
Milk	l	10,2	184	0,25	3,53
Butter	kg	182,0	3080	3,41	38,30
Margarine	kg	93,7	1499	...	12,12
Cheese, emmental	kg	...	...	2,90	39,93
Eggs	10 pc	57,7	1075	1,00	16,10
Potatoes	kg	3,2	112	0,17	4,50
Carrots	kg	9,9	196	0,32	9,73
Red beets	kg	9,3	203	...	...
Rutabaga	kg	7,9	139	...	...
Cabbage	kg	6,7	194	...	...
Wheat flour	kg	46,2	531	0,42	6,61
Pearl barley	kg	32,8	472	...	...
Rice	kg	57,7	651	0,79	5,06
Manna	kg	47,3	626	...	...
Rye bread	kg	19,2	387	0,21	13,84
White bread	kg	49,3	1106	0,53	15,85
Macaroni	kg	77,4	...	0,67	11,85
Pork	kg	91,9	1539	2,10	32,62
Ham	kg	178,0	2697	...	82,13
Beef	kg	62,6	1185	2,15	56,69
Mutton	kg	63,7	1377	...	...
Pike	kg	44,5	1052	...	...
Perch	kg	29,3	714	...	...
Baltic herring	kg	23,6	419	0,31	8,10
Herring, salted	kg	50,1	760	...	...
Sugar	kg	48,0	611	0,80	8,00
Coffee	kg	...	...	20,00	35,32

Sources: "Eesti statistika 1938", Riigi Statistika Keskbüroo, Tallinn, 1938; "Suomen tilastollinen vuosikirja 1938", Tilastokeskus, Helsinki, 1938; "Töölise, teenistuja ja kolhoosniku perekonna budzett", Eesti NSV Riiklik Statistikakomitee, Tallinn, 1989; "Suomen tilastollinen vuosikirja 1990", Tilastokeskus, Helsinki, 1990.

Appendix 2. Quantities of foodstuffs that can be bought with the hourly wage in Estonia and Finland

Foodstuff item	Unit	1938		1988	
		Industrial workers Estonia	Finland	Employees Estonia	Finland
Potatoes	kg	11,844	5,948	7,706	6,789
Carrots	kg	3,828	3,408	4,094	3,140
Red beets	kg	4,075	3,291	...	...
Rutabaga	kg	4,797	4,806	...	...
Cabbage	kg	5,657	3,443	...	...
Wheat flour	kg	0,820	1,258	3,119	4,622
Pearl barley	kg	1,155	1,415	...	...
Rice	kg	0,657	1,026	1,658	6,038
Manna	kg	0,801	1,067	...	...
Rye bread	kg	1,974	1,726	6,238	2,207
White bread	kg	0,769	0,604	2,472	1,927
Macaroni	kg	0,490	...	1,955	2,578
Sugar	kg	0,790	1,093	1,638	3,819
Coffee	kg	...	...	0,066	0,865
Milk	l	3,716	3,630	5,240	8,654
Butter	kg	0,208	0,217	0,384	0,798
Margarine	kg	0,404	0,446	...	2,521
Cheese, emmental	kg	...	...	0,452	0,765
Eggs	10 pc	0,657	0,621	1,310	1,898
Pork	kg	0,412	0,434	0,624	0,937
Ham	kg	0,213	0,248	...	0,372
Beef	kg	0,605	0,564	0,609	0,539
Mutton	kg	0,595	0,485	...	...
Pike	kg	0,852	0,635	...	...
Perch	kg	1,294	0,936	...	...
Baltic herring	kg	1,606	1,594	4,226	3,772
Herring, salted	kg	0,756	0,879	...	...

Appendix 3. Distribution of household members by the size of income per capita in Estonia

Income class (roubles/month)	1986 %	1989 %
- 50.0	0.3	0.7
50.1- 75.0	4.6	2.4
75.1-100.0	9.2	7.0
100.1-125.0	17.8	12.2
125.1-150.0	17.3	14.4
150.1-175.0	15.9	11.3
175.1-200.0	10.7	12.5
200.1-250.0	24.2 (*)	18.3
250.1-300.0		9.4
300.1-350.0		4.9
350.1-400.0		2.5
400.1-		4.4
Average monthly income (roubles)	167.3	197.7

(*) 200.1 roubles and above

Appendix 4. Distribution of households by size of household income

Income class (roubles/month)	1989 %
100.1-150.0	8.8
150.1-200.0	14.4
200.1-250.0	4.7
250.1-300.0	8.9
300.1-350.0	6.7
350.1-400.0	11.8
400.1-500.0	11.3
500.1-600.0	10.8
600.1-700.0	7.8
700.1-	14.8
Average monthly income (roubles)	405.4

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