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## Conference Paper

# Regional income convergence and inequality in boom and bust. Results from micro data in Finland 1971-2000, and especially during the 1990s

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June 26, 2003

## **Regional income convergence and inequality in boom and bust.**

Results from micro data in Finland 1971-2000, and especially during the 1990s.

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**by**

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# This is a paper prepared and updated for the European Regional Science Association (ERSA) Conference, 27-30 August, 2003 in Jyväskylä, Finland. Previous versions were presented at ESRC URBAN AND REGIONAL ECONOMICS SEMINAR GROUP, 1-3 July, 2002 at the University of Central Lancashire in Preston, UK, and UNU/WIDER conference on Inequality, Poverty and Well-being, 30-31 May 2003, Helsinki, Finland.

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## 1 Introduction

The purpose of this article is to analyse what happened to income differences between and within regions as a part of national developments and policies in Finland. We have results from 1971 until the turn of the millennium, but our main focus is on developments since mid 1980s. At the beginning of this period the old institutional framework was still in operation including fixed exchange rate policy, capital import controls, interest rate regulation and a tax system with quite a few deductions (narrow base). Regional policies at large aimed at even development throughout the country. Urban growth problems were not emphasized although Finland was internationally lagging behind in the rate of urbanization relative to its GDP per capita level. Increase in mobility to urban centres when economic growth accelerated always seemed to come as a surprise. Immigration from abroad to Finland was marginal.

This institutional framework in Finland changed in late 1980s with financial liberalisation, collapse of fixed exchange rate policies, EU membership and joining EMU. There were also tax and grant (to municipalities) reforms and deregulation of some markets. Besides institutional changes, the period since mid 1980s is also unique in the economic history of Finland due to its volatility. A boom was followed by an economic disaster in early 1990s, when GDP declined cumulatively by more than 10 per cent in three years. In mid 1990s a new, to great extent IT industry based growth phase started reshaping the economy and its regional structure.

This article first briefly describes how Finland first experienced a boom and then came “Down from the heavens and up from the ashes” (c.f. Kalela et al. 2001 for an extensive multidisciplinary analysis). Thereafter we shall concentrate on our main topic, namely what happened to regional income disparities (convergence or divergence) and inequality. As for the latter topic, we shall study both national developments and inequality within main regions summarizing some results of our project “*Regional income differences and inequality during 1971-1998 and especially in the 1990s*”. It is one of the studies financed by the Academy of Finland under the research program “*The Economic Crisis of the 1990s*”.<sup>1</sup>

In economics’ literature analyses of income convergence and inequality are mainly separate topics. The former typically use national or regional macro aggregates (per capita GDP or the like) whereas the latter are based on utilization of micro data

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<sup>1</sup> The Research program contained more than twenty studies. Three of them belonged to a consortium named “Economic crisis of the 1990s, regional development and the welfare state” (led by Heikki A. Loikkanen) which considered regional developments. Our paper summarizes results of one of its subprojects. The other two concentrate on regional development with more aggregate (sub-region level) data, and on housing market developments. Summary articles of all the projects of the “Economic Crisis of the 1990s” project can be found in Kalela et al. eds. (2001). This paper is based on the summary article of our consortium in that book (see Kangasharju, Laakso, Loikkanen, Riihelä and Sullström, 2001). It is an extended version of its section 13.3, which reports results of our sub-project.

(household income, consumption or the like). These topics are related in studies, which explain economic growth, among other things, by measures of income inequality.

In our project we utilize micro data to study both regional convergence and inequality. We are especially interested in households' situation. Household Survey data, available with about five year intervals, is used to give a long run view of income differences between and within regions in Finland during 1971-90. As a second data source, annual income distribution statistics are used to get a more detailed picture of the years 1990-2000. We apply three income concepts: factor income (i.e. wage, entrepreneur and capital income), gross income (i.e. before direct taxes) and disposable income (i.e. after direct taxes). Thus we can get an idea how the mechanisms of the Welfare State affect regional disparities and inequality. In the main text we present results based on four major regions (Helsinki Region, Southern Finland, Middle Finland and Northern Finland). Results based on alternative regional divisions exist elsewhere. One set of them, based on a city type classification, can be found in Appendix.

With these two data, Household Survey (HS) and Income Distribution Statistics (IDS) we consider how incomes have evolved regionally relative to the respective national averages since early 1970s, and especially during the economic crisis years of early 1990s and the subsequent growth phase. Then, Gini coefficients are used to study income inequality nationally and within regions. To find out what factors have affected changes in inequality, we decompose aggregate national and regional changes into components in order to find out the role of changes in demography, different forms of market income, and the mechanisms of the welfare state (taxation and transfers). In appendices we also consider national and regional poverty measures.

Our paper is organized as follows. Section 2 gives a summary of macroeconomic developments and policies since mid 1980s when the Finnish economy ended up experiencing a boom in the latter part of 1980s. It was followed by a depression in early 1990s, and a new and rapid growth phase, which continued over the turn of the millennium. With this background, section 3 concentrates on what happened to income differences between and within regions in boom(s) and bust. For this purpose we utilize micro data in studying regional income convergence vs. divergence and inequality. Also poverty is considered. A short summary in section 4 concludes the paper.

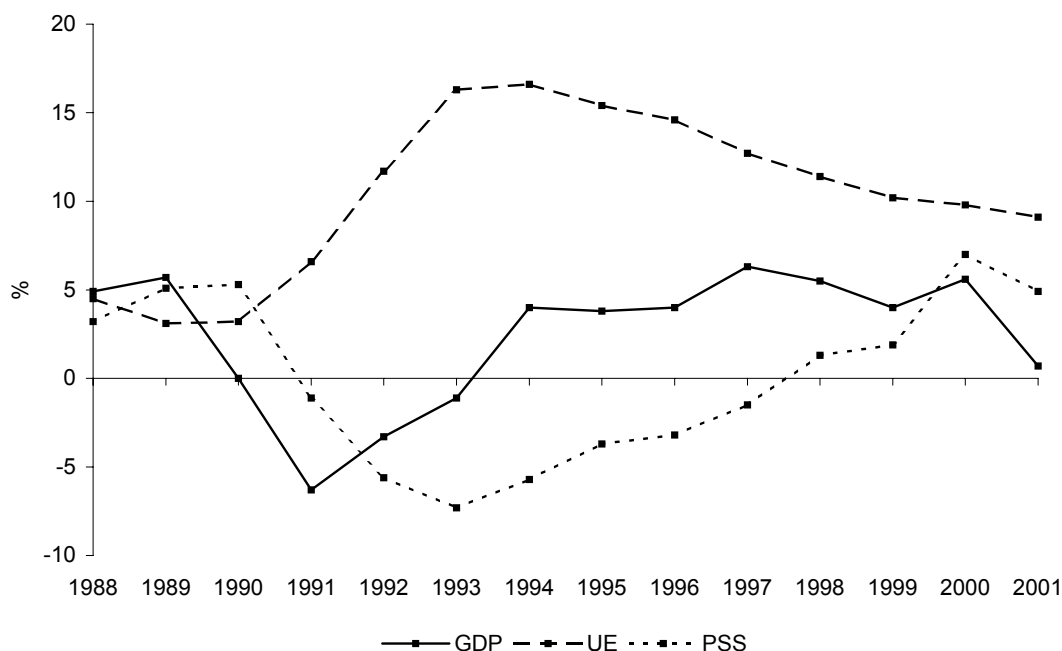
## **2. Economic developments and policies since mid 1980s**

As for long-term income level, since World War II Finland has been catching-up West-European countries or EU average from below. GDP per capita has doubled during the last thirty years and reached e.g. the level of Sweden for the first time at the turn of the millennium. Although economic growth has been fast on average, it has by no means been steady. On the contrary, Finland has been a rather volatile country in West-European perspective, much due to being driven by the world market demand for forest sector products. In this respect 1980s were special, because during its first half it looked

like the business cycle had been tamed. The growth rate of GDP was between 2 and 4 percent. The longer this phase of stable growth continued, the more clearly economic forecasting institutes in Finland, including Ministry of Finance, predicted that a bust was around the corner. Indeed, a change was coming, but the direction was (first) the opposite. Thus, macroeconomic stability problems became especially acute again.

After mid 1980s unexpectedly favourable international economic developments, improving terms of trade, and especially the most important phases of financial deregulation lead to a boom where GDP growth was exceptionally high (figure 2.1). Abolishment of interest rate regulation and capital import controls ended extensive credit rationing and lead to a credit expansion. It was predominantly based on inflow of foreign capital to the economy. The restrictive reaction from interest rate hikes, made possible by abolishment of (average) interest rate regulation in 1986, was delayed, and did not constrain borrowing in the first phase, and when it occurred, the interest rate differential to German Mark widened increasing importation of capital on the assumption that Finland would stick to the fixed exchange rate. As a matter of fact Finnish Markka was revaluated in 1988. Due to credit expansion asset prices increased substantially. The stock market boomed and especially prices of owner-occupied housing skyrocketed relative to normal times (figure 2.2).

**Figure 2.1** *GDP growth rate, unemployment rate (UE) and public sector surplus (or deficit) as a per cent of GDP (PSS) in Finland, 1988-2001*



Source: Statistics Finland

Also the turn from the boom to a bust in early 1990s was unprecedented in Finland, more severe than the 'great' depression in the 1930s. The declared policy of sticking to a

fixed exchange rate, when current account deficits cumulated fast, lost confidence especially when export demand in Western markets decreased, and also barter trade with the former Soviet Union, an important trade partner, collapsed. The consequent currency and bank crises, together with pursued economic policies lead to a cumulative decline of the real GDP of more than 10 per cent in 1991-93. Unemployment rate, which had been 3,2 per cent in 1990, reached 16,6 per cent in 1994. The bust increased public expenditure at the same time when tax revenues decreased. Public sector deficits led public debt to increase from about 15 per of GDP in 1990 to more than 60 per cent level in mid 1990s. The share of public expenditure in GDP reached 62 per cent in mid 1990s.

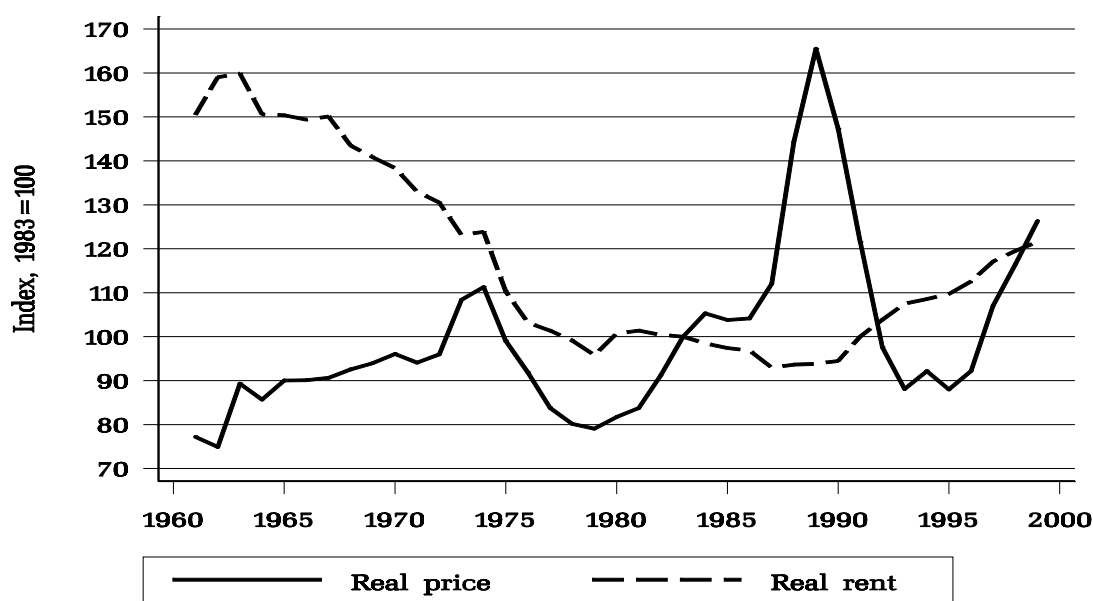
When the boom turned to a depression in 1991 the fixed exchange rate policy lost credibility. After an unsuccessful defence with high interest rates, the Finnish Markka was devalued by 12 per cent in November 1991, and in September 1992 the Markka was floated. In 1995 Finland became a EU member, in October 1996 Finland joined ERM, and in 1999 EMU.

The credit expansion of late 1980s, financed to a great extent by foreign borrowing, lead to a banking crisis when interest rates increased, the Markka was devalued and asset prices collapsed. Prices of owner-occupied dwellings decreased almost to half of their top level (figure 2.2). The economic crisis resulted in banks with non-performing loans and missing collateral values and construction companies with unsold dwellings. A record high number of households suffered from unemployment or no income growth. Quite a few of them were unable to manage with their housing expenses, especially if the last dwelling was bought with credit in the boom with high price, which soon collapsed.

As for banks, some went bankrupt, others merged with domestic or foreign banks and heavy state subsidies were used to save the banking sector. Bankruptcies and merger also occurred in the construction sector. No major bank or construction company survived the turmoil of 1990s without some form of restructuring, something that reflects in the almost complete disappearance of previously familiar company names and entry of new ones, including some foreign ones. To save the banking sector, it has been estimated that the government gave bank worth in all 7,5 percent of 1992 GDP (Nyberg and Vihriälä 1994).

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**Figure 2.2** *Real housing prices and rents in Finland 1960-99, index 1983=100*



Source: Laakso (2002)

It has become customary to explain and summarize the developments which led to the boom of late 1980s and the economic crisis that followed referring to three bads: bad banking, bad luck and bad policies. The first refers to poorly designed financial deregulation without sufficient reforms in the banking sector and taxation. Bad luck refers to business cycle factors in Western markets and sudden discontinuation in major part of East trade following the collapse of the Soviet Union. The third is related to the combination and timing of financial liberalisation, exchange rate policies, and fiscal policies which together first added fuel to an overheating economy at the end of 1980s, and later, when the bust started, had a neutral or in some years even a contractive effect on aggregate demand. As more thorough economic analysis of these developments in English can be found besides in Honkapohja and Koskela (1999). Their article is also in Kalela et al. (2001), which contains articles considering this period from a multitude of viewpoints.

In the middle of the crisis, the government made quite a few reforms in 1993. There was a tax reform, which included adoption of a dual households' income tax system where labour income is taxed on a progressive scale and capital income at a flat rate. Tax base was broadened by eliminating or limiting deductions. A rather modest local property tax was introduced and at the same time taxation of imputed income from owner-occupied housing was abolished. Also corporate income taxation was renewed in the same spirit such that statutory tax rates declined but tax base increased. Furthermore, two-stage taxation of capital income from corporate sector was eliminated. These reforms took

place at a time when the government had hard time financing the expenditures, especially increased transfers due to massive unemployment, with declining tax revenues supplemented by increased public debt, which exploded in a few years relative to previous modest level. Furthermore, the system of state grants to municipalities was reformed from a matching grants system to a lump-sum type system. Rent controls in the private rental sector were abolished, first new contracts and by 1995 from all contracts.

From 1995 on economic growth has been exceptionally fast until the last downturn of the economy in 2001. During the last growth phase the structure of the economy has changed. IT industries, led by the success of NOKIA, have been the fastest growing sectors and the stock prices of related firms boomed until the more recent downturn. This period generated wealth and an exceptional flow of capital income to those who managed to benefit from the boom. Alongside those who could share the success of the new economy or did not lose jobs during the crisis years, there has been a huge amount of unemployed people. Until recently, the unemployment rate has declined rather modestly and it is still around 9 percent, about three times higher than in late 1980s. It has remained at high level (figure 2.1) not only in areas with continuing economic problems (negative employment growth and net migration) but also in urban growth areas, which are undergoing a structural change.

Regionally recent growth has been less evenly distributed than earlier. Concentration of economic activity and migration to urban centres during economic booms has been a stylised fact for long, but now the process has been more selective than earlier, and based rather on the growth of IT sector than traditional (paper, pulp and metal) industries. Only half a dozen urban areas (Helsinki, Tampere, Turku, Jyväskylä, Oulu and Salo regions) have been attracting new investment and gained from net migration. With a clear lag relative to stock prices, housing prices began to increase not only in growth areas but also elsewhere since 1996. The positive aspects of financial liberalization and Finnish membership in EMU, and the related adoption of Euro have, after a period of utmost turmoil, brought better availability and relative stability in the and terms of housing finance in Finland. The utilization of these opportunities have increased housing demand and housing prices as the supply side, as usual, has been sluggish react (figure 2.2).

### **3. Studying regional income differences and inequality with micro data**

#### **3.1 Introduction**

In economics' literature analyses of convergence and inequality are mainly separate topics. The former typically use national or regional aggregates (per capita GDP or the like), whereas the latter are based on utilization of micro data. Our results will be based



on the use of micro data in studying of both regional convergence and inequality. Thus our analysis is related to two somewhat separate, but related research areas.<sup>2</sup>

Research interest in income differences between nations and regions has brought about contributions based on the use of international data in "convergence analysis" (e.g. Barro and Sala-i-Martin 1992 and Sala-i-Martin 1996a, 1996b). Regional convergence studies in Nordic countries include Dilling-Hansen, Petersen and Smith (1994), Dilling-Hansen and Smith (1997) and Groes (1998) in which Danish aggregate county and municipality data is analysed. Persson (1997) studied convergence in per capita incomes across the Swedish counties from 1911 to 1993. Convergence and mobility in Sweden are both considered by Aronsson, Lundberg and Wikström (2001) at county level and by Lundberg (2001) at municipal level. In Finland Okko (1995) and Pekkala (1999) have studied post-war regional convergence of per capita value added at county, province and sub-region levels, whereas Kangasharju (1997) use information on taxable income from 88 areas during 1934-1993. This analysis differs from all these studies in that we use the Household Survey and Income Distribution Statistics data, which give richer possibilities to study regional income differences than more aggregate data.

As another and related research topic, we use our micro data also to study income differences within regions. There is a vast literature on the distribution of income – thousands of entries in the EconLit database (Atkinson, 1997). The latest empirical studies relevant to us can be mentioned Mookherjee and Shorrocks (1982), Atkinson, Rainwater and Smeeding (1995), Jenkins (1995), Aaberge, Björklund, Jäntti, Pedersen, Smith and Wennemo (2000). Finnish studies in this area we can pick up Uusitalo (1988), Aura (1996), Sullström and Riihelä (1996), Jäntti (1997), Jäntti and Ritakallio (1997), Suoniemi (1998, 1999) and Lehtinen (1998). Their main interest is mostly in analysis of inequality at national level.<sup>3</sup>

In this study, we shall present results on income differences both between and within regions in Finland during 1971-1998. The latter is related to the question of regional income convergence vs. divergence (section 3.3) and the latter to inequality within regions (section 3.4). To find out what factors have affected changes in inequality, in section 3.5 we decompose aggregate national and regional changes into components in order to find out the role of changes in demography, income types and the mechanisms of the welfare state (taxation and transfers).

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<sup>2</sup> This relatedness becomes most obvious when we decompose income differences at national level into between regions and within regions components.

<sup>3</sup> In addition to separate analyses of convergence and inequality, these two topics are present in studies, which explain economic growth among other things by measures of income inequality (e.g. Persson and Tabellini 1994, Partridge 1997, Forbes 2000).

### 3.2 Data description and definitions

Our long-run view of income differences between and within main regions in Finland during 1971-1990 is based on the time series data of the Household Surveys (HS) from the years 1971, 1976, 1981 and 1985. A corresponding, but more detailed analysis of 1990s is done with annual Income Distribution Statistics (IDS) data for the period 1990-2000. In both data information on different types of income makes it possible to calculate factor incomes for each household, then add transfers and get gross income, and subtract direct taxes to get disposable income. Thus we can study regional convergence and inequality with all three income concepts.<sup>4</sup>

Our data are samples, which do not allow very detailed regional classifications. Here, we divide Finland into four main regions: the Helsinki (Capital City) region, Southern Finland, Middle Finland and Northern Finland. The sample size (households) in the time series data of the Household Survey is about 3000 in 1971 and 1976 and about 8000 in 1981 and 1985. The samples of annual IDS are bigger ranging from about 9000 to 12000. Both have enough observations for our regional analyses. In studying regional income differences and inequality we apply the income per consumption unit form by using the OECD equivalence scale. Despite of this choice, we shall speak of per capita incomes in the sequel. Note that we have not deflated incomes by regional price indices, which deviate mainly because of housing price and rent differences.

### 3.3 On income differences between regions

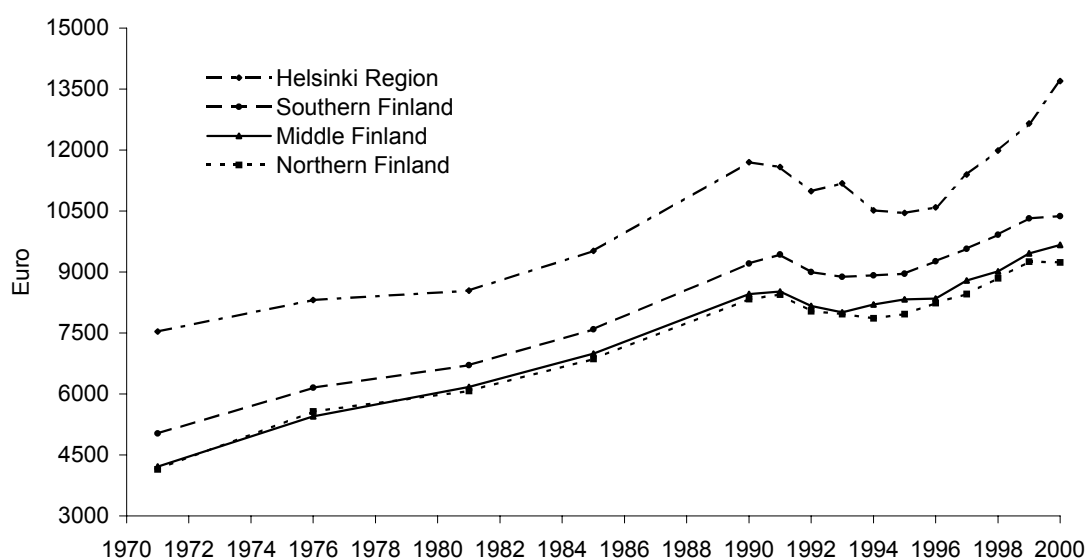
When household survey data is used to consider real per capita income over time, irrespective of income concept used, real income level increased substantially until the year 1990. Thereafter, the depth of the depression of early 1990s is very clear. For the first time during the Post World War II period in Finland real incomes per capita decreased.

Figure 3.1 illustrates that real disposable income per capita increased steadily during 1971-1990 in all major regions. When the economic crisis led to declining GDP beginning in 1991-93, real incomes did not decrease immediately, but only in 1992, except for the Helsinki Region where a drop took place already in 1991. Also the decline in income level lasted longer in the Capital City Region than elsewhere, but when the turn up finally took place in 1997, growth in the Helsinki Region was faster than elsewhere.

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<sup>4</sup> A discussion on the merits and demerits of different measures (alternative income concepts, expenditure, consumption etc) in welfare analysis can be found from Atkinson (1998).

**Figure 3.1** Real per capita disposable income in main regions in 1971-2000

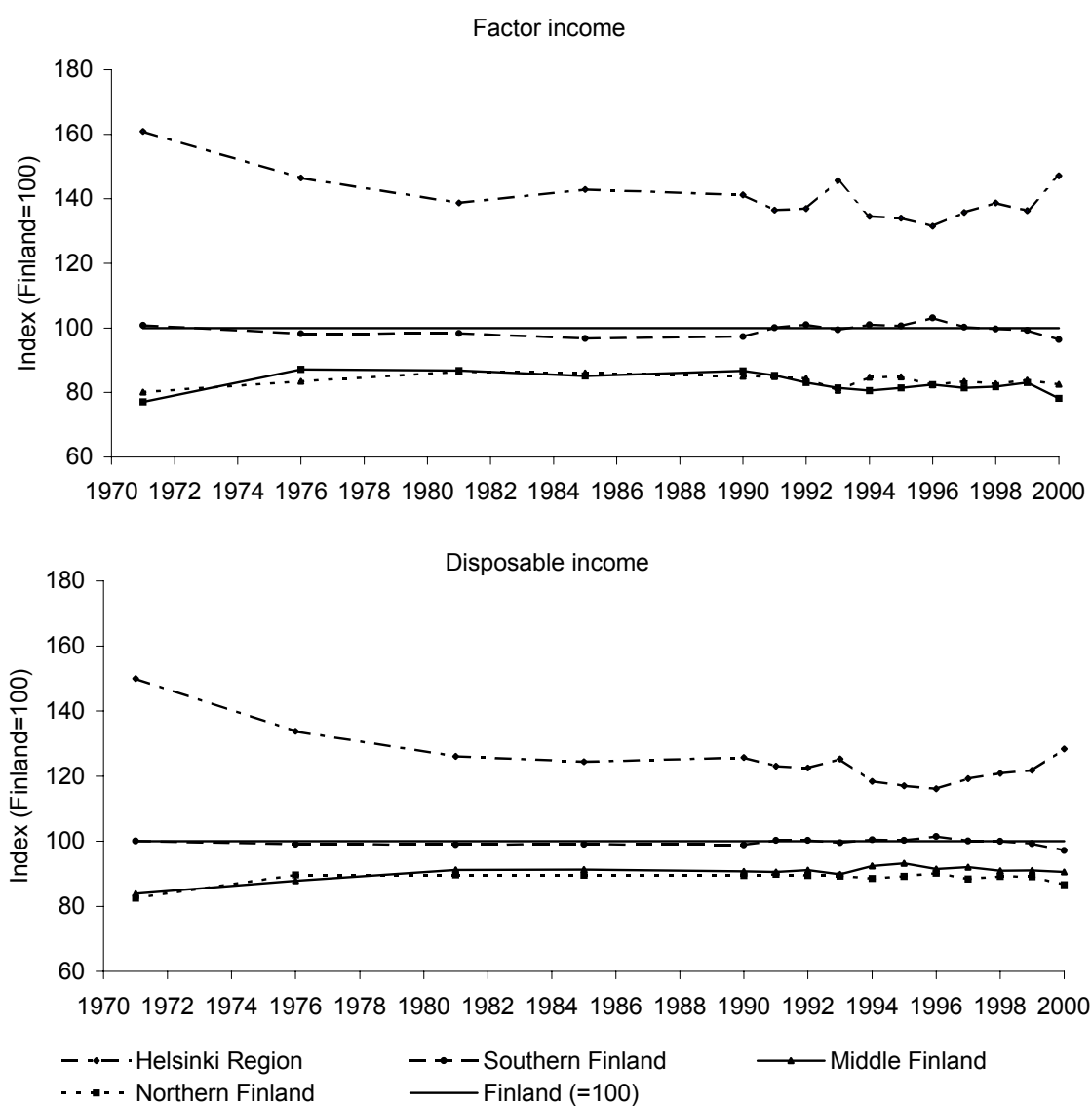


Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

Next, we shall consider the evolution of regional per capita incomes relative to the national average (= 100) applying two income concepts: factor income and disposable income. Figure 3.2 indicates that for both income concepts, there has been substantial regional convergence of relative income levels over time. Convergence was especially clear from 1971 to 1980. In the Helsinki region relative income level declined, whereas the opposite tendency was prevalent in Middle and Northern Finland. The relative position of Southern Finland has remained much the same. We also note that the relative income differences based on disposable income are somewhat smaller than those based on factor income. Thus, the mechanisms of the welfare state decrease regional disparities by taxation and transfers.

During 1990-2000 relative income differences between main regions remained relatively stable. During the three years period of falling GDP, only in the final year 1993 regional disparities in terms of relative factor and disposable incomes increased temporarily. After slight convergence in 1994-96, the last four years indicate some divergence, mainly because of improved position of the Helsinki Region. Relative regional disparities in 2000 were greater than they were in 1990.

**Figure 3.2** *Per capita factor income and disposable income in main regions in 1971-2000*



Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

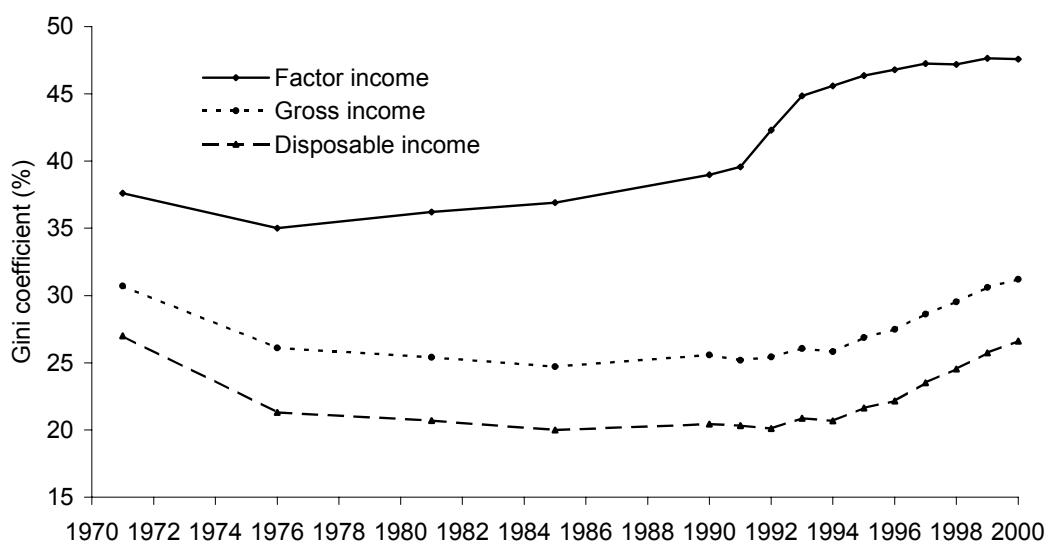
### 3.4 Distribution of income and poverty within regions

International comparisons of income inequality before 1990s indicate that Finland did not differ very much from other countries when the distribution of factor income is considered. However, together with Sweden, Finland had the most even distribution of disposable income (see e.g. Atkinson et al. 1995). Here, in addition to describing national developments, we also have results on inequality for major regions in Finland.

We measure inequality by Gini coefficients based on per capita incomes (OECD equivalence scale).

Figure 3.3 describes national developments of Gini coefficients. Our first observation is that direct taxes and transfers decrease inequality as Gini coefficients decline when we move from factor income to gross income, and to disposable income. As for developments over time, after a slight decline, inequality based on factor income increased since mid-1970s. During 1990s the sharpest increase took place during the deepest recession in 1992-93, after which the growth of this Gini coefficient has continued at a lower rate.

**Figure 3.3** *Gini coefficients based on three income concept in 1971-2000*

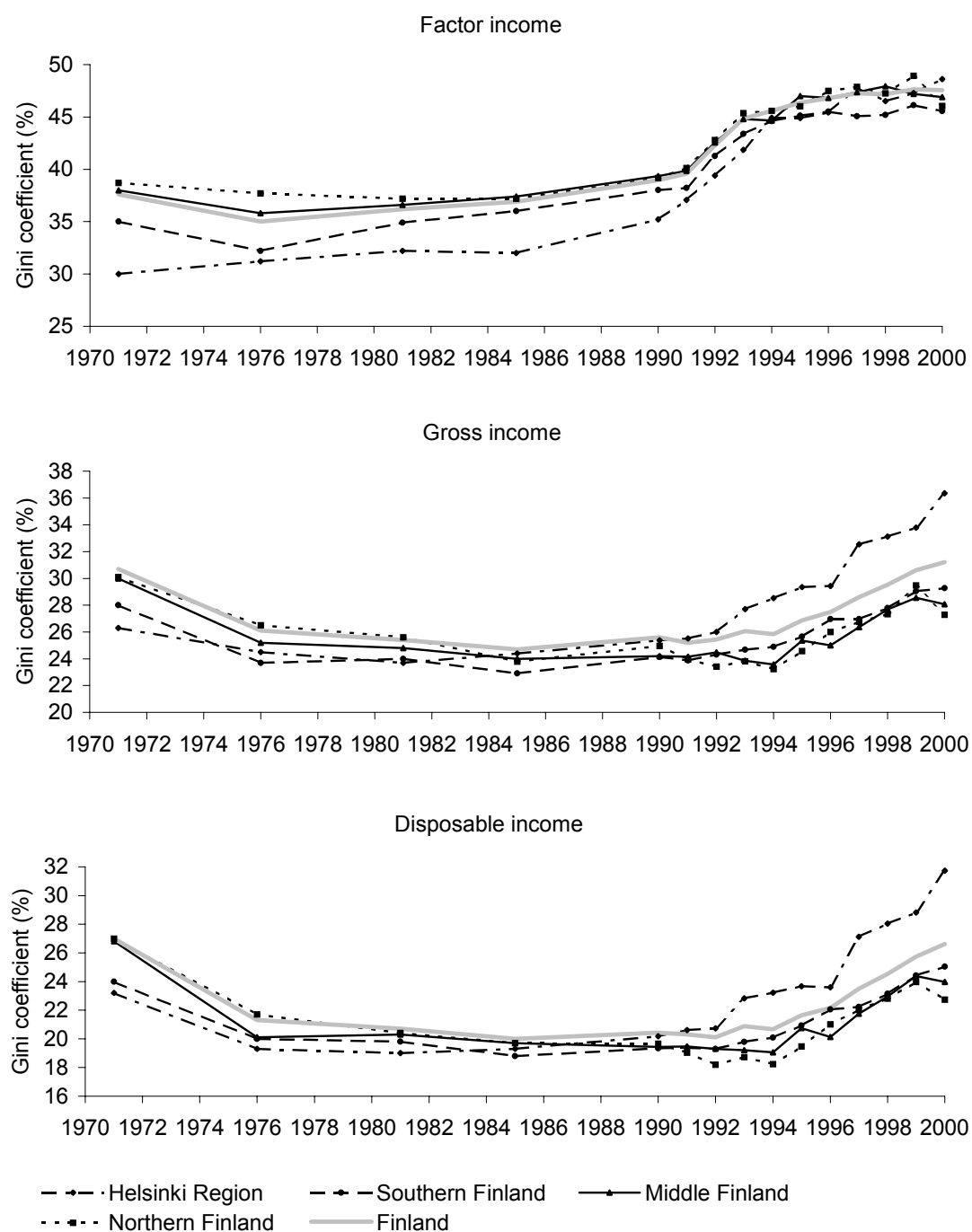


Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

Gini coefficients based on gross income and disposable income both decreased from 1971 to 1976, and thereafter there was no major change in their level. This is surprisingly also true for the deepest recession years 1990-94 suggesting that the economic crisis left income distribution relatively unaffected. However, as the economy began to grow fast after 1994, also inequality began to increase.

The general level and development of regional Gini coefficients is remarkably similar to the national Gini coefficients during 1971-90 (figure 3.4). The most noticeable regional differences are related to factor income Gini coefficients, whereas e.g. in 1985 and 1990 Gini coefficients for disposable income are almost the same in all regions. During the 1990s these trends change. Disparities in regional inequality based on disposable and gross income per capita increase since 1992. Especially, respective Gini coefficients in Helsinki Region began to grow faster than those of the other regions. Somewhat surprisingly, regional disparities in factor income based inequality have slightly decreased during 1990s and are smaller in the boom than in the bust.

**Figure 3.4** Gini coefficients by income variables and main regions in 1971-2000

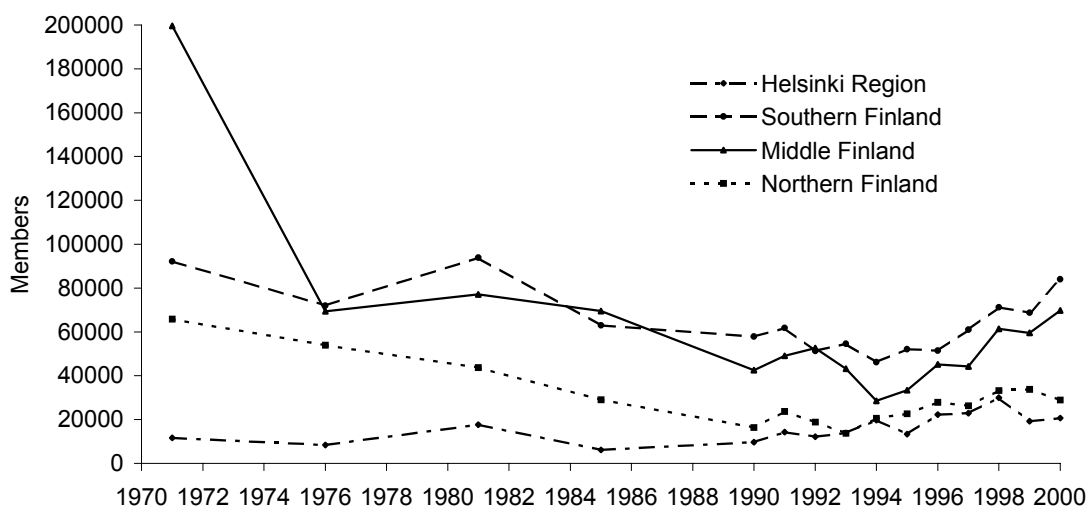


Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

Consideration of poverty supplements our analysis of inequality. The number of poor people (disposable income per capita below half of respective median income) in the Helsinki Region was low during 1971-90 (figure 3.5) whereas in all other regions it was

initially much higher and decreased over time.<sup>5</sup> During the crisis years of early 1990s only in Helsinki Region the number of poor increased and this trend continued until 1998. In other regions, the number of poor began to increase only in 1994 when the economy began to grow fast.<sup>6</sup>

**Figure 3.5** *The number of poor by regions in 1971-2000*



Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

### 3.5 Decomposition of inequality

In the previous section, we presented Gini coefficients for each region and the whole country. To find out which factors have caused changes in total inequality of disposable income, we decompose them into the contributions of demographic changes and changes in types of income.

Methodologically our analysis is related to studies by Jenkins (1995), Aaberge et al. (2000), and Suoniemi (1998,1999), who decompose either changes in Gini coefficients

<sup>5</sup> Note that we have not taken into account regional price differences, especially high housing costs in the Helsinki Region, which partly explains why the number of poor is low in this area.

<sup>6</sup> We have also calculated the number of poor by using the 1990 real income level of the poverty line in considering later years. Then the number of poor increases more than in Figure 3.5 during 1992-96, whereas in 1997-98 the number of poor using this criterion decreases, but still in 1998 there are more poor than in 1990. When we studied similarly the number of rich (disposable income per capita twice the median income), also their number grew during 1994-98, especially in Helsinki Region and in Southern Finland (see Riihelä and Sullström, 2001).

or generalized entropy measures. From the entropy family measures we use mean logarithmic deviation ( $I_0$ ) and squared coefficient of variation ( $I_2$ ) to decompose inequality to between and within region components, and  $I_0$  to decompose changes of inequality over time to contributions of regional populations and relative incomes. To conclude this section, we summarize results based on decomposing changes in regional Gini coefficient by type of income. We use five income sources, which add up to disposable income.

First, in Table 3.1 we consider the contributions of inequality within and between regions to aggregate inequality with our measures  $I_0$  and  $I_2$ . Both measures indicate that total inequality was high in 1971, clearly lower in 1981 and 1990, grew slightly between 1990 and 1993, and increased considerably between 1993 and 2000. Most variation of disposable income is within major regions. The share of between regions variation was 12-13 % in 1971, decreased to 5-8 % in 1981, 1990 and 1993, and still more in 2000. Since 1981 all the changes of aggregate inequality are due to the within regions components.

**Table 3.1** *Within group and between group inequality in 1971-2000*

Year	Mean log deviation ( $I_0$ )				Squared coefficient of variation ( $I_2$ )				Gini coefficient
	Within (%)	Between (%)	Total (%)	Between/Total (%)	Within (%)	Between (%)	Total (%)	Between/Total (%)	
1971	11,1	1,6	12,7	12,5	12,2	1,8	14,1	13,0	27,0
1981	7,1	0,5	7,6	6,3	6,9	0,5	7,5	7,0	20,7
1990	6,4	0,5	6,9	7,6	7,4	0,6	8,0	7,3	20,4
1993	6,9	0,5	7,5	7,3	10,4	0,6	11,0	5,4	20,9
1996	7,9	0,3	8,2	3,5	10,7	0,3	11,0	2,7	22,2
2000	11,8	0,8	12,5	6,1	70,9	0,8	71,8	1,2	26,6

Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

The above decomposition does not tell to what extent changes in inequality are due to changes in regional population shares, income levels and internal inequality. Following Mookherjee and Shorrocks (1982) change in inequality measured by  $\Delta I_0$  can be approximately decomposed to four additive elements where A is a measure of changes in inequality within each group (pure change in inequality), whereas terms B and C indicate the impact on the within groups and between groups components of inequality which result from changes in regional populations, and D gives the effect of changes in relative incomes of regions.

In Table 3.2 results of this decomposition of change in inequality (in %) is reported for three periods: (a) 1971-81 (clear decrease in inequality), (b) 1981-90 (slight decrease in inequality), (c) 1990-2000 (clear increase in inequality). They show that the pure effect A dominates and all other effects are small except term D during 1971-81 when regional (relative) income changes decreased inequality.



**Table 3.2** *Sub-group decompositions of the changes in disposable income inequality*

Period	% $\Delta I_0$	% change in $\Delta I_0$ accounted for by changes in			
		Within-group inequalities (term A)	Population shares		Sub-group mean incomes (term D)
			within groups (term B)	between groups (term C)	
(a) 1971-1981	-39,9	-31,0	-0,2	0,6	-9,2
(b) 1981-1990	-8,8	-9,5	0,0	0,1	0,5
(c) 1990-2000	80,1	75,6	1,2	0,5	2,8
(d) 1990-1993	7,7	7,5	0,1	0,2	0,1
(e) 1993-1996	18,3	21,6	0,2	0,1	-3,6
(f) 1996-2000	52,2	45,7	0,7	0,2	5,7
(g) 1971-2000	-1,3	4,0	1,2	1,4	-7,7

Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

Changes in total and regional population are slow and did not help much in understanding changes in inequality especially in the 1990s. Changes in sources of income and taxation have changed much more following booms and busts of the economy, changes in unemployment, and reforms in tax and transfer systems. To study their role we first note that disposable income can be defined as a sum of four income sources minus transfers paid. The income items consist of wages, entrepreneurial income, capital income, transfers received, including separately unemployment benefits. During 1971-2000 the share of wage and entrepreneurial income has had decreasing trend. Capital income's share surprisingly almost doubled from 1990 (6.6 %) to 1993 (12.3 %) and increased also thereafter. The share of unemployment in early 1990s drove to a still higher level.

In Table 3.3 we present results of a decomposition of squared coefficient of variation by main regions and income sources, which indicates that the roles of income sources for inequality have changed over time. The positive contribution of wage income to aggregate (disposable) income variation has decreased since 1981. The contribution of entrepreneurial income increased until 1990 but has since that decreased. The most noticeable change concerns capital income. Its contribution has increased very much since 1990, and most of the change comes from the Helsinki Region. Direct taxes have decreased variation of disposable income and this effect was at its greatest in 1990. Thereafter, the negative contribution has decreased to some extent.

As another way to find out the role of different sources of income for inequality, we have decomposed regional Gini coefficients by income type and calculated elasticities, which indicate how much a percentage change in each type of income affects total inequality during 1990-2000 (c.f. Lerman and Yitzhaki, 1985). The results in Figure 3.6 indicate that marginal wage increases (evaluated at mean value) increase total

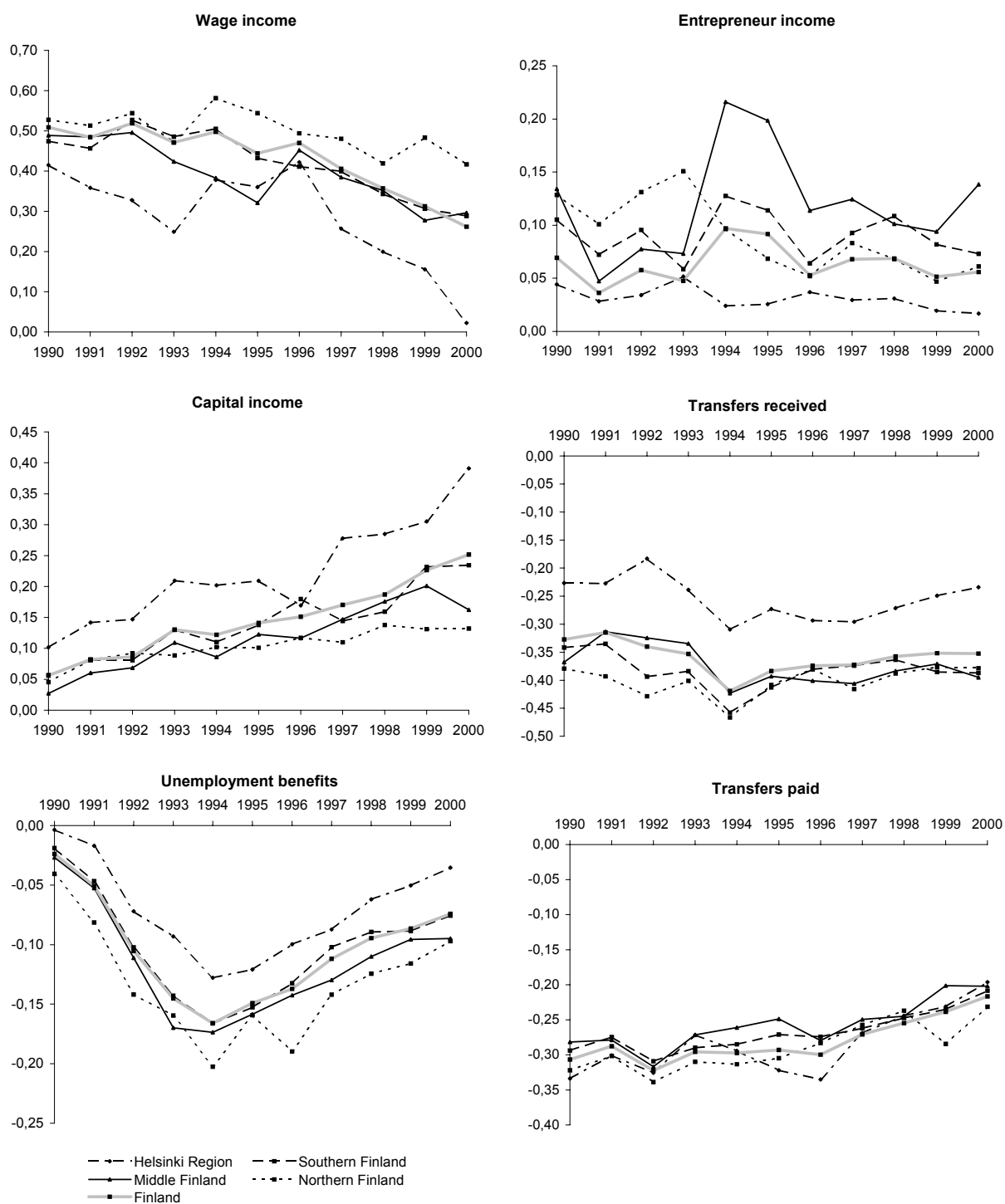
inequality, but this effect has decreased over time. The opposite is true for capital income: the contribution of its change has increased, and is clearly highest in Helsinki Region. An increase in unemployment benefits and transfers received decrease inequality and these effects were greatest in 1994 at the end of the bust. An increase in taxes (transfers paid) decrease inequality and this effect is very similar across regions and years during 1990s.

**Table 3.3** *Decomposition of the squared coefficient of variation ( $I_2$ ) by main region and income source in selected years*

Year	Region	Wage income	Entrepreneurial income	Capital income	Unemployment benefits	Transfers received	Transfers paid	Regional contribution
1971	Helsinki Region	56,8	2,4	5,1	0,0	9,5	-18,9	<b>54,9</b>
	Southern Finland	36,5	7,1	2,5	-0,1	1,9	-14,6	<b>33,4</b>
	Middle Finland	11,3	1,2	1,6	-0,1	-1,8	-4,3	<b>8,0</b>
	Northern Finland	6,8	-0,4	0,1	-0,0	-0,7	-2,1	<b>3,7</b>
	<b>Income source contribution</b>	<b>111,4</b>	<b>10,3</b>	<b>9,3</b>	<b>-0,1</b>	<b>8,9</b>	<b>-39,9</b>	<b>100,0</b>
1981	Helsinki Region	61,3	3,2	2,1	0,0	6,9	-24,5	<b>49,0</b>
	Southern Finland	49,0	7,5	2,4	-0,3	-2,4	-19,7	<b>36,8</b>
	Middle Finland	15,4	6,5	1,2	-0,3	-3,2	-10,2	<b>9,7</b>
	Northern Finland	8,7	1,7	1,1	-0,2	-2,0	-5,1	<b>4,4</b>
	<b>Income source contribution</b>	<b>134,4</b>	<b>18,9</b>	<b>6,8</b>	<b>-0,9</b>	<b>-0,5</b>	<b>-59,6</b>	<b>100,0</b>
1990	Helsinki Region	64,3	5,5	9,5	0,1	8,1	-32,9	<b>54,4</b>
	Southern Finland	40,9	11,8	7,7	-0,3	-1,2	-24,0	<b>35,2</b>
	Middle Finland	10,9	6,1	1,1	-0,4	-4,6	-7,3	<b>6,2</b>
	Northern Finland	7,3	2,6	0,9	-0,3	-1,9	-4,7	<b>4,2</b>
	<b>Income source contribution</b>	<b>123,4</b>	<b>26,0</b>	<b>19,0</b>	<b>-0,9</b>	<b>0,5</b>	<b>-68,9</b>	<b>100,0</b>
1993	Helsinki Region	40,8	3,7	19,9	0,0	13,4	-26,9	<b>50,8</b>
	Southern Finland	37,2	4,7	22,5	-1,6	0,0	-24,5	<b>39,9</b>
	Middle Finland	6,8	2,8	3,2	-1,8	-2,7	-5,5	<b>4,6</b>
	Northern Finland	3,7	5,1	0,8	-0,8	-1,8	-3,2	<b>4,7</b>
	<b>Income source contribution</b>	<b>88,5</b>	<b>16,3</b>	<b>46,4</b>	<b>-4,3</b>	<b>8,8</b>	<b>-60,1</b>	<b>100,0</b>
1996	Helsinki Region	37,3	2,7	11,2	-0,4	7,6	-23,8	<b>35,0</b>
	Southern Finland	41,1	10,1	30,8	-1,8	2,9	-31,7	<b>53,1</b>
	Middle Finland	9,3	3,5	5,5	-1,5	-3,0	-7,2	<b>8,1</b>
	Northern Finland	5,5	1,2	2,1	-1,0	-1,3	-3,6	<b>3,8</b>
	<b>Income source contribution</b>	<b>93,2</b>	<b>17,4</b>	<b>49,6</b>	<b>-4,7</b>	<b>6,1</b>	<b>-66,3</b>	<b>100,0</b>
2000	Helsinki Region	19,5	0,6	93,0	0,0	1,7	-42,4	<b>72,4</b>
	Southern Finland	5,7	2,8	27,1	-0,2	-0,7	-11,6	<b>23,3</b>
	Middle Finland	1,5	1,7	3,4	-0,2	-0,5	-2,2	<b>3,9</b>
	Northern Finland	0,6	0,2	0,5	-0,1	-0,3	-0,5	<b>0,5</b>
	<b>Income source contribution</b>	<b>27,2</b>	<b>5,3</b>	<b>124,0</b>	<b>-0,5</b>	<b>0,3</b>	<b>-56,7</b>	<b>100,0</b>

Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

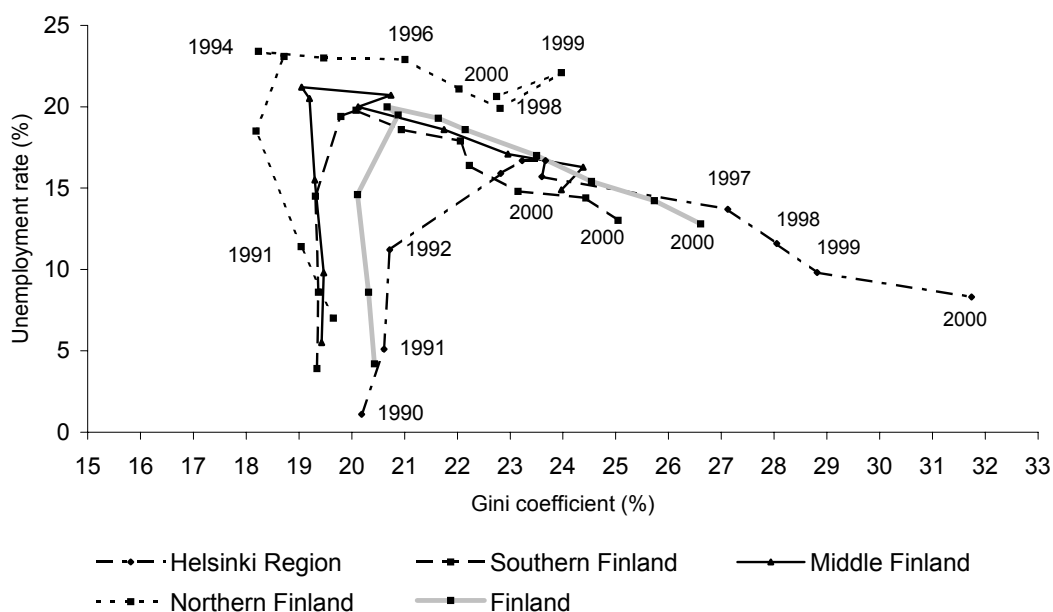
**Figure 3.6** Gini elasticities of income components by main region in 1990-2000



Source: Income Distribution Statistics, Statistics Finland

The most visible indicator of economic crisis in 1990s was the increase in unemployment, which took place during 1990-94 in all regions. Surprisingly, during this phase inequality did not almost increase at all, except in Helsinki Region where the subsequent increase in Gini coefficient began in 1993 (figure 3.7). Other regions followed with a lag.

**Figure 3.7** Trade off between unemployment rate and Gini coefficient by main region



#### 4 Concluding comments

In this study, we have used micro (Household Survey and Income Distribution Statistics) data to study both income differences both between and within major regions in Finland during 1971-2000. The latter is related to the question of regional income convergence vs. divergence and the latter to inequality at national level and within regions. Besides long-term developments, we are especially interested in what happened during boom-bust-boom period that began in late 1980s which included besides economic turmoil also institutional changes ranging from financial liberalization, tax reforms to EU and EMU membership. During the last years considered, also the structure of the economy changed with the rise of IT industry.

As for regional disparities, regional GDP as well as micro data based (factor, gross and disposable) income indicators indicate that there has been convergence among Finnish regions over time, more earlier and less when we come closer to the end of 1980s. At this level of regional aggregation, regional disparities remained more or less the same in early 1990s, and increased only slightly thereafter.

As for inequality, the greatest decline in (disposable) income differences since 1971 took place before mid-1980s, thereafter inequality remained pretty much at the same level. Somewhat surprisingly, this was also the case in early 1990s, when output dropped and unemployment increased dramatically. When the recovery began in mid-1990s inequality began to increase rapidly. These developments were surprisingly similar both at national level and at the level of major regions thinking of both time profiles and levels of most typical inequality indicators (Gini coefficients, generalised entropy measures). Only in the recovery period we could detect clear regional divergences as inequality in the Helsinki Region began to increase earlier and to greater extent than elsewhere. This was very much due to capital income which increased both as a source of income and contributor to inequality especially in the Helsinki Regions, a fact which is related to the rise of IT-industry since mid-1990s.

Our results indicate that the mechanisms of the Welfare State, namely transfers and taxation, decrease regional disparities and inequality. It is surprising that the joint effect of economic crisis and these mechanisms had almost no visible effect on our (relative) measures of regional income differences and inequality. Due to tax and transfer reforms of 1993, their re-distributive role has somewhat diminished and this partly explains the changes disparities have increased in the boom of late 1990s.

We also considered poverty to supplement our analysis of inequality. The number of poor people (disposable income per capita below half of respective mean income) in the Helsinki Region was low during 1971-1990 whereas in all other regions it was initially much higher and decreased over time. During the crisis years of early 1990s the number of poor increased only in the Helsinki Region, and this trend continued until 1998. In other regions, the number of poor began to increase only in 1994 when the economy began to grow fast. As for the number of rich (disposable income per capita twice the mean income), also their number grew during 1994-1998, especially in Helsinki Region and in Southern Finland.

To conclude, we note that else where, instead of four main regions we have also used NUTS2 classification (five regions), "old provinces" (twelve), and a classification which divides Finland according to urbanization (cities, densely populated areas and country-side) and by city type. Some results based on the last alternative can be found in Appendix. Furthermore, we have also considered convergence and inequality on the basis of per capita consumption in addition to per capita income. Although the time periods of these studies have varied somewhat, the main long run tendencies and the basic picture of early 1990s concerning convergence and inequality is much the same as here.<sup>7</sup>

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<sup>7</sup> See Loikkanen et al. (1997a, 1997b), Loikkanen et al. (1998), and Loikkanen et al. (1999).

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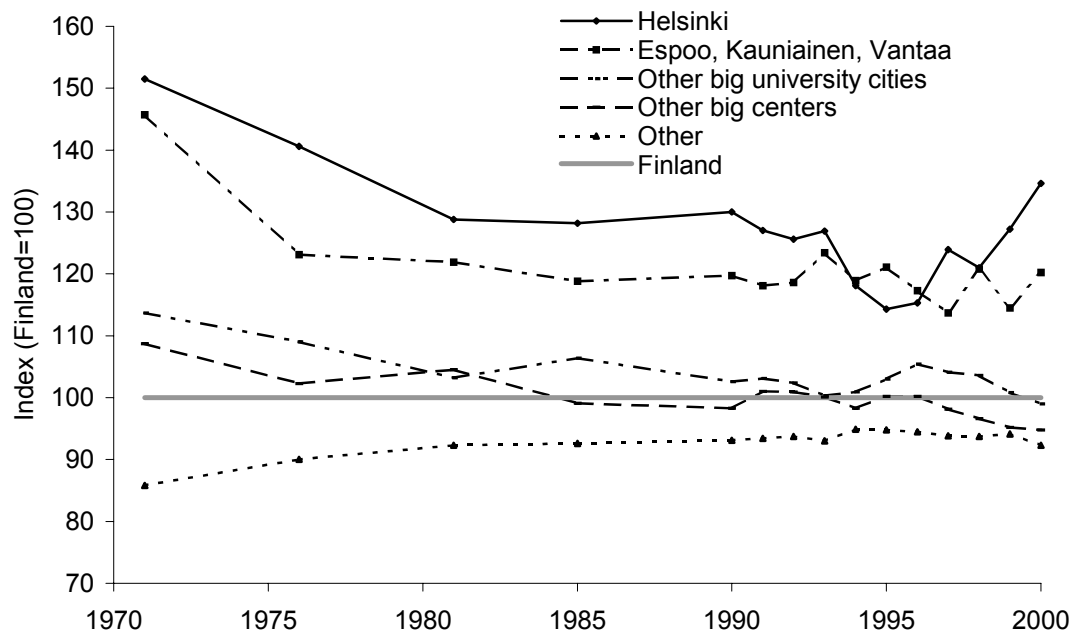
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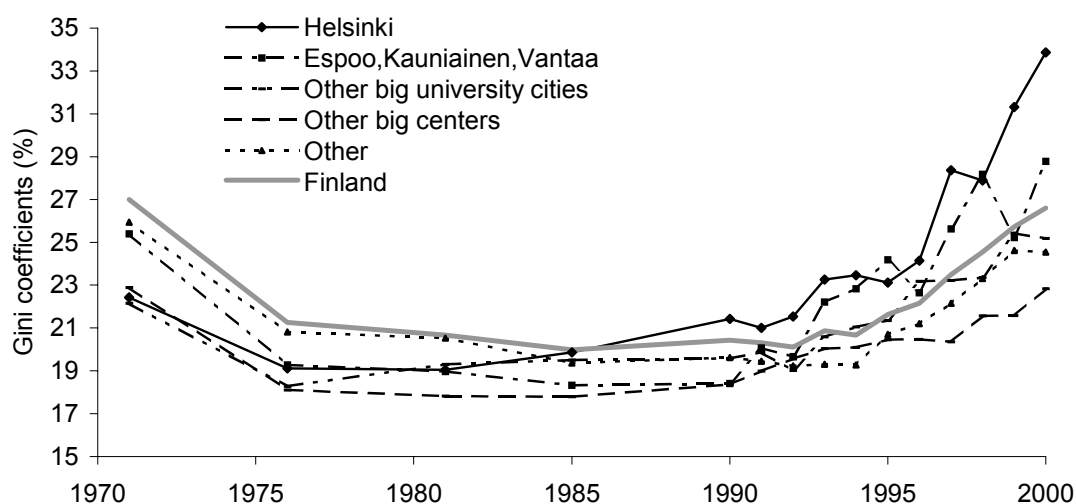


## APPENDIX: Some results based on city type regional classification

*Figure A1* Relative disposable incomes per capita by type of area in 1971-2000



*Figure A2* Disposable income based Gini coefficients by type of area in 1971-2000



Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland

**Table A1** The number and %-share of poor population in Finland and by area type 1966-2000 (Poverty limit half of median income)

Year	Helsinki		Vantaa Espoo Kauniainen		Other big university cities		Big cities		Other municipalities		Finland	
	No*	%	No*	%	No*	%	No*	%	No*	%	No*	%
1966	2	0,4	9	7,8	8	1,8	12	2,0	495	16,8	526	11,4
1971	3	0,6	9	5,6	23	4,8	20	4,7	315	10,7	369	8,3
1976	3	0,8	5	1,9	13	2,3	2	0,5	180	6,1	204	4,4
1981	13	2,8	5	1,6	17	3,2	9	2,2	189	6,2	232	4,9
1985	4	0,8	2	0,7	15	2,8	9	2,1	137	4,5	168	3,5
1990	7	1,4	3	0,9	17	3,1	10	2,5	89	2,8	126	2,5
1991	6	1,4	8	2,2	19	3,2	10	2,4	106	3,3	149	3,0
1992	8	1,8	4	1,1	13	2,2	12	2,7	98	3,1	135	2,7
1993	8	1,7	6	1,5	13	2,2	11	2,6	87	2,8	125	2,5
1994	16	3,1	4	1,1	16	2,8	14	3,2	66	2,1	115	2,3
1995	9	1,7	4	1,3	21	3,7	11	2,7	76	2,4	121	2,4
1996	19	3,5	4	1,1	24	4,0	11	2,6	90	2,8	147	2,9
1997	17	3,5	6	1,4	21	3,5	16	3,6	94	3,0	154	3,0
1998	18	3,4	12	3,1	20	3,3	19	4,5	127	4,0	196	3,9
1999	15	2,8	4	1,1	27	4,5	15	3,6	120	3,8	181	3,6
2000	16	3,1	4	1,1	43	4,0	25	4,6	138	4,4	203	4,0

\* In thousands

**Table A2** The number and %-share of rich population in Finland and by area type 1966-2000 (Richness limit 2 x median income)

Year	Helsinki		Vantaa Espoo Kauniainen		Other big university cities		Big cities		Other municipalities		Finland	
	No*	%	No*	%	No*	%	No*	%	No*	%	No*	%
1966	165	33,0	28	25,5	65	14,2	67	11,1	128	4,4	454	9,8
1971	100	21,4	33	20,2	32	6,6	32	7,6	115	3,9	312	7,0
1976	45	10,5	25	9,2	13	2,4	7	1,5	41	1,4	132	2,8
1981	28	6,0	19	6,5	10	1,9	8	1,9	47	1,6	112	2,4
1985	27	5,7	18	5,4	14	2,6	5	1,1	46	1,5	109	2,3
1990	40	8,3	25	7,2	18	3,2	7	1,8	67	2,1	157	3,2
1991	41	9,0	24	6,7	16	2,8	9	2,1	58	1,8	148	3,0
1992	38	8,5	23	6,2	15	2,5	11	2,4	65	2,0	151	3,0
1993	43	9,1	38	10,0	18	3,0	16	3,6	71	2,3	185	3,7
1994	40	8,0	27	7,0	22	3,7	14	3,4	80	2,6	183	3,6
1995	38	7,2	37	10,7	22	3,9	13	3,2	85	2,7	196	3,9
1996	45	8,4	27	7,7	27	4,6	18	4,0	88	2,8	204	4,0
1997	52	10,4	42	9,9	35	5,8	15	3,4	107	3,4	250	4,9
1998	54	10,1	41	10,8	32	5,3	15	3,5	117	3,7	259	5,1
1999	55	10,4	40	10,2	35	5,9	13	3,1	128	4,1	272	5,3
2000	66	12,4	50	12,3	36	5,7	13	3,3	130	4,2	295	5,8

\* In thousands

Source: Consumption Expenditure Survey and Income Distribution Statistics, Statistics Finland