Societal change and poverty in Finland 1971–2011: The roles of distribution of market income, redistribution and demographic change

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This study analyses how changes in the distribution of market income, redistribution, and socioeconomic and demographic composition affected relative poverty in Finland in 1971–2011. The effects of these components are analysed using a shift-share analysis of households with a working-age head. Decompositions are carried out using subgroups based on educational level, socioeconomic status, the number of working adults in the household, age, and household size. The data used in the analysis are the Consumer Expenditure Survey for the year 1971 and the Income Distribution Survey for the years 1990 and 2011, from Statistics Finland. In the 1971–1990 period, the poverty rate declined mainly because the income transfer system was more redistributive in 1990 than in 1971. Between 1990 and 2011, the weakened redistributive capacity of the welfare state increased the poverty rate. Changes in the distribution of market income and increase in the number of persons without incomes related to the market also contributed to increasing poverty during the recent decades.

Keywords: Poverty, societal change, redistribution, shift-share analysis

Introduction

Poverty has an adverse effect on individual life chances and quality of life, as well as on the economic performance and social cohesion of the society at large (Nolan & Marx 2007, 315). Despite the economic growth of the last decades, poverty remains one of the core problems of welfare states. The eradication of poverty is one of the main goals for welfare states (Barr 2012, 12), and the existence of poverty can be seen as a measure of the effectiveness of social policies and income distribution systems (Beckerman 1979).

Poverty rates have been rising in Western countries in recent decades (e.g. OECD 2008), but there is still uncertainty concerning what caused these changes. Both individual factors (such as educational and household composition and earnings) and societal factors (such as redistribution) have been seen as contributing to changes in poverty rates. Long-term poverty development in Finland has been descriptively illustrated several times (e.g. Blomgren et al. 2012; Jäntti & Ritakallio 1997; Riihelä et al. 2007), but there is a need for an empirical analysis of reasons for changes in poverty rates.

The main question in this study is how changes in the distribution of market income, redistribution and socioeconomic and demographic composition affected relative income poverty rates in Finland between 1971 and 2011. The analyses were carried out using the Consumer Expenditure Survey for the year 1971 and the Income Distribution Survey

for the years 1990 and 2011, both from Statistics Finland. Changes in the poverty rate were decomposed using a shift-share analysis. To account for the effects of socioeconomic and demographic changes, changes in poverty rates were decomposed separately by age, household size, the number of working adults in the household, educational level, and socioeconomic status.

Poverty and how it changes

Poverty is commonly defined using concepts of absolute and relative poverty. While living in absolute poverty is defined as having less than an absolute minimum, relative poverty is defined relative to the standard of living in the society in question (i.e. having less than others in that society) (for a recent review of the literature of different concepts, see Goedemé & Rottiers 2011). Approaches using relative and national income poverty lines[1] are used in most research on poverty in the European Union (ibid.). Especially in developed countries, relative measures are recommended because poverty is influenced by prevailing conditions and expenditure patterns (Piachaud 1987). Furthermore, to some degree the absolute definitions of poverty are always relative. The absolute measures are not independent of time and location, since the goods that people consume and the definition of the minimum needed are likely to change (Ringen 1987).

Changes in poverty rates may be explained by changes in the distribution of pre-tax/transfer income, socioeconomic and demographic composition, and welfare state generosity. Several scholars have argued that changes in the distribution

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[1] This study agrees with the widely accepted notion that poverty is multidimensional (Atkinson et al. 2002; Nolan & Whelan 2007; Ringen 1987), but due to the datasets used, other indicators of poverty or social exclusion could not be analysed.

of pre-tax/transfer income explain changes – also by post-tax/transfer income – in poverty and especially in income inequality. Most of the explanations for the increase in income inequality in the last decades are based on changes in technology and labour markets (Esping-Andersen 2007, 639). Fritzell and Ritakallio (2010) argued that between 1980 and 2000, the increase in poverty rates in most countries was due to an increase in the pre-tax/transfer poverty rates. Many studies have concluded that the labour market structure needs to be considered when explaining poverty trends and standstills (e.g. Cantillon 2011; Chen & Corak 2008; Gornick & Jäntti 2012).

Socioeconomic factors such as unemployment largely explain pre-tax/transfer poverty rates (Moller et al. 2003). Overall, the shift from manufacturing to services has been associated with an increase in pre-tax/transfer poverty rates (ibid.). The relationship between socioeconomic factors and poverty is not straightforward, however. For instance, an increase in the percentage of households without employment does not necessarily increase the poverty rate (Vandenbroucke & Corluy 2012). According to human capital theory, differences in earnings are explained by individual characteristics such as education or age (Becker 1993). An increase in educational attainment can be seen as increasing productivity that has historically decreased inequality. Education also reduces the gap between skilled and unskilled labour (for a brief review of effects of education on inequality, see Moller et al. 2003).

With respect to the demographic composition, Fritzell & Ritakallio (2010) found that in most countries poverty rates would be lower if labour and household characteristics were similar to those of Sweden. Bäckman (2009) argued that the female labour participation rate[2] and the percentage of families with children explain the temporal variation of poverty. However, he also noted that in the 1990s the welfare state retrenchments increased poverty rates. It has been argued that changes in age structure and living arrangements explained the increase of income inequality in rich countries in the 1990s only to a slight extent (Jäntti 1997).

The effect of redistribution can be explained by welfare state generosity, constitutional structure, and the strength of political left (Moller et al. 2003). Overall, social transfers and public health spending are associated with lower poverty rates (Brady 2005). The generosity of the welfare state and welfare state arrangements seem to have a significant reducing effect on poverty (e.g. Moller et al. 2003; Brady et al. 2009; Kim et al. 2010). In recent decades, the extent of redistribution has increased, but this has not prevented an increase in inequality. Market income inequality has grown, and those at the bottom of the income distribution have slipped further down because benefits have failed to keep pace with earnings growth (OECD 2011). In general, the welfare state plays an important role in explaining national poverty levels (e.g. Brady 2005; Bäckman 2009; Fritzell & Ritakallio 2010). It also seems that the welfare state effects are more significant than economic or demographic factors (Brady 2005; Foschi & Schommer 2008; Kim et al. 2010).

Societal change and poverty rate changes in Finland

There have been significant changes in the economy, socioeconomic and demographic composition, and the welfare state in Finland during the last decades. Similar changes have been seen in other Western countries. Economic growth after the Second World War was quite stable in Finland until the early 1990s (for the development of the GDP per capita in Finland, see Figure 1).[3] Downturns were rare and shallow. Finland was a late industrialiser, not developing a mature industrial economy until the 1970s. The percentage of the labour force in agricultural employment declined throughout the 20th century, and since the 1980s the percentage of manufacturing employees has been declining. The service sector has grown steadily, today accounting for some 60 % of the labour force (Jäntti et al. 2006).

The rapid economic growth of the late 1980s turned into a near collapse of the economy in the early 1990s. The recession of the 1990s (1990–1993) was highly dramatic, the GDP declining by more than 10 % and the unemployment rate soaring to almost 20 %. Many businesses failed, and Finland ended up in a banking crisis. The effects of the economic crisis of the 1990s were more severe in Finland than in the other Nordic countries. In the late 1990s, economic growth was again very fast (Kalela et al. 2001). International trade, globalisation and growth of the ICT sector boosted the economy in the boom period around the turn of the millennium. The demand for skilled labour pushed up the wages of the highest-skilled employees (Blomgren et al. 2012). Economic growth continued until the downturn in 2007.

Finland succeeded in channelling the economic growth of the 1970s and 1980s into a decrease of the relative poverty rate (see Figure 1). Especially from 1966 to 1976, income inequality and poverty declined rapidly (Riihelä et al. 2007; Uusitalo 1989). The poverty rate also decreased remarkably in the last years of the 1980s and the first years of the 1990s. Since the economic recession of the 1990s, poverty rates and income inequality have been increasing in Finland. However, income poverty did not increase immediately during the recession, since the median incomes for all groups decreased, and the poverty rate actually fell during the recession (Blomgren et al. 2012; Riihelä et al. 2007). With regard to general poverty trends in recent decades, Finland is no exception. For instance, from the mid-1980s to the mid-2000s, poverty increased in two out of three OECD countries (OECD 2008).

In 2000, the poverty rate was higher than 20 years earlier. The poverty rate continued to rise until the end of the first decade of the new century. Among households with a working-age head, the increase was even stronger. The increase in poverty rates and income inequality in Finland during the last decades are among the highest in the OECD countries (OECD 2008; 2011). Especially the income of

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[2] The participation of women on the labour market is one explanation for the Nordic countries having lower poverty rates (Esping-Andersen 2002; Fritzell & Ritakallio 2010).

[3] In this study the working-age population is defined as those aged 18–59.

Figure 1. The relative poverty rates (left axis) in Finland for the total population and those households with a working-age head and GDP per capita (right axis; 1971=100), 1971–2011.
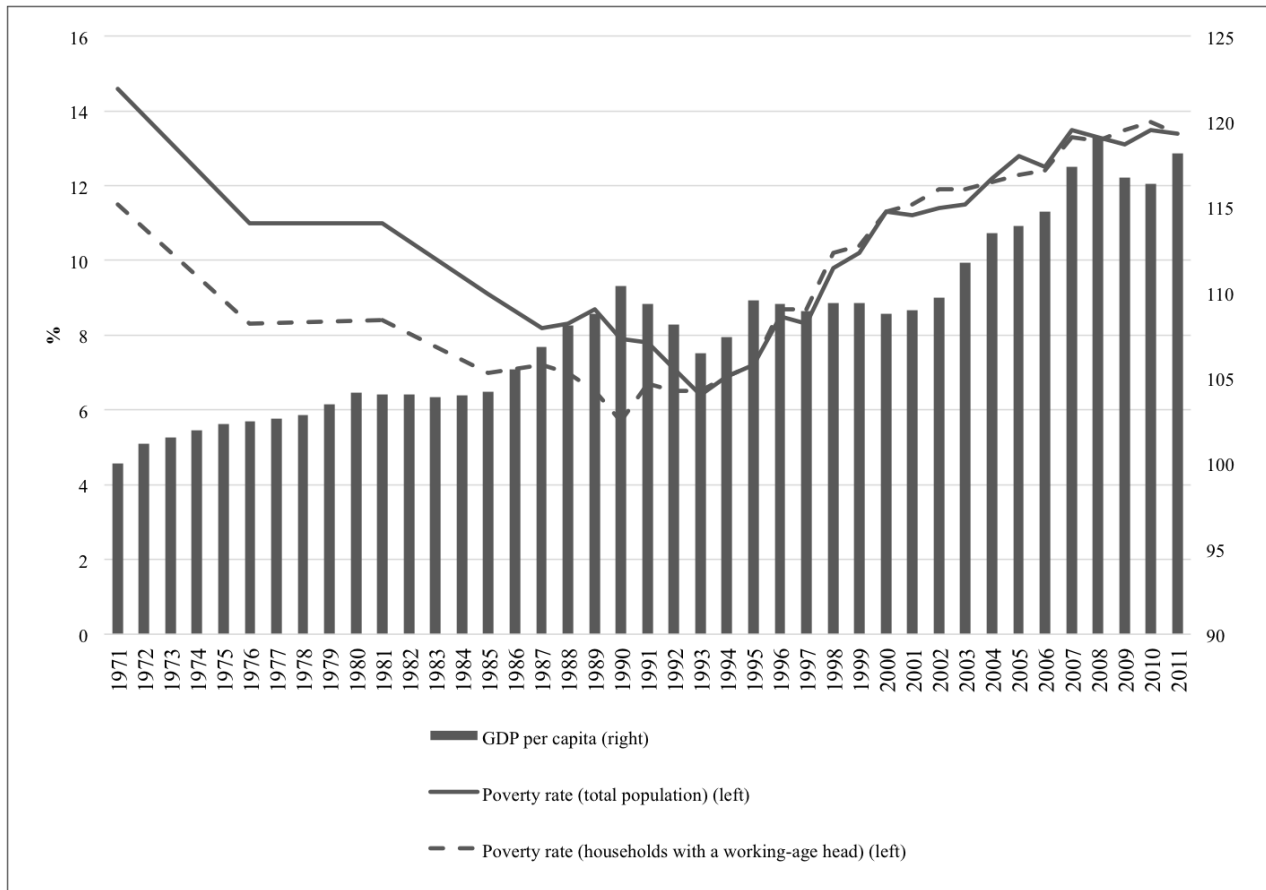
Poverty threshold set at 60 percent of median equivalent disposable income.
Sources: Poverty: for the 1971–1985 period the first CES time series and for 1987–2011 the IDS time series, own calculations; GDP: World Bank (2014).

those in the highest income groups increased (Blomgren et al. 2012; Riihelä 2009). Simultaneously, the adequacy and effectiveness of social assistance in terms of poverty reduction decreased (Kuivalainen & Nelson 2012). Also, redistribution has decreased in Finland (OECD 2011). The economic growth after the deep recession of the 1990s did not translate into a decline of the poverty rate, even though combating poverty remains high on the political agenda (Mikkonen 2013).

Finland has seen a wide range of changes in socioeconomic and demographic composition (see also Appendix). The largest socioeconomic changes are an increase in the percentages of clerical workers and persons without any occupation and a decrease in the percentage of farmers and manual workers. Moreover, there are fewer households with two or more working adults. At the same time, the percentage of households without employment has increased. The percentage of persons having only basic education has rapidly declined, while the percentage of persons with tertiary education has dramatically increased. Households are smaller than

previously. Households with only one or two adults have become particularly common, and the percentage of households with multiple children has decreased.

The development of universal welfare programs began in the 1960s (Alestalo & Uusitalo 1986). The involvement of the government in social protection grew in the 1980s. The compensation levels of benefits increased strongly (Nordlund 2000). In the 1990s and 2000s, the Finnish welfare state faced retrenchments (Kuivalainen & Nelson 2010; Kuivalainen & Niemelä 2010). Benefits were cut and compensation levels reduced particularly in the 1990s (Heikkilä & Uusitalo 1997; Nelson 2007; Nordlund 2000). Anti-poverty policy was introduced as a new element in Finnish social policy in the 1990s and 2000s. This means emphasising targeted measures to help the poor. In combating poverty, Finland has shifted from the idea of universalism to the idea of selectivism (Kuivalainen & Niemelä 2010). Earlier, the aim of Finnish social policy had not been to reduce poverty but to protect against social risks that may lead to poverty (Saari & Kangas 2007). However, this shift in the preven-

tion of poverty should be seen as a new approach to combating poverty rather than the introduction of a completely new welfare state model.

Previous findings on the causes of changes in poverty in Finland

Although poverty and how it has changed have been studied with respect to Finland, there is a somewhat limited understanding of the causes behind this increase. In the present study, poverty trends and factors affecting the change in the poverty rate over the last decades were analysed more precisely than before. Particular attention was given to changes in various socioeconomic and demographic factors.

Many of the studies analysing the effects of various factors on poverty have used pooled time-series covering many countries (Brady et al. 2009; Brady et al. 2005; Bäckman 2009; Moller et al. 2003). The results of these studies do not give country-specific conclusions. In addition, there seem to be more analyses of changes in income inequality than of changes in poverty.

Other studies dealing with Finland do not cover as long a period as the present study does (see Förster & Mira d'Ercole 2005; Chen & Corak 2008; OECD 2008; Suoniemi 2013; Honkanen & Tervola 2014). For example, Finland was included in the OECD (2008) analysis using the same method as applied here, but the time period considered was only nine years. The decompositions were carried out using only two socioeconomic or demographic factors (the number of working adults in the household and household type). The study by Chen and Corak (2008) focused on child poverty using decomposition based on density functions (over a 10-year period) while in the present study poverty trends were analysed on the basis of households with a working-age head.

Between 1995 and 2004, changes in the number of working adults per household and household composition, and especially changes in the redistributive capacity of the welfare state, increased poverty among the working-age population. Changes in the pre-tax/transfer poverty rates decreased poverty (OECD 2008, 144–146). Furthermore, if household composition in Finland had not changed between the mid-1990s and 2000, the poverty rate would have been lower in 2000 (Förster & Mira d'Ercole 2005). In the 1990s, changes in government transfers increased child poverty in Finland (Chen & Corak 2008). A recent microsimulation analysis showed that changes in the income transfer system in the 1995–2013 period increased relative poverty (Honkanen & Tervola 2014). Suoniemi (2013) found, using longitudinal analysis, that changes in demographic composition did not have any significant effects on poverty rates between 1998 and 2007.

Research question and hypotheses

The research question of this study was: *How did changes in the distribution of market income, changes in redistribution, and changes in socioeconomic and demographic composition affect the relative poverty rate in Finland between 1971 and 2011?* The effects of these changes were analysed over two time periods: 1971–1990 and 1990–2011. Finally, the calculations were carried out for the entire period 1971–2011. The effects were analysed separately by age structure, household size, the number of working adults in the household, educational composition, and socioeconomic composition.

The reason for using different socioeconomic and demographic factors was to analyse various important processes of societal change in Finland (e.g. the ageing of the population, the downward trend in household size, and the increase in educational attainment). These factors also include subgroups with considerable differences with respect to poverty rates; therefore changes in demographic composition can have a substantial impact on poverty rates. The period was divided into two sub-periods (1971–1990 and 1990–2011), because the poverty rate trend in Finland has been twofold. Both periods are approximately 20 years long. The year 1990 was selected as the cutoff point to avoid the recession of the 1990s affecting the figures. The analyses were carried out based on households whose head was aged 18–59, because the elderly population does not have substantial pre-transfer income. Hence, the pre-tax/transfer poverty rates of certain population subgroups would be very high if calculated based on the total population. Leaving out the households with an old head is justified also by the fact that the effective retirement age in Finland has been around 60 years (Finnish Centre for Pensions 2008). Moreover, Eurostat also uses population aged 18–59 to calculate the work intensity of households, for instance.

Certain hypotheses may be drawn from the existing literature, although the findings for the effects of different components do not completely agree. With respect to the distribution of market income, it was argued that since there were signs of increases in pre-tax/transfer poverty and income inequality, changes in the pre-tax/transfer poverty rates increased post-tax/transfer poverty – especially during the second sub-period (1990–2011). With respect to the effect of redistribution, the hypothesis was that redistribution decreased poverty in the first period, during the growth of the welfare state, and in the second period the effectiveness of redistribution in terms of poverty reduction weakened. With respect to the socioeconomic and demographic composition, it is likely that due to the wide range of socioeconomic and demographic factors (including both household and socioeconomic characteristics), a clear uniform pattern cannot be found.

Data, income concepts, and poverty measure

Two datasets were used – the Consumption Expenditure Surveys (CES) and Income Distribution Surveys (IDS), published by Statistics Finland. The figures for 1971 were calculated using the CES and the figures for 1990 and 2011 were calculated using the IDS. The reason for using data from two surveys is the time perspective. The IDS data are collected more frequently and are thus more feasible for research.

Moreover, there are no significant conceptual differences in the income definitions between the surveys. The first CES was conducted as early as 1966. Since then, the CES has been conducted approximately every five years. Income Distribution Surveys have been conducted annually since 1987. Both data are based on nationally representative samples of individuals. The sampling was carried out in two phases with stratification. The units of analysis are Finnish households. Both datasets measure income on an annual basis.

The 1971 CES had a response rate of 67.5 %, producing data for 2,986 households. This includes 2,326 households with a working-age head. The dataset includes information about household income, indebtedness, housing conditions and consumption expenditure patterns. Income and background information was collected from registers. Interviews were used to obtain auxiliary information. Consumption was measured through diaries and receipts for consumer goods and services. The dataset used contains information from those households that participated in all stages of data collection (see also Ahlqvist & Ylitalo 2009; Statistics Finland 1977).

The 1990 IDS had a response rate of 88 %, producing data for 11,545 households, while the 2011 IDS had a response rate of 80 %, producing data for 10,307 households. The 1990 and 2011 datasets include 9,096 and 6,999 households with a working-age head, respectively. These datasets are from the same time series. The datasets includes information about households' and individuals' incomes and living conditions. Most of the information – including income information – was collected from registers. Interviews were used to obtain auxiliary information (see also Statistics Finland 2014).

People permanently resident abroad, without an address, or in institutions (prisons, nursing homes, etc.) were excluded from both surveys. The poverty figures may be underestimated, because the surveys do not yield information on these subgroups. In the present study, weighting was used to make the sample representative of the total population. The used weights also corrected for bias due to non-response.

In the present study, two income measures were used: household market income and disposable income. Market income contains employment income, income from self-employment, and property income. Disposable income is market income plus received transfers, minus taxes. The received transfers contain minimum income and social insurance benefits, pensions, and transfers between households. In other words, market income can be interpreted as pre-tax/transfer income and disposable income as post-tax/transfer income. The income concepts used exclude indirect taxes and the provision of public services. However, these could have consequences for measures of income inequality. Indirect taxes tend to be regressive (e.g. Decoster et al. 2010), and public services tend to be redistributive (Verbist et al. 2012). Over the years, there have been changes in the methods for calculating the income concepts in the datasets. Therefore, the income data for different years are not totally comparable. However, the effect of these changes

on the principal income concepts – such as the ones used in the present research – was minor.

In order to make households of different size and composition comparable, households' incomes were divided by an equivalence scale. The equivalence scale used was the modified OECD scale. On this scale, the first adult in each household has a weight of 1 and the other adults in that household have a weight of 0.5. Children are weighted at 0.3. Children are defined as persons aged 0–13, and adults are persons over 13. This equivalence scale is the most widely used one in research at the EU level. Other scales that have been used frequently in the past are the 'old OECD scale', where the weight is 1 for the first adult in each household, 0.7 for the other adults and 0.5 for the children, and the square root scale (the square root of household size). For analysing the sensitivity of results, calculations were also carried out using the old OECD scale.

In this study, poverty was measured using a head-count approach, which is the standard approach in poverty measurement. For identification of the poor, they must be distinguished from the non-poor population. Poverty thresholds are used for this purpose. Those households whose incomes are below the thresholds are designated as being poor. The weakness of the head-count approach is that it does not measure the severity of poverty (e.g. Atkinson et al. 2002, 114). Those just below the threshold and those at the very bottom of the income distribution are treated in the same way.

The poverty threshold was set in the present research at 60 % of equivalent household disposable national median income. For analysing the sensitivity of results, calculations were also carried out using a 50 % poverty threshold. The thresholds calculated on the basis of equivalent disposable income were used also when poverty rates are calculated using market income. This is a standard method for calculating the effectiveness of redistribution. However, this approach is problematic in that the welfare state affects both pre-tax/transfer and post-tax/transfer poverty rates. The distribution of market income would be different if the welfare state did not exist (e.g. Bergh 2005). Although the pre-tax/transfer poverty rates consider the hypothetical non-existence of taxes and transfers, the poverty reduction effectiveness of the income distribution system can be analysed using this approach.

In the present study, the analyses were carried out using various socioeconomic and demographic factors: age, household size,[4] the number of working adults, educational level, and socioeconomic status. Age, education, and socioeconomic status were calculated using information on the head of the household, because the data used are household data. The analyses were carried out using the different socioeconomic and demographic factors separately. Furthermore, the number of observations in each subgroup with respect to all the years analysed was certainly large enough when the socioeconomic and demographic factors were not merged.

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[4] Number of household members' was used since the classification of household type differed between the CES and the IDS data and it was not possible to make it comparable in a meaningful way.

The households were divided into four age groups (18–29, 30–39, 40–49 and 50–59). Thus, the full effect of the ageing of the population cannot be captured, because the analyses did not focus on the total population.[5] However, even among the working-age population the percentage of older people has increased. Five groups were created by household size (one, two, three, four and five or more persons living in the household). Three groups were created by the number of working adults in the household (none, one working adult and two or more working adults). Five groups were created by the highest educational attainment of the head of the household (classifications merged given in parentheses): basic education (basic education or no education), secondary education (lower and upper secondary education), post-secondary non-tertiary education, and tertiary education (lower and upper tertiary education and post-graduate education). Five groups were created using socioeconomic classifications (farmers, other entrepreneurs, clerical workers, manual workers, and non-working).

Method

The method used in the present study is shift-share-analysis, a simple method to decompose changes in poverty rates into different components. This method may be used in studying poverty rate trends in a single country between different time periods (see Danziger 1995; Förster & Mira d'Ercole 2005; OECD 2008). The method may also be used in counterfactual analyses. It is possible to evaluate what the poverty rate would be if redistribution were as effective as in some other country (e.g. Whiteford & Adema, 2007) or what the overall poverty rate would be without change in poverty risks (e.g. Cancian & Reed 2009). Here, the poverty rate (at the level of disposable income) was decomposed into three components: pre-tax/transfer poverty rates (calculated using market income), effects of redistribution, and population shares. The effect of redistribution is expressed as the ratio of the pre-tax/transfer poverty rate and the post-tax/transfer poverty rate.

The decomposition was possible since the relative poverty rate is additively decomposable. In the decompositions, the poverty rate (using disposable income) was expressed as the weighted sum of the subgroup poverty rates. The weights are proportional to population percentages. The subgroup poverty rates were expressed using the pre-tax/transfer poverty rates and coefficients expressing the effect of redistribution (the effect of taxes and transfers on reducing poverty). These group-specific poverty rates were then multiplied with the population percentages of the groups:

$$P_t = \sum_{i=1}^{n} P_{it}\, \alpha_{it} = \sum_{i=1}^{n} [p_{ift} * r_{it}] * \alpha_{it}$$

The formula shows the calculation of the poverty rate (P) by disposable income at the time t for each group i; p_f is the poverty rate calculated using market income; the effect of redistribution is expressed by r; the population percentage

of group i is α. The redistribution, r_i, is the poverty rate by disposable income divided by the poverty rate by market income in group i.

Since the present research focused on analysing changes over time, changes in one component (e.g. $\triangle \alpha$) were multiplied by the average value between two points of time of the two other components. The next formula shows how changes in different components were analysed in the present study. Denoting changes over time by $\triangle$ and averages by a bar above the variable, the change of poverty rate between two points of time ($P_t - P_{t-1}$) can be calculated as

$$P_t - P_{t-1} = \sum_{i=1}^{n} [\Delta p_{if}\bar{r}_i\bar{\alpha}_i + \Delta r_i \bar{p}_{if}\bar{\alpha}_i + \Delta \alpha_i \bar{p}_{if}\bar{r}_i + \Delta p_{if}\Delta r_i \Delta \alpha_i \left(\frac{1}{4}\right)]$$

where $\Delta p_{if}\bar{r}_i\bar{\alpha}_i$ is the effect of change in the distribution of market income; $\Delta r_i \bar{p}_{if}\bar{\alpha}_i$ is the effect of change in redistribution; $\Delta \alpha_i \bar{p}_{if}\bar{r}_i$ is the effect of the compositional change, and $\Delta p_{if}\Delta r_i \Delta \alpha_i \left(\frac{1}{4}\right)\Delta$ is the residual term. The sum of these components is the same as the difference in the aggregate poverty rates between two points of time. This is a very convenient feature of this kind of decomposition.

A mechanical decompositions, such as shift-share analysis, cannot reflect complex interrelations between the dimensions. However, they allow an analysis of what the relative roles of different components in explaining the changes in poverty rates might be. This is important for understanding the mechanisms behind changing poverty rates.

Results

Poverty rates by subgroups

Poverty rates for households with a working-age head for the years 1971, 1990, and 2011 are shown in Table 1. Pre-tax/transfer poverty rates were calculated using market income, and post-tax/transfer rates were calculated using disposable income. The post-tax/transfer poverty rates are clearly smaller than pre-tax/transfer poverty rates, regardless of the year or the socioeconomic and demographic factor focused on. Overall, poverty rates were mainly higher in 2011 than they were in 1971.

The rates in the table may also be used for analysing poverty trends and standstills of the socioeconomic and demographic subgroups. Overall, the same population subgroups are vulnerable also in other rich countries (European Commission 2010; OECD 2008). However, in the Nordic countries the rates for these groups are lower on average than in the other EU countries (Fritzell et al. 2012).[6] With respect to different age groups, there have been considerable changes in poverty rates during the last decades in Finland. While in

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[5] For instance, a higher percentage of children and elderly people in the population has been discovered to be associated with higher poverty rates (Mäkinen 1999).

[6] Finland differs from the other Nordic countries by having a higher poverty rate among older people (Fritzell et al. 2012).

Table 1

The pre-tax/transfer and post-tax/transfer poverty rates (%) of the households with a working-age head by different subgroups in 1971, 1990 and 2011.

	1971		1990		2011	
	Pre-tax/transfer	Post-tax/transfer	Pre-tax/transfer	Post-tax/transfer	Pre-tax/transfer	Post-tax/transfer
Age of the head of the household						
18–29 years	9.7	9.0	22.3	11.4	39.1	30.5
30–39 years	10.8	8.0	13.7	4.1	18.6	10.0
40–49 years	18.1	11.6	9.0	4.1	16.5	10.4
50–59 years	23.6	18.0	20.9	6.0	17.3	9.6
Household size						
1 person	15.4	11.7	28.1	19.8	41.3	33.4
2 persons	10.2	6.7	14.9	4.8	17.9	11.2
3 persons	8.8	8.0	11.7	3.6	18.4	9.8
4 persons	13.5	10.4	8.5	2.5	13.6	6.5
5 or more persons	22.4	15.4	21.8	6.8	22.3	14.1
Number of working adults						
0	87.2	53.0	93.4	40.0	96.6	68.7
1	16.0	10.5	21.9	5.9	22.6	12.3
2 or more	13.0	10.6	4.1	2.5	2.3	1.4
Socioeconomic status of the head of the household						
Farmers	36.1	26.6	22.1	12.5	9.7	6.4
Entrepreneurs	23.8	21.0	14.1	9.3	18.4	12
Clerical workers	3.0	3.4	4.7	1.6	6.0	3.1
Manual workers	8.7	6.1	12.2	3.1	16.5	8.9
Non-working	78.8	47.4	87.2	34.6	94.0	65.9
Educational attainment of the head of the household						
Basic education	21.0	14.6	19.8	6.9	39.1	27.5
Secondary education	8.7	8.0	17.8	7.2	28.0	18.0
Post-secondary non tertiary education	2.4	1.4	7.0	3.0	9.1	5.1
Tertiary education	0.4	0.4	2.4	1.2	7.8	4.0

Sources: For the 1971–1985 period the first CES time series and for 1987–2011 the IDS time series, own calculations.

the 1970s poverty was mainly a problem for older households, in 2011 young households were the poorest. Households whose head was over 59 years old also fit this pattern: their post-tax/transfer poverty rate was almost 30 % in 1971 and around 13 % in 2011 (figures not shown). With respect to the groups created by household size, single households were the most underprivileged. In 2011, households with five or more persons also had a rather high poverty rate. Households with three or four persons had the lowest poverty rates after taxes and transfers in 2011, while the lowest rate in 1971 was for households with two persons.

It is clear that working prevents poverty. In households with two or more working adults, the poverty rate after taxes and transfers was 1.4 % in 2011, while for households with no working adults it was 69 %. During the last decades, almost all households without a working adult would have been poor without social transfers and taxes. Their pre-tax/transfer poverty rate was around 95 % in 2011. Clerical workers and manual workers had the lowest poverty rates throughout the time period considered. The poverty rate for farmers in 2011 was only one fourth of that what it had been in 1971. However, the decline of the poverty rate of farmers is mainly due to changes in the composition of farms; only bigger farms have survived, which has improved the relative situation of the group although there has been no real improvement in incomes (Uusitalo 1989). Education also prevents relative poverty: those with high educational attainment had the lowest poverty rates. Yet none of the education groups avoided an increase in poverty rates between 1971 and 2011.

Table 2
Impact of various components on the change in the poverty rate by different socioeconomic and demographic factors, 1971–1990.

	Effect of the compositional change	Effect of changes in the distribution of market income	Effect of changes in redistribution	Residual	Overall change
Age of head of household	-0.3	0.2	-5.7	-0.1	-5.8
Household size	-0.5	0.6	-5.8	-0.1	-5.8
Number of working adults in the household	1.3	-3.0	-4.2	-0.01	-5.8
Socioeconomic status of head of household	-0.7	-0.2	-4.8	-0.1	-5.8
Educational attainment of head of household	-1.9	2.1	-5.9	-0.2	-5.8

Sources: For the 1971–1985 period the first CES time series and for 1987–2011 the IDS time series, own calculations.

Effects of the compositional change, changes in the distribution of market income, and changes in redistribution between 1971 and 2011

Because the total poverty rate can be decomposed using the subgroups' population percentages and poverty rates (a feature of additive decomposability), changes in poverty rates can also be decomposed. The population can be divided into subgroups using various socioeconomic or demographic factors. However, groups created using factors such as age and educational attainment have different population percentages and poverty rates. Furthermore, any one age group consists of members of different educational groups. Since the decompositions were carried out separately, the various components (e.g. the effect of change in redistribution) may have been affected differently by the socioeconomic and demographic factors. In addition, the total effect of each component, shown in the tables, is a sum of the effects of the various subgroups. The effects of the components may have been very different in different subgroups.

Each decomposition presents effects related specifically to the population percentages and poverty rates of the specific socioeconomic and demographic factor. However, the various components add up to the total change in poverty rates between years in each decomposition. Of course, in reality the total change is affected by all of these changes simultaneously. The fact that decompositions are carried out using different socioeconomic and demographic factors makes it possible to compare effects between these factors and also provides reliability in analysing the big picture of the causes of poverty trends.

Table 2[7] shows the results of the shift-share analysis for the 1971–1990 period.[8] Each row contains the results of a separate decomposition. The total change in the poverty rate of households with a working-age head was -5.8 percentage points and is shown in the last column on the right. Each number in the four columns starting from the left shows the amount of change that each component explains. The amounts related to changes in age groups between 1971 and 1990 are next used as examples. Changes in the population percentages of the age groups (compositional effect) had a small poverty-reducing effect (-0.3 percentage points, first

column). Changes in distribution of market income increased poverty slightly (0.2, second column). With respect to the age groups, changes in redistribution explained most of the change in the poverty rate (-5.7, third column). The residual (fourth column) was -0.1.

In this period, changes in household size, socioeconomic composition, and, especially, educational composition also contributed to reducing the poverty rate. Changes in the number of working adults (the effect of compositional change) increased the poverty rate. The development of the pre-tax/transfer poverty rates (the effect of distribution of market income) by age, household size and education groups increased the poverty rate, while development by the number of working adults and socioeconomic status decreased the poverty rate. However, the effect according to age, household size, and socioeconomic status was only modest. Thus, the hypothesis that changes in the distribution of market income increased poverty cannot be fully verified. Regardless of which socioeconomic or demographic factor was considered, the effects of changes in population percentages and the distribution of market income were offset by the effect of redistribution. The development of taxes and transfers was the main contributing factor in the decline of the poverty rate between 1971 and 1990. This supports the hypothesis that developments in the redistributive capacity of the welfare state decreased poverty during the growth of the welfare state.

When the analyses for the 1971–1990 period were carried out using the 50 % threshold, the overall picture of the causes of changes remained similar.[9] When the analyses were carried out using the 'old OECD scale', the overall decline of the poverty rate was even stronger (almost 8 percentage points), although the picture of the causes was similar to those figures reported here. When the old OECD scale was used, changes in the distribution of market income by age

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[7] The differences between the overall change and the sum of the components are due to rounding.

[8] For the 1971–1990 period, the calculations were also carried out using the CES time series data for both years as a sensitivity analysis. The picture of the effects of different components was similar to that provided by the IDS data for the year 1990.

[9] Figures of the sensitivity analyses are not shown here. These figures can be requested from the author.

Table 3

Impact of various components on the change in the poverty rate by different socioeconomic and demographic factors, 1990–2011.

	Effect of the compositional change	Effect of changes in the distribution of market income	Effect of changes in redistribution	Residual	Overall change
Age of head of household	-0.1	3.5	4.3	-0.1	7.7
Household size	1.0	2.7	4.1	<0.01	7.7
Number of working adults in the household	3.6	-0.4	4.5	0.02	7.7
Socioeconomic status of head of household	2.2	1.1	4.4	0.01	7.7
Educational attainment of head of household	-2.2	5.3	4.8	-0.3	7.7

Sources: IDS time series, own calculations.

Table 4

Impacts of various components on the change in the poverty rate by different socioeconomic and demographic factors, 1971–2011.

	Effect of the compositional change	Effect of changes in the distribution of market income	Effect of changes in redistribution	Residual	Overall change
Age of head of household	0.1	4.3	-2.5	0.02	1.9
Household size	-0.02	4.1	-2.3	0.03	1.9
Number of working adults in the household	5.5	-2.5	-1.0	-0.1	1.9
Socioeconomic status of head of household	2.1	1.4	-1.6	-0.1	1.9
Educational attainment of head of household	-7.2	11.7	-2.2	-0.5	1.9

Sources: For the 1971–1985 period the first CES time series and for 1987–2011 the IDS time series, own calculations.

contributed to the decreasing of the poverty rate by a small amount, and the compositional change of household size decreased the poverty rate more than when analysed with the modified OECD scale.

The poverty trend reversed over the following twenty years: poverty increased by 7.7 percentage points in the 1990–2011 period. Table 3 shows the results of the shift-share-analysis for this period. Changes in household size increased the poverty rate but only slightly. The compositional change related to the number of working adults and the socioeconomic status increased the poverty rate. Changes in the age composition had only a minor effect on the poverty rate. The effect of changes in educational composition is different than that of the other compositional factors: changes in educational composition contributed notably to reducing the poverty rate.

Changes in pre-tax/transfer poverty rates (the effect of changes in the distribution of market income) by age, by household size, by socioeconomic status, and especially by educational attainment increased poverty. Changes in the distribution of market income by the number of working adults decreased poverty, although the effect was very small. However, it should be pointed out that the finding that changes in the distribution of market income increased the poverty rate in fact partly tells the same story as the compositional changes in the number of working adults and, to

a lesser extent, socioeconomic composition: there are more persons without market incomes.

Changes in redistribution explained most of the increase in the poverty rate. For four out of five socioeconomic and demographic factors, the effect of changes in redistribution was the largest. When the decomposition was carried out using subgroups by educational attainment, the effect of redistribution was nearly as large as the effect of the distribution of market income.

When the decompositions were carried out using the 50 % threshold for the period 1990–2011, the fact that there were more persons without work increased poverty relatively more than in the decompositions carried out with the 60 % threshold. However, redistribution still had the greatest effect. Using the old OECD scale instead of the modified OECD scale did not affect the results for the 1990–2011 period.

In the 1990–2011 period, again, redistribution had the most prominent role with respect to the change in poverty rates. This supports the hypothesis that changes in redistribution played an important role with respect to changes in the poverty rate during this period. However, although it was the most significant component that increased poverty, it was not the only one. Market income was more unequally distributed in 2011 than in 1990. This result supports the hypothesis that changes in the distribution of market income increased poverty in this period.

The calculations can also be done for the entire 1971–2011 period (Table 4). The poverty rate of the working-age population increased by 1.9 percentage points during this period.[10] The figures for the whole period show some similarities with the sub-period analyses. As in the 1971–1990 sub-period, between 1971 and 2011 changes in redistribution decreased the poverty rate. Since redistribution decreased poverty and for the total working-age population the poverty rate increased during the period, it follows that the other components must have increased the poverty rate. The entire 1971–2011 period is similar to the 1990–2011 sub-period, because the growth in the number of persons without market incomes increased poverty. This can be seen from the figures of the effects of the distribution of market income by age, household size, socioeconomic status, and especially education, and of the effects of the compositional change by the number of working adults in the household and by socioeconomic status. Hence, the welfare state has not fully succeeded in responding to a situation where full employment is further away and market incomes are more unequally distributed. This supports the hypothesis that changes in pre-tax/transfer poverty rates have increased poverty. The welfare state's redistributive capacity increased between 1971 and 2011, but not sufficiently. The demographic change between 1971 and 2011 (by age and household size) did not affect poverty rates. As in both sub-periods, increasing educational attainments substantially decreased poverty. As expected, socioeconomic and demographic factors did not create a uniform pattern.

Discussion and conclusion

In this study, I analysed how changes in the distribution of market income, changes in redistribution, and changes in socioeconomic and demographic composition affected relative income poverty rates of households with a working-age head. The analyses were carried out with various socioeconomic and demographic factors (age, household size, the number of working adults, socioeconomic status, and educational attainment). Two sub-periods (1971–1990 and 1990–2011) were analysed in addition to the analysis focusing on the entire time period studied (1971–2011). During the second sub-period in particular, many rich countries – including Finland – experienced increases in poverty rates.

From 1971 to 1990, the poverty rate declined mainly because the income transfer system was more redistributive in 1990 than it was in 1971. From 1990 to 2011, the weakening redistributive capacity of the welfare state increased the poverty rate. Changes in the distribution of market income and socioeconomic and demographic composition had a less significant impact on poverty. However, in the 1990–2011 period changes in the distributions of market income by age structure, household size, and educational attainment increased the poverty rate. The decline of the number of working adults in households increased poverty, and the increase in educational attainment decreased poverty. Despite more income redistribution, an increase in market income inequality and a growing share of the population without any market incomes led to an increase in poverty among the working-age population. Overall, changes in the demographic composition (household size and age structure) had only a small effect on the poverty rates.

The shift-share analysis does not reveal complex interrelations of the variables and components used. Furthermore, in reality the various socioeconomic and demographic factors experience changes simultaneously. The method is nevertheless useful in analysing the relative roles of the various components. Since decompositions are carried out using different socioeconomic and demographic factors, the effects of components can be reliably evaluated. The income concepts do not include the effects of public services and indirect taxes, and persons living in institutions are not included in the data. These shortcomings may have an effect on the analysed poverty rates. Furthermore, the sensitivity analyses performed strengthen the picture of the causes of changes in poverty rates. This study concentrated on households with a working-age head. Some effects of societal change may not be shown at full strength due this restriction.

The findings of the present research are similar to those reported before. Changes in redistribution have contributed most to the large and rapid changes in poverty rates. In the 1970s and 1980s, the growing commitments of the government reduced poverty. By contrast, the present study confirms that retrenchments of the Nordic welfare states in recent decades (e.g. Kuivalainen & Nelson 2010; Kuivalainen & Niemelä 2010) increased poverty. There has been an increase in the need for effective redistribution, but at the same time the effectiveness of the income distribution system in terms of poverty reduction has decreased. However, the present study cannot determine what the effect of changes on different types of benefits has been.

Because eliminating poverty is one of the main goals of welfare states (Barr 2012), increases in the poverty rates in Finland and other Western countries do not flatter them. The welfare state has experienced difficulties in responding to a decline in the employment rate. Simultaneously, incomes at the bottom of the income distribution have risen less quickly than among those higher in the income distribution (e.g. OECD 2011; Blomgren et al. 2012). This has resulted in increasing poverty thresholds. The redistributive capacity of the welfare state has especially decreased, as also shown in the present study. With respect to the implemented anti-poverty policy, it seems that the change from the idea of universalism to the idea of selectivism (Kuivalainen & Niemelä 2010) has not been successful. Because the welfare state can affect the effectiveness of redistribution in poverty reduction by its policy measures, it can be argued that the welfare state can and should do more to eradicate poverty and to prevent from its harmful consequences. One way is to ensure the adequacy of social security benefits.

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[10] Using the 50 % threshold or the old OECD scale the poverty rate for the year 2011 is close to the poverty rate of the year 1971.

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APPENDIX

Table A1. Percentages of households with a working-age head by various subgroups in Finland, 1971, 1990, and 2011.

	1971	1990	2011
Age of the head of the household			
18–29 years	16.9	18.0	16.5
30–39 years	29.1	34.7	26.7
40–49 years	32.3	31.6	32.0
50–59 years	21.7	15.6	24.8
Household size			
1 person	5.0	10.0	13.9
2 persons	10.3	20.7	25.4
3 persons	20.1	22.1	18.9
4 persons	26.1	29.3	24.0
5 or more persons	38.6	17.9	17.8
Number of working adults			
0	2.3	5.6	11.7
1	33.7	32.7	37.9
2 or more	63.9	61.8	50.5
Socioeconomic status of the head of the household			
Farmers	17.2	6.2	2.4
Other entrepreneurs	5.2	8.7	8.8
Clerical workers	27.1	42.4	51.0
Manual workers	46.1	35.9	25.0
Non-working	4.4	6.8	12.7
Educational attainment of the head of the household			
Basic education	61.7	33.5	11.6
Secondary education	30.6	39.1	46.4
Post-secondary non-tertiary education	3.1	13.6	13.0
Tertiary education	4.5	15.6	28.9

Sources: For the 1971–1985 period the first CES time series and for 1987–2011 the IDS time series, own calculations.