Master thesis for the Master of Economic Theory and Econometrics Degree

The Effects of Local Government Spending on Poverty in Norway.

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Preface

This thesis has been written in connection with a project at Statistics Norway funded by the Research Council of Norway. I would like to thank my supervisor Rolf Aaberge for encouraging and inspiring talks and for always leaving the door open for me. Secondly, I would like to thank Audun Langørgen , Taryn Ann Galloway and Magne Mogstad for helpful comments and invaluable help with the data analysis. I would also like to thank the people mentioned above for including me as a member of their team and for all the interesting discussions at lunch at Amfitryon. And also, thanks to Svein Longva for insightful comments.

Finally I would like to thank Morten for his patience and continuous support throughout this whole process.

Contents

1. Introduction

Poverty is a recurrent theme in the media, an issue every politician nowadays have close to heart but also an issue that most people feel strongly about. The current center-left government in charge has recently published an action plan against poverty as an enclosure to the budget plan for 2007. The action plan calls attention to the fact that public services such as health care and childcare play an important role as an influence on the distribution of income and standards of living of the population. The report points out that access to education may influence future work and income possibilities, in addition to the fact that free or subsidized public services may compensate for having a low income. The importance of public services will naturally be higher for households in the lower part of the income distribution since these households have less opportunity to buy these services in the private market.

Most studies on poverty are based solely on a cash income definition. Smeeding et al. (1993) suggest a possible explanation for this when stating: "The problems inherent in the measurement, valuation and imputation of non-cash income to individual households on the basis of microdata files are formidable". Furthermore, the analysis of this problem is limited in many countries due to lack of sufficient data. Norway has an established extensive data register system in addition to a relatively large public sector where municipalities are given a key role in the provision of public services. This makes Norway an attractive country to study with the intention of measuring the benefits from public services. By applying methods of valuing and allocating public services on an individual basis, Aaberge and Langørgen (2006) show that we are able to construct an extended income measure that includes important benefits such as education, childcare, health care and care for the elderly and disabled. Aaberge and Langørgen (2006) have applied this extended income measure in an analysis on the distribution of income. We will now look at the impact on poverty of including the value of public services by studying the share of poor in the population when we apply income after tax as the relevant income measure in comparison to applying the extended income measure. In order to study the development over time, we have chosen to look at the period 1993-2001, a period that includes both a soaring boom and the start of a recession.

The measurement and definition of poverty is subject to much debate. In this paper, we have chosen to apply a relative poverty definition. Intuitively, the concept of what is an unacceptable low standard of living must be identified relative to the general standard of living in society. In order to adjust for economies of scale within the household we apply an equivalence scale. In this paper we have chosen to use the OECD scale. The poverty line is assumed to be 50 % of median equivalent income. In order to illustrate the sensitivity of the results to the choice of poverty line and equivalence scale, we have also reported results for a poverty line defined as 60 % of median equivalent income, where equivalent income is calculated in accordance with the EU scale.

In this paper we have chosen to study poverty both in a temporary and chronic perspective. One should be careful when interpreting an analysis on temporary poverty based on annual income. Tax evasion, leave of absence in order to pursue a hobby or occupational retraining may be some reasons why individuals may have a temporarily low income without necessarily being in financial trouble. An alternative is to base the poverty analysis on income earned over several years. This will reduce the interpretation problems connected with an analysis on temporary poverty.

In order to interpret the results of a poverty analysis in a meaningful way, we need to take into consideration the economic environment in which the analysis takes place. In chapter 2 we explore the development in macroeconomic and demographic variables in our analysis period of 1993-2001. In chapter 3 we look into the theory that underlies our analysis. In this section we define the two different income concepts. We describe the model used to value the different municipal services, and the method of allocating the different services on an individual basis. We also discuss different equivalence scales and poverty lines in order to provide a motivation for the choice of poverty definition utilized in this paper. In the analysis we have used data from the income register combined with client statistics and sample surveys, all data material provided by Statistics Norway. A thorough discussion of data material, choice of economic unit and population is found at the end of chapter 3.

The empirical results of the poverty analysis are presented in chapter 4. We study the trend of poverty, and in addition we look at the poverty profile for different subgroups of the

population, based on both demographic (gender, age, household type and immigrant status) and geographic characteristics. Conclusions are provided in chapter 5.

A recent study on poverty in Norway in the period of 1993-2001, Galloway and Mogstad (2006), found that the share of chronically poor has been decreasing over the period. In addition, they also found that temporary poverty decreased all through the nineties, but there was a slight upturn in the start of the new millennium. The question to be answered in this paper is: Will the addition of important municipal services in a new extended income definition change the common perception of the level and trend of poverty in Norway?

2. Changes in macroeconomic and demographic conditions

Changes in macroeconomic conditions

In an empirical analysis, it is of great importance to always take into consideration the environment in which the analysis is being conducted. Earlier studies have shown that there exists a connection between business cycles and the extent of poverty in Norway.[1] Unskilled workers earning a low income are considered particularly vulnerable to business cycles as they are easily sacrificed when there is time for rationalization and cut downs. Consequently, one can argue that households living on a low income are more exposed to poverty in a recession than the rest of the population. Norway went through a recession in the late eighties and through the early nineties. The recession was partly triggered by a substantial fall in oil prices in 1986. The bottom[2] was reached in late 1992. From then on Norway entered into a period of high growth in employment and real wages. The peak[2] was reached in 1998 and the following years were characterized by a weak labor market and low growth in mainland GDP. In 2001, the boom had officially ended. In the 1980's, business cycles were mainly influenced by distinctive Norwegian economic conditions, such as the deregulations of the credit and exchange markets and the development of the oil sector. In the nineties, Norway became more vulnerable to fluctuations in international market growth, commodity prices (such as the price of oil), exchange rates and foreign interest rates. The income from oil had made Norway richer, but as a consequence, more receptive to shocks from the outside world.

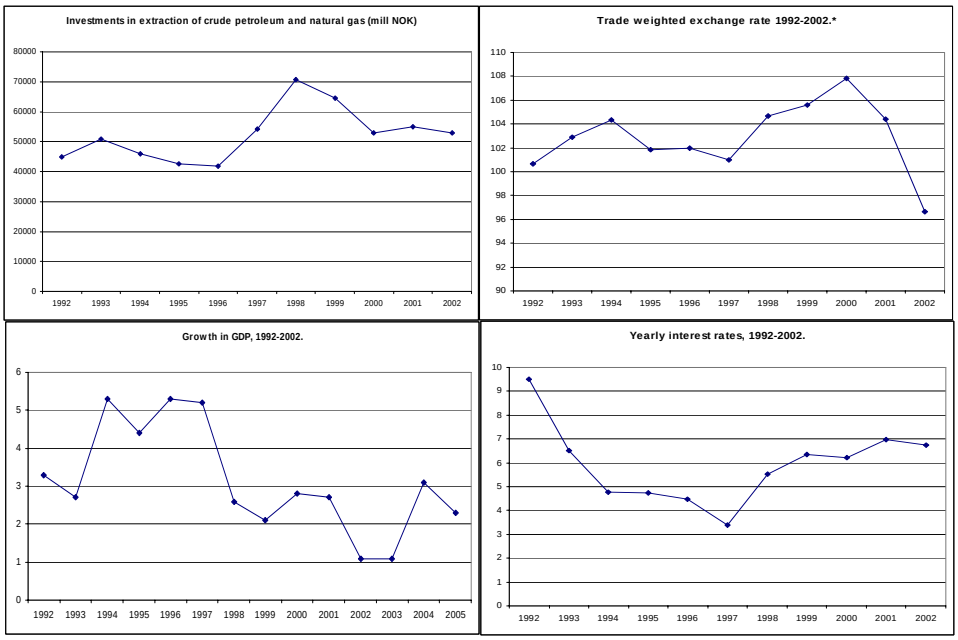
The period after 1993 was characterized by high growth. After many years of low cost and price growth compared to Norwegian trading partners, competitiveness was improved. From the period of 1993 through 1999, mainland GDP grew approximately 20 percent, or on average 3,2 percent per year. The start of the upturn in the economy in the years 1993-1994 was mainly due to a substantial fall in interest rates. Reduced interest rates imply that the disposable incomes of households increase, and as a consequence, households have more money to spend on consumer goods and services. The fall in interest rates was made possible

[1] See Andersen et al. (2003) and Epland and Kirkeberg (2004).

[2] The "bottom" and "peak"of a business cycle is defined as the point where the gap between actual GDP and an estimated trend is at its largest.

by a change of monetary regime, as Norway went from a fixed to a floating exchange rate. The high growth tendencies did not result in an overheated economy in the beginning. Available production capacity together with increasing rate of participation in the work force made the development viable. It was not until 1996 that the growth in the economy started to flatten out. But, because of increasing oil investments in both 1997 and 1998, the growth in the economy persisted at a fairly high level. The peak was reached in 1998. At this point, pressure tendencies were becoming noticeable in the Norwegian economy. After the wage settlement in 1998, it became obvious that the competitiveness of Norwegian mainland export industries had weakened. On the top of this, oil prices plummeted through 1998. It became difficult to keep the exchange rate stable. The Norwegian Krone was considered to be overvalued since oil prices were low and the cost level in the mainland industry high. Interest rates were nearly doubled but still, the exchange rate depreciated. The rest of the analysis period was characterized by stagnation in the rate of employment and growth. For more information on changes in the macroeconomic variables mentioned above see figure 2.1.

Figure 2.1 Changes in macroeconomic variables, 1992-2002.

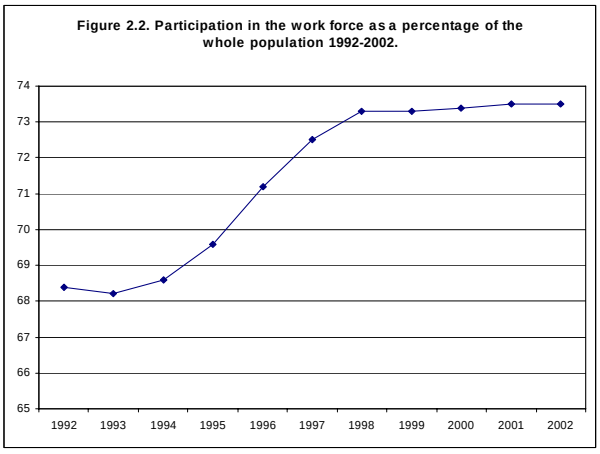


*An increase in the exchange rate means that the currency *depreciates*. A decrease in the exchange rate means that the currency *appreciates*.
Source: Statistics Norway and the Central Bank of Norway.

Unemployment started a steady decline from 1993 until the end of the nineties. At the same time the rate of participation in the work force moved in the opposite direction, steadily

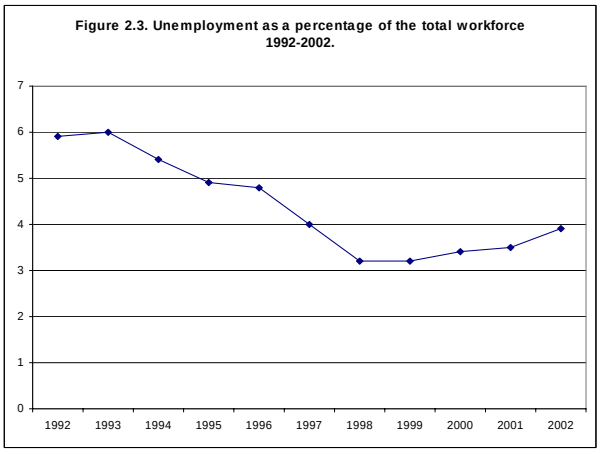
rising. This implies that there was a double positive effect. Unemployment within the workforce declined and in addition, the workforce grew larger. It was mainly the participation rate among women and young people that rose in this period. The variation in the participation rate among the young has been highly correlated with the state of the economy through the whole period. Young people tend to be employed in low-income professions, and are thus more sensitive to business cycle movements. In addition, young people tend to prolong their education when times are not good in the labor market. Thus the rise in participation in this group must be seen in connection with the decline in the late eighties and early nineties. The rise in participation among women can be seen as a more long-term trend, the rate among women is moving closer to the participation rate among men. In 2001, 77 % of the population in the age of 16-74 was employed, against 64 % in the EU. For an outline of the development in employment, see figure 2.2.

Figure 2.2. Participation in the work force as a percentage of the whole population 1992-2002.



Source: Statistics Norway

Figure 2.3. Unemployment as a percentage of the total workforce 1992-2002.

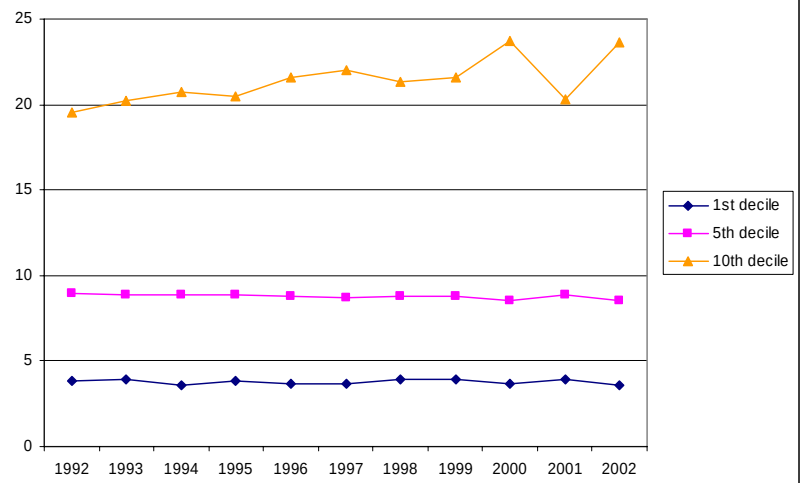


Source: Statistics Norway

Almost all households experienced an increase in income after tax during the 1990's. Contrary to this, inequality in income increased. The highest decile of the income distribution received an increasing share of total household income. This increase in inequality can be explained by a substantial increase in capital income. Capital income is primarily received by households at the upper end of the income distribution, and thus an increase in capital income such as an increase in share dividends will mainly benefit the richest part of the population leaving the income of the less fortunate unchanged. A temporary tax on share dividends was put into place in 2001, causing firms to hold back profits pending on the repeal of the tax. As we can

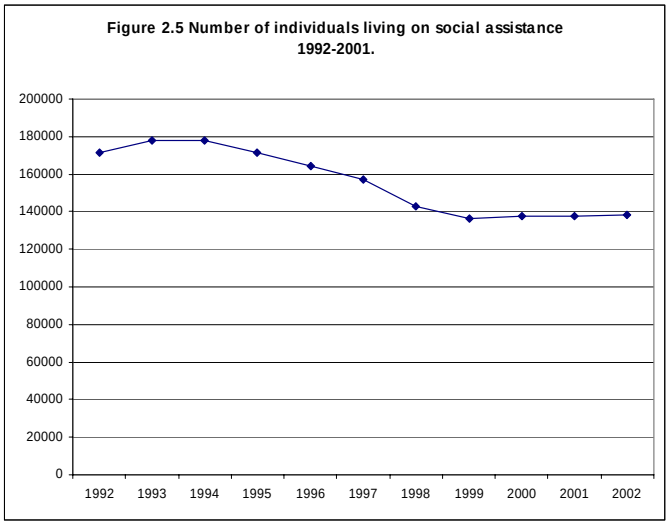
see from figure 2.4, this had a significant effect on the distribution of income in 2001, especially for the topmost decile. But this was just a temporary effect. When the tax was lifted in 2002, the income share of the topmost decile was restored to the level seen in 2001. Couples with children experienced the highest growth in real income, increasing their real income by 31% during the period of 1990-2000. Young singles, i.e singles up to the age of 45, experienced the lowest growth in income in this period.

Figure 2.4. Deciles of the distribution of household equivalent income, 1992-2002.



Source:Statistics Norway

Another group experiencing a particularly low growth in income in this period was recipients of social assistance. Social assistance is provided when other private or public support does not cover the cost of living. The rates of social assistance, adjusted in line with the Consumer Price Index, have not kept pace with the general income growth in the rest of society. On the other hand, the number of recipients decreased during the nineties. This implies that the economic conditions of many people that earlier had the need of social assistance was improved.



Source: Statistics Norway

Changes in demographic conditions

The demographic profile of the population may change over time, and thus affect the results of a poverty analysis. For example, an increase in the share of individuals with a higher education implies that a larger share of the population has a greater chance of escaping poverty, since education is a key to success in the labor market.

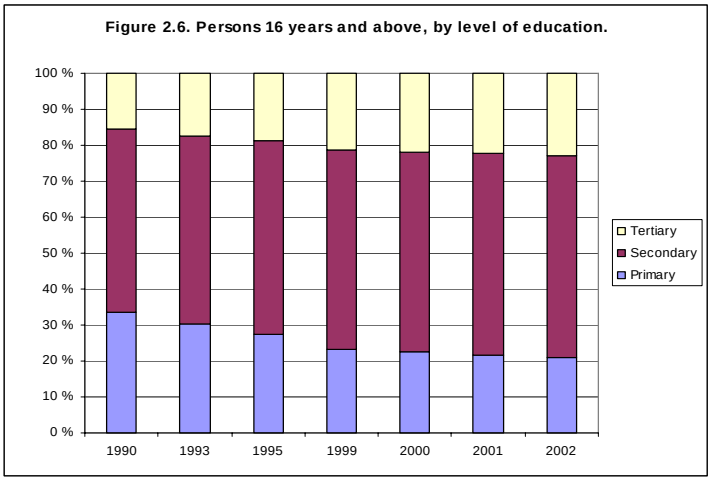
The 1990's were characterized by increasing participation in the work force, lower unemployment and increasing real wage growth. The favorable terms of the labor market led to an increase in the mobility of the population. A positive trend of urbanization can be traced through the whole period. Central areas, especially Oslo, offers a wide range of education possibilities and also a more varied and better paid labor market than rural areas. The international study, Rees et al. (1999), show that this upwards trend in urbanization was mainly caused by young people moving into central areas. On the other hand, larger urban areas experienced a net loss in the population in the category of middle aged and above. Migration out of the Oslo area was mainly focused to other municipalities within commuting range, so this deconcentration should not be characterized as a counter-urbanization but rather as an extended suburbanization.

The number of couples living together without being married and the number of singles have been steadily rising among the young and the middle aged, a result of among other factors, a high rate of broken marriages. A trend towards decreasing size in households implies that the

general pattern of consumption will somewhat change. If the size of the household becomes smaller, individual expenses will decrease faster than joint expenses within the household. Individual expenses are expenses such as expenses on clothing and food. Joint expenses are expenses such as housing costs and car expenses. Smaller households miss out on the benefit of economies of scale seen in larger households. A trend towards more one-person households implies that joint expenses will become a larger share of the household budget. This again proves the importance of applying the household as the economic unit of analysis and not the family. The household includes all cohabitants living under the same roof, while the family, in the register meaning of the word, will count unmarried couples without mutual children as singles. The higher the frequency of unmarried couples without children, the greater the error one makes when calculating equivalent income by applying family as the unit of analysis.

The share of highly educated people in the population has risen steadily through the whole period. Higher education may determine access to different kinds of jobs and influence further career opportunities, and thus promote avoidance of poverty. Note that results from a poverty analysis with respect to education level must be treated with caution, since it is difficult to separate the effect from different correlated factors. For example, the probability of being poor is higher among immigrants than for the rest of the population. At the same time, immigrants are overrepresented in the category of "No or unregistered level of education". Another factor to consider is the skewness of the age composition when it comes to education level. When applying the EU method for measuring poverty (see definition in chapter 3), an observed high share of poverty among the elderly with little or no education must be seen in connection with the fact that the EU method identifies elderly living on a basic pension as poor.

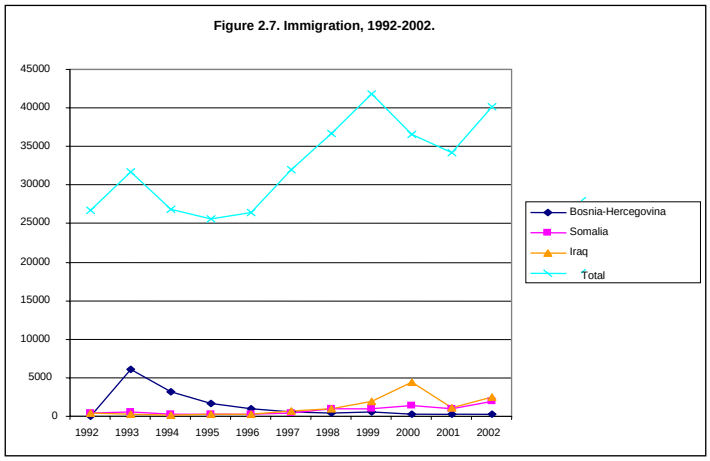
Figure 2.6. Persons 16 years and above, by level of education.



Source: Statistics Norway

The immigrant population in Norway is a complex group, made up of nationalities from over 200 countries. It has been shown that the occurrence of poverty is much higher in the immigrant population than what we see in the general population, see Galloway and Mogstad (2006). Kirkeberg (2001) shows that there is a clear overrepresentation of non-western immigrants in the bottom of the income distribution. The number of immigrants coming into the country each year depends on the prevailing policy of immigration, the demand for labor and the current crises situation in the world. As we can see from figure 2.6, immigration has been fluctuating over the years. The high number of immigrants in 1992-1993 was mainly a result of giving 8000 Bosnians (meant to be temporary) permanent permit of residency. In the end of the 1990's immigration came up to a record-breaking level. Norway accepted a significant number of individuals rescued out of the airlift in Kosovo in 1999, in addition to the arrival of a substantial number of refugees from Iraq and Somalia. On top of this, a strained labor market tempted many western Europeans to come to Norway where wages were relatively high and job opportunities plenty.

Figure 2.7. Immigration, 1992-2002.



Source: Statistics Norway.

3. Methodological issues and data

3.1 Income

In a society where most consumer goods and services can be bought, it is natural to think that the size of income has an impact on our standard of living. Traditionally, income has been defined to be the maximum expenditure possible without depleting net wealth. Because of insufficient data on net wealth there is no room for performing an analysis based directly on this definition. A standard approach in wealth studies is then to apply a broader definition of private income, income after tax. The choice of income definition may be of great importance to the results of a poverty analysis. Here, I will analyze poverty with the use of two different income concepts, namely income after tax and extended income. The focus will not be on the actual consumption of each individual, but rather the possibilities of consumption. Intuitively, a person with high income but low consumption due to high savings should not be considered poor. By applying a method for valuing different local government services, an attempt is made to construct a measure of extended income that incorporates important benefits such as education, childcare, health care and social services.

3.1.1 Income after tax

Income after tax includes wages, self-employment income, gross capital income, cash transfers and taxes. (See table 3.1). Use of official data from Statistics Norway on the entire population provides fairly accurate numbers for the income components mentioned above, except for capital income and income from self-employment. The measurement of capital income and income from self-employment is more problematic than the measurement of earnings and cash transfers. The reporting behavior of firms is highly influenced by changes in the tax system. In 2000-2001, a temporary tax on stock dividends was put into place. It has been shown that this resulted in a "timing effect" where companies held back profits pending on the repeal of the tax (Dypbukt, 2004). Thus the capital income reported may give a distorted picture of the actual profits of the firms. In accordance with other recent studies on

poverty, gross capital income is applied instead of net capital income. Interests from debt are deducted from gross capital income in order to construct net capital income. Guidelines from the UN recommend that interests from commercial loans and investment in a home are deducted from income (but not interest from loans on consumer goods), and that an income from owning a home is imputed (UN 1977). This is problematic for the following reasons. *First*, the UN guidelines suggests that one should estimate the income from owning a home by calculating the income one would get if the residence was put up for rent at a market price minus maintenance costs. However, in Norwegian statistics, income from owning a home is estimated as 2,5 % of the assessment value of the residence minus a basic deduction (51 250 kroner in 1996). Since the assessment value of a residence lies significantly below the market value, one clearly underestimates the income of owning a home. *Second*, it is not possible, from the data available, to make a distinction between interests paid on a mortgage and interest paid on a loan made for consumption purposes.

It is worth noticing that even though income after tax is recognized as being a good indicator of economic resources and is in close agreement with international standards (Expert Group on Household Income Statistics 2001), it fails to take into account relevant income components such as undeclared work and the value of public services such as childcare, health services etc.

Table 3.1. Overview of income components

Market income = Employment income

- earnings
- income from self-employment

+ Capital income, for example

- interest
- stock dividends
- sale of stocks

Total income = Market income

+ Transfers such as:

- welfare
- old-age pension
- unemployment benefits
- child allowance
- student grants

Income after tax = Total income - taxes

Households in which a member is registered with a negative income after tax will be excluded from the analysis. This is a small group that will have little influence on the analysis. In addition, observed negative capital income and observed negative income from self-employment will be set to zero. [3]

3.1.2 Extended income

Most income studies focus only on cash income when analyzing poverty. As noted before, one then neglects to take into account the value of public services, even though most public services such as education, childcare and care for the elderly and disabled are provided for redistributive purposes. I will therefore analyze the extent of poverty also with the use of an

[3] This is in accordance with Aaberge and Langørgen (2006)

additional income concept denoted extended income. Extended income is defined as the sum of income after tax and the value of municipal services received by the household/individual.

The valuation of local government services

The most common approach in assessing the value of public services is by setting the value of services equal to the expenditures in service production. This means that in-kind transfers are treated similarly as cash transfers when this income component is added to private income. One then assumes that municipalities have the same costs in providing a given set of public services. Since municipalities differ with respect to economic, demographic and geographic characteristics, this seems to be a rather strict assumption.

Aaberge and Langørgen (2003) propose a method of explaining differences in unit costs on the municipal level based on municipal expenditure data for different services combined with observations on local economic, demographic and geographic variables. The method is based on a linear expenditure system (LES). LES is here used to estimate municipal-specific costs of reaching minimum standards of different services. It is then assumed that municipal data on expenditure is generated from a model specified as a linear expenditure system with eight service sectors

(3.1) $$u_i = \gamma_i \pi_i + \beta_i (y - \sum_h \gamma_h \pi_h) + \varepsilon_i \ , \ \text{i} = 1,2,...,8.$$

$$\sum_{i=1}^{8} \beta_i = 1$$

where u_i is per capita expenditure on service sector i, y is per capita exogenous income of the local government, the parameter γ_i is subsistence output and π_i is unit cost in sector i. The parameter β_i is the marginal budget share and ε_i is the random term for service sector i [4]. Subsistence expenditures, $\gamma_i \pi_i$, are defined to be the product of subsistence output and unit cost.

Moreover, Aaberge and Langørgen (2003) assume that variation in unit costs is identified by assuming that unit costs are a function of observable characteristics of the municipalities. Subsistence output is assumed to depend on the structure of needs or demand of the overall population in each municipality. For instance, the share of employed women is assumed to increase subsistence output in the childcare sector.

[4] For further discussion and estimation results for the model see Aaberge and Langørgen (2003).

Further one can assume the following relationships

(3.2) $$\gamma_i = \gamma_{i0} + \sum_j \gamma_{ij} z_j \,, \quad \text{i=1,2,...,8,}$$

(3.3) $$\pi_i = \pi_{i0} + \sum_k \pi_{ik} p_k$$

where z_j is a vector of variables that affect subsistence output, while p_k is a vector of variables that affect unit costs in service sector i, and γ_{i0}, γ_{ij}, π_{i0} and π_{ik} are vectors of estimated parameters. Normally, we do not have a well-defined scale of measurement for output. The most intuitive method is to measure (valued) output in money, this implies that unit cost π_i may be defined as a price index with an average for the whole country equal to 1. This normalization means that we can solve for the constant in 3.3) and get

(3.4) $$\pi_i = 1 + \sum_k \pi_{ik} (p_k - \bar{p}_k)$$

Now we see that the variables affecting unit costs enters as deviations from their respective means.

While variation in unit costs implies that output is not directly affected, it is assumed that changes in subsistence output factors affect the output but not unit costs. Basically, the method identifies variation in unit costs by making a distinction between factors affecting unit costs and factors affecting subsistence output.

This is a fairly strict assumption, but it is much more flexible than the standard approach which ignores all variation in unit costs and as a consequence sets expenditures equal to the value of output.

The model includes the following service sectors:

1. Administration
2. Education
3. Childcare
4. Health care
5. Social services
6. Care for the elderly and disabled
7. Culture
8. Infrastructure

Summaries of variables that are assumed to explain variation in subsistence expenditure are displayed in Table 3.2. A further discussion on the choice of variables is found in Langørgen et.al. (2005).

Table 3.2. Variables that explain variation in subsistence expenditures by type of variable and service sector

Variable type	Variable name	Included in sector
p_k Variables affecting unit cost	Index for small municipalities 0-2000 inhabitants	1, 4 and 6
	Index for small municipalities 0-5000 inhabitants	1, 2, 3, 4, 6 and 8
	Distance to center of municipal subdistrict	2, 3, 4, and 6
	Distance to neighboring basic unit	2 and 4
	Children 0-5 years with basic or supplementary benefits	3
	Children 6-15 years with basic or supplementary benefits	2
	Mentally disabled persons 16 years and above	6
	Sewage purification degree	8
	Amount of snowfall	8
z_j Variables affecting subsistence output	Population share 1-5 years of age	3
	Population share 6-12 years of age	2
	Population share 13-15 years of age	2
	Population share 67-79 years of age	6
	Population share 80-89 years of age	6
	Population share 90 years and above	6
	Employed women of 20-44 years of age	3
	Immigrants with integration grant	5
	Divorced/separated 16-59 years	5
	Unemployed 16-59 years	5
	Population of poor	5
	Urban municipality criterion	5

Sector 1: Administration
Sector 2: Education
Sector 3: Childcare
Sector 4: Health care
Sector 5: Social services
Sector 6: Care for the elderly and disabled
Sector 7: Culture
Sector 8: Infrastructure

The per capita expenditures are in most service sectors a decreasing function of population size. This is taken as proof of economies of scale; smaller municipalities have higher unit costs. One important reason for variation in productivity is that smaller municipalities use a larger share of resources on administration in most of the service sectors, including central administration (sector 1). This effect is captured by an index for small municipalities. Since social care is mainly cash transfers (social assistance), all the explanatory variables of sector 5 are assumed to only affect subsistence output and not unit costs.

Local government infrastructure services include sewage disposal and snow removal. Local variation in the requirements for sewage purification comes from national environmental regulations and is assumed to affect unit costs in sewage disposal. The need for snow removal to keep roads open in each municipality depends on the amount of snowfall, and thus subsistence costs are assumed to increase with the amount of snowfall.

The distance to the center of the municipal sub-district and neighboring basic unit reflects the dispersion of settlement in the municipality. This is assumed to increase subsistence expenditures in education, health care, childcare and care for the elderly. For instance in sector 6, care for the elderly and disabled, travel time of the staff between client homes is increasing with dispersion, and thus sparsely populated municipalities have higher unit costs.

The output in health services is regarded as an insurance benefit received regardless of the actual use of services. This is in accordance with Smeeding et al. (1993). Public provision of services is then compared to the private alternative, where citizens buy insurance in the market. Here, output increases as a function of risk and coverage. Risk is defined as probabilities that citizens become recipients based on age gender and household type, and coverage is described as the service standards that different types of clients can expect to receive. Since elderly people have a higher probability of becoming recipients of health related services, output is higher for elderly people than for young people (given the level of coverage). Thus it follows that the age structure within each municipality will affect the subsistence output.
The share of mentally disabled in each municipality is assumed to not affect output. Local government expenditures are increasing with the share of mentally disabled. The distribution of mentally disabled is partly explained by some municipalities being appointed host communities. Thus a high observed share of mentally disabled in some municipalities does not mean that there is a higher risk of becoming mentally disabled in these municipalities. By assuming that the share of mentally disabled affects unit costs, there will not be a problem of total output and welfare being an increasing function of the share of mentally disabled in the local community.

The following valuation of services in sector i is suggested

(3.5) $$u_i^* = \frac{u_i}{\hat{\pi}_i}, \quad i = 1,...,8,$$

Thus when assessing the value of sector-specific services we adjust observed expenditures by dividing by a price index reflecting the relative difference in unit costs in providing the service across municipalities. A high $\hat{\pi}_i$ implies that the municipality has a relatively higher cost in providing the same service compared to other municipalities. In municipalities with a $\hat{\pi}_i$ higher (lower) than 1, the value of services is found to be below (above) the observed expenditures. This implies that the value of services in small and sparsely populated municipalities tends to be lower than the actual expenditures and vice versa for large and densely populated municipalities. Equation 3.3 can be seen as an analogue to household equivalence scales. Scales such as the OECD scale make comparison of income of individuals from households of different size and composition possible. But note that the scale proposed here depends on the income of municipalities, this is not common practice in household equivalence scales.
In addition to adjusting for variation in unit costs, expenditures are also adjusted for regional variation in employers' social security tax rate. The value of services is calculated for an average tax rate and user fees are deducted. In this paper, the model is only estimated on 1998 data, thus we assume that the parameters have not changed much over time.

The allocation of the value of public services on individuals

The allocation of public services on individuals is based on two methods; direct identification or selection of recipients from a subpopulation of potential recipients on the basis of estimated probabilities for being a recipient. For most services we do not have the data to exactly identify the recipients. One important exception is primary education since primary school is compulsory for children in the age of 6-15 years. We can with certainty identify all children in the age of 6-15 as recipients.

When there is no way of identifying the recipients directly from data, the strategy has been to use available micro data as a basis for estimating probabilities of being a recipient based on demographic and socioeconomic variables. These probabilities are then used to draw a population of recipients. The identities of the actual recipients are not found by this

procedure, but as long as relevant characteristics of the recipients are taken into account we are able to construct fairly precise approximations of the distributional profiles of these services. In the years 1999-2001[5], data for cash benefit for parents of young children[6] is applied to identify households that are not likely to receive childcare services since the household is receiving a high level of cash benefits. If a household is receiving more than 50% of full cash benefits, the children of that household is excluded from the population of eligible recipients of childcare services.

For some services such as health care and social care, the method used is a risk related insurance benefit approach in accordance with Smeeding et al. (1993). Health care is viewed as an insurance benefit received by all coverees independent of actual use. However, the probabilities of receiving care are allowed to vary with age, household type and gender in line with differences in need. In contrast to other services, direct identification in the health care sector makes little sense. By allocating the value of services on the actual users, we boost the welfare of the sick and disabled as compared to the healthy. If this approach is going to be meaningful, one must take into account the welfare loss of being sick and disabled.

When the recipients have been selected by simulation, the value of services is distributed uniformly among the selected recipients. For instance, there is no adjustment made for different opening hours in kindergartens. Demand for culture is assumed to be constant given an education level. But when services are allocated in the insurance-benefit approach, we assume that benefits are distributed in proportion to the probability of being a recipient. This applies to the sectors healthcare, social care and care for the elderly and disabled. Thus differences in allocated in-kind benefits can either come from variation in the probability of being a recipient or from variation in the economic situation and service sector priorities of the municipality.

The allocation method combines estimated probabilities of being a recipient with the assumption of a uniform distribution of benefits on selected recipients or of potential recipients with common characteristics within municipalities. In the service sectors

[5] The arrangement of cash benefits for parents with young children was first put into place in august 1998.

[6] To be eligible for cash benefit parents must have children between the age of one and three. The children must not, or only partly, attend a kindergarten for which public operating support is given.

administration, culture[7] and infrastructure the probability of being a recipient is equal to one for the whole population. For the other sectors, the probabilities vary with relevant individual characteristics. The relevant characteristics used to allocate benefits in the different service sectors are depicted in Table 3.3.[8]

Table 3.3. Distribution of different municipal services as a function of individual characteristics

	Age	Sex	Family type	Education level	Private income
Administration					
Education	x				
Childcare	x		x	x	
Health Care	x	x			
Social care	x				x
Care for the elderly and disabled	x	x	x		
Culture				x	
Infrastructure					

Where does the money come from?

An interesting aspect of analysis where an extended income definition is applied is how the population's income is distributed on different income components. The study Aaberge and Langørgen (2006) have looked into this. Table 3.4 shows mean values of different income components by deciles of extended income. Extended income in the first column is the sum of the income components in the six following columns. The table shows that both market income and taxes increase with extended income while social assistance decrease with extended income. National cash transfers increase from the first to the second decile, then decreases with extended income. This implies that the national welfare system only to a limited degree succeeds in redistributing income from the wealthy to the decile of the population with the lowest income. The results also show that individuals with an income in

[7] For culture we have estimated average demand on each education level rather than the probability of being recipient.

[8] For results on the distribution of in-kind transfers based on relevant characteristics, see Aaberge and Langørgen (2006).

the middle of the income distribution enjoys a much higher mean value of public services than individuals residing at the bottom and top of the income distribution. This does not necessarily imply that the population of poor is receiving an unacceptably low level of public services. The poor population is only a small share of the first 10 % decile. The poor population may still get a high value of public services if the remaining part of the population belonging to the lowest decile receive a relatively low value of public services, causing a low mean value for the whole decile. I will explore this subject further in the empirical section of chapter 4.

Table 3.4. Decomposition of decile-specific extended income by income components, NOK 1998*

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1. decile	101 000	33 400	4 000	52 400	-12 400	-6 400	30 000
2. decile	144 600	65 000	2 300	76 200	-24 800	-7 100	33 000
3. decile	165 500	109 800	1 600	63 700	-36 200	-7 400	34 000
4. decile	182 900	144 800	1 000	54 800	-45 100	-7 500	34 800
5. decile	198 900	175 300	700	48 800	-53 600	-7 500	35 200
6. decile	215 000	204 800	500	44 600	-62 600	-7 400	35 200
7. decile	232 800	236 500	400	41 300	-73 100	-7 200	34 800
8. decile	254 700	275 800	300	38 500	-86 800	-7 000	33 800
9. decile	287 300	338 300	300	34 300	-109 300	-6 500	30 200
10. decile	444 900	576 200	200	32 500	-184 900	-6 200	27 100
All deciles	222 800	216 000	1 100	48 700	-68 900	-7 000	32 800

Source: Aaberge and Langørgen (2006).

*Note: Aaberge and Langørgen(2006) applies the square-root scale when estimating equivalent income.

3.2 Accounting period for income

Empirical analyses of poverty are normally based on cross-section data, of annual income. This type of analysis captures what is called temporary poverty. But poverty results based on annual income must be interpreted with caution. Individuals /households may have low income in a single year without necessarily having problems financially. This can be the case

for self-employed people who can be registered with low or even negative income in a single year due to accounting reasons. The same goes for people who take a leave of absence in order to pursue some planned leisure activity, or due to some other temporary circumstance. For these reasons, a measure of income based on a longer time period may give a more accurate identification of individuals suffering from lack of economic resources. In order to study chronic poverty, I will use data for three-year equivalent income, and thus define people as chronically poor if they have a three-year income that is less than a poverty line based on three-year equivalent income.

3.3 Choice of equivalence scale

When the choice of income definition is made, a new problem arises. How can one compare incomes of individuals belonging to households of different size and composition? In most studies, this problem is handled by normalizing income with the help of an equivalence scale. An equivalence scale takes into account economies of scale in households, for example when a household lives in the same residence. Equivalent income is constructed by dividing total household income by an equivalent weight. This weight represents a balance between economies of scale and private consumption. In Norway and other OECD countries it is normal to apply *the OECD scale* in poverty and distributional analysis. This scale gives a weight of 1 to the first adult in the household, 0,7 to each of the remaining adults in the household and children get a weight of 0.5. An alternative to this scale is *the modified OECD scale*, which is often applied by the EU, and will from here on be called the EU scale. The EU scale places a higher emphasis on economies of scale in consumption within the households. The scale places a weight of 1 to the first adult and 0.5 to each additional adult member of the household and then a weight of 0.3 on each child. The choice of equivalence scale may have importance for the distribution of poor and the extent of poverty. It has been shown that measurement of poverty with the use of equivalent income calculated on the basis of the EU scale has a tendency to identify relatively high numbers of single elderly and large households as poor, while the OECD scale also produces high poverty rates for large families but relatively low poverty rates for small households, Hagenaars et al (1994).

The nature of some public services implies that neither one of the scales mentioned above is suitable for application. Some services are considered purely public goods while others are considered private goods. An exception is care for the elderly and disabled. The recipient of

care consumes nursing and receives assistance in household work, which also yields benefits for the other household members. Thus this service is considered both a private and collective good, and so the OECD scale or the EU scale will be suitable.

The benefits derived from social care, administration and infrastructure is considered purely public goods. This means that the consumption of the good is independent of household size, it does not matter whether a recipient is single or is part of a household of ten. Household members consume collectively the benefits from these services. If a member of a household is a drug abuser and is cured from treatment provided by social services, the whole household will benefit from having a drug-free environment. Infrastructure such as public roads, sewage and refuse collection is also obviously consumed commonly within the household
Culture is considered a private good. For instance, subsidies given to sports activities and youth centers in the community are not enjoyed by all members of the household, consequently there are no economies of scale. The same argument holds for childcare, education and healthcare.

3.4 Poverty line

Poverty is a concept we normally reserve for other parts of the world or a distant past. Still, poverty is a topic of current interest in the media and politics. Poverty was a hot topic in debates prior to the general election in 2001. The new coalition government, Bondevik I, presented a program of action against poverty (Stortingsmelding nr. 6 2002-2003) a year after the election. There are many issues to take into account when trying to define poverty. Should poverty be considered an absolute or a relative concept dependent on standards of living? An absolute view of poverty implies the existence of a minimum need of living standard that is time invariant and can be applied to all different societies. Critics of this view have argued that the concept of absolute poverty is in itself relative. Arguably, poverty cannot be defined independently of the social and economic environment in which needs arise and are defined, Smeeding et al. (1993). Here, I will focus on a relative poverty definition. This means that the requirement for being classified as poor will change over the course of years in accordance with changes in standards of living. A poor person is not necessarily a person barely surviving, but rather a person experiencing an unacceptable low standard of living. What is "unacceptable" depends on the general standard of living in society. In order to take part in

society-at-large, or as Adam Smith (1776) expressed it " appearing in public without shame", one would have to have a larger income in a wealthy country than a poor country.

Here, the measurement of poverty will be done by applying a poverty line defined as a percentage of median equivalent income. All individuals with an equivalent income falling below this line will be considered poor. A common approach is to set the poverty line at 50 percent of median equivalent income, with equivalent income calculated in accordance with the OECD scale. This method will from here on be called the OECD method for measurement of income. There are no theoretical or empirical reasons for setting the line at 50 percent rather than for example 60 percent of the median income. However, as demonstrated by Aaberge et al. (2000) the magnitude of the 50 percent poverty line during the 1990's was only slightly lower than the basic pension for singles. Although basic pension never was introduced as a poverty line, it is the closest minimum required income evaluation made by politicians.

Another method of measuring poverty is given by a poverty line defined as 60 percent of median equivalent income, where equivalent income is calculated in accordance with the EU scale. This method will from here on be called the EU method for measurement of poverty. Recent studies on Norwegian data such as Galloway and Mogstad (2006) show that when this poverty line is applied, elderly people living on a basic pension is considered poor. This implies that the poverty rate among the elderly will be very high compared to when we apply the OECD method. It can be argued that the EU approach leads to a misleading picture of poverty among the elderly in Norway since benefits such as assistance in the home, nursing and health care, which are considered necessary to obtain a good quality of life for many elderly people, are provided almost free of charge. Thus elderly people in Norway will need a lower cash flow than elderly in many other countries in order to obtain the same standard of living.
As a consequence of what is stated above, I have chosen to focus mainly on the OECD method of measuring poverty. But for the sake of completeness, I will also report results from the EU method.

An extended income definition adds an extra income component to all individuals compared to private income after tax. It is interesting to see in what way this addition to income affects

the probability of being poor, or in other words, the probability of falling below the poverty line. Theoretically, the question can be examined by the following model:

Assume that income after tax (X_1) has the cumulative probability distribution function $F_1(x)$. The poverty line (z_1) is then given by

$$z_1 = \frac{1}{2} F_1^{-1}(\frac{1}{2}) . \tag{3.6}$$

Provided that the effect of public services is similar to a lump-sum transfer, α, extended income ($X_2 = X_1 + \alpha$) has the cumulative probability distribution function $F_2(x)$, given by

$$F_2(x) = P_r(X_1 \le x - \alpha) = F_1(x - \alpha) . \tag{3.7}$$

The poverty line z_2 is then defined by

$$z_2 = \frac{1}{2} F_2^{-1}(\frac{1}{2}) = \frac{1}{2}(F_1^{-1}(\frac{1}{2}) + \alpha) . \tag{3.8}$$

The probability of being classified as poor under F_1 and F_2 is given by

$$p_1 = P_r(X_1 \le z_1) = P_r(X_1 \le \frac{1}{2} F_1^{-1}(\frac{1}{2})) = F_1(\frac{1}{2} F_1^{-1}(\frac{1}{2})) \tag{3.9}$$

$$p_2 = P_r(X_1 + \alpha \le \frac{1}{2}(F_1^{-1}(\frac{1}{2}) + \alpha) = F_1(\frac{1}{2}(F_1^{-1}(\frac{1}{2}) - \frac{\alpha}{2}) \tag{3.10}$$

Thus, p_1 is the probability of becoming poor when the income definition applied is income after tax, whereas p_2 is the corresponding probability for extended income.

By comparing equations 3.9 and 3.10 we see that the probability of becoming poor is lower when we rely on extended income rather than income after tax. Thus, provided that the effect of public services works as a lump-sum transfer, we should expect that the empirical analysis will show lower results for the poverty share under extended income compared to income after tax. The results are illustrated in figure 1.

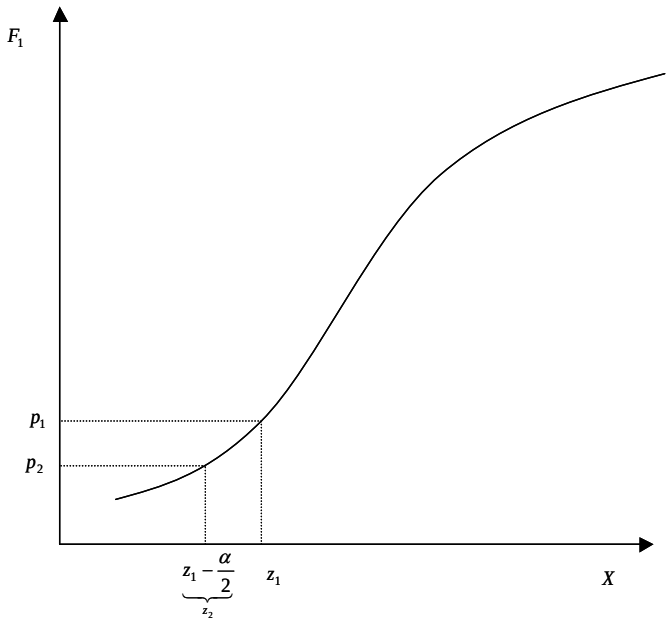


Figure 1. The effect of an equal cash transfer on the probability of becoming poor

3.5 Data and choice of economic unit and population

To study poverty one needs in addition to data on income for all individuals, data on the size and composition of the households. In earlier studies, analysis on poverty has been based on family as the economic unit. Family, in the register meaning of the word, is a narrower concept than the household, in the sense that a household includes all individuals living together. For example, one cannot distinguish between a couple without children living together and singles when family is the economic unit of analysis. This implies that the number of singles in Norway will be exaggerated when family forms the basis of a data set. In this analysis I have used two different income definitions, income after tax and extended income. The analysis on income after tax is based on data from the Income register of Statistics Norway that includes individual data for the whole working population of Norway, combined with registered based data on households.

Extended income is constructed by adding income after tax and the value of in-kind benefits. According to Aaberge and Langørgen (2006), the allocation of municipal in-kind benefits and user fees on households and individuals is based on six different data sources:

- Local government accounts that provides sector specific expenditures and fees on the municipality level.

- Demographic, social and geographic characteristics which affect the subsistence expenditures of the municipalities, and thus also the value of services.
- Number of recipients of different services by age and gender on the municipality level
- Prices in kindergartens and care for the elderly and disabled reported by municipalities. Prices are reported for different family income levels
- Register information on age, sex, household type, municipality, education level and private incomes for individuals (and households)
- Data from sample surveys that provide information on the use of public services for individuals and households

The base population of analysis is decided to be all individuals residing in Norway at least one of the years in the period 1993-2001. This implies that children and residents with a foreign citizenship are also taken into account.

It is desirable to have a population of analysis where all individuals have been residing in Norway for the whole year. In this setting, annual income is comparable amongst all individuals.
People who die or emigrate in the course of a year are not registered with a full year of income. Including these individuals in the population of analysis may give misleading results, especially for the elderly. A person can have a respectable income in the time she is a resident in Norway, but because she happens to die early in the year, she is registered with a low annual income and is classified as poor. Thus we get an upward bias in the results, especially for the elderly where the death rate is high and many elderly are living on a pension that is relatively near the poverty line. Thus people who die or emigrate are excluded from the analysis in the year they become non-residents.

It has been argued that students should be excluded from a poverty analysis. It is considered legit for students to have a low income, since an education can be seen as an investment in future income producing work. In addition, favorable student funding schemes where students have the opportunity of borrowing money on very good terms exist, but these loans are not counted as income. On the other hand, most students living away from home are still registered with their parents' home address. This means that these students are still counted as a part of their parents' household and share their parents' income. There will therefore be a

tendency to overestimate the income of students, and thus students will not significantly affect the poverty results. This is confirmed in the empirical results of Mogstad (2005).

Intuitively, no individual with high wealth should be counted as poor even if the individual has a low income. Therefore it can be argued that one should exclude these individuals from the population of poor. However, it has been shown that the exclusion has little influence on poverty results in Norway.[9]

Above, I have argued that the exclusion of students and wealthy individuals will have little influence on the results on poverty in Norway. But, just to be on the safe side, and to prove the robustness of the empirical results presented, students and wealthy individuals will be excluded from the population of poor in this analysis. Because of lacking data on wealth, a wealthy individual is defined as an individual registered with equivalent gross financial capital[10] greater than or equal to a limit of 3 times the median of equivalent income after tax. In addition to these restrictions, I have also excluded individuals with an illegitimate registered municipality of residence and individuals registered with an illegitimate household code from the overall population.[11]

When analyzing chronic poverty, the population consists of all individuals residing in Norway for each of the whole three-year periods. When analyzing chronic poverty with respect to demographic characteristics such as age and household types, the state in the first year will be determining the state in the rest of the three-year period. For example, it is reasonable to assume that an individual which is married in the first period, but switches to being a lone mother in the next two periods will have a life situation which is influenced by the state in the first period. However, we account for the effect on equivalent income of changes in household status.

[9] See Mogstad (2005) and Epland et al (2003). Epland et al (2003) where the results are based on the OECD method. However, Epland et al. (2001) finds that the exclusion of wealthy individuals has a significant impact on the results when the EU method for measuring poverty is applied.

[10] Gross financial capital consists of bank deposits, shares in mutual funds, bonds and money market funds, taxable foreign wealth, securities and also other accounts receivable and wealth such as art, trotting horses antiques etc.

[11] Household codes such as '00000000000' and municipalities of residence with a code such as '9999'.

4. Empirical results

In this section the estimated results from the conducted poverty analysis will be represented and discussed. The framework outlined in Section 3 is applied on Norwegian register data for the years 1993-2001. The results will be discussed in reference to the outline of the economic development in Section 2. In order to shed light on different aspects of poverty we have produced poverty estimates for various subgroups of the population defined by household type, age, sex, place of residence and immigrant status. The results presented in this section will mainly be based on the OECD method of measuring poverty, a poverty line defined as 50 % of the median equivalent income derived in accordance with the OECD scale. In the appendix, I will also report results where definitions are chosen to be in accordance with the EU method of estimating poverty, i.e. the poverty line is defined as 60 % of the median equivalent income derived in accordance with the EU scale (further discussion of the OECD and EU method is found in Section 3). In the analysis we have applied two different income definitions, namely income after tax and extended income. Private income, measured by income after tax, express the cash income received by the individual/household, whereas extended income also incorporates important benefits such as childcare, health care, education and care for the elderly and disabled[12]. The addition of the value of public services brings a new aspect to the analysis. For instance, we will explore whether the effect on poverty is greater when allocating the value of public services rather than giving each member of the population an equal cash transfer. Does the addition of the value of public services have any redistributional effect beyond a lump-sum transfer?

Although an economic boom will give rise to a general improvement in the economic conditions of the population, it is not obvious that people with low incomes will benefit significantly from the boom. Even if the poor population experiences an increase in income, a higher increase in income in the general population will lead to an increase in poverty. Thus the increase in income among the poor must be relatively higher than the increase seen in the general population in order for the rate of poverty to decline.

[12] For more information on the components of the income definitions see Section 3.

From Table 4.1 one can see that chronic poverty based on extended income is less than a half of chronic poverty rate found when income after tax is applied as definition of income and the accounting period is 1999-2001. If we take al look at tables 4.3 and 4.9 we see that the same trend is found for all time periods and for both definitions of poverty, both temporary and chronic. It is interesting to see that the results show that there are no individuals that are classified as poor under extended income and at the same time are classified as non-poor when income after tax is applied. This implies that individuals with an income in the lower part of the income distribution benefits relatively more than individuals with an income in the middle of the income distribution. However, this does not necessarily mean that the poor population receives more public services than the rest of the population. According to the theoretical discussion in Section 3.4, we will see a reduction in the number of poor even if the transfer of valued services are the same for all members of the population. The improvement occurs since an equal cash transfer will be a greater relative increase in income for a person with low income than for a person with a higher income.

Table 4.1 Chronic poverty* based on both income definitions**.

		Extended Income		
		Poor	Non-poor	Sum
Income after tax	Poor	0.7	1.0	1.7
	Non-poor	0	98.3	98.3
	Sum	0.7	99.3	100.0

**OECD definition.*

***Accounting period is 1999-2001.*

Section 3 demonstrated that poverty would decrease if the whole population received an equal transfer of public services. An interesting question is now to investigate whether or not the addition of the value of municipal services works better (or maybe worse) than allocating an equal cash transfer to each individual in the whole population. As we can see from Table 4.2 it seems that the effect on temporary poverty is slightly higher when actual allocation takes place rather than giving the whole population an equal cash transfer. This may imply that the local government is doing a good job in targeting the group of individuals that needs help. But on the other hand, the difference between giving the equal cash transfer or distributing the

value of municipal services is quite low, only 0,2 %. Similar results are found for chronic poverty.

Table 4.2. Temporary poverty* when an equal cash transfer is added to income after tax compared to extended income (where the value of public services are distributed according to certain individual characteristics), 2001.

Income after tax	2.7
Income after tax + distributed value of public services	1.3
Income after tax + equal cash transfer	1.5

**OECD definition*

Table 4.3. Chronic poverty* when an equal cash transfer is added to income after tax compared to extended income (where the value of public services are distributed according to certain individual characteristics), 1999-2001.

Income after tax	1.7
Income after tax + distributed value of public services	0.7
Income after tax + equal cash transfer	0.8

**OECD definition*

4.1 The pattern of temporary poverty 1993-2001.

"Temporarily poor" is a term assigned to individuals with an annual income falling below a poverty line based on annual income. Since we are dealing with a relative poverty definition, this poverty line will change from year to year, pending on the overall welfare development in the population. For an outline of the development in the poverty line, see Table 4.3. Median income is chosen instead of mean income as a measure of the development in the income distribution since the median is less sensitive to changes in top incomes. A poverty measure

should not be too dependent on whether the richest 1 % gets even richer, but rather on the general income development of the population.

Table 4.4 Poverty lines* based on annual equivalent income after tax and annual equivalent extended income 1993-2001. Fixed prices (2001 Kroner).

Year	Poverty line 50% of median equivalent income	
	Income after tax	Extended income
1993	68426	80011
1994	68578	80110
1995	69238	81091
1996	71815	84021
1997	73588	86164
1998	77743	91579
1999	80693	94715
2000	82238	96485
2001	84068	99124

**OECD definition*

The results reported in Table 4.4 suggest that there is a relationship between poverty and business cycles in Norway. In 1993 Norway was at the bottom of a recession. The rest of the nineties were steered by high growth and a rise in employment. The upturn in the economy was also reflected in the share of poor in society. We see a steady decline in the rate of poverty all through the nineties in both income definitions. The millennium was characterized by stagnation in growth and employment, and also a slight upturn in the number of poor when income after tax is applied as the income measure. It appears that the addition of public services smoothes the effect of business cycles when the economic conditions grow worse. It is worth noticing that even though the rate of poverty seemingly follows the business cycles, the fluctuations are quite small. As suggested in Galloway and Mogstad (2006), this may be explained by a generous welfare system and the fact that households partly compensate the

loss of income when a household member looses his job by increasing the work supply in the rest of the household.

Further one can notice that the addition of public services to cash income has a strong impact on annual poverty. The numbers are almost cut in half. The poverty shares based on extended income seem to follow the trend of cash income through the nineties. It seems that the addition of public services reduces the effect of the starting recession in 2001.

Table 4.5 Temporary poverty* 1993-2001.

	OECD definition	
	Income after tax	Extended income
1993	2.9	1.9
1994	2.8	1.7
1995	2.7	1.6
1996	2.7	1.5
1997	2.7	1.5
1998	2.5	1.3
1999	2.5	1.3
2000	2.5	1.3
2001	2.7	1.3

**OECD definition*

When the impact on poverty of public services is covered, the next step is then to analyze how the distribution of public services benefits the poor. Table 3.4, in Section 3, taken from Aaberge and Langørgen (2006), shows mean values of different income components by deciles. In Aaberge and Langørgen (2006) a different equivalence scale is applied, the square-root scale. Compared to the OECD scale, the square-root scale puts more emphasis on economies of scale within the household. This has a great effect on the composition of the top deciles of the income distribution. Results based on the OECD scale are displayed in Table 4.5[13]. We see that the change of equivalence scale changes the picture somewhat. Market income is still increasing by decile, while social assistance is decreasing. National cash transfers increase from the first to the second decile, and decreases thereafter. Compared to Table 3.4, the conditional distribution of municipal services are now more rightly skewed, in the sense that it is now the 10^{th} decile of the population that receive the highest mean value of municipal services. But most importantly, the lowest decile of the distribution still receives relatively less municipal services than the higher deciles.

[13] Notice that the level of income has also changed. This is a consequence of the change in equivalence scale, and is not of importance for an analysis of distributive issues.

Table 4.6. Decomposition of decile-specific extended annual income by income components, NOK 1998*.

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1. decile	98500	40900	3500	46400	-13 600	-5500	26800
2. decile	125400	68600	1900	55200	-23 200	-5700	28600
3. decile	139800	94900	1200	50100	-30 400	-5700	29700
4. decile	151600	119100	800	44600	-37200	-5800	30100
5. decile	162800	141700	600	40200	-43900	-5900	30100
6. decile	174500	162100	500	37800	-50300	-5900	30300
7. decile	187500	185300	400	35600	-58100	-6000	30300
8. decile	203500	212000	300	34300	-67800	-6100	30800
9. decile	227300	248900	200	34000	-82100	-6400	32700
10. decile	348100	426200	200	35200	-141100	-6800	34400
All deciles	181900	170000	1000	41300	-54800	-6000	30400

OECD definition

By considering smaller fractions than 10 % we get a more nuanced picture of the distribution of the different income components. For example, Table 4.6 shows that the lowest 2-percentile receives only a half of what the next 2-percentile receives of national cash transfers. Further, one can notice that the lowest 2-percentile now receives just below the average level of municipal services for the whole population, while the following 2-percentiles receives much less. This implies that the poor population receives more municipal services than suggested by the lowest decile in Table 4.5. It is the remaining part of the lowest decile that pulls down the mean value for the group as a whole. But still it is the upper 2-percentiles that receives the most public services. In Table 4.7 the composition of income for the poor population is displayed. As we can see, the level of municipal services is even closer to the average level than what Table 4.6 shows for the lowest 2-percentile.

Table 4.7. Decomposition of percentiles in the distribution of annual extended income by income components, NOK 1998*

Percentiles	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1-2	66700	26200	4000	19800	-6600	-5800	29100
3-4	96100	39100	4600	44100	-12100	-5200	25600
5-6	104700	41500	3400	53700	-14400	-5300	25800
7-8	110400	46000	2900	57000	-16500	-5400	26400
9-10	114800	51600	2500	57500	-18400	-5500	27100
91-92	250200	285000	200	34100	-97200	-6600	34700
93-94	262900	302000	200	35200	-104800	-6900	37200
95-96	281400	332800	200	35100	-117500	-7000	37800
97-98	315500	396700	100	34200	-143000	-7000	34500
99-100	630500	814600	200	37400	-242800	-6500	27600
All percentiles	181900	170000	1000	41300	-54800	-6000	30400

**OECD definition*

Table 4.8. Decomposition of mean annual extended income by income components for the poor population, NOK 1998*.

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
Poor population	61500	21800	4500	16400	-5300	-5800	29900

**OECD definition*

As mentioned earlier, one should take great care when analyzing poverty on the basis of annual poverty indicators since households may temporarily experience low incomes without necessarily suffering from a lack of economic resources. In addition, temporary poverty gives no information on the duration of poverty.

4.2 The pattern of chronic Poverty 1993-2001.

In order to study poverty in a more long-term perspective it is not sufficient to only look at annual income. With the intention of throwing light on the persistence of poverty, we need to consider incomes that reflect the well being of the population over a longer time period. By using three-year income we are able to study poverty over a longer perspective, eliminating some of the concerns connected with an analysis based on annual income. An individual is classified as chronically poor if he/she is registered with a three-year income lower than a poverty line assessed as 50 % of median three-year income. The trend in the poverty line is displayed in Table 4.8. There are three three-year periods in the analysis, covering both a boom and the start of a recession. As mentioned earlier the development in the poverty line reflects the general economic development in the Norwegian society. As expected, the chronic poverty lines follow the same trend as the temporary poverty lines.

As we can see from Table 4.9 the share of chronically poor has declined through the whole period. This result suggests that also chronic poverty is influenced by the ups and downs of the Norwegian economy. Statistics Norway (2004) finds that there is a strong connection between an individual's affiliation with the labor market and chronic poverty. The nineties were characterized by both a rise in employment and a decrease in unemployment. A consequence of this may be that individuals that earlier had problems entering the labor market or had problems finding an employment of a permanent character will have a greater chance of acquiring a job and thus avoiding poverty. Also here we see a drastic change in the probability of becoming poor when the value of public services is added to cash income.

Table 4.9. Poverty lines* based on three-year equivalent incomes, 1993-2001. Average per year in 2001 prices.

Three year accounting period for income	Poverty line 50 % of median income	
	Income after tax	Extended income
1993-1995	69365	80771
1996-1998	75057	87648
1999-2001	83103	97246

**OECD definition*

Table 4.10. Chronic poverty*, 1993-2001.

Accounting period	Income after tax	Extended income
1993-1995	1.9	1.0
1996-1998	1.8	0.8
1999-2001	1.7	0.7

**OECD definition*

As a parallel to the decomposition of 2-percentile specific annual income by income components performed in Section 4.2, we have performed the same analysis on the basis of three-year income in Table 4.10. The three-year incomes exhibit roughly the same trend as annual income. A difference is found in the distribution of municipal services where the mean value of services is not increasing all the way to the top of the distribution, but decrease in the 6^{th} and 7^{th} decile before it rises again. But one should notice that this is not a sizeable decrease, and the results may very well be interpreted as reflecting a stable and more or less equal level of municipal services in the middle deciles of the distribution. In accordance with the results on annual income, it is the bottom decile that receives the lowest level of municipal services. The highest level of municipal services is found in the upper decile. But as explained earlier, the composition of the top deciles is extremely vulnerable to the choice of equivalence scale, so the results for the highest decile is not easily interpreted. To investigate what level of municipal services the poor population receives, a finer division of the distribution of income is applied in Table 4.11. When comparing the distribution of income in the bottom 2-percentiles, one can see that there is a much more even distribution of municipal services in the lowest 2-percentiles when we apply three year incomes than annual incomes. It is no longer the case that the lowest 2 % of the distribution receives significantly higher level of municipal services than the level above. But it should be noted that in the case of annual extended income, the poor population is almost equivalent to the population of the bottom 2-percentile. Thus the level of municipal services is representative for the level of services received by the poor population in a much greater degree than when we apply three-year income. To further investigate the composition of incomes among the poor, table 4.12 gives a decomposition of income components in the poor population. Here, we can see that the poor population receives a relatively high level of municipal services, but less than the average

level of municipal services for the whole population. This is consistent with the results based on annual income.

I have now sketched out the development in both temporary and chronic poverty and the connection between business cycles and poverty in Norway. The next step is then to investigate the probability of becoming poor based on different characteristics, both demographic and geographic. Basically, who are these poor individuals and where do they live? This subject will be explored further in the next section.

Table 4.11. Decomposition of decile-specific extended three-year* income by income components, average per year NOK 1998.**

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1. decile	98700	39800	3800	48900	-13800	-5400	25400
2. decile	121600	67500	2200	52700	-22500	-5600	27300
3. decile	134600	92900	1400	47400	-29500	-5600	28000
4. decile	145700	115500	900	42500	-35800	-5600	28200
5. decile	155900	136300	600	38500	-42000	-5700	28200
6. decile	166700	156700	400	35700	-48400	-5700	28000
7. decile	178600	178100	300	33800	-55700	-5800	27900
8. decile	193300	202900	200	32700	-64700	-5900	28100
9. decile	215200	237500	200	32200	-78200	-6100	29600
10. decile	318700	391500	100	34200	-132200	-6600	31700
All deciles	172900	161900	1000	39900	-52300	-5800	28200

**Accounting period is 1996-1998*

***OECD definition*

Table 4.12. Decomposition of percentiles in the distribution of three-year* extended income by income components, average per year NOK 1998 **.

Percentiles	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1-2	75100	28600	5300	29700	-8300	-5600	25400
3-4	96000	34500	4200	50800	-12300	-5200	24000
5-6	102700	39400	3600	54200	-14300	-5300	25100
7-8	107800	45100	3200	55000	-16100	-5400	26000
9-10	111900	51100	2900	54900	-17900	-5500	26400
91-92	236000	270400	100	32400	-92000	-6400	31500
93-94	247600	287900	100	33100	-99700	-6600	32800
95-96	264500	313600	100	33900	-110800	-6800	34500
97-98	295600	367700	100	34300	-132800	-7000	33300
99-100	549400	718100	100	37300	-225800	-6400	26100
All percentiles	172900	161900	1000	39900	-52300	-5800	28200

**Accounting period is 1996-1998 **OECD definition*

Table 4.13. Decomposition of mean three-year* extended income by income components for the poor population, average per year NOK 1998.**

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
Poor poulation	61000	22500	5300	17700	-5900	-5800	27200

**Accounting period is 1996-1998*

***OECD definition*

4.3 Geographic and demographic poverty profile

In order to conduct a meaningful analysis on the development in poverty in Norway, we must also study poverty with respect to geographic location and demographic characteristics. Redistributing income between municipalities is a main concern of the government, the municipalities should be given equal production possibilities if possible. However, the government also transfers money for other reasons, mainly regional purposes. This gives some municipalities an opportunity to provide more services to the population than others. In addition, different municipalities choose to spend their money differently. For example,

according to Aaberge and Langørgen (2003), there is a tendency for municipalities ruled by socialist parties to give priority to childcare services, which is in line with the socialist program for public welfare.

4.3.1 Geographic profile

Norway can be characterized as both a large and small country, small in population but large in area. Studies of poverty have shown that both temporary and chronic poverty in Norway is a greater problem in the capital than in more rural areas[14], this is also reflected i Tables 4.13-4.15. Oslo has a high share of highly educated individuals, but at the same time the share of the population with little or no education is relatively large compared to the rest of the country. In addition, Oslo has a high concentration of immigrants, couples in the establishment phase and singles[15]. These are groups shown later in this section to have a high probability of becoming poor.

The pattern of temporary and chronic poverty seems to be quite similar for all regions, expressing the same "ranking". During all three-year periods, we see a large percentage reduction in poverty when public services are added to cash income in the region of Northern Norway (62,5 % reduction in chronic poverty in the three-year period of 1996-1998). Northern Norway is a region struggling with decreasing birth rates, emigration and a weak labor market. Some municipalities in the region experienced close to a 3 % drop in population size in 1999. In order to turn around this negative trend, the municipalities of Northern Norway (especially the municipalities of Finnmark) are given additional government transfers. This enables the municipalities to offer a higher level of public services in order to attract more people to the region and prevent the existing population from decreasing. Akershus is the region with the lowest occurrence of poverty. This region has the highest general income level of all regions.

[14] See Galloway and Mogstad (2006)
[15] See Mogstad (2005) for a thorough analysis of poverty in Oslo.

Table 4.14. Temporary poverty* in the regions of Norway calculated on income after tax, 1993-2001.

Region	1993	1994	1995	1996	1997	1998	1999	2000	2001
Oslo	5.2	5.2	5.4	5.3	5.2	5.0	4.8	4.8	5.1
Akershus	2.1	1.9	1.8	1.7	1.7	1.6	1.6	1.7	1.9
Hedmark and Oppland	3.0	2.9	2.9	2.8	2.8	2.6	2.5	2.5	2.6
South-Eastern Norway	2.8	2.6	2.6	2.6	2.5	2.4	2.4	2.4	2.6
Agder and Rogaland	2.6	2.6	2.5	2.5	2.5	2.3	2.2	2.3	2.6
Western Norway	2.5	2.3	2.2	2.3	2.2	2.0	2.0	2.0	2.3
Trøndelag	2.6	2.6	2.6	2.7	2.6	2.5	2.4	2.4	2.6
Northern Norway	2.5	2.4	2.4	2.4	2.5	2.3	2.1	2.2	2.4

**OECD definition*

Table 4.15. Temporary poverty* in the regions of Norway calculated on extended income, 1993-2001.

Region	1993	1994	1995	1996	1997	1998	1999	2000	2001
Oslo	3.4	3.3	3.2	2.9	2.9	2.8	2.6	2.6	2.8
Akershus	1.5	1.3	1.1	1.1	1.0	0.9	0.9	1.0	1.0
Hedmark and Oppland	2.0	2.0	1.8	1.7	1.9	1.5	1.4	1.4	1.3
South-Eastern Norway	1.8	1.7	1.5	1.5	1.4	1.2	1.3	1.2	1.3
Agder and Rogaland	1.5	1.4	1.3	1.2	1.2	1.0	1.1	1.1	1.1
Western Norway	1.6	1.5	1.3	1.3	1.3	1.1	1.0	1.0	1.1
Trøndelag	1.8	1.8	1.6	1.6	1.6	1.3	1.3	1.3	1.3
Northern Norway	1.4	1.3	1.2	1.2	1.3	1.1	1.1	1.0	1.0

**OECD definition*

Table 4.16. Chronic poverty* in the regions of Norway.

Region	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended Income	Income after tax	Extended income	Income after tax	Extended income
Oslo	4.0	2.3	3.8	1.8	3.6	1.6
Akershus	1.2	0.7	1.0	0.5	1.1	0.5
Hedmark and Oppland	2.1	1.2	2.0	1.0	1.7	0.8
South-Eastern Norway	1.8	1.0	1.7	0.7	1.6	0.7
Agder and Rogaland	1.6	0.7	1.6	0.6	1.5	0.5
Western Norway	1.6	0.8	1.4	0.6	1.4	0.5
Trøndelag	1.7	0.9	1.7	0.8	1.7	0.7
Northern Norway	1.6	0.7	1.6	0.6	1.4	0.6

**OECD definition*

4.3.2 Demographic profile

Age

A subject that is often brought up in the media is poverty among children. This is an issue that many feel passionate about. Children are vulnerable in the sense that they do not have much power to control their own life situation. The government has also put focus on this issue, St.meld no 6 (2002-2003) states: *It is especially unacceptable that children live in poverty. Less fortunate families with children are prioritized in the total effort to fight poverty*. As we can see from Tables 4.16-4.18, the probability of being poor (both temporary and chronic) in the age group below 16 is relatively high when we apply income after tax. However, it is interesting to see that the picture changes somewhat when we add the value of public services. Children are recipients of public services such as childcare and education. Since we are dealing with equivalent incomes, the value of services will benefit the entire household, thus the typical parent between the age of 27 and 44 is also favored. The largest change in poverty when the value of services is added is found in the elderly population. The occurrence of poverty among elderly is by many said to be impossible since the minimum pension in Norway exceeds the OECD poverty limit. But, to have the right to achieve a full minimum pension, one must have been a resident in Norway or have performed income-producing work

in the country for at least 40 years. Elderly immigrants reuniting with their family and individuals that have worked out of the country for a significant amount of time are not qualified for a full minimum pension. However, when the value of public services is added, poverty among elderly is reduced to nothing. Elderly people are heavy consumers of public services such as health care, nursing and assistance in the home. Thus they will receive a large increase in their income when the value of public services is added. As expected the smallest change in poverty when the value of public services is added is found in the age group of 45-66 years. This group is normally not members of households with small children, and are thus not benefiting from childcare and education. Nor are they heavy recipients of health related services, at this age most people are still in good health.

Table 4.17. Temporary poverty* by age, income after tax.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
0-2 years	4.9	4.5	4.8	5.0	4.8	4.5	3.9	3.9	4.5
3-5 years	4.2	3.9	4.0	4.1	4.2	4.0	3.9	4.2	4.8
6-15 years	3.5	3.4	3.5	3.5	3.5	3.5	3.4	3.7	4.2
16-26 years	4.3	4.1	4.0	3.8	3.5	3.4	3.4	3.5	3.8
27-44 years	2.9	2.8	2.8	2.8	2.7	2.7	2.6	2.7	2.9
45-66 years	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.5	1.6
67-79 years	1.2	1.1	1.1	1.2	1.3	0.9	0.9	0.8	0.8
80-89 years	1.5	1.4	1.5	1.6	1.9	1.0	0.8	0.8	0.9
90 and above	1.9	1.8	1.9	2.0	2.5	1.6	1.3	1.2	1.2

**OECD definition*

Table 4.18. Temporary poverty* by age, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
0-2 years	3.1	2.7	2.6	2.6	2.6	2.2	2.1	2.0	2.2
3-5 years	1.8	1.7	1.5	1.5	1.6	1.2	1.3	1.3	1.4
6-15 years	0.8	0.9	0.8	0.7	0.7	0.6	0.6	0.7	0.7
16-26 years	3.4	3.1	2.9	2.7	2.6	2.4	2.4	2.5	2.6
27-44 years	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.4
45-66 years	1.8	1.8	1.7	1.7	1.5	1.3	1.3	1.3	1.2
67-79 years	0.8	0.7	0.7	0.7	1.0	0.6	0.5	0.5	0.6
80-89 years	0.1	0.1	0.1	0.1	1.0	0.1	0	0	0.2
90 and above	0	0	0	0	0.9	0	0	0	0

**OECD definition*

Table 4.19. Chronic poverty* by age, 1993-2001.

Age group	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended Income	Income after tax	Extended Income
0-2 years	3.1	1.2	3.1	0.9	2.6	0.8
3-5 years	2.8	0.7	2.8	0.5	3.0	0.5
6-15 years	2.4	0.4	2.5	0.3	2.6	0.3
16-26 years	2.6	1.7	2.1	1.2	2.0	1.2
27-44 years	1.9	1.0	1.8	0.8	1.8	0.7
45-66 years	1.3	1.2	1.2	1.0	1.1	0.9
67-79 years	0.8	0.4	0.8	0.4	0.6	0.3
80-89 years	1.2	0	1.1	0	0.6	0
90 and above	1.9	0	2.1	0	1.3	0

**OECD definition*

Gender

A clear trend from the results on gender is that the probability for becoming poor is higher among men than women. As mentioned in Section 2, young singles fell behind in terms of income growth in the period of 1993-2001. Men are overrepresented in this group. We also see that women experience a larger drop in poverty when the value of public services is added. This may be explained by the fact that women are more often caretakers for young children than men. Nine out of ten lone parents are women.

Table 4.20. Temporary poverty* by gender , income after tax 1993-2001.**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Men	2.7	2.6	2.5	2.5	2.4	2.2	2.2	2.2	2.3
Women	2.4	2.3	2.2	2.3	2.2	2.0	1.9	2.0	2.1

**OECD definition*

***Population above 17 years of age*

Table 4.21. Temporary poverty* by gender , extended income 1993-2001.**

Gender	1993	1994	1995	1996	1997	1998	1999	2000	2001
Men	2.3	2.0	1.9	1.8	1.8	1.6	1.6	1.5	1.6
Women	1.7	1.6	1.4	1.4	1.4	1.1	1.1	1.1	1.2

**OECD definition*

***Population above 17 years of age*

Table 4.22. Chronic poverty* by gender, 1993-2001.**

Gender	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Men	1.8	1.3	1.6	1.0	1.5	0.9
Women	1.5	0.9	1.4	0.7	1.3	0.6

**OECD definition*

***Population above 17 years of age*

Household types

The idea of a normal household is in constant change. Many choose to live together as a couple without being married, especially among young people. At the same time, more and more people choose to live alone. One can suspect that some household types benefit more than others when we add the benefit of public services to income. For example, it is natural to think that a household with children will receive more public services than a young single person. From Tables 4.22-4.24, we see that especially young singles have a high probability of becoming poor in both income definitions and accounting periods. This should be seen in connection with the weak development in income level for this group described in Section 2. The group that benefits the least from public services (i.e. experience the smallest decrease in poverty when services is added to income) is singles in the age of 45-66. We see that the addition of the value of services actually increases the share of temporarily poor in this group early in the analysis period. As time passes by we see that the difference between the poverty results based on income after tax and the results based on extended income decreases. We see the same tendency when we look at chronic poverty. Singles in this age group benefits next to nothing from the addition of public services. This is quite intuitive, since singles in this age group are normally done with education, have no children and are still at an age where the need for heath services is not significantly high. This implies that singles in this particular age group receives less public services than the rest of the population. As expected, the highest change in the probability of becoming poor is found in households with children. Households with children receive a significant amount of municipal services through childcare and education.

Table 4.23. Temporary poverty* by household type, income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Singles age < 45	10.0	9.6	9.1	8.7	7.9	7.6	7.7	7.8	8.1
Singles age 45-66	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0
Singles age >= 66	1.3	1.3	1.3	1.4	1.6	1.0	0.9	0.9	0.9
Couples without children	1.3	1.1	1.1	1.1	1.1	0.9	0.8	0.8	0.8
Couples with children	2.1	2.1	2.1	2.1	2.1	2.0	1.9	2.0	2.1
Single provider	5.2	4.7	4.8	5.2	5.1	4.8	4.6	4.9	6.1

**OECD definition*

Table 4.24. Temporary poverty* by household type, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Singles age < 45	9.0	8.4	7.7	7.1	6.7	6.3	6.3	6.3	6.4
Singles age 45-66	6.0	5.9	5.6	5.6	4.8	4.4	4.2	4.1	4.0
Singles age > 66	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3
Couples without children	1.0	0.9	0.9	0.8	1.2	0.7	0.6	0.6	0.7
Couples with children	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6
Single provider	2.7	2.3	2.2	2.4	2.3	2.0	1.9	1.9	2.1

**OECD definition*

Table 4.25. Chronic poverty* by household type, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Singles age < 45	5.9	4.8	4.8	3.6	4.6	3.2
Singles age 45-66	3.8	4.6	3.4	3.6	3.2	3.1
Singles age >66	1.3	0.4	1.2	0.3	0.9	0.2
Couples without children	0.7	0.6	0.6	0.5	0.5	0.4
Couples with children	1.5	0.4	1.5	0.3	1.4	0.3
Single provider	3.2	1.3	3.1	1.1	3.3	1.0

**OECD definition*

In the analysis of chronic poverty with respect to different geographic and demographic characteristics, we have used the state prevailing in the first year of the period to decide whether or not the individual has the relevant characteristic. This approach neglects to take into consideration the possible change in economies of scale when an individual changes household type in the course of the three-year period. In Table 4.25, we have studied individuals that have switched from being single/single parent to being in a couple-household or vice versa during the three-year period of 1999-2001. We see that a change from single to couple during the three-year period greatly decreases the probability for becoming chronically poor. In addition we see that a change from being in a couple household to being single increases the probability of being poor. This demonstrates that economies of scale in the household is important in determining the economic well being of individuals.

Table 4.26. Chronic poverty* by household status in each year, 1999-2001.**

Household status	Income after tax	Extended income
Single in whole period	3.3	2.0
Couple in whole period	1.2	0.3
Change from single to couple	2.0	0.7
Change from couple to single	1.6	0.5

**OECD definition*

***Single=single /single parents, couple=couple with/without children*

Education level

The relation between education and labor market has changed over the years. More education is required to get a specific job. Individuals with no more than 9 years of education in primary school looking for a job have only few options when entering the labor market. Apart from a stronger connection with the labor market, it has been shown that higher education has a positive effect on both health and law-abidingness. Thus, the trend towards a higher share of highly educated individuals in Norway is indeed positive. Again, it is important to stress that results from an analysis of poverty with respect to education must be treated with caution, since it is hard to distinguish between effects of different correlated factors. For example, there is a high share of immigrants registered with little or no education at the same time as there is a high share of poverty among immigrants (see the next section for results on poverty among immigrants). Tables 4.26-4.28 display poverty rates by education level. As expected, poverty is decreasing as education level increases independently of choice of income and poverty definition. Poverty is relatively stable within each level of education.

Table 4.27. Temporary poverty* by education level, income after tax 1993-2001**.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Primary school or below	4.2	4.2	4.0	4.1	4.1	3.7	3.8	3.7	3.9
Secondary school	2.2	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.1
Higher education	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.1	1.2

**OECD definition*

***Population is above 16 years of age*

Table 4.28. Temporary poverty* by education level, extended income 1993-2001.**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Primary school or below	3.2	3.1	2.9	2.8	3.0	2.4	2.5	2.4	2.6
Secondary school	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.2
Higher education	0.7	0.7	0.7	0.6	0.7	0.6	0.6	0.7	0.8

**OECD definition*

***Population is above 16 years of age*

Table 4.29. Chronic poverty* by education level, 1993-2001.**

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Primary school or below	3.0	2.0	2.8	1.6	2.7	1.5
Secondary school	1.3	0.8	1.2	0.7	1.2	0.6
Higher education	0.6	0.4	0.6	0.3	0.6	0.3

**OECD definition*

***Population is above 16 years of age*

Immigrants

In the last couple of decades, Norway has become a multicultural society. As mentioned in Section 2, the immigration stream into Norway is not a constant homogenous stream, but changing in both composition and total number. In the analysis we will group immigrants according to their country of origin. Note that by only taking country of origin into consideration, we do not take into account differences in household type, age or education level. Nor do we take into account the number of years since migration occurred. Galloway and Aaberge (2005) find a negative correlation between the length of time since migration and the probability of becoming poor. Thus high numbers of poverty in a group may be reflecting a high share of newly arrived immigrants in the particular group, while immigrants that have been in the country for a long time may very well have a probability of becoming poor in line with native Norwegians. Longer time since migration is often followed by

positive consequences such as knowledge of language, culture and how the society works in general. This leads to an easier access to the labor market but also a better knowledge of the benefits from various social security programs. From the results in Tables 4.29-4.31 we see that the occurrence of poverty among immigrants are significantly higher than what is found in the population in general. We see that the occurrence of poverty varies across the groups. Ethnic Norwegians has much lower occurrence of poverty than any of the immigrant group. Western immigrants and immigrants from South and Central America have a significantly lower occurrence of poverty than immigrants from Eastern Europe, Africa and Asia. Temporary poverty among Eastern European immigrants rises significantly in the beginning of the period, declines all through the nineties and makes another leap in 2000. The increases in the start and end of the period are a consequence of an increased inflow of refugees from the former Yugoslavian Republic. We see that the addition of public services has a great impact on poverty, especially for Asian and African immigrants. One probable explanation for this is the fact that there is a high frequency of large households in these two groups. According to results from the Population and Housing Census 2001 from Statistics Norway, approximately one out of three immigrants from Asia or Africa lives in a household of five or more people, while only every seventh person with non-immigrant background lives in such a large household. Some of the municipal services are distributed as public goods within the household, thus the consumption of one household member does not reduce the consumption possibilities of the same good by the other members of the household. This applies for services such as social care and infrastructure. The addition to household income, as a consequence of one member of the household receiving social care, increases proportionally with the number of members in the household. Secondly, women from these regions have higher level of fertility than what is seen in the rest of the population[16]. More children mean more municipal benefits in the form of childcare and education.

[16] See Lappegård(2000) for results on the fertility patterns of immigrant women.

Table 4.30. Temporary poverty* among immigrants by world region, income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	2.2	2.0	2.0	2.0	2.0	1.9	1.8	1.8	2.0
Western	10.7	10.4	10.5	9.9	9.2	8.6	8.3	8.2	8.1
Eastern European	26.3	36.2	20.5	18.5	17.2	14.5	12.9	17.5	14.9
African	22.6	20.9	21.3	20.2	19.1	18.0	18.2	18.3	21.0
Asian	24.3	22.9	23.1	21.6	20.3	19.2	18.3	17.8	18.4
South or Central American	15.1	14.3	12.8	12.1	11.7	9.9	9.7	9.6	10.2

**OECD definition*

Table 4.31. Temporary poverty* among immigrants by world region, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	1.4	1.2	1.2	1.2	1.2	1.0	1.0	0.9	0.9
Western	8.4	8.0	7.8	7.1	6.6	5.8	5.7	5.6	5.4
Eastern European	21.7	26.1	10.5	8.9	8.0	6.8	6.8	11.1	8.9
African	14.8	12.8	12.4	10.2	9.6	8.2	9.0	8.8	9.5
Asian	13.0	11.7	11.1	10.1	9.5	8.5	8.0	7.8	7.9
South or Central American	9.9	9.8	8.8	8.2	7.5	6.3	6.3	6.0	6.0

**OECD definition*

Table 4.32. Chronic poverty* among immigrants by world region, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Ethnic Norwegian	1.4	0.7	1.3	0.6	1.2	0.5
Western	7.7	5.3	6.5	3.8	5.7	3.2
Eastern European	20.0	12.4	13.3	4.5	9.4	4.1
African	17.0	8.8	14.3	5.5	14.6	5.3
Asian	20.5	8.5	17.1	5.8	15.2	5.1
South or Central American	9.8	5.8	8.2	4.2	6.8	3.6

**OECD definition*

Classification by world region is insufficient in many ways. First of all, immigrants from Chile dominate the group "South or Central American". Secondly, the immigrant population from Asia consists of several of the largest immigrant groups in Norway, thus the interpretation of the group "Asia" will not be very meaningful. We have therefore chosen to also take a look at immigrants sorted by country of origin, and have narrowed it down to Chile and the nine largest non-Western immigrant groups in Norway. Bosnia and Herzegovina is left out in 1993 and 1994 simply because this group is very small in numbers until 1995.

The most "successful" of the immigrant groups reported in the tables below is clearly Chile. According to Østby (2004), Chilean immigrants have especially favorable characteristics for integration. Firstly, they possess a level of education that resembles very much the Norwegian education level. Secondly, the Chilean society resembles the Norwegian society in a greater extent than the origin society of many of the other groups. Thirdly, their language (Spanish) is closer to Norwegian than for example Asian languages. Inn addition, most Chileans have been in the country for a relatively long time. This gives Chilean immigrants an advantage in

a better understanding of language and culture and they are thus more integrated into the labor market than other immigrant groups.

The poverty results for immigrants from Turkey and Pakistan are relatively high, even though the majority of immigrants from these countries came as labor immigrants in the seventies. This implies that they are the immigrant groups with the highest time of residence in Norway. At the same time there is a high frequency of family reunion immigration from these countries. Thus one cannot see a clear time of residence effect. The labor participation rate among immigrant women from Turkey and Pakistan is low at the same time as average size of household in these immigrant groups are relatively higher than what is seen in other non-Western immigrant groups. This combination implies that the household cash income of the Turkish and Pakistani immigrant households are relatively low. But on the other hand, these group benefit greatly when the value of public services is added.

The development in immigrant poverty for Iran, Iraq and Somalia is dominated by the continuous inflow of new refugees. This implies that we cannot yet see any effect of longer time of residence, at least not yet[17].

Table 4.33. Temporary poverty* among immigrants, by country of origin, Income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	2.2	2.0	2.0	2.0	2.0	1.9	1.8	1.8	2.0
Serbia and Montenegro	44.8	41.5	24.8	21.4	21.4	18.1	15.3	30.5	24.8
Turkey	23.9	23.8	25.0	24.3	25.0	24.6	21.2	21.1	20.8
Bosnia and Herzegovina	-	-	25.3	22.9	19.8	15.7	13.2	11.8	11.3
Somalia	27.0	25.5	22.6	21.8	20.6	20.4	21.8	23.4	28.8
Sri Lanka	19.1	17.2	13.4	11.7	10.6	9.0	8.9	8.8	8.5
Iraq	24.2	20.4	19.6	22.1	23.1	26.7	26.8	28.6	29.6
Iran	17.5	17.0	17.4	16.7	16.2	15.7	15.8	15.8	15.6
Pakistan	35.2	33.9	35.7	32.3	31.1	30.2	29.1	27.8	27.9
Vietnam	20.7	18.7	18.3	17.6	15.3	13.7	11.6	10.1	10.0
Chile	14.4	12.8	11.1	10.5	10.1	8.8	8.3	7.8	8.9

**OECD definition*

[17] For a more extensive discussion on the integration of immigrants in Norway see Galloway (2006a) and Galloway (2006b)

Table 4.34. Temporary poverty* among immigrants, by country of origin, Extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	1.4	1.2	1.2	1.2	1.2	1.0	1.0	0.9	0.9
Serbia and Montenegro	38.0	29.6	9.9	7.2	5.8	4.7	4.2	18.8	13.4
Turkey	11.3	10.6	11.5	10.3	11.0	10.2	8.5	9.1	9.2
Bosnia and Herzegovina	-	-	11.2	9.7	8.5	7.0	7.0	6.6	6.3
Somalia	15.4	14.2	10.4	8.2	8.0	6.6	9.3	9.4	12.0
Sri Lanka	14.4	12.1	9.7	8.0	6.7	5.4	5.2	5.7	5.4
Iraq	8.7	6.9	6.8	8.1	7.0	7.7	9.0	10.0	11.3
Iran	10.1	9.0	8.6	7.3	8.2	7.4	7.4	7.6	6.5
Pakistan	14.3	13.0	13.3	11.9	11.3	10.7	10.0	9.6	10.0
Vietnam	8.9	8.2	7.2	6.9	6.1	4.9	4.7	4.4	4.2
Chile	8.3	7.5	6.6	6.3	6.0	4.9	4.5	4.0	4.4

**OECD definition*

Table 4.35. Chronic poverty*, by country of origin, among immigrants, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Ethnic Norwegian	1.4	0.7	1.3	0.6	1.2	0.5
Serbia and Montenegro	33.5	19.7	18.5	3.1	12.5	2.5
Turkey	21.4	7.7	20.8	6.8	17.9	5.8
Bosnia and Herzegovina	-	-	15.0	5.3	9.9	4.8
Somalia	19.4	8.8	16.0	4.4	18.6	5.5
Sri Lanka	13.3	8.8	7.2	3.8	6.7	3.6
Irak	17.3	3.7	20.9	5.1	25.3	4.8
Iran	13.2	6.2	11.7	4.5	12.8	4.1
Pakistan	32.3	9.6	28.9	7.5	25.8	6.9
Vietnam	17.8	5.7	12.7	3.7	8.6	2.9
Chile	8.8	4.3	7.6	3.4	6.1	2.8

**OECD definition*

5. Conclusion

In this paper we have sought to study the effect of the distribution of public services on poverty in Norway. Intuitively, the inclusion of public services in the income definition provides a more comprehensive measure of the standard of living for individuals. One of the main findings of the analysis is that the probability of becoming poor is greatly reduced when we add the value of public services to cash income. Furthermore results also show that almost no one gets worse off when public services is included in the income definition. In other words, almost no one is classified as non-poor when income after tax is applied and is at the same time classified as poor when extended income is applied. It is proven theoretically that an equal cash transfer to the whole population will reduce the share of poor in society. Moreover, the empirical results show that the effect on poverty is greater when actual provision of services based on socioeconomic variables takes place.

The empirical results in this paper show that the development in the trend of poverty varies in line with the business cycles. The country experienced a boom in the nineties, which is reflected in a decreasing trend in poverty. Temporary poverty decreases all through the nineties for both income definitions. In the turn of the century, we see a slight upturn in the share of poor when income after tax is applied, while the rate of poverty when extended income is applied stays constant. This may imply that public services serve the purpose of smoothing the effect of a recession.

The empirical results show that there is great regional variation in poverty across the country. The capital finishes last with a poverty share well above the other regions in the analysis, while Akershus has the lowest occurrence of poverty. Oslo has a high concentration of immigrants, couples in the establishment stage and singles. All of these groups are shown to have high probabilities of becoming poor.

The results with respect to the age distribution of poverty show that the impact of public services is especially high for children. When income after tax is applied we see that there is a high occurrence of poverty for children, but the picture changes when we add the value of public services. Households with children are big recipients of services such as education and

childcare. This means that adults in the age of 27-44 also benefit greatly from the addition of public services since this is the age group most likely to be parents.

When we look at poverty with respect to household type, we find only one demographic group namely singles in the age of 45-66 that actually gets worse off when the value of public services is added to income. This trend is turned around as time progresses, but it is clear that this group benefits little from public services. This is quite intuitive since at this age individuals have normally finished their education and are still in good health. In addition, they miss out on major benefits by not being parents. As expected, the largest decrease in the probability of becoming poor is found in households with children. Moreover we find that a change in household type during a three-year period changes the probability of becoming chronically poor. The results show that a change from being single to entering couple hood decreases the probability for becoming chronically poor and vice versa. This implies that economies of scale and income sharing within the household are important factors when determining the welfare of individuals.

Our results show that the immigrant population deserves special attention in a poverty analysis. The probability of becoming poor is much higher in the immigrant population than the rest of the population. The results show great variation across different immigrant groups depending of where their country of origin is located. It is problematic to interpret which groups are most successful in becoming a well functioning part of the Norwegian society based on our results. By only looking into country of origin, we neglect to take into consideration differences in household type, age or education level. Nor do we take years since migration occurred into account. Galloway and Aaberge (2005) suggest a negative relationship between the length of time in Norway and the probability of becoming poor. A group characterized only by a common country of origin may differ greatly with the length of time in Norway. Thus it is difficult to interpret the development over time because new immigrants came into the country during the course of the analysis period. Our results show that immigrants from Eastern European, Asian and African countries stand out with alarmingly high probabilities of becoming poor. But these probabilities are greatly reduced when we take public services into account, especially for African and Asian immigrants. One reason for the great impact on poverty in these two groups may be that there is a high

frequency of large households within these two groups combined with a high rate of fertility. More children mean more benefits in the form of education and childcare.

Overall, based on our results, we may conclude that the addition of public services in the income definition has a great impact on the results of a poverty analysis. Including public services is clearly a step in the right direction of a more comprehensive and complete income measure. Public services such as health care, childcare and care for the elderly and disabled are not necessarily targeted towards the lowest part of the income distribution, but the impact on poverty is nonetheless substantial.

6. References/Literature

Aaberge, R. and A. Langørgen (2003): "Fiscal and spending behavior of local governments; Identification of price effects when prices are not observed", Public Choice, vol. 117, 2003.

Aaberge, R. and A. Langørgen(2006): "Measuring the Benefits from Public Services: The Effects of Local Government Spending on the Distribution of Income in Norway," Review of Income and Wealth Series 52, Number 1.

Andersen, A., J. Epland, T. Wennemo and R. Aaberge (2003): " Økonomiske konjunkturer og fattigdom: En studie basert på norske inntektsdata, 1979-2000", Tidskrift for velferdsforskning 2.

Arbeids- og Inkluderingsdepartementet (2006): "Handlingsplan mot fattigdom", vedlegg til St.prp. nr.1 (2006-2007) - Statsbudsjettet 2007.

Dypbukt, T. (2004) : "Tilpasningseffekter av utbytteskatten 2000/2001". Notater 2004/3, Statistics Norway.

Epland, J. (2001): "Barn i husholdninger med lav inntekt: Omfang, utvikling og årsaker", Rapporter, 9, Statistics Norway.

Epland, J., M. Kirkeberg (2004): "Økonomi og levekår for ulike grupper, 2004", Rapporter 28, Statistics Norway.

Galloway, T. A. and M. Mogstad (2006): "Årlig og kronisk fattigdom i Norge: En empirisk analyse fra perioden 1993-2001", Rapporter, 20, Statistics Norway.

Galloway, T. A. and R. Aaberge (2005): "Assimilation Effects on Poverty Among Immigrants to Norway", Journal of Population Economics, 18, 691-718.

Galloway, T. A. (2006a): "The Labor Market Integration of Immigrant Men and Women", Discussion Paper 483, Statistics Norway.

Galloway, T. A. (2006b): "Do Immigrants Integrate Out of Poverty in Norway?", Discussion Paper 482, Statistics Norway

Hagenaars, J. M A., K. de Vos and M. A. Zaidi (1994): "Poverty Statistics in the Late 1980's: Research based in micro-data", study carried out for Eurostat, Office for Official Publications in the European Community, Luxembourg.

Kirkeberg, M. I. (2001): "Innvandrerhusholdningenes inntekter 1994 og 1998: Færre ikke-vestlige innvandrere med lav inntekt", Samfunnspeilet 2, 60-68, Statistics Norway.

Langørgen,A., T. A. Galloway, M. Mogstad and R. Aaberge (2005): "Sammenlikning av simultane og partielle analyser av kommunenes økonomiske atferd", Rapporter 2005/25, Statistics Norway.

Lappegård. T. (2000): "Mellom to kulturer: Fruktbarhetsmønstre blant innvandrerkvinner i Norge", Rapporter 2000/25, Statistics Norway.

Mogstad, M. (2005): "Fattigdom i Stor-Osloregionen: En empirisk analyse", Rapporter 2005/11, Statistics Norway.

Rees, P., L. Østby, H. Durham and M. Kupiszewski (1999): "Internal migration and regional population dynamics in Europe: Norway Case Study", Reports 99/19. Statistics Norway.

Smith, A. (1776): "An Inquiry into the Nature and Causes of the Wealth of Nations", Republished 1910, Home University London.

Smeeding, T.M., P.Saunders, J.Coder, S. Jenkins, J. Fritzell, A.J.M Hagenaars, R. Hauser and M Wolfson (1993): "Poverty, inequality and family living standards across seven nations: The effect of noncash subsidies for health, education and housing", Review of income and wealth 39, 229-256.

Sandnes, T. (2005): "Fordelingen av økonomiske ressurser mellom kvinner og menn". Rapporter 2005/35. Statistics Norway.

Statistics Norway (2004): "Økonomi og levekår for ulike grupper,2004". Rapporter 2004/28. Statistics Norway.

Sosialdepartementet (2002): "Stortingsmelding nr. 6 (2002-2003): Tiltaksplan mot fattigdom".

United nations (1977): "Provisional Guidelines on Statistics of the Distribution of income, consumption and Accumulation of Households", Study M 61.

7. Appendix

Table A.1 Chronic poverty* based on both income definitions**.

		Extended Income		
		Poor	Non-poor	Sum
Income after tax	Poor	3.3	4.6	7.9
	Non-poor	0.2	91.9	92.1
	Sum	3.5	96.5	100.0

**EU definition.*

***Accounting period is 1999-2001.*

Table A.2. Temporary poverty* when an equal cash transfer is added to income after tax compared to extended income (where the value of public services are distributed according to certain individual characteristics), 2001.

Income after tax	9.2
Income after tax + distributed value of public services	4.9
Income after tax + equal cash transfer	6.5

**EU definition*

Table A.3. Chronic poverty* when an equal cash transfer is added to income after tax compared to extended income (where the value of public services are distributed according to certain individual characteristics), 1999-2001.

Income after tax	7.9
Income after tax + distributed value of public services	3.5
Income after tax + equal cash transfer	5.5

**EU definition*

Table A.4 Poverty lines* based on annual equivalent income after tax and annual equivalent extended income 1993-2001. Fixed prices (2001 Kroner).

Year	Poverty line 60% of median equivalent income	
	Income after tax	Extended income
1993	99453	112436
1994	99687	112555
1995	100618	113802
1996	104290	117912
1997	106806	120868
1998	112758	128354
1999	116934	132778
2000	118994	135202
2001	121527	138616

**EU definition*

Table A.5 Temporary poverty* 1993-2001.

	EU definition	
	Income after tax	Extended income
1993	10.5	5.9
1994	10.4	5.6
1995	10.4	5.5
1996	10.3	5.3
1997	10.1	5.8
1998	9.6	4.7
1999	9.1	4.6
2000	9.0	4.5
2001	9.2	5.0

**EU definition*

Table A.6. Decomposition of decile-specific extended annual income by income components, NOK 1998*.

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1. decile	109200	39200	4200	60300	-14900	-6500	26900
2. decile	143000	71500	2300	72000	-26100	-7000	30300
3. decile	161200	112600	1400	59800	-36500	-7100	31000
4. decile	176300	143800	1000	51700	-44600	-7100	31500
5. decile	190100	171500	700	45500	-52300	-7100	31800
6. decile	203800	196500	500	41700	-59900	-7100	32100
7. decile	218500	222700	400	38800	-68700	-7000	32300
8. decile	236600	255800	300	36100	-80400	-7000	31800
9. decile	263700	304100	200	33200	-98700	-6800	31700
10. decile	406100	521800	100	32100	-170000	-6800	28900
All deciles	210700	203900	1100	47100	-65200	-7000	30800

EU definition

Table A.7. Decomposition of percentiles in the distribution of annual extended income by income components, NOK 1998*

Percentiles	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1-2	71000	27200	5400	23100	-7100	-6600	29000
3-4	105800	37000	5600	57500	-13100	-6300	25100
5-6	116500	39000	3600	70800	-16000	-6400	25500
7-8	123300	43400	3200	74500	-18100	-6600	26900
9-10	135700	55700	3000	75800	-20100	-6700	28000
91-92	290000	352400	100	31000	-117800	-6900	31200
93-94	304500	379300	100	31000	-129200	-6800	30100
95-96	326000	419700	100	30000	-145700	-6800	28700
97-98	366800	488100	100	30900	-173400	-6800	27900
99-100	743300	969500	200	37800	-284100	-6900	26800
All percentiles	210700	203900	1100	47100	-65200	-7000	30800

*EU definition

Table A.8. Decomposition of mean annual extended income by income components for the poor population, NOK 1998*.

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
Poor population		31400	5300	50200	-11000	-6400	26600

**EU definition*

Table A.9. Poverty lines* based on three-year equivalent incomes, 1993-2001. Average per year in 2001 prices.

Three year accounting period for income	Poverty line 60 % of median income	
	Income after tax	Extended income
1993-1995	100745	113493
1996-1998	108857	122973
1999-2001	120177	136228

**EU definition*

Table A.10. Chronic poverty*, 1993-2001.

Accounting period	Income after tax	Extended income
1993-1995	9.1	4.4
1996-1998	8.8	4.0
1999-2001	7.9	3.5

**EU definition*

Table A.11. Decomposition of decile-specific extended three-year* income by income components, average per year NOK 1998.**

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1. decile	109800	37400	4600	63700	-15000	-6500	25600
2. decile	138700	71100	2700	68400	-25500	-6900	28900
3. decile	155700	108800	1700	57600	-35000	-7000	29600
4. decile	169800	140300	1000	49200	-43200	-6900	29400
5. decile	182300	166300	600	43400	-50500	-6900	29400
6. decile	194900	190500	400	39200	-57800	-6800	29400
7. decile	208400	215200	300	36300	-66000	-6700	29300
8. decile	225000	245100	200	34200	-76800	-6700	29000
9. decile	249800	289200	200	31800	-93600	-6600	28800
10. decile	371600	478600	100	31600	-159100	-6700	27100
All deciles		194200	1200	45500	-62200	6800	28700

**Accounting period is 1996-1998*

***EU definition*

Table A.12. Decomposition of percentiles in the distribution of three-year* extended income by income components, average per year NOK 1998 **.

Percentiles	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
1-2	80500	29300	6500	35100	-9100	-6400	25100
3-4	106200	31400	4900	65400	-13200	-6200	23900
5-6	114800	35100	4000	72300	-15500	-6400	25300
7-8	120900	41800	3800	72900	-17600	-6600	26600
9-10	126200	49300	3500	72500	-19700	-6700	27300
91-92	273700	332900	100	30300	-111300	-6700	28400
93-94	287100	357100	100	29700	-121500	-6700	28400
95-96	306700	392000	100	30000	-136200	-6700	27500
97-98	343400	455000	100	30400	-161600	-6800	26300
99-100	646800	855800	100	37600	-265000	-6800	25100
All percentiles	200600	194200	1200	45500	-62200	-6800	28700

***Accounting period is 1996-1998*

***EU definition*

Table A.13 Decomposition of mean three-year* extended income by income components for the poor population, average per year NOK 1998.**

	Extended income	Market incomes	Social assistance	National cash transfers	Taxes	Municipal user fees	Municipal services
Poor population	95900	28200	5700	54700	-10900	-6300	24500

**Accounting period is 1996-1998*

***EU definition*

Table A.14. Temporary poverty* in the regions of Norway calculated on income after tax, 1993-2001.

Region	1993	1994	1995	1996	1997	1998	1999	2000	2001
Oslo	11.9	11.8	12.0	11.8	11.5	11.1	10.6	10.6	10.9
Akershus	6.5	6.3	6.0	5.9	5.8	5.5	5.3	5.3	5.5
Hedmark and Oppland	13.6	13.6	13.7	13.6	13.4	12.9	12.0	11.7	11.6
South-Eastern Norway	10.9	10.8	10.7	10.6	10.4	9.9	9.4	9.2	9.4
Agder and Rogaland	9.4	9.3	9.3	9.4	9.3	8.7	8.1	8.3	8.5
Western Norway	10.4	10.1	10.1	10.1	9.9	9.3	8.8	8.7	9.0
Trøndelag	10.9	11.0	11.1	11.0	10.9	10.4	9.8	9.6	9.6
Northern Norway	10.8	10.8	10.7	10.8	10.7	10.0	9.6	9.6	9.7

**EU definition*

Table A.15.Temporary poverty* in the regions of Norway calculated on extended income, 1993-2001.

Region	1993	1994	1995	1996	1997	1998	1999	2000	2001
Oslo	7.2	6.9	6.9	6.3	6.6	6.5	6.0	6.2	6.8
Akershus	4.0	3.6	3.3	3.2	3.4	2.9	2.8	2.9	3.2
Hedmark and Oppland	8.5	8.4	8.3	8.2	9.0	7.0	6.8	6.5	6.9
South-Eastern Norway	6.5	6.2	6.1	5.8	6.0	5.1	4.9	4.7	5.1
Agder and Rogaland	4.9	4.5	4.5	4.4	4.8	3.8	3.8	3.9	4.3
Western Norway	5.2	4.9	4.8	4.8	5.4	4.1	3.9	3.9	4.5
Trøndelag	6.3	6.5	6.2	6.2	6.8	5.3	5.3	5.2	5.4
Northern Norway	5.0	4.9	4.7	4.7	5.4	4.1	4.1	4.0	4.4

**EU definition*

Table A.16. Chronic poverty* in the regions of Norway.

Region	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended Income	Income after tax	Extended income	Income after tax	Extended income
Oslo	10.4	5.5	9.9	4.7	9.1	4.7
Akershus	5.2	2.6	4.8	2.2	4.4	2.0
Hedmark and Oppland	12.3	7.1	12.1	6.8	10.6	5.5
South-Eastern Norway	9.6	5.0	9.1	4.4	8.2	3.7
Agder and Rogaland	8.0	3.4	8.0	3.2	7.1	2.9
Western Norway	9.0	3.9	8.6	3.5	7.7	3.0
Trøndelag	9.6	5.0	9.5	4.7	8.6	4.1
Northern Norway	9.4	3.7	9.1	3.5	8.4	3.1

**EU definition*

Table A.17. Temporary poverty* by age, income after tax.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
0-2 years	9.0	8.6	9.0	9.1	8.9	7.8	6.4	6.4	7.2
3-5 years	7.9	7.4	7.6	7.7	7.7	7.1	6.5	6.8	7.6
6-15 years	6.1	5.9	6.1	6.2	6.2	6.0	5.8	6.0	6.7
16-26 years	8.0	7.6	7.5	7.2	6.9	6.5	6.4	6.7	7.2
27-44 years	5.6	5.5	5.5	5.5	5.5	5.3	5.2	5.3	5.6
45-66 years	6.5	6.5	6.4	6.4	6.2	5.9	5.7	5.5	5.5
67-79 years	26.7	27.0	26.7	26.7	26.7	25.0	22.7	22.0	21.1
80-89 years	56.8	57.3	56.5	56.0	54.4	51.9	49.2	47.9	46.1
90 and above	71.8	69.2	69.4	69.6	68.8	66.0	64.8	64.7	64.5

**EU definition*

Table A.18. Temporary poverty* by age, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
0-2 years	7.2	6.7	6.8	6.8	6.9	5.6	4.7	4.7	5.2
3-5 years	4.6	4.3	4.1	4.1	4.3	3.5	3.4	3.6	3.9
6-15 years	2.2	2.2	2.2	2.1	2.2	1.9	1.9	2.0	2.1
16-26 years	7.2	6.7	6.5	6.1	5.9	5.7	5.7	6.0	6.3
27-44 years	4.2	4.0	3.9	3.8	3.8	3.7	3.8	3.8	3.9
45-66 years	7.1	6.9	6.8	6.7	6.2	6.0	5.9	5.7	5.6
67-79 years	11.0	10.5	10.7	10.3	13.5	8.4	7.4	6.9	9.8
80-89 years	2.2	1.9	1.8	1.7	9.5	1.1	0.8	0.8	3.6
90 and above	0.2	0.2	0.1	0.1	4.3	0.1	0.1	0.1	0.3

**EU definition*

Table A.19. Chronic poverty* by age, 1993-2001.

Age group	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended Income	Income after tax	Extended Income
0-2 years	6.4	3.9	6.4	3.5	4.9	2.5
3-5 years	5.8	2.6	5.6	2.1	5.3	1.9
6-15 years	4.6	1.4	4.8	1.2	4.7	1.2
16-26 years	5.8	4.8	5.0	4.0	4.8	3.9
27-44 years	4.2	2.9	4.2	2.6	4.1	2.6
45-66 years	6.2	6.3	5.8	5.7	5.2	5.1
67-79 years	29.4	9.7	28.5	9.3	24.2	6.9
80-89 years	59.4	1.1	57.1	1.7	51.1	0.7
90 and above	70.2	0	69.6	0.1	66.8	0

**EU definition*

Table A.20. Temporary poverty* by gender , income after tax 1993-2001.**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Men	8.8	8.7	8.6	8.4	8.3	7.8	7.5	7.4	7.4
Women	14.1	14.2	14.1	14.1	13.8	13.1	12.5	12.3	12.2

**EU definition*

***Population above 17 years of age*

Table A.21. Temporary poverty* by gender , extended income 1993-2001.**

Gender	1993	1994	1995	1996	1997	1998	1999	2000	2001
Men	6.4	6.1	5.9	5.7	6.3	5.2	5.1	5.1	5.6
Women	6.5	6.3	6.1	6.0	6.5	5.2	5.0	4.9	5.4

**EU definition*

***Population above 17 years of age*

Table A.22. Chronic poverty* by gender, 1993-2001.**

Gender	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Men	7.5	5.0	7.1	4.5	6.4	4.1
Women	12.9	5.1	12.5	4.6	11.3	3.9

**EU definition*

***Population above 17 years of age*

Table A.23. Temporary poverty* by household type, income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Singles age < 45	17.8	17.4	17.2	16.6	15.8	15.4	15.6	16.2	16.8
Singles age 45-66	19.4	19.4	19.4	19.5	18.5	18.4	18.2	18.0	17.8
Singles age > 66	52.9	53.8	53.5	53.5	52.3	51.2	50.2	49.3	48.2
Couples without children	10.5	10.5	10.2	10.1	10.1	8.8	7.3	6.7	6.8
Couples with children	3.8	3.7	3.8	3.7	3.6	3.4	3.3	3.3	3.4
Single provider	12.0	11.2	11.3	11.8	11.7	10.6	9.5	10.0	11.6

**EU definition*

Table A.24. Temporary poverty* by household type, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Singles age < 45	17.0	16.3	15.6	14.8	14.2	14.5	14.8	15.3	15.5
Singles age 45-66	22.7	22.4	22.9	22.0	20.2	20.5	20.3	20.1	19.7
Singles age > 66	5.4	5.8	5.8	5.3	5.9	3.6	3.6	3.3	1.9
Couples without children	8.0	7.3	7.2	7.0	9.7	5.7	4.9	4.6	6.8
Couples with children	2.4	2.3	2.2	2.1	2.1	1.8	1.8	1.7	1.7
Single provider	7.7	7.1	6.8	7.1	6.9	6.0	5.5	5.5	6.2

**EU definition*

Table A.25. Chronic poverty* by household type, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Singles age < 45	12.8	11.7	11.8	10.3	11.6	10.4
Singles age 45-66	19.4	20.8	18.7	19.3	17.6	18.2
Singles age >66	54.6	5.1	53.5	4.0	50.6	2.3
Couples without children	11.0	6.9	10.3	6.5	7.4	4.8
Couples with children	3.0	1.6	2.9	1.3	2.6	1.1
Single provider	8.9	4.9	8.5	4.2	8.0	3.8

**EU definition*

Table A.26. Chronic poverty* by household status in each year, 1999-2001.**

Household status	Income after tax	Extended income
Single in whole period	21.5	8.4
Couple in whole period	3.5	1.9
Change from single to couple	4.8	3.0
Change from couple to single	7.3	2.9

**EU definition*

***Single=single /single parents, couple=couple with/without children*

Table A.27. Temporary poverty* by education level, income after tax 1993-2001**.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Primary school or below	23.1	23.8	24.0	24.9	25.4	24.6	23.9	24.5	24.5
Secondary school	7.5	7.5	7.5	7.5	7.5	7.2	7.0	7.1	7.3
Higher education	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.3	2.4

**EU definition*

***Population is above 16 years of age*

Table A.28. Temporary poverty* by education level, extended income 1993-2001.**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Primary school or below	11.7	11.5	11.4	11.4	13.3	10.4	10.2	10.0	11.6
Secondary school	4.8	4.6	4.6	4.5	4.9	4.3	4.3	4.3	4.7
Higher education	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.8	1.8

**EU definition*

***Population is above 16 years of age*

Table A.29. Chronic poverty* by education level, 1993-2001.**

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Primary school or below	21.9	10.0	23.2	9.7	22.6	8.9
Secondary school	6.3	3.5	6.3	3.4	6.0	3.2
Higher education	1.5	1.0	1.5	1.0	1.5	1.0

**EU definition*

***Population is above 16 years of age*

Table A.30. Temporary poverty* among immigrants by world region, income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	9.8	9.6	9.6	9.5	9.4	8.9	8.4	8.2	8.3
Western	17.9	17.6	17.3	16.8	16.2	15.2	14.7	14.4	14.6
Eastern European	33.5	45.1	32.8	31.6	28.7	25.2	22.5	26.4	23.3
African	33.5	31.2	32.3	30.5	30.0	28.0	27.8	27.7	31.2
Asian	34.8	33.0	33.4	31.6	29.9	28.2	26.8	26.3	27.5
South or Central American	25.2	24.3	22.2	21.6	20.2	17.3	16.4	16.8	17.5

**EU definition*

Table A.31. Temporary poverty* among immigrants by world region, extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	5.3	4.9	4.9	4.7	5.2	4.2	4.0	3.9	4.3
Western	13.5	12.9	13.0	12.0	11.7	10.8	10.7	10.5	10.8
Eastern European	28.6	36.9	21.4	19.5	19.1	16.8	15.5	19.8	17.0
African	25.0	22.7	21.9	19.5	19.4	17.7	18.4	18.3	20.9
Asian	23.9	22.2	22.2	20.3	19.9	18.4	17.5	17.1	17.7
South or Central American	18.3	17.7	16.6	16.0	15.1	12.9	12.6	12.8	12.8

**EU definition*

Table A.32. Chronic poverty* among immigrants by world region, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Ethnic Norwegian	8.5	4.0	8.2	3.6	7.3	3.1
Western	14.9	10.0	13.4	8.5	12.3	7.8
Eastern European	28.1	21.5	25.3	14.1	18.7	11.6
African	29.0	19.0	25.7	13.8	24.7	14.2
Asian	31.7	19.5	27.4	15.5	23.8	13.6
South or Central American	21.0	13.7	16.8	11.0	13.8	9.4

**EU definition*

Table A.33. Temporary poverty* among immigrants, by country of origin, Income after tax 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	9.8	9.6	9.6	9.5	9.4	8.9	8.4	8.2	8.3
Serbia and Montenegro	51.7	49.3	34.5	33.1	31.4	28.5	25.0	39.6	33.6
Turkey	37.2	37.1	36.8	35.6	37.3	35.1	33.2	31.2	32.4
Bosnia and Herzegovina	-	-	45.2	42.7	36.9	30.5	25.8	22.9	22.0
Somalia	40.6	38.6	35.7	33.5	33.4	31.2	32.9	34.7	41.6
Sri Lanka	27.3	24.7	20.7	19.1	17.0	14.5	13.0	12.6	12.3
Iraq	40.1	37.7	37.9	35.6	38.8	41.8	40.9	43.3	45.6
Iran	28.5	27.7	29.1	27.1	27.2	25.9	25.3	25.8	26.0
Pakistan	47.6	45.4	46.5	44.0	42.3	40.5	39.0	37.4	37.7
Vietnam	33.3	30.5	30.7	29.1	26.4	23.5	20.4	19.2	18.5
Chile	25.3	24.1	20.9	20.3	18.9	16.4	14.7	15.3	16.4

**EU definition*

Table A.34. Temporary poverty* among immigrants, by country of origin, Extended income 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Ethnic Norwegian	5.3	4.9	4.9	4.7	5.2	4.2	4.0	3.9	4.3
Serbia and Montenegro	45.3	40.0	21.1	17.1	16.8	13.8	12.3	29.0	23.1
Turkey	24.4	23.0	25.0	22.0	23.3	23.4	21.5	21.5	22.5
Bosnia and Herzegovina	-	-	27.1	25.8	24.8	21.9	19.2	17.3	16.3
Somalia	27.6	27.5	21.7	18.7	19.5	17.0	20.6	20.9	26.7
Sri Lanka	22.6	18.9	15.7	13.8	12.9	10.8	9.4	9.7	9.8
Iraq	21.7	20.7	16.9	19.1	19.3	20.4	23.3	24.0	26.3
Iran	19.8	18.5	18.7	17.6	18.1	17.4	16.5	17.2	16.3
Pakistan	29.2	26.9	29.0	24.7	25.5	24.3	23.1	22.6	22.9
Vietnam	20.3	19.5	19.2	18.1	16.6	14.5	13.5	12.1	12.1
Chile	17.4	16.3	14.9	14.1	13.4	11.4	10.4	11.1	11.1

**EU definition*

Table A.35. Chronic poverty*, by country of origin, among immigrants, 1993-2001.

	1993-1995		1996-1998		1999-2001	
	Income after tax	Extended income	Income after tax	Extended income	Income after tax	Extended income
Ethnic Norwegian	8.5	4.0	8.2	3.6	7.3	3.1
Serbia and Montenegro	42.2	32.6	29.7	11.9	22.4	9.6
Turkey	35.1	20.1	33.5	18.7	30.6	18.3
Bosnia and Herzegovina	-	-	33.0	19.7	21.2	15.1
Somalia	34.9	22.0	28.5	13.4	31.3	16.2
Sri Lanka	20.8	15.5	12.1	8.1	10.4	7.1
Irak	35.7	15.0	36.5	15.9	39.3	17.4
Iran	25.2	15.0	23.6	13.0	22.9	12.9
Pakistan	45.3	24.7	41.8	20.8	36.2	18.9
Vietnam	30.4	17.7	24.3	13.3	16.7	9.7
Chile	21.3	12.5	16.6	10.1	13.2	8.0

**EU definition*