

A Decade of Changing Pattern of Poverty in Great Britain

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Abstract

It has been noted in the literature that failure to meet the target set by government for reducing the headcount ratio of child poverty in Britain is partly due to the success of government policy in generating economic growth. Apart from missing the argument that absolute poverty is not a meaningful idea, this apology for the failure of government to meet poverty targets also misses wider problems embedded in recent trends in household income distribution. For example, inequality measures that are sensitive to the distribution of income amongst the poor suggest that the experience of those who have failed to benefit from government policy and remained poor has worsened. Also, households containing no children have been neglected.

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I. Introduction

The discussion about poverty in Britain has been sidetracked by a desire to measure success of policy by the ability to reach previously specified target numbers. This is particularly evident in the field of child poverty (refs). In this report, we explain the caveats of basing policy evaluation exclusively on targeting the headcount ratio of child poverty, and we identify, in addition, the salient trends in poverty by examining the Family Resources Survey (FRS) and the Household Below Average Income (HBAI) datasets.

It has been pointed out that the "main reason why it has proved so hard for the Government to reduce the child poverty count" is the "focus on relative rather than absolute income" (Brewer et al, 2003). We understand that this is not a sufficient defence of government policy. In fact, even if the shape of the distribution curve remains unaltered between periods, being the only change an increase over time of the mean income, the idea of absolute poverty does not take into account all angles characterizing poverty and a detailed assessment of the income distribution, especially of those living under the poverty line, is needed.

The bigger picture also risks to be missed unless we break free of the debate about targets for child poverty and examine what has happened to all groups of households. It is, thus, reasonable to surmise that a purpose of poverty reduction policy in Britain in the context of the rhetoric about child poverty is to reduce the incidence of social exclusion by identifiable groups. This, hence, begs the question of how other

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demographic groups fare under these policies. The evidence collected in this paper recommends the conclusion that the impact of such policies is at most mixed.

The paper is organised as follows. Section II summarises conceptual issues underlying measures of poverty and examines the link between poverty and income distribution. This relationship highlights the importance of analysing income distribution amongst those who remain poor. This matter is then considered by reference to trends in $FGT(\alpha)$, a family of indices of which the headcount ratio is a special case. The rationale for the choice of this index is discussed in Section III, where we also discuss the important property that this index presents of being additively decomposable. On account of this property, the FGT bears the calculus of the share of the contribution to poverty by mutually exclusive and exhaustive groups, hence admitting also the examination of the impact of the policies by demographic groups. After providing, in Section IV, a summary description of the data employed, in Section V evidence illustrating changing patterns in poverty is illustrated both for all individuals in the sample as a whole and for individuals pertaining to different identifiable groups. Finally, Section VI concludes and suggests further directions.

II. Measurement of Poverty

The definition of the poor as those individuals whose income falls below some poverty datum line raises the question of how to delineate the poverty line. This is not a trivial issue that has been strongly debated in the literature and still remains controversial.²

On reflection, it appears that the distinction between relative and absolute poverty is not as sharp as it might seem at first sight. Changes in income distribution may lead to variations in relative prices through modifications in demands for different goods. This, in turn, may lead to a change in what and how much the poor can buy with a fixed sum of money. Another reason for introducing the distribution of income into poverty measures is that goods in themselves do not provide utility; they empower an individual with the capabilities for securing utility. However, the capability derived

² Atkinson (1983), Townsend (1979), Angeriz and Chakravarty (2003) for a discussion about these issues.

from a good depends on the distribution of income. Hence, if poverty is measured not in terms of the lack of ability to buy certain goods but in terms of the lack of capability to do certain things, then relative deprivation in terms of goods could sometimes result in absolute deprivation in terms of capabilities (Sen, 1983).³

Nowadays, most governments in OECD countries use a measure of poverty related to the mean or the median income of the population as a whole. The British government's position, for instance, is that the absolute standard -- the backbone of the Beveridge approach characterising much of post-war social security policy -- has been superseded by "a notion of a relative minimum with all groups in society having a share in the long run increase in national prosperity."⁴ The United States, instead, remains an exception, where the US Census Bureau continues to calculate an absolute measure notwithstanding recommendations to the contrary by a panel of the American Academy of Sciences. The methodology for calculating the subsistence budget combines data on household 'choice' (Household Consumption Survey) with some bureaucratically-defined level of minimum food requirement, possibly responding to the strong agricultural lobby

In November 1998, the Statistical Programme Committee of the European Union agreed on a poverty line based on the median income. In these countries, anyone having an income below 60 per cent of the median income is defined to be poor. Thus the poverty datum line for income changes over time. When governments set targets about reducing the percentage of those who are poor, the targets are set by reference to the above changing line. In setting these targets, no explicit indication may be given about how the median income is expected to change over time. Nor there may be explicit statements about acceptable changes in income inequality. In fact, governments in most OECD countries do not over-concern themselves with changes in the right hand tail of the income distribution in deciding on the poverty line. No explicit target, for example, is set for the rate of change in the median income with respect to the mean; and a degree of ambiguity is indeed inherent about the expected changes in income distribution in the context of which targets for the headcount ratio

³ It should not be concluded, on the basis of the argument presented here about commodities versus capabilities that the distinction between relative and absolute poverty can be entirely erased. See the debate between Sen and Townsend (*Oxford Economic Papers*, vol. 37, Dec 1985).

of poverty are set. This ambiguity cannot be resolved by re-interpreting the targets, *ex post*, by reference to some absolute poverty line that was not contemplated when the goals for poverty reduction were announced. Instead, policy evaluation has to search for some other criterion to examine..

The distribution of income enters into measures of poverty also in two different ways: the dispersion of income in the whole population and the distribution of income amongst the poor. The poverty datum line takes into account the distribution of income in society. However, if it is accepted that the measure must reflect the difference in how poverty is experienced, then measures focused on the amount of people under the poverty line need to be replaced by indices that capture any normative value that might be placed by society on the distribution of income amongst the poor. The FGT(α), suggested by Foster, Greer and Thorbecke (1984), provides a good standard taking into account the issues arised.

III. FGT(α), A Decomposable Index of Poverty

The attraction of Foster, Greer and Thorbecke index becomes apparent by following the literature on the development of poverty indices. Once the poverty datum line is agreed, the next step is to decide on a measure for poverty. As a starting point, the Head Count Ratio (H) calculates the ratio of people whose incomes fall below the poverty line. A deeper understanding of the extent of poverty, however, is only possible considering the distribution of income of those who fall below that line. For this purpose a simple approach is to construct an index by adding up the intensity of deprivation, measured along a scale that makes possible inter-personal comparison of those who are poor. The Poverty Income Gap, I, is a candidate for this index.

$$I = \sum_{i=1}^{i=m} \frac{(Z - y_i)}{mZ}$$

⁴ HMG, 1985. p. 16..

where m denotes the number of units (households) enjoying an income below the datum line, Z . The income for this set of units is represented by the set $\{y_1 \dots y_m\}$, where $y_i < Z$ for all values of $i = 1, \dots, m$.

Thus, the intensity of deprivation is captured by adding up the amount of income needed to be transferred to the poor in order to bring all of them up to the datum line level of income (Beckerman and Clark 1982). In order to make the measure independent of the number of the poor and the currency in which poverty income is recorded, this index is commonly normalized, producing the Poverty Income Gap Ratio, P .

$$P = I / mZ$$

This approach, however, does not satisfy the Transfer Axiom, a desirable property of any poverty index. The Transfer Axiom entails that "a pure transfer of income from a poor [household] to any other [household] that is richer must increase the poverty measure" (Foster et al 1984 p.762). Note that, if both referred households are below the poverty line of income and neither crosses that threshold due to the transfer, then P does not increase when income is transferred from the poor to the less poor. This inadequacy is addressed by Sen (1976), who provides a measure of poverty depth by combining the head count ratio with the Gini coefficient of distribution. For large values of m , the Sen index, S , is defined as: $S = H \cdot \{P + (1 - P) \cdot G\}$, where G is the Gini coefficient for the poor and it is defined for incomes $\{y_1 \dots y_m\}$.

This index, in turn, presents a clear problem. A transfer from a poor household to a less poor one could decrease the poverty measure if, as a consequence of that transfer, the second household crossed the poverty datum line.⁵ A partial remedy to these problems is offered by Foster, Greer and Thorbecke (1984).

⁵ Whereas this property of index S might be tolerable if both households initially were close to each other in income—for instance, if they were hovering just below the poverty line and a small amount of transfer was contemplated-- this property is especially questionable if the household which loses out suffers significantly as a result of the transfer (Thon, 1983).

$$FGT(\alpha) = \left(\frac{1}{n}\right) \cdot \sum_{i=1}^{i=m} \left\{ \frac{(Z - y_i)}{Z} \right\}^\alpha$$

where n is the total population, but the summation is only over the poor, ie all those whose income fall below the poverty line. The parameter α is a special feature of this index encapsulating an implicit weight placed on inequality aversion. The $FGT(\alpha)$ index for $\alpha = 0$ is the head count ratio, H . For $\alpha = 1$, $FGT(1) = H \cdot P$. But the FGT index becomes more interesting for $\alpha > 1$, as it is in this case, when the FGT index introduces distributional consideration *amongst* the poor (p. 762, Foster *et al* op. cit.). For example, when $\alpha = 2$: $FGT(2) = H \cdot \{P^2 + (1 - P)^2 \cdot C\}$, where C is the coefficient of variation in the income of the poor. Hence, inequality amongst the poor increases the experience of poverty, as it is measured by this index, even if the head count ratio has not changed. More precisely, when $\alpha > 1$ the index above satisfies the Transfer Axiom described earlier.

A stronger condition, called the Transfer Sensitivity Axiom, is satisfied if $\alpha > 2$. To understand this axiom, suppose that persons A, B, C, and D are all poor. Next, assume

$$y_A - y_B = y_C - y_D = q, \quad q \geq 0;$$

$$\text{also: } y_B \geq y_D, \quad \text{hence: } y_A \geq y_C.$$

The transfer sensitivity axiom is satisfied if, for any set of the poor {A, B, C, D} described as above, an increase in the poverty index due to a transfer from B to A is greater than the increase recorded due to a transfer of the same amount of income from D to C. An implication of this axiom is that an increase in the proportion of the poor who are further down the poverty datum line implies, *ceteris paribus*, an increase in a poverty index satisfying this axiom even when the mean income for the poor remains unaltered.

Poorer units are given greater weight in the above index and "a larger α gives greater emphasis to the poorest poor" (Foster *et al*, op. cit.). The $FGT(\alpha)$ index can, therefore, be interpreted as a measure of the depth of poverty.

It can also be decomposed to isolate and measure the depth of poverty experienced by different groups. Suppose that there are k distinct –i.e. mutually exclusive and exhaustive-- subgroups of the sample population, each containing n_j units. Therefore,

its sum over all the categories comprise the total sample of n households: $\sum_{j=1}^{j=k} n_j = n$.

Out of a population of n_j in the j th group m_j fall below the poverty line, so the total number of units m whose incomes fall below the poverty line in the whole sample

is: $\sum_{j=1}^{j=k} m_j = m$. Thus, the aggregate FGT(α) index can now be regarded as the weighted

sum of the index computed for each of the considered sub-groups.

$$FGT(\alpha) = \sum_{j=1}^{j=k} \left(\frac{n_j}{n} \right) \cdot FGT_j(\alpha),$$

where the summation runs over $j = 1 \dots k$ and the index for the subgroup j is:

$$FGT_j(\alpha) = \left(\frac{1}{n_j} \right) \cdot \left\{ \sum_{i=1}^{i=m_j} \left[\frac{(Z - y_{ij})}{Z} \right]^\alpha \right\},$$

where m_j being the number of poor households in the j th subgroup. The poverty line income is Z and y_{ij} is the income of the i^{th} household in the j^{th} group whose income falls below Z . The percentage of the contribution to the total aggregate poverty index of the j^{th} group is, thus:

$$PCNT_j(\alpha) = \frac{\left(\frac{n_j}{n} \right) \cdot FGT_j(\alpha)}{FGT(\alpha)} \cdot 100$$

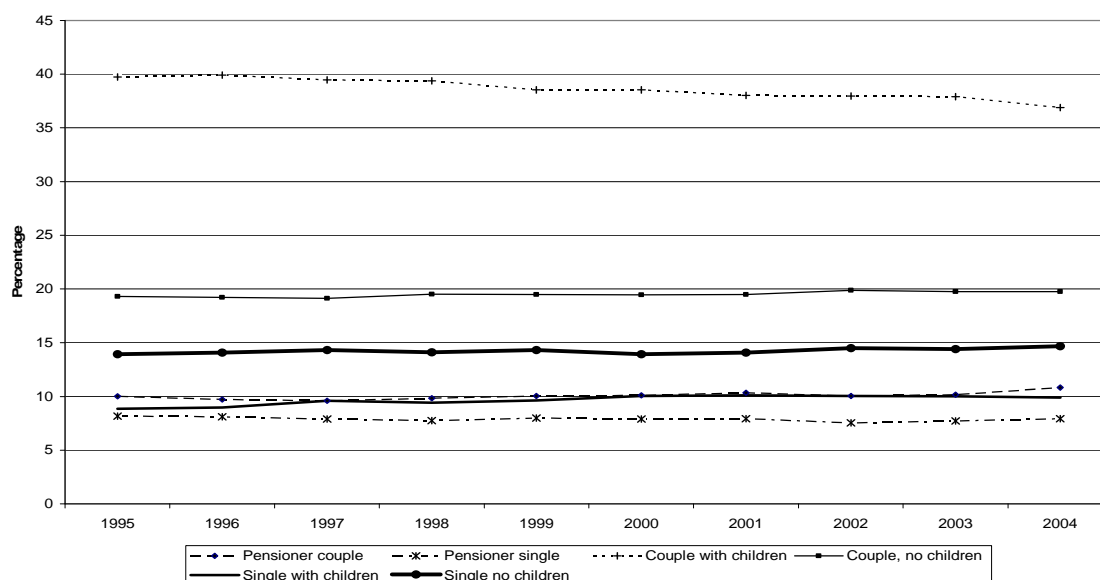
And it is easily perceived that these measures allow engaging in informed discussion about the changing nature of poverty beyond the confines of a single index of headcount measure of child poverty.

IV. Family Resources Survey

We use the Family Resources Survey (FRS) and Households Below Average Income (HBAI) Survey for the years 1994/5 to 2003/4. The FRS consists of a set of cross-sections providing information about incomes, employment, demographic aspects and other individual circumstances of about 25,000 households in Britain. The HBAI dataset reports variables computed by the Department of Works and Pensions (DWP), using the FRS data.

Poverty is measured on the basis of household disposable incomes adjusted for household size (or 'equivalised' income) in common with practice in the literature. The income recipient unit is the individual to whom the per capita net income of the household is assigned. The net household income, in turn, is computed by aggregating all household members' total incomes and subtracting direct tax and national insurance contributions. These results are then netted off the contributions to pensions, the maintenance expenses to support children not living in the household and the council tax contributions. Finally, the per capita net income is calculated by equivalising the household's income by the members in the McClements Scale. The procedure conforms to the methods in HBAI statistics reported by government.

Figure 4.1 depicts the proportion of individuals living in different types of households to the entire sample.



There is a reasonably stable demographic composition of the population during the period examined here. However there is a slight decrease in the share of the dominant groups, the ‘couple with children’, category which loses around 3 points along the decade. This loss is compensated by a very modest, sustained increase in the proportions of most of the other groups, being ‘single pensioners’ a remarkably stable series all along the period.

The average per capita weekly income net of taxes and equivalised for those who live below 60 per cent of the median income are given in Table 4.1. The population is grouped into the six mutually exclusive and exhaustive categories.⁶

Table 4.1: Average Per Capita Weekly Disposable Income of the Poor (£)

Group	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All households	105	107	117	118	122	128	127	137	142	144
Pensioner couple	116	120	129	130	134	140	145	152	159	164
Pensioner single	111	114	122	124	127	136	139	146	154	158
Couple with children	103	103	116	115	118	124	125	134	140	143
Couple, no children	90	99	102	105	112	109	109	122	120	126
Single with children	118	120	127	131	135	143	140	150	156	161
Single no children	97	101	110	108	112	118	114	125	127	126

The poverty datum line (60% of the median income of sample population)

All households	139	144	154	159	164	173	177	188	196	201
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Note: Income data are equivalised and deflated within each year prices.

The poverty line is also indicated in that table. The same groups can be compared with the average income of the total population, as reported in Table 4.2 below.

Table 4.2: Average Per Capita Weekly Disposable Income (£)

Group	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All households	279	290	309	321	337	352	366	387	400	408
Pensioner couple	239	242	269	274	284	296	309	325	328	348
Pensioner single	208	217	230	239	252	267	278	286	301	310
Couple with children	273	285	303	315	331	347	365	383	407	407
Couple, no children	357	371	396	412	432	453	459	492	497	512
Single with children	179	189	190	203	214	219	233	247	256	277
Single no children	293	300	324	337	353	375	389	419	412	418

Median per capita income

All households	232	239	257	264	273	288	295	313	326	336
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⁶ The composition of each of these groups is presented in table A.1 in the Appendix. For further information about FRS see DWP (2003).

A comparison of mean and median income trends suggests that the disparity between these two measures has slightly widened in favour of the mean,.. Effectively, after 1997 median per capita income rose around 30.7% per cent for the sample population, whereas the average per capita income rose at a 32.0% in the same period. Table 4.3, however, shows a very different picture for households whose income falls below the poverty line. In this case, note the much lesser increase in all groups of households' incomes, with a remarkably low increment for those poor 'Single with no children'.

Table 4.3: Increase in Average Per Capita Weekly Disposable Income. 1997-2004

Group	Poor	Total sample
All households	23	32
Pensioner couple	27	29
Pensioner single	30	35
Couple with children	23	34
Couple, no children	24	29
Single with children	27	46
Single no children	15	29

V. Poverty Indices

In order to measure poverty for the period 1997-2004 we first calculated the FGT(α) indexes with $\alpha=0, 2$ and 3 , as previously described in section III. The first index, the Head Count ratio, which corresponds to FGT(0), reached its maximum value in 1997. Since then it has gradually been decreasing, dropping about 10% in 2004. In contrast, the FGT(2) and FGT(3) indexes showed the opposite trend, being higher in 2004 than in 1997 (these results are summarised in Table 5.1). Overall these results indicate that although the absolute number of individuals in poverty has decreased, the gap..... has increased.

Table 5.1: Poverty Indices for all households

Year	No. of households	Head Count (%)	FGT(2)	FGT(3)
1995	62,394	17.8	2.107	1.431
1996	62,037	17.0	2.107	1.472
1997	60,618	18.4	1.948	1.234
1998	55,865	18.3	2.222	1.489
1999	53,973	18.2	2.163	1.431
2000	58,898	17.9	2.282	1.560
2001	62,394	17.0	2.505	1.793
2002	62,037	16.9	2.300	1.615
2003	60,618	17.0	2.410	1.683
2004	55,865	16.8	2.510	1.792

We next wanted to examine how these poverty measurements affected the six mutually exclusive and exhaustive categories defined in section IV. The results for head count ratio and FGT(3) are summarised in Table 5.2. The FGT(2) index was not included in the table as it showed a similar pattern as FGT(3). In addition, separate indices for the above groups were weighted by their respective population shares to obtain their percentage contribution to total poverty. These contributions are available upon request from the authors..

Table 5.2: Poverty Indices Decomposed by Population Groups

Head Count (%)						
Year	<i>Pensioners couple</i>	<i>Pensioners single</i>	<i>Couple with Children</i>	<i>Couple w/o Children</i>	<i>Lone Parent</i>	<i>Single</i>
1995	20.2	24.1	18.8	9.7	30.5	16.1
1996	22.1	22.6	17.7	9.1	27.9	14.9
1997	20.8	24.1	18.6	9.7	37.7	16.2
1998	21.8	23.9	18.2	9.5	38.4	15.6
1999	24.2	23.5	17.9	9.7	36.8	14.8
2000	21.9	23.7	17.1	9.8	36.1	15.9
2001	22.1	22.5	15.5	10.0	31.9	16.4
2002	22.9	22.9	15.6	9.8	31.3	15.7
2003	22.7	21.8	15.3	9.9	31.8	17.1
2004	20.5	21.9	15.4	10.7	30.8	16.2

FGT(3)

Year	<i>Pensioners couple</i>	<i>Pensioners single</i>	<i>Couple with Children</i>	<i>Couple w/o Children</i>	<i>Lone Parent</i>	<i>Single</i>
1995	0.424	0.726	1.663	1.541	0.684	2.012
1996	0.588	0.757	2.008	1.153	0.938	1.765
1997	0.338	0.654	1.270	1.478	1.177	1.648
1998	0.610	0.817	1.786	1.424	0.918	2.012
1999	0.575	0.883	1.707	1.263	1.172	1.915
2000	0.618	0.766	1.695	1.753	1.126	2.145
2001	0.568	0.748	1.739	2.095	1.614	2.779
2002	0.641	0.867	1.750	1.591	1.368	2.385
2003	0.716	0.747	1.515	1.949	1.548	2.720
2004	0.573	0.992	1.688	2.008	1.301	3.018

The head count ratio of individuals living in poor households belonging to Group 3, Couples with Children, has gone down substantially in recent years, and certainly after 1997. As the head count ratio of poverty amongst individuals living in Group 5, Lone Parent Families, presents an important decrease as well, it is possible to conclude that the number of children living in poverty has declined.

In fact, the head count ratio has declined faster for this group than it has for the population as a whole. For example, this ratio has declined from 18.4 to only 16.8 between 1997 and 2004 for the total population. But the decline for Group 3 has been faster, from 18.6 to 15.4, during the same period. A consequence of the above trends is that the proportion of the poor who belong to Group 3 has declined from 40 per cent to 38 per cent between 1997 and 2002. Hence the contribution of this group to the aggregate head count ratio has declined from 37.16 to 31.76 per cent between the years 1997 and 2002. Thus, households comprising couples with children have been more successful in escaping poverty, if we measure poverty by the head count ratio, FGT(0).

Brewer et al (2003) concentrate on the FGT(0) measure, and rightly point out that the decline in poverty would be even greater if the poverty datum line were set at a lower level. But this view is only partial. A greater fraction of those who have been left behind now are further away from the current poverty datum line, as indicated by the

FGT(α) measures of poverty. For example, whilst the percentage contributions to all the FGT measures of poverty by Group 3 have declined, both FGT(2) and FGT(3) measures themselves have gone up. FGT(2) has gone up from 1.89 to 2.25 between 1997 and 2004. FGT(3) has increased from 1.2 to 1.65 during the same period. As we noted earlier, "a larger α gives greater emphasis to the poorest poor" (Foster, Greer, Thorbecke 1984 p.763). If we consider, especially, the increase in the FGT(3) index, we find that a greater fraction of the poor living in Group 3 households are further away from the contemporary poverty datum line in 2004 than was the case in 1997.⁷ What can definitely be said is that those children who live in Group 3 households experience a greater heterogeneity in income than their counterparts in 1997. Since the FGT(2) and FGT(3) indices for Group 5, Lone Parent Households, have also increased between 1997 and 2004, we can make a stronger statement. Whilst the number of children living in poverty may have fallen, there is greater heterogeneity in the income distribution amongst those who now live in poverty.

An investigation into the nature of the heterogeneity amongst the poor is required in order both to analyze the effectiveness of past policies and to consider whether these policies need to be changed in order to address the changing circumstances, problem. It may have been the case that the previous policies addressed only those who were just below the poverty line. As Brewer et al (2003) explain, children in the third and fourth deciles amongst the poor experienced much higher income increases than any other subgroup amongst the poor. Further attempts to reduce poverty may entail attention to those at the very bottom of the distribution.

VI. Conclusions

Policy evaluation is not a numbers game but numbers can provide insight into how well different aspects of policy are joined up. In this paper we examine one set of numbers to come to a less sanguine view of the efficacy of government policy than

⁷ It is difficult to be more precise in the interpretation of poverty indices between time periods because the datum line is not fixed (Foster and Shorrocks 1988). Fixing the datum line required arbitrary assumption about the nature of absolute poverty, an little will be gained by attempting to obtain a precise interpretation of poverty measures by fixing the poverty line.

the one arrived at by some commentators who examine only the head count ratio of child poverty.

There is more to be done if we are to comprehend the task involved in policy evaluation. Whilst additional investigation is outside the scope of this paper, emerging features of some of these other questions that might be raised about poverty are suggested below. For example, one particularly striking feature of Group 5, Lone Parents, that has been noted in the literature is that the rate of return to work for single parents is low. This may partly be due to the fact that benefits while not at work are more generous for this group, if the child care cost of going to work is ignored.⁸ The coherence of poverty reduction policy cannot be judged without reference to aspects of taxation and childcare policies that have an impact on the decision to work. This is an aspect of social policy that requires further attention.

There is another aspect of the changing nature of poverty that is worth mentioning. The reductions in poverty for one group appear to be accompanied by increases in poverty for other groups. For example, the contribution to the poverty of households containing children has declined between 1997 and 2002, but the contribution to poverty of single people below retirement age has increased.⁹ The index of poverty has also increased from this group during this period (Table 5.2). Before a view can be taken about the efficacy of poverty reduction policy for households with children, it is necessary to establish whether this reduction is obtained at the expense of other groups amongst the poor.

⁸ Dickens and Ellwood (2003). The direct monetary outlay out of earnings needed for child care may, paradoxically, increase as the employment rate amongst non-single parents increase. The extent of child care covered within families containing unemployed members is not adequately reflected in models examining the incentives of return to work by single parents.

⁹ See Annex.

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Appendix

Table A.1. Demographic family type groups as accounted for in the FRS

Group 0: All households

Group 1: Pensioner couple (Benefit units headed by a couple, where the Head of the Benefit Unit is over the state pension age)

Group 2: Pensioner single (Benefit units headed by a single adult, who is over the state pension age).

Group 3: Couple with children (Benefit units headed by a couple, below the age of eligibility of state pensions, with dependent children).

Group 4: Couple without children (Benefit units headed by a couple, below the age of eligibility of state pensions, with no dependent children).

Group 5: Single with children (Benefit units headed by a single adult, below the age of eligibility of state pensions, with dependent children).

Group 6: Single without children (Benefit units headed by a couple, below the age of eligibility of state pensions, with no dependent children).