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LOW-INCOME AND DEPRIVATION IN BRITISH FAMILIES

Low-Income and Deprivation in British families

An exploratory analysis of the 'consistent poverty' approach to poverty measurement using data for Great Britain drawn from the families and children study.

A study carried out on behalf of the Department for Work and Pensions

BY

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EXECUTIVE SUMMARY

Background

In April 2002 the UK Government launched *Measuring Child Poverty: a consultation document*. One of the approaches to monitoring progress in the long term highlighted in the consultation document is based on the 'Irish Government's approach'. This approach is centred on the definition of 'consistent poverty' as a combination of low-income and lifestyle deprivation. This paper aims at exploring this type of measure using British data, specifically the *Families and Children Study*. No final decision has yet been taken as to what measure will be adopted by the UK Government, but preliminary conclusions from the consultation were published in May 2003. This research should be seen as a contribution to the ongoing debate.

'Consistent poverty' resonates well with the common perception of poverty as exclusion from ordinary living patterns due to lack of resources. Deprivation indicators, defined as the enforced lack of material goods or social activities, aim at measuring living standards in a direct way. At the same time, low-income measures verify that poor living standards are due to lack of resources and not to other factors such as individual choices. The approach investigated in this paper combines both deprivation and low-income together to define 'consistent poverty'. If properly presented and understood, it can be more appealing and intuitive than simple income measures. Non-monetary measures of poverty have a long tradition in the academic literature, which is briefly reviewed in the paper.

Methodology

A crucial and controversial issue in all the approaches that include deprivation indicators, such as the 'consistent poverty' one, relates to the choice of these indicators and to the definition of a 'deprived' individual based on the chosen set of indicators. The approach developed by the *Economic and Social Research Institute* (ESRI) in Ireland is based on a statistical technique called factor analysis. This technique looks at the correlation between a large set of observable deprivation indicators to identify a limited set of unobservable dimensions of poverty. Deprivation is then defined as lacking a specified number of items in a specified number of dimensions or factors.

Factor analysis is attractive as it abstracts, to a certain extent, from subjective value judgements on what constitutes a necessity. However, a degree of personal judgements is still required to derive the separate factors. Secondly, this technique is completely data driven, which means that we can potentially obtain different results when different samples are used or when the same sample is interviewed over time. Finally, the problem remains as to how the deprivation indicators that are included in the survey are chosen in the first place, and how this list should be updated over time.

The *Families and Children Study* is the most complete source of information on non-monetary deprivation indicators in Britain and a cross section analysis of this survey for the years 1999 and 2001 is carried out in this paper. However, the 1999 survey

sampled only low to moderate income couple families, so only partial conclusions can be drawn by comparing the two surveys. Using factor analysis, four factors are identified. The factors mainly contain:

- food items,
- clothing items,
- consumer durables,
- leisure/ social activities.

However, this classification changes at the margin for different groups (lone parents, couples, all families together), for different choices of items included in the analysis and for different factor analytical techniques used.

The correlation matrix appears to be based mainly on the frequency of purchases, rather than on the degree or severity of deprivation. Therefore it is not possible to identify any single dimension as 'basic deprivation', as it is the case using Irish data, and different measures of 'multiple' deprivation are constructed using different combinations of factors and items within each factor and each imposing progressively more stringent conditions. This approach resonates well with the concept of poverty as a multidimensional complex phenomenon presented in the annual UK Government report on poverty and social exclusion *Opportunity for All*.

Findings/ results

Deprivation is the lowest in the food and clothing dimensions, with only 33.5% and 40.6% families in 1999 respectively lacking 1 or more items. On the contrary, the majority of families lack 1 or more items in the leisure and consumer durables dimensions (80.7% and 72.1%). By looking at these percentages, at the frequency of purchases, and at the type of items we can use the food and clothing factors as a proxy for severity, the consumer durables one as a proxy for persistence and the leisure factor as a proxy for social inclusion.

Even if different definitions are more or less stringent and therefore identify a more or less large group of families as multiply deprived, the profile of deprivation that they define is similar in all cases. The lone parent families with the highest risk of being multiply deprived are those with lower income, the lowest degree of attachment to the labour market, without any legally sanctioned previous partnership, in social accommodation, with lower or no qualifications, with more and younger children. Similar risk factors relate to couple families. These factors are broadly the same in 1999 and 2001.

On average, income and deprivation are closely correlated, with average weekly income clearly separating deprived families from non-deprived ones. The income distribution is less dispersed for deprived families, with smaller range, standard deviation and 90/10 ratios. Finally, average income for deprived families is almost invariant to definitional changes.

However, if we consider the income distribution by deciles, we see that at the bottom of the distribution, the incidence of deprivation initially increases reaching a peak around the 2nd deciles and then decreases. This may be due to:

- measurement error (although this has been reduced by the exclusion of self-employed workers),
- differences in individual expectations (as people on very low income have reduced expectations as to what things and activities they need or want),
- conceptual differences between income and deprivation (as they measure different phenomena we would expect them to diverge, at least to a certain extent).

'Consistent poverty' is defined as being deprived and having low income, i.e. being below some threshold, most commonly 60% of median equivalised income. Therefore the relationship between low income and deprivation is crucial. According to all definitions, income-poor individuals have the highest risk of deprivation. However, there is also a sizeable degree of mismatch between low income and deprivation: according to a central estimate around 30% of individuals in lone parent families in 1999 are either income-poor but not deprived or vice versa.

The dimensions of deprivation varied for the 1999 and 2001 data, confirming that factor analysis does not necessarily produce consistent results across different samples or over time. Using a ‘consistent poverty’ approach there is a drastic decrease between 1999 and 2001 in those defined as both income-poor and deprived. This implies that using the same basket of deprivation items year on year gives an absolute measure producing results that may not gain public credibility. Analysis of the Irish data shows that updating the items after ten years radically changes the assessment of progress in the time period between the two surveys (1987 and 1997).

This study highlights the benefits of complementing simple relative low-income measures with more direct assessments of living standards. However, even the use of statistical techniques such as factor analysis does not provide an easy answer as to how to construct such a measure. Setting a long-term target based on 'consistent poverty' alone would not satisfy some key characteristics of a good indicator such as longevity, robustness and credibility with the public.

CHAPTER 1 - INTRODUCTION

1.1 Background and Methodology

1.2 The meaning and importance of deprivation

The definition of poverty that is most commonly applied to economically advanced societies is exclusion from ordinary living patterns, customs and activities due to lack of resources (Townsend, 1979). Often low-income is used as a proxy for poverty. It is possible to define low-income with respect to several different thresholds, but the one most commonly adopted (e.g. in the DWP/HMT child poverty PSA target for 2004 and in the EU social indicators adopted by the Laeken Council) is 60% of median equivalised contemporary household income.

But this is not satisfactory for several reasons. Firstly, income is an indirect measure of poverty in the sense that it relates only to resources and not to the outcome in which we are interested, i.e. living standards. Secondly, contemporary income is defined as financial inflows at one point in time. This implies that other resources available to the household, such as physical assets and savings, are ignored, in the same way as income fluctuations over a longer period of time. Finally, income data suffers from measurement error, especially for households in the bottom (and top) end of the income distribution.

Deprivation indicators are useful in addressing some of the limitations of income measures just mentioned. Firstly, they aim to measure living standards directly by looking at the 'enforced lack'[1] of a set of material goods or social activities. In this way, deprivation is closely associated to what is commonly perceived as poverty, often in a more intuitive way than simple income measures: for example, a pensioner household may receive a relatively low income but live in a comfortable self-owned house with all standard amenities.

Secondly, deprivation indicators are better placed to measure 'persistence' than contemporary income. This is due to the fact that the lack of items such as consumer durables or adequate housing conditions are more likely to be associated with lack of resources over a prolonged period of time.

This is not to deny the centrality of income in assessing living standards. First of all, it is desirable to exclude those with a low standard of living for reasons other than low income, e.g. choice. Furthermore, income measures are useful to monitor the effects of social policy since they reflect more closely Government's employment and social security policies. This suggests a combined use of both income and deprivation indicators to measure poverty.

To sum up, a measure of poverty that includes both deprivation indicators and income measures (such as the Irish 'consistent poverty' measure) is justified on definitional grounds if we consider poverty as exclusion to ordinary living patterns

[1] By 'enforced lack' we mean lack of items that the household would like to have but cannot afford. In this way, we, at least partially, take into account the role of preferences in the expenditure and ownership patterns of the households analysed.

(deprivation) arising from lack of resources (low income). If properly presented and understood, it can be more appealing and intuitive than simple income measures.

1.3 Alternative measures of deprivation

Deprivation indicators have been used in the academic literature since the late 1970s, even if different methodologies (and terminology) were applied each time. The various approaches mainly differ according to the choice of indicators, to the weights (or lack of weights) applied to each indicator and to the cut-off point chosen. In particular we can identify the following main strands of research[2].

- Townsend, 1979.
  Included items lacked by a majority.
- Mack and Lansley, 1985.
  Concentrated on the items that most people in the sample regarded as a necessity.
- Desai and Shah, 1988.
  Produced a summary index using Townsend's sub-set of items, weighted by the proportion in the sample possessing them.
- Subjective Deprivation Scale (Muffels, 1993).
  Weights are based on both the proportion possessing the item and the proportion regarding it as a necessity.

    - It builds in a compensation mechanism, i.e. it allows for the fact that the possession of an item can, to some extent, compensate for the lack of another.
    - It corrects for taste or individual variations in preferences through the calculation of weights reflecting the relative welfare contribution for each item.
    - It incorporates the idea of preference interdependence, by incorporation of the concept of reference group.

- Callan, Nolan and Whelan, 1993.
  Deprivation score is based on items in the basic dimension derived with factor analysis.
- Proportional Deprivation Index, PDI (Halleröd, 1995).
  All items are retained, but each item is weighted by the proportion regarding it as a necessity.
- Hardship Score (Marsh et al., 2001).
  All items are retained and some components of the hardship index are based on relative measures of low living standards (using prevalence weighting) whereas others are based on absolute measures.

The only household survey in the UK that provides data for a potentially large set of deprivation indicators is the *Families and Children Study*. Marsh et al. have already explored the construction of a possible deprivation (or hardship in their terminology) measure partly based on prevalence weighting. This paper concentrates on the construction of a poverty measure that combines low income and deprivation using

[2] For a more in-depth analysis of the existing literature, cfr. Nolan and Whelan (1996), which provided the basis for this section.

factor analysis (the same methodology used by the ESRI in Ireland) in order to assess its robustness. The 'consensual approach' is not feasible at present due to lack of data.

Before we start the empirical analysis it is appropriate to present the statistical technique used - factor analysis - in more detail.

1.4 Methodology: factor analysis

Two crucial and controversial issues in the 'consistent poverty' approach relate to the choice of deprivation indicators and to the definition of a 'deprived' individual based on the chosen set of indicators[3].

The material goods or social activities can be chosen using different methods. These are, for example, based on a consensual approach whereby items that the majority of people perceive as being 'necessities' are included. Alternatively, the items chosen are those owned by the majority of the population or, finally, those whose ownership more strongly discriminate, in a statistical sense, the most deprived families to the rest.

The Joseph Rowntree Foundation's *Poverty and Social Exclusion in Britain Survey* uses the consensual approach, while the Policy Studies Institute has investigated deprivation (or hardship) measures using the prevalence weighting approach. This paper will concentrate on the approach developed by the Economic and Social Research Institute (ESRI) in Ireland and based on a statistical technique called 'factor analysis'.

This technique[4] looks at the correlation between a large set of observable deprivation indicators to identify a limited set of unobservable dimensions of poverty. Deprivation is then defined as lacking a specified number of items in a specified number of dimensions or factors.

More specifically, 'deprivation' can be thought of as an unobservable dimension that can be described by a large number of observable correlated variables – i.e. the deprivation indicators, each representing the enforced lack of a commodity. Factor analysis, in this case, seeks to identify a limited number of hypothetical or underlying factors that explain the observable correlated variables. Each factor is associated to a subset of deprivation indicators that are correlated with one another but relatively independent to those in other factors. Factors that have been used to represent deprivation are basic life-style deprivation, secondary life-style deprivation and housing deprivation (Nolan and Whelan, 1996) or food deprivation, heat deprivation and so on (Muffels and Vrien, 1991).

[3] Furthermore, in the case of *child* poverty measurement, there is the additional question as to whether only indicators that refer specifically to children, as opposed to the whole family, should be used and if so which ones. This problem is not addressed directly in this paper.

[4] For a more complete illustration of this technique see for example Kim Jae-On and Mueller (1978) or Tabachnick and Fidell (1989).

The 'Irish' measure developed by the ESRI in Ireland then defines as deprived those with enforced lack of at least one item in the basic dimension[5].

In this sense deprivation indicators are seen as 'summary statistics' of overall living standards and not as key indicators in their own right of specific dimensions of poverty. However, what is important in the factor analytical approach is the degree to which indicators correlate to each other and to the unobservable underlying characteristics that we wish to measure, which is generalised deprivation. Deprivation indicators do not stand alone in their own right as measures of specific aspects of poverty, but represent a 'proxy' for overall deprivation.

Nevertheless, 'factor analysis' is not the ultimate solution to the problem as it is not a fully transparent method to group deprivation indicators into a few factors. The main shortcomings are as follows:

- It assumes that the deprivation indicators are related to one another in a specific way. More technically, it assumes that observed variables are linear combinations of some underlying causal variables (postulate of factorial causation) and that if a varying number of factors is consistent with the same covariance structure, the more parsimonious model is accepted 'on faith' (postulate of parsimony)[6]. The statistical tests that can be used simply measure the degree of correlation between the set of variables, not the appropriate structure to describe the correlation itself.

- There is no unequivocal method or solution to factor analysis. This is due to the fact that there is no set rule or test that could guide the researcher as to: what items are sufficiently correlated to the other ones so that they can be safely included in the analysis, what factor analytical method is the most appropriate (e.g. principal components, maximum likelihood etc.), how many factors should be used to explain the underlying structure and how they should be defined (the 'rotation' problem).

- Factor analysis is completely data driven and different solutions are likely to be obtained from different samples/ household surveys or from the same sample over time. First, samples that are different with respect to some criterion may also have different factors. Second, underlying factor structure may shift in time for the same units of analysis. As a consequence, when constructing a deprivation index to be monitored through time, there is no certainty that the underlying factor structure remains unchanged and that the same factors are relevant over time.

[5] For a similar approach applied to Austrian data, see Förster M. et al. (2001).

[6] What we assume is the existence of a minimum number of common factors that combine in a linear way to generate the observable variables, for example:

$$X_1 = b_1F + d_1U_1$$
$$X_2 = b_2F + d_2U_2$$

Where X_1 and X_2 are the observable variables (e.g. enforced lack of two goods), F is the common factor, b and d some coefficients and U some specific factor to each variable. The communality of an observed variable is the square of the linear weights b_1 and b_2 (called factor loadings).

In conclusion, factor analysis is not a fully objective way to select items in a ‘basic dimension’ of poverty and consistency over time is not guaranteed. Finally, the problem remains as to how the deprivation indicators that are included in the survey are chosen in the first place, and how this list should be updated over time. This problem, however, is common to all techniques measuring deprivation.

CHAPTER 2: ANALYSIS OF FACS

2.1 Factor analysis and poverty dimensions

The *Families and Children Study* (funded by the Department for Work and Pensions, Inland Revenue and other Government Departments) is the most complete source of information on non-monetary deprivation indicators in Britain. The survey started in 1999 and it was known as the Survey of Low Income Families (SOLIF)[7] as it sampled lone parent families across the income distribution, but only up to moderate-income couples with children, where moderate income was defined as 35% beyond the upper threshold of eligibility for Family Credit. From 2001 the survey sampled all families across the whole income distribution.

A cross section analysis of this survey for the years 1999 and 2001 is carried out in this paper[8]. Analysis of the 1999 survey is particularly important to establish some possible evidence for the joint HMT/DWP Public Service Agreement (PSA) target baseline year.

The *Families and Children Study* provides direct information on deprivation in 34 different items, which are listed in the table below. The questions in the questionnaire are formulated in the following way. In each case the respondent is asked whether he/she or his/her family has the item, and the possible answers are "we have this", "we would like to have this, but cannot afford it at the moment" and "we do not want/ need this at the moment". To carry out the factor analysis, these variables have been re-classified as two level variables (deprived vs. non-deprived) where deprivation is defined as wanting but not being able to afford an item. On top of these 34 items it is possible to derive a further set of five indicators (listed at the bottom of the table) that closely relate to deprivation, even if the survey does not explicitly ask whether the family cannot afford the item.

Within this set of extra five deprivation indicators, debt is *per se* a signal of material deprivation, and catches all the instances in which the family did manage to get one of the items in the main list but at the price of over-stretching its financial resources. Three further items relate to housing and one to feelings of distress about the financial situation. However, once these extra items are analysed using factor analysis, only debt and 'cannot afford to keep home warm' are retained. Intuitively, this can be explained by the fact that they directly measure enforced lack of material goods/ activities due to lack of household resources, while the other items may be linked to other factors, e.g. rules in the allocation of social housing, landlords' inactivity, and the like.

Table 1 presents a list of all deprivation indicators and the percentage of lone parent families being deprived in each individual item – the analysis is restricted to lone parents as the sampling framework for couple families changes between 1999 and 2001. The table shows a marked decrease in deprivation in all but one indicator in just two years.

[7] For an exhaustive presentation of the survey see Woodland and Collins (2001) and Woodward et al. (2003).
[8] SPSS base 10 was used to carry out the analysis.

Table 1: Deprivation indicators in FACS and % of lone parent families deprived in each individual item – 1999 and 2001

Percentage of lone parent families deprived in:	1999	2001
Cooked main meal every day	7.5	4.5
Fresh fruit on most days	17.9	10.7
Fresh vegetables on most days	20.4	10.8
Meat/fish every other day	16.7	11.8
A roast meat joint at least once a week	16.9	14.0
Cakes/biscuits on most days	19.7	13.1
Brand name food for family meals on most days	39.9	29.3
A celebration with presents, for friends and family at special occasions like birthdays	26.9	17.0
Toys and sports gear for the children	24.4	14.9
Money for trips, holidays, or outings, or going with gifts to parties	58.5	45.7
A one-week holiday away from home, not staying with relatives	73.9	62.0
Night out once a month	45.5	34.8
Able to have friends or relatives for a meal once a month	33.8	22.5
Colour TV set	1.6	0.3
Cable/satellite/digital TV	38.7	28.8
Video recorder	11.1	6.9
Music system (tape or CD)	11.5	6.4
Home computer (not Gameboy, Nintendo, Playstation)	50.2	37.6
Telephone (incl. mobile)	8.9	5.0
Refrigerator (inc. fridge freezer)	1.6	0.6
Separate deep freezer	17.9	11.8
Washing machine	4.2	2.0
Tumble drier	30.7	24.0
Dishwasher	36.2	30.4
Microwave oven	11.8	6.5
Car/ van	33.6	25.8
Central heating (incl. storage heaters)	8.5	6.4
Weatherproof coat for each adult	23.3	17.3
Weatherproof coat for each child	9.0	6.2
Two pairs of all-weather shoes for each adult	32.8	23.0
Two pairs of all-weather shoes for each child	24.6	15.3
New, not second hand clothes, when you all need them	41.0	28.6
Best outfit for the children	20.1	15.1
Good quality new 'Brand Name' clothes or shoes for children	45.1	32.1
Reports two or more problems with quality of accommodation	19.4	17.9
Lives in overcrowded accommodation	14.7	16.1
Cannot afford to keep home warm	9.9	6.8
Worries about money almost all the time and runs out of money most weeks	18.4	13.4
Has no savings and two or more debts	26.2	12.5

As a preliminary step in factor analysis, six items were removed from the analysis based on the 1999 data, because of small correlation with the other items and with the underlying factors. These were: microwave oven, overcrowding, worries about money, refrigerator, central heating and two or more problems with accommodation. By removing them, the actual percentage of total variance, explained by the model, increases[9].

There are other indicators with somewhat low correlations and communalities; however these indicators are likely to have greater longevity, i.e. to be increasingly more relevant in future years (e.g. cable TV, deep freezer etc.). Therefore, the most conservative approach of retaining the highest number of indicators has been followed. However, it is important to highlight the fact that this process depends upon the researcher's value judgements and there is no strict benchmark against which it is possible to unequivocally decide what variables should be retained and which one should be excluded[10].

Four factors are identified using factor analysis. The identification of the four factors presented above is not unique with respect to:

The methodology used (whether principal components or maximum likelihood),
The alternative choice of items excluded from the analysis,
The group analysed (lone parents, couples or both together).

However, the differences are rather marginal in the sense that they related to a few items moving from one group to another, but the main factors remain unchanged with consumer durables representing one factor, food items a second one, clothing a third one and finally a set of items that can stand for social inclusion. A possible way of looking at factors is to consider the timing of expenditure patterns whereby consumer durables represent a one-off purchase, food items daily shopping and 'social inclusion' and clothing monthly or seasonal purchases. The factors contain:

[9] In the case of 7 factors it goes up from 41% to 45%, and from 32% to 36% when looking at 4 factors only.
[10] Even the original set of questions included in the survey is not all encompassing and it is based upon some *a priori* judgement.

Table 2: List of deprivation factors

1. Social inclusion	2. Durables deprivation
Celebration with presents at special occasions Toys and sports gear for children Money for outings, trips or gifts for parties One week holiday away from home Night out once a month Have friends or relatives for a meal once a month New, not second hand clothes, when needed Brand name clothes or shoes for children Brand name food on most days Best outfit for children Cannot afford to keep home warm	Colour TV Cable/satellite/digital TV Video recorder Music system Home computer Telephone Deep freezer Washing machine Tumble drier Dishwasher Car or van No savings & two or more debts
3. Clothing	4. Food
Weatherproof coat for each adult Weatherproof coat for each child Two pairs all-weather shoes for each adult Two pairs all-weather shoes for each child	Cooked main meal every day Fresh Fruit on most days Fresh vegetables on most days Meat/fish every other day Roast joint every week Cakes/biscuits on most days

The correlation matrix appears to be based on the frequency of purchases, rather than on the degree or severity of deprivation. Therefore it is not possible to identify any single dimension as 'basic deprivation', as it is the case using Irish data, and different measures of 'multiple' deprivation are constructed using different combinations of factors and items within each factor. This approach also resonates well with the concept of poverty as a multidimensional complex phenomenon presented in the annual UK Government report on poverty and social exclusion *Opportunity for All*.

When factor analysis is carried out using 2001 data, all indicators become relevant and a three factor model becomes more appropriate, where, broadly speaking, indicators in the clothing dimension are grouped together with those in the social inclusion one. In the analysis that follows we have kept the same factor that resulted from the 1999 data to determine in a consistent way how deprivation changed over time. However, it should be noted that the analysis of the FACS survey did confirm the general rule mentioned above, i.e. that factor analysis does not necessarily produce consistent results across different samples and over time.

2.2 Material deprivation

The table below illustrates the percentages of households by family type being deprived of a progressively larger number of items within each factor. The following points are worth noting:

- Deprivation is the lowest in the food and clothing dimensions, with only 33.5% and 40.6% couple families respectively lacking one or more items. In comparison, the majority of couple families lack one or more items in the social inclusion and consumer durables dimensions (80.7% and 72.1%). The relative importance of the four dimensions is similar for lone parents. As expected, food and clothing represent the most basic dimensions of living standards.

- Although the sample contains only low-income couples, they show lower levels of material deprivation with respect to all dimensions, as opposed to lone parents.

Table 3: Percentages of households lacking *n* items within each factor - 1999

Column percentages

	Number of items lacked	**Food**	**Social Inclusion**	**Consumer durables**	**Clothing**
Couples	0	66.5	19.3	27.9	59.4
	1	14.0	12.1	23.0	16.1
	2	8.6	11.2	18.3	14.6
	3	5.1	10.7	13.4	5.5
	4	3.3	9.1	7.7	4.5
	5	1.9	9.3	5.0	---
	6	.5	7.5	2.7	---
	7	---	7.4	1.2	---
	8	---	6.7	.7	---
	9	---	4.2	.2	---
	10	---	2.0	0	---
	11	---	.3	0	---
	Total	100.0	100.0	100.0	100.0
Lone Parents	0	58.7	14.4	18.4	54.7
	1	15.0	9.3	17.6	16.1
	2	9.7	10.0	16.8	18.5
	3	7.4	10.5	14.5	6.5
	4	4.6	10.5	11.6	4.3
	5	3.2	11.6	9.4	---
	6	1.3	8.8	4.8	---
	7	---	8.2	3.4	---
	8	---	7.1	2.2	---
	9	---	5.5	.8	---
	10	---	3.3	.4	---
	11	---	.8	.1	---
	Total	100.0	100.0	100.0	100.0
Total number of items		*6*	*11*	*12*	*4*

Table 4 reports the corresponding figures for 2001. The 2001 survey includes couples across the income distribution, so the drop in the level of deprivation of couple families is to a certain degree expected. However, the improvement for lone parent families is particularly striking: in just a two year period the proportion of families who are not deprived of any items increases by approximately ten percentage points across all dimensions. In terms of the static picture, the remarks made above for 1999 remain true in 2001, with relatively fewer families lacking one or more items in the food and clothing dimensions.

Table 4: Percentages of households lacking *n* items within each factor - 2001

Column percentages

	Number of items lacked	**Food**	**Social Inclusion**	**Consumer durables**	**Clothing**
Couples	0	92.3	66.3	66.8	89.7
	1	4.2	10.5	16.7	4.9
	2	1.7	7.3	7.9	3.6
	3	1.1	5.1	3.8	1.1
	4	0.5	3.4	1.5	0.7
	5	0.3	2.4	0.8	--
	6	0.0	2.0	0.3	--
	7	--	1.3	0.2	--
	8	--	0.8	0.1	--
	9	--	0.5	0.0	--
	10	--	0.3	0.0	--
	11	--	0.0	--	--
	Total	100	100	100	100
Lone Parents	0	71.3	25.0	29.5	65.5
	1	11.6	13.5	21.6	15.2
	2	7.1	12.4	16.8	13.2
	3	4.7	9.9	12.0	4.2
	4	2.7	8.9	9.2	1.9
	5	2.0	8.4	5.6	--
	6	0.8	7.0	3.3	--
	7	--	6.3	1.3	--
	8	--	3.7	0.7	--
	9	--	2.8	0.1	--
	10	--	1.8	0.0	--
	11	--	0.4	--	--
	Total	100	100	100	100
Total number of items		*6*	*11*	*12*	*4*

Even if food and clothing represent some sort of basic dimensions, at least some items from each factor should be included in the analysis. Consumer durables together with debt should be taken into consideration as they capture some sort of long term or persistent deprivation. Food and clothing are probably more closely associated to what we would perceive as being a necessity and are the most frequently needed items; their enforced lack therefore indicates more severe deprivation. Finally the last factor includes a set of items that can be broadly

identified with social inclusion, in terms of lack of social activities or good quality items that are required to fully participate to social events without any sort of stigma.

From this perspective, deprivation indicators can be used as a *proxy* for persistent and severe poverty, as well as social exclusion - dimensions that would not be normally captured using relative low-income headcount measures on their own.

In order to interpret the meaning of the different dimensions of deprivation it is also possible to compare them with other living standards indicators. In the graph below, deprived families are assessed against a subjective indicator of financial stress, "worries about money almost all the time and runs out of money most weeks". Only lone parents are considered in 1999 since couples are not sampled across the income distribution. A greater proportion of families that are deprived in the food and clothing dimensions also perceive themselves as being in financial distress. This result reinforces the perception that the enforced lack of items in the food and clothing dimensions indicates more severe deprivation.

Figure 1: Self-assessed financial distress by deprivation status in the four dimensions – lone parents 1999

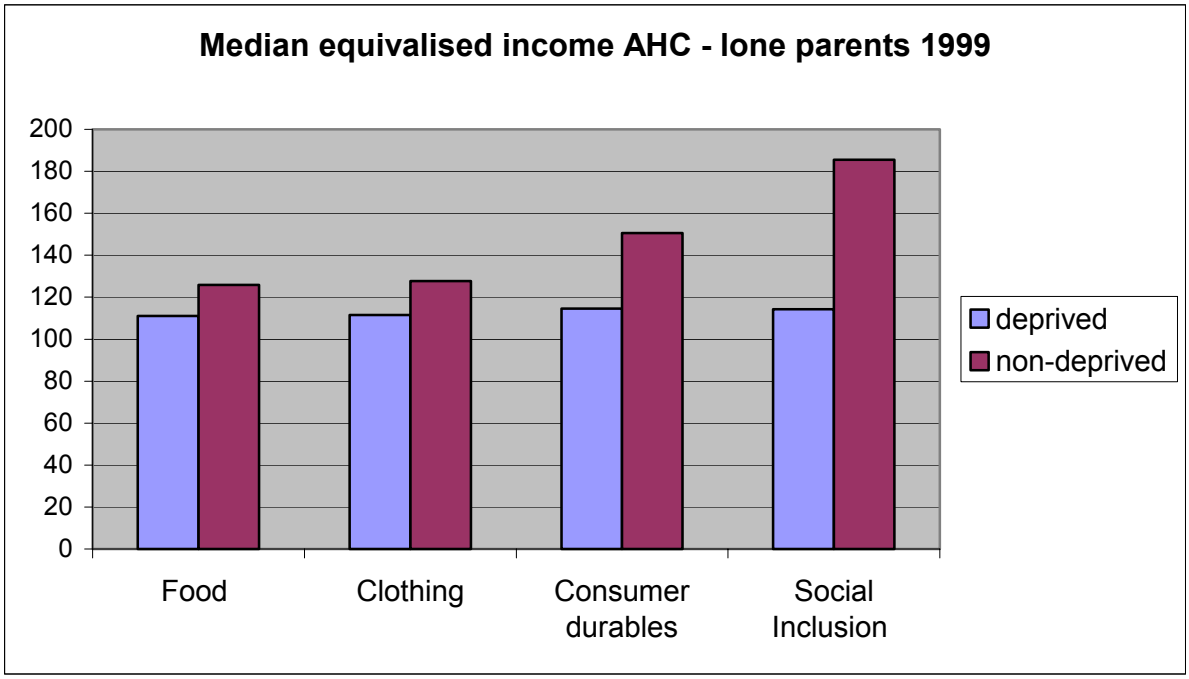
Column percentages

Results for 2001 are similar; however the incidence of financial stress is smaller ranging from 24.7% and 22.9% for lone parent families deprived in the first two dimensions to 16.9% for those deprived in the last two. It is also interesting to note that these percentages are even smaller for couples families, corresponding to 17.9% and 16.9% for those deprived in the food and clothing dimension and 7.9% and 8.6% for those deprived in the consumer durables and social inclusion dimension respectively.

Even if the incidence of subjective financial stress is higher among families that are deprived in the food or clothing dimensions, the difference between dimensions of deprivation is not so stark if we look at a more objective indicator, such as income. Fig. 2 shows median[11] equivalised[12] income after housing costs for deprived and non-deprived families in the four dimensions.

It is evident that income is broadly similar among deprived families, regardless of what dimension is considered. However, as we saw above, food and clothing are perceived as more basic dimensions: being forced to go without one food or clothing item causes, on average, greater financial distress than going without items in the other dimensions, even if income is broadly similar. Income for non-deprived families in the consumer durables and social inclusion dimensions is markedly higher than in those deprived in the food and clothing dimensions. In other words, being able to afford all consumer durables and social inclusion items indicates greater income resources.

Fig 2: Median equivalised income after housing costs by deprivation status in the four dimensions - £ per week – lone parents 1999



The main consequence of the correlation structure in the British data is that it is not possible to identify deprived families as those lacking one or more items in one basic deprivation dimension, as mentioned above. For this reason, alternative measures of multiple deprivation similar to those adopted in the

[11] The median is the income value, which divides a population, when ranked by income, into two equal sized groups. The median is used rather than the mean because it is less influenced by extreme values that are more subject to error.

[12] Equivalisation is the process by which household income is adjusted to account for variation in household size and composition – here the McClement's scale is used. For more details see the DWP *Households Below Average Income* statistical publications of the Department for Work and Pensions.

'Second European Social Report' are used in this paper. In particular, deprived households are defined as those lacking:

- 1 or more items in 2 or more and 3 or more factors
- 2 or more items in 2 or more and 3 or more factors
- 3 or more items in 2 or more and 3 or more factors

The following table shows the percentages of families that are multiply-deprived according to the above definitions by employment/income status.

Table 5: Multiple deprivation by employment/income status – 1999 data

Cell %

1999 data	Multiple deprivation in						
	2+ factors 1+ items	**3+ factors 1+ items**	**2+ factors 2+ items**	**3+ factors 2+ items**	**2+ factors 3+ items**	**3+ factors 3+ items**	**Base**
CP not working	89.5	67.1	75.0	45.7	57.1	23.3	*541*
CP ENC	72.4	44.3	49.0	21.4	31.0	8.1	*210*
CP FC	86.2	52.9	63.9	29.5	41.6	12.9	*363*
CP Moderate inc.	60.3	31.5	36.4	13.2	17.5	3.5	*750*
CP self-employed	61.1	29.6	38.9	14.6	21.3	5.6	*301*
Total	**73.2**	**44.9**	**52.2**	**25.0**	**33.3**	**10.8**	***2165***
LP not working	89.7	66.0	78.3	43.8	58.3	21.7	*1551*
LP working ENC	67.9	35.1	47.3	15.3	26.7	8.4	*131*
LP working FC	82.5	52.6	59.6	31.3	38.5	10.2	*441*
LP moderate inc.	46.9	23.1	27.2	9.5	12.9	6.1	*147*
LP high income	36.6	13.1	21.6	5.9	10.5	1.3	*153*
LP self-employed	43.7	29.6	36.6	14.1	18.3	4.2	*71*
Total	**80.2**	**55.2**	**65.7**	**34.9**	**46.4**	**16.3**	***2494***

Note: LP = lone parent; CP = couple; ENC = Eligible Non Claimant; FC = Family Credit.

Depending upon the different definitions, the proportion of all couple families suffering from multiple deprivation ranges from 10.8% to 73.2%, whereas that for lone parent families varies from 16.3% to 80.2%. Despite this wide range of values, the relative incidence of multiple-deprivation between the groups is similar across all possible definitions. In the case of couples, the group with the highest incidence of multiply deprived families is that with non-working adults, followed by those on Family Credit and then 'Eligible Non Claimants'. Within moderate income and self-employed couples the incidence of deprivation is almost the same and it is the lowest compared to all other groups.

A similar picture holds true in the case of lone parent families, the main difference being that the relative incidence of deprivation between self-employed and moderate-income families changes as we use different definitions. High-income lone parents show the lowest incidence of multiple-deprivation.

On average, the percentage of multiply deprived families is higher for lone parents regardless of what definition is used. This is mainly due to a composition effect as the largest group within lone parent families is the one that suffers from the highest incidence of multiple deprivation, i.e. not working lone parents. However, if we look at each category in turn we can see that couple and lone parent families present very similar percentages of deprived families within each category, regardless of the definition used. And in the case of moderate income and self-employed families the incidence of deprivation is lower for lone parents.

Table 6 shows similar results for 2001. The table allows isolating the effects on deprivation due to the inclusion of high-income couples in the survey. No matter what definition of multiple- deprivation is used, between 1999 and 2001 there is a marked decrease in the proportion of families suffering from deprivation for each of the sub-groups highlighted in the table.

Table 6: Multiple deprivation by income/ employment status – 2001 data

Cell %

2001 data	Multiple deprivation in						
	2+ factors 1+ items	**3+ factors 1+ items**	**2+ factors 2+ items**	**3+ factors 2+ items**	**2+ factors 3+ items**	**3+ factors 3+ items**	**Base**
CP not working	73.1	43.7	56.0	24.9	33.6	9.8	*357*
CP ENC	36.7	16.6	18.7	6.2	9.3	1.5	*482*
CP WFTC	57.5	28.8	35.0	12.1	16.7	4.6	*586*
CP Moderate inc.	22.1	7.0	10.4	2.6	2.9	0.0	*384*
CP High Income	12.8	3.5	4.6	1.2	1.2	0.2	*2761*
CP self-employed	16.1	5.2	7.3	1.5	2.9	0.5	*1010*
Total	**24.7**	**10.4**	**13.2**	**4.5**	**6.0**	**1.4**	***5580***
LP not working	83.5	54.1	63.1	31.0	41.9	13.4	*1166*
LP working ENC	44.0	22.9	25.1	11.4	14.9	5.1	*175*
LP working WFTC	57.2	26.1	33.3	11.5	17.3	3.6	*589*
LP moderate inc.	17.3	5.8	7.7	3.8	5.8	0.0	*52*
LP high income	28.4	8.8	16.7	5.9	7.8	2.0	*102*
LP self-employed	33.9	13.6	20.3	8.5	8.5	3.4	*59*
Total	**67.5**	**39.4**	**47.1**	**21.6**	**29.5**	**8.9**	***2143***

Note: LP = lone parent; CP = couple; ENC = Eligible Non Claimant; FC = Family Credit.

The following tables analyse families in 1999 according to a more complete set of characteristics and show the percentage of families suffering from multiple deprivation within each category.

Table 7: Multiple-deprivation by family characteristics - lone parents - 1999.

Cell %

LONE PARENTS	Multiple deprivation in						
	2+ factors 1+ items	3+ factors 1+ items	2+ factors 2+ items	3+ factors 2+ items	2+ factors 3+ items	3+ factors 3+ items	Base
Work status							
Working 30+ hrs	54.5	29.2	36.1	14.6	21.0	5.8	*466*
Working 16-29 hrs	74.4	45.5	53.7	25.8	32.5	9.0	*477*
Working <16 hrs	78.2	52.6	64.1	34.0	42.9	14.7	*156*
Not working	91.0	67.5	79.9	44.9	60.1	22.5	*1395*
Family type							
Divorced	78.2	53.6	62.9	32.0	41.0	14.4	*556*
Sep from marriage	79.8	52.0	65.2	33.2	41.0	15.2	*446*
Sep from cohabitation	86.0	60.8	71.7	37.4	53.8	18.0	*615*
Never partnered	86.8	60.7	72.2	40.6	56.1	19.9	*547*
Widowed	57.1	41.6	46.8	27.3	28.6	11.7	*77*
Male lone parent	56.6	39.3	43.4	24.8	29.0	8.3	*145*
Tenure							
Owner occupied	59.8	33.7	40.3	17.7	21.4	6.8	*724*
Social tenant	90.5	66.5	78.3	44.5	59.5	21.5	*1324*
Private tenant	88.0	60.5	75.0	38.8	52.5	19.9	*276*
Other	60.0	46.7	60.0	26.7	46.7	13.3	*15*
Highest qualification	87.4	67.5	77.5	45.2	58.7	24.3	*913*
None	86.3	55.3	69.4	34.7	48.9	14.4	*438*
GCSE D-G or equiv.	78.0	50.8	59.9	29.7	39.1	12.0	*774*
GCSE A-C or equiv.	60.4	33.1	42.6	18.3	27.8	8.9	*169*
GCE A level	54.4	31.6	41.1	20.9	25.3	6.3	*158*
Degree/higher degree							
Number of children							
1	75.4	48.5	60.4	30.6	42.4	14.5	*1238*
2	82.2	58.0	67.1	34.7	45.7	16.5	*828*
3+	90.6	69.6	78.6	47.7	59.5	20.2	*415*
Age youngest child							
0-4	85.8	59.7	70.6	37.8	53.2	18.5	*878*
5-10	81.3	56.4	68.0	35.9	47.7	15.6	*860*
11-15	74.5	52.1	59.7	31.3	38.9	16.0	*568*
16+	66.3	36.8	49.1	26.4	30.1	10.4	*163*

Although a different proportion of families are classified as multiply deprived according to the more or less stringent conditions applied by the different definitions, the basic profile of deprivation remains the same. The main points to note for **lone parents** are the following (see table 7).

Work status. Lone parents working 30 or more hours are the least likely to be multiply-deprived. The risk of deprivation increases monotonically as the amount of work is reduced, from 54.5% for full-time workers to 91.0% for not working parents

and from 5.8% to 22.5% (almost a four-fold increase), according to the two extreme definitions[13].

Family type. Never partnered lone parents and those separated from cohabitation present the highest risk of deprivation, which is similar for the two groups according to all definitions. Divorced and 'separated from marriage' lone parents have a lower risk of deprivation. These differences show that lone parents that previously had the support of a partner can enjoy a higher standard of living, but only if they were married - informal cohabitation does not appear to have a lasting effect on the living standards of the lone parent. Widowed lone parents have a still lower risk of deprivation, which probably picks up an age effect and the fact that they can usually rely upon the whole set of material possessions of their deceased husbands. Male lone parents have the lowest risk of deprivation, partly due to gender differentials in labour market outcomes.

Tenure. According to the different definitions, between 90.5% and 21.5% of lone parents in social accommodation are affected by multiple deprivation with only slightly lower percentages for those renting their accommodation from a private landlord (between 88.0% and 19.9%). Those owning their accommodation are the least likely to be multiply deprived.

Education is another characteristic that is highly correlated with deprivation. Lone parents with no education are between 1.6 and 3.9 times more likely to be deprived than those with a degree or higher qualification. According to the various definitions, the biggest differences are either between those with no qualification and a GCSE or between the latter group and those with an A level.

Age and number of children are also correlated with the likelihood of being multiply deprived. A higher proportion of lone parents with more and younger children are multiply deprived than those with older and fewer children. However, it should be noted that these variables are likely to pick up the effects of other factors as well, such as the age of the family head and the family type.

For **couples**, the correlation between family characteristics and multiple-deprivation is similar, with a few caveats (see table 8 below). In terms of work status, the most marked difference is between couples where none works and those with one adult in employment of at least 16 hours (with a drop of between 20% and 69% in the incidence of multiple deprivation). Multiple-deprivation decreases the higher the qualification obtained by the respondent – small increases in the incidence of deprivation at the degree level are probably due to small sample sizes. Families with two children have the lowest incidence of deprivation and the correlation between age of youngest child and deprivation is weaker. The profile of deprivation is similar in 2001.

[13] To simplify the illustration of the results in table 7, I will only refer to the two extreme definitions, i.e. enforced lack of 1 or more items in 2 or more factors and enforced lack of 3 or more items in 3 or more factors.

Table 8: Multiple deprivation by family characteristics – couples - 1999.

Cell %

COUPLES	Multiple deprivation in						
	2+factors 1+ items	3+factors 1+ items	2+factors 2+ items	3+factors 2+ items	2+factors 3+ items	3+factors 3+ items	Base
Work status							
Both work 16+ hrs	59.0	30.3	36.2	15.0	18.1	4.8	*459*
One works 16+ hrs	71.2	40.4	48.0	19.4	28.2	7.3	*1165*
None works 16+hrs	89.5	67.1	75.0	45.7	57.1	23.3	*541*
Tenure							
Owner occupied	62.8	33.7	39.0	15.6	21.3	5.3	*1187*
Social tenant	88.1	60.9	70.6	38.5	49.9	18.9	*732*
Private tenant	80.7	55.6	65.2	30.4	43.7	14.1	*135*
Highest qualification							
None	82.5	55.9	63.8	34.5	43.9	17.5	*759*
GCSE D-G or equiv.	73.9	41.2	51.6	22.5	31.9	9.1	*417*
GCSE A-C or equiv.	68.2	40.4	44.9	20.5	26.7	7.1	*708*
GCE A level	57.3	28.2	36.6	13.0	18.3	3.1	*131*
Degree/higher degree	53.5	29.3	37.4	12.1	23.2	3.0	*99*
Number of children							
1	73.6	43.7	53.1	21.3	31.1	9.5	*639*
2	69.2	38.9	46.0	21.7	28.6	7.6	*839*
3+	77.8	53.6	59.3	32.7	41.0	15.8	*685*
Age youngest child							
0-4	75.7	47.8	54.4	25.3	33.7	10.7	*1016*
5-10	74.1	43.8	51.9	26.2	35.2	11.4	*634*
11-15	67.3	42.3	47.4	24.7	30.6	11.7	*392*
16+	67.3	32.7	51.4	14.0	27.1	3.7	*107*

2.3 Income and deprivation

A key issue that this paper seeks to examine is the interaction between low-income and deprivation. The following table compares median equivalised weekly income for multiply deprived and not multiply deprived families. The various definitions of multiple deprivation have been ordered with respect to the drops in income to which they are associated. In the analysis that follows self-employed individuals have been excluded due to the poor quality of income data for this group. Also, we will mainly concentrate on lone parents, as they are sampled across the whole income distribution in the 1999 data.

Table 9: Median equivalised weekly income by deprivation status

Median equivalised income- £ per week

1999		Equivalent Income AHC	Equivalent Income BHC
1. Deprivation in 2+ factors 1+ items			
Couple[1]	Not multiply deprived	£159	£189
	Multiply deprived	£124	£158
Lone Parent	Not multiply deprived	£169	£195
	Multiply deprived	£114	£155
2. Deprivation in 2+ factors 2+ items			
Couple[1]	Not multiply deprived	£149	£182
	Multiply deprived	£120	£153
Lone Parent	Not multiply deprived	£144	£181
	Multiply deprived	£112	£153
3. Deprivation in 3+ factors 1+ items			
Couple[1]	Not multiply deprived	£145	£177
	Multiply deprived	£120	£153
Lone Parent	Not multiply deprived	£133	£172
	Multiply deprived	£112	£152
4. Deprivation in 2+ factors 3+ items			
Couple[1]	Not multiply deprived	£143	£176
	Multiply deprived	£114	£146
Lone Parent	Not multiply deprived	£129	£168
	Multiply deprived	£112	£152
5. Deprivation in 3+ factors 2+ items			
Couple[1]	Not multiply deprived	£139	£174
	Multiply deprived	£113	£146
Lone Parent	Not multiply deprived	£125	£165
	Multiply deprived	£110	£150
6. Deprivation in 3+ factors 3+ items			
Couple[1]	Not multiply deprived	£136	£171
	Multiply deprived	£105	£142
Lone Parent	Not multiply deprived	£120	£161
	Multiply deprived	£108	£148
Total			
Couple[1]		£131	£165
Lone parent		£117	£159

Note: 1) couple families are only sampled up to moderate-income ones and median income values do not refer to the whole population but only to the truncated sample in the survey.

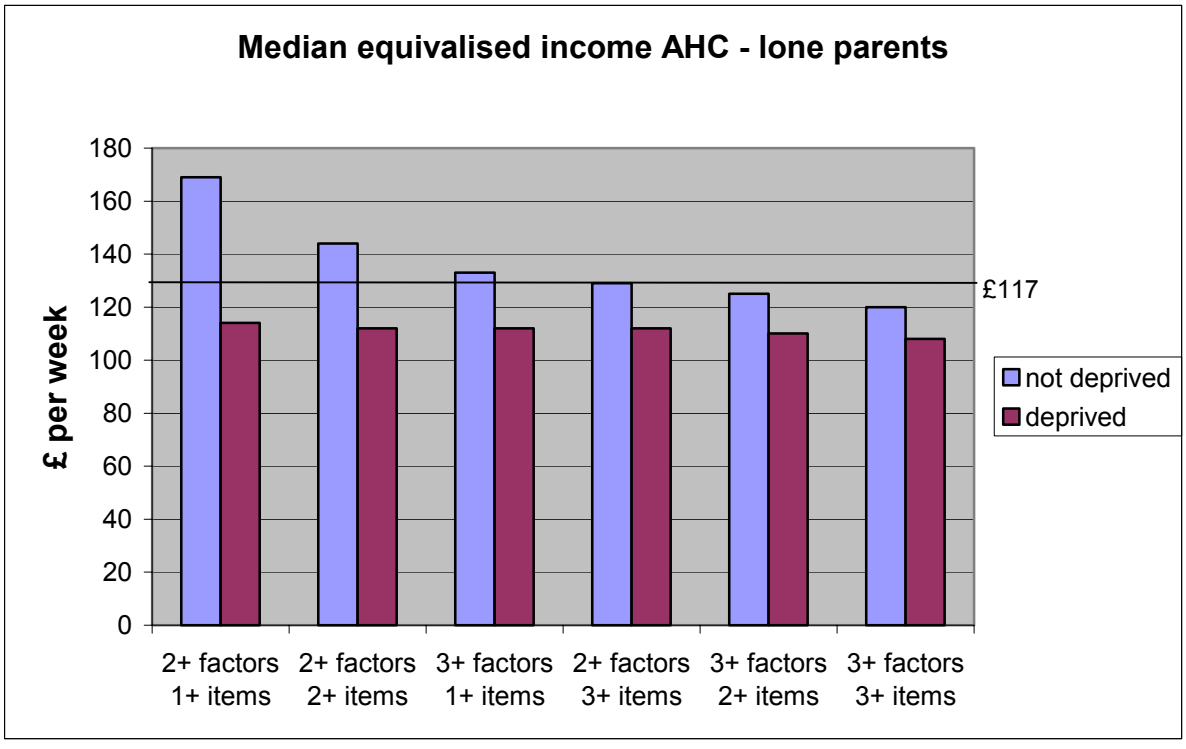
Let's start by considering the median income of families lacking one or more items in 2 or more dimensions, which is equal to £114 for multiply deprived lone parent families and £169 for not deprived ones, on an after housing costs (AHC) measure. This is the broadest definition of multiple-deprivation under consideration. We can then make this definition more severe by adding either one item per factor (case 2) or one factor (case 3). In other words, we can define as multiply deprived only those families being deprived either of a greater number of items per dimension or in one further dimension. In this way we identify a smaller set of families with a greater level of deprivation. We can see that the median income of the multiply deprived families is essentially the same under the two stricter definitions (i.e. £112). However, the drop in income is markedly different, under the two alternative definitions, for the

reference groups i.e. the non-deprived (£144 vs. £133). The reason why median income drops is because we are now considering as non-deprived a wider set of families that may lack a broader set of items.

Similar considerations can be carried out for the other definitional changes. If we compare the first definition with the last one we see that AHC income of non-deprived families drops on average by 14.5% for couples and 29.0% for lone parents. On the other hand, median income of multiply deprived families drops by 15.3% in the case of couples and only 5.3% in the case of lone parents. In other words, the median income of multiply deprived lone parent families is broadly invariant to definitional changes.

Finally, we can see from the table that all the alternative definitions of multiple-deprivation clearly separate - on average - those families below and above median income. The last two rows of the table report median income for all couple families and all lone parent families. If we compare these figures with those reported above them, we can easily see that no matter what definition we choose, all multiply deprived families have below-average income, and the opposite is true for non-deprived families. The points made in the last two paragraphs are illustrated in the graph below.

Figure 3: Median weekly equivalised income by deprivation status - lone parents - 1999.



The following table presents income inequality statistics split by deprivation status using the two extreme definitions, on an AHC measure. It is evident that the income distribution of the deprived families is less dispersed than for the non-deprived ones. The 90/10 ratio for non-deprived families is between 9 and 50. However, mean

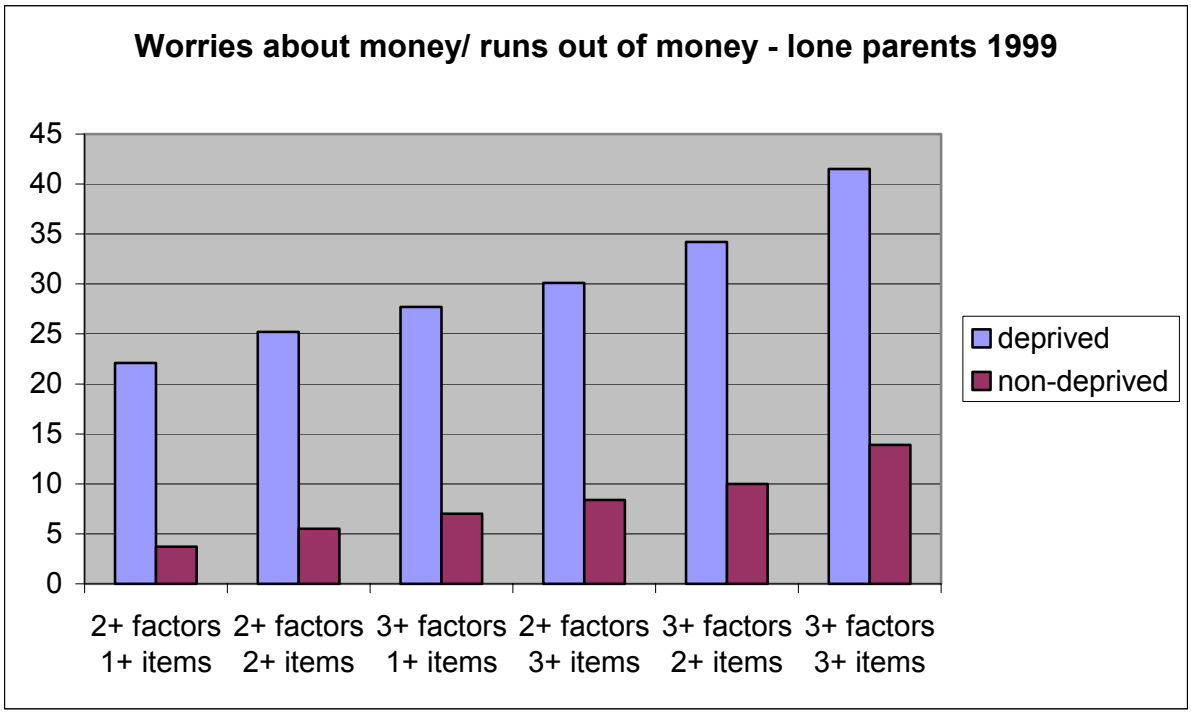
income of deprived families in the top decile is only between 4 and 6 times greater than that at the bottom of the distribution.

Table 10: measures of dispersion in the income distribution AHC of lone parent families - 1999

		Min £	Max £	Interquartile range - £	Std. deviation
2+ factors 1+ items	Not deprived	-209	882	147	137
	Deprived	-127	537	54	63
3+ factors 3+ items	Not deprived	-209	882	78	90
	Deprived	-31	517	41	56

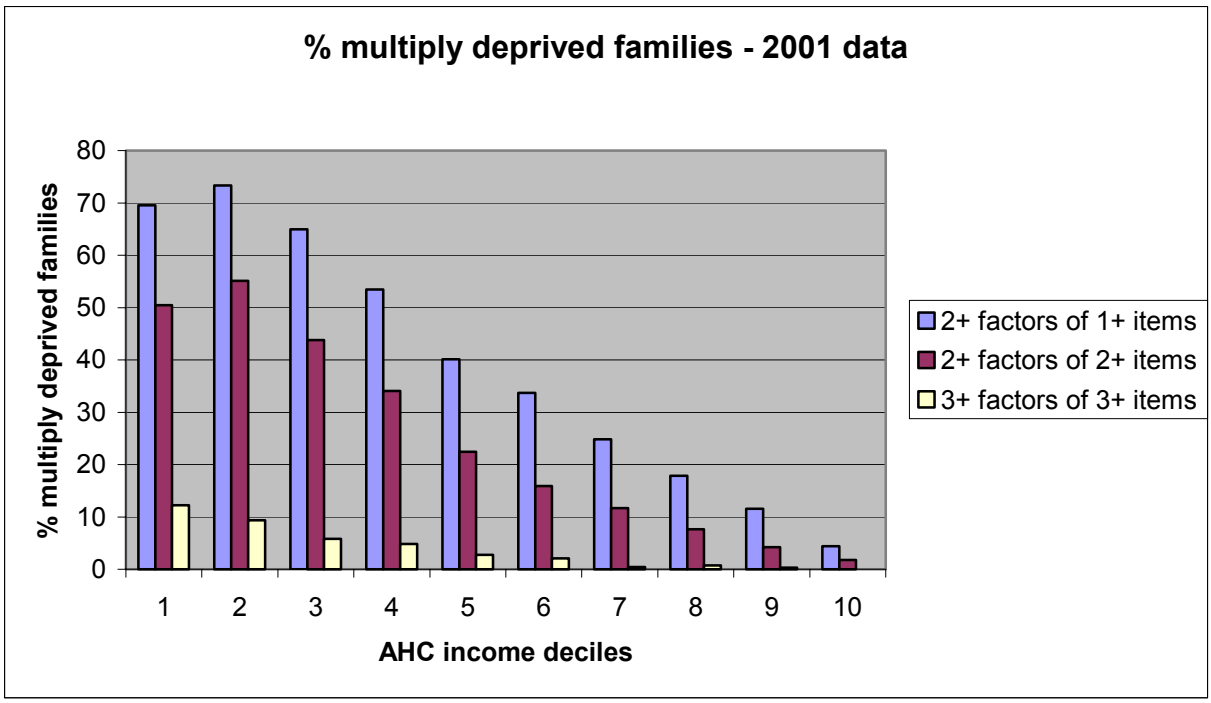
Multiple-deprivation is also correlated with the indicator of self-assessed financial stress "worries about money almost all the time and runs out of money most weeks". Fig 4 shows that the incidence of financial stress is always far greater for multiply-deprived families and that this increases when using more stringent definitions.

Fig 4: Financial stress and multiple deprivation in lone parent families – 1999 - %



Although income and multiple deprivation appear to be broadly correlated, if we look at a more disaggregated picture some degree of mismatch between the two dimensions becomes apparent. If we consider the income distribution by deciles, we see that at the bottom of the distribution, the incidence of deprivation initially increases and then decreases, at least for most of the definition of deprivation used in this paper. Figure 5 shows this using 2001 data, which is representative of all families across the whole income distribution.

Fig 5: Percentage of multiply deprived families in each income decile AHC - 2001



There are several possible explanations for this non-linear relationship between income and deprivation at the bottom of the income distribution.

Measurement error - although this has been reduced by the exclusion of self-employed workers.

Differences in individual expectations - enforced lack is defined in terms of wants/needs and it is conceivable that people on very low income may have reduced expectations as to what things and activities they want or need.

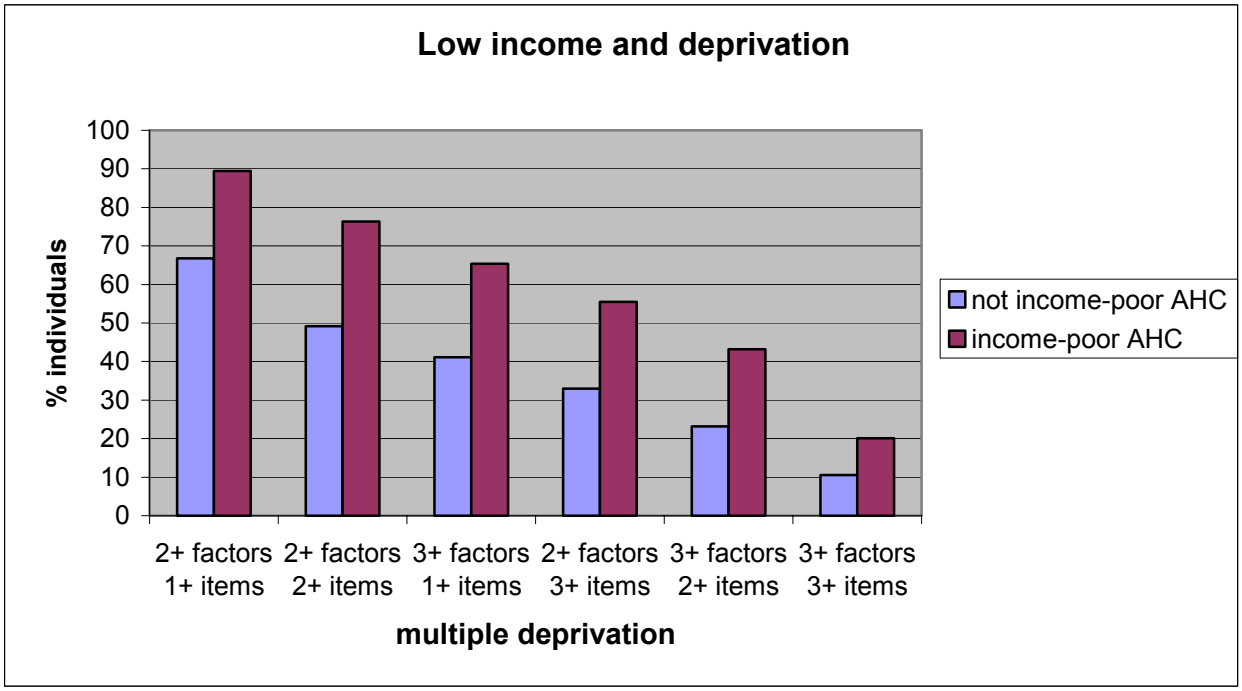
Conceptual differences between income and deprivation. As highlighted in the first chapter, income is a measure of financial flows, while deprivation is a more direct measure of living standards in terms of stocks and expenditure. Therefore we would expect them to diverge, at least to a certain extent, especially at the bottom of the income distribution: if individuals, say, can afford not to work and therefore receive a very low income it may be precisely because they can already rely on accumulated assets. And to a certain extent the fact that low-income and

deprivation do not coincide is one of the rationales for using a definition of poverty that represents the intersection of these two dimensions.

A crucial issue is how the low-income headcount compare with the proportion of individuals who are multiply-deprived. The low-income thresholds used correspond to 60% of contemporary median income and are derived from *Households below Average Income* (HBAI) datasets[14]. HBAI values are used, as FACS is not representative of the whole population across the entire income distribution.

Figure 6 shows the percentages of multiply deprived individuals according to their income status. Regardless of the definition used, the risk of deprivation is consistently higher for low-income individuals. However, if we use a very stringent definition of deprivation we see that only 20% of low-income individuals are deprived, and on the other hand more than 65% of not-income poor individuals suffer from deprivation, according to the broadest definition used.

Figure 6: Risk of multiple deprivation by income status – 1999 - % of individuals in lone parent families.



[14] For 1999, these figures correspond to £144 AHC and £164 BHC, which correspond to 60% median income at July 1999 prices, the mid-point of the fieldwork for the FACS survey. The corresponding value for 2001 are £156 and £176. It is important to note that the percentage of individuals below the low-income thresholds is far greater in the 1999 FACS survey than in the HBAI (34% in HBAI against 58.2% in FACS BHC, and 58% against 71.4% AHC, for lone parent families). This may be due to several reasons. HBAI reports household income while FACS includes family income only, which would be lower than household income if lone parents live with other adults. Another possible reason is that the 1999 FACS data is not grossed to take into account non-respondents. In any case, the main interest here is not on absolute figures, but in the relative importance of low-income and deprivation.

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Table 11 explores in more detail the correspondence between low income and multiple-deprivation. If the two dimensions of poverty were in every sense identical, we would expect to have empty cells in the positive diagonals, 'income-poor/ not deprived', 'not income-poor/ deprived'. However, it is clear that there is a sizeable proportion of individuals who experience multiple-deprivation but not low income, and vice versa.

As a rough estimate of this degree of mismatch, it is useful to look at the third definition of multiple-deprivation (2+ factors, 2+ items), since this is the definition that identifies the most similar proportions of individual who are deprived and in low-income (68.5% vs. 71.4). Under this definition, 31% of individuals present inconsistent characteristics: although this is quite a large number, it is in any case smaller than what we would expect if the underlying generating mechanism were completely random. It is also worth noting that the percentage of those below 60% of median income also found to be multiply-deprived is the same as the one derived from wave 4 of the European Community Household Panel[15].

Consistent poverty, as defined by the ESRI in Dublin, identifies those individuals that experience both low-income and deprivation. Clearly, the consistent poverty headcount differs between the various definitions of multiple-deprivation and in the table are highlighted in italic. Figures for consistent poverty AHC vary between 14.4% and 63.8% and by definition they are always less than the low-income headcount.

By using the central estimate used above (corresponding to deprivation in 2+ factors and 2+ items), using a consistent poverty measure would reduce the percentage of 'poor' individuals by approximately 17 percentage points as opposed to a low-income measure on its own. However, it should be stressed that this choice of a middle estimate is rather arbitrary.

[15] See Second European Social Report.

Table 11: Individuals in income poverty AHC, multiple deprivation and consistent poverty - lone parent families – 1999 data.

Cell %

	Deprivation in 2+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	9.5	19.1	28.6
Income-poor AHC	7.5	*63.8*	71.4
Total	17.0	83.0	100.0
	Deprivation in 3+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	16.8	11.8	28.6
Income-poor AHC	24.7	*46.7*	71.4
Total	41.6	58.4	100.0
	Deprivation in 2+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	14.6	14.1	28.6
Income-poor AHC	16.9	*54.5*	71.4
Total	31.5	68.5	100.0
	Deprivation in 3+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	22.0	6.6	28.6
Income-poor AHC	40.5	*30.8*	71.4
Total	62.5	37.5	100.0
	Deprivation in 2+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	19.2	9.4	28.6
Income-poor AHC	31.8	*39.6*	71.4
Total	50.9	49.1	100.0
	Deprivation in 3+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	25.6	3.0	28.6
Income-poor AHC	57.0	*14.4*	71.4
Total	82.6	17.4	100.0

Table 12 reproduces the same results as in table 8, but on a BHC measure of income.

Table 12: Individuals in income poverty BHC, multiple deprivation and consistent poverty - lone parent families - 1999.

Cell %

	Deprivation in 2+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	10.1	31.7	41.8
Income-poor AHC	7.0	*51.2*	58.2
Total	17.0	83.0	100.0
	Deprivation in 3+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	20.7	21.1	41.8
Income-poor AHC	20.9	*37.3*	58.2
Total	41.6	58.4	100.0
	Deprivation in 2+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	16.9	24.9	41.8
Income-poor AHC	14.6	*43.7*	58.2
Total	31.5	68.5	100.0
	Deprivation in 3+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	29.1	12.7	41.8
Income-poor AHC	33.5	*24.7*	58.2
Total	62.5	37.5	100.0
	Deprivation in 2+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	24.1	17.7	41.8
Income-poor AHC	26.8	*31.4*	58.2
Total	50.9	49.1	100.0
	Deprivation in 3+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	35.8	6.0	41.8
Income-poor AHC	46.8	*11.4*	58.2
Total	82.6	17.4	100.0

Table 13 reports the same results for 2001. Data for 1999 and 2001 are not strictly comparable because of the problems with the 1999 income data highlighted above. However, it should be noted that the already mentioned drastic decrease in multiple-deprivation in just two years determines a corresponding drastic decrease in consistent poverty, which identifies individuals that are both income-poor and multiply-deprived. This raises some issues as to the public credibility of this type of measure.

In 2001 there is again a considerable degree of mismatch between low-income and multiple deprivation. Deprivation in 2+ items in 2+ factors can be taken once more as a benchmark measure as it identifies the same proportion of individuals in low income and in multiple-deprivation (50.6% vs. 48.7%). According to this definition 18.9% of individuals are income-poor but not multiply-deprived.

Table 13: Individuals in income poverty AHC, multiple deprivation and consistent poverty - lone parent families – 2001 data.

Cell %

2001	Deprivation in 2+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	22.1	27.3	49.4
Income-poor AHC	8.2	*42.4*	50.6
Total	30.3	69.7	100.0
	Deprivation in 3+ factors of 1+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	35.4	14.0	49.4
Income-poor AHC	23.6	*26.9*	50.6
Total	59.1	40.9	100.0
	Deprivation in 2+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	32.4	17.0	49.4
Income-poor AHC	18.9	***31.7***	*50.6*
Total	51.3	*48.7*	100.0
	Deprivation in 3+ factors of 2+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	42.4	7.0	49.4
Income-poor AHC	34.8	*15.8*	50.6
Total	77.2	22.8	100.0
	Deprivation in 2+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	39.8	9.6	49.4
Income-poor AHC	29.5	*21.1*	50.6
Total	69.3	30.7	100.0
	Deprivation in 3+ factors of 3+ items		
	Not deprived	Multiply deprived	Total
Not income-poor AHC	46.9	2.5	49.4
Income-poor AHC	43.4	*7.2*	50.6
Total	90.3	9.7	100.0

CHAPTER 3 - CONCLUSIONS

The main research focus for this paper was to investigate the construction of a consistent poverty measure as proposed in the UK Government consultation document on child poverty measurement. In particular, a specific statistical technique, factor analysis, was used to assess whether this methodology could provide an answer to the main problems of adopting this type of measure as a Government target.

The two main issues relating to deprivation measures and mentioned in the consultation document concern the choice of the basket of indicators and how to update it. This paper has confirmed the existence of these problems and highlighted the fact that factor analysis – or any method – cannot provide an easy answer to them.

Further evidence comes from the research carried out elsewhere, in particular by the ESRI, which designed this measure in the first place. For this purpose please note the following two points.

The ESRI originally derived the consistent poverty measure that was later adopted by the Irish Government using the Irish survey of *Poverty, Income Distribution and Usage of State Services*. Using factor analysis they identified three dimensions of deprivation and classified one of that consisting of eight items as basic deprivation (Nolan 1996). They have recently carried out the same type of analysis using the ECHP (in EUROSTAT, *Income, Poverty and Social Exclusion: 2nd report*) and identified five dimensions of deprivation. But more importantly, items that in one survey were included in the basic dimension were then included in other dimensions and vice versa. In other words, as stated before, factor analysis is data driven and different surveys at different points in time could lead to the choice of different indicators. The analysis in both studies was rigorous and the dimensions of deprivation carefully selected using objective criteria and cross-referencing with subjective assessment of poverty. However, the fact that different dimensions can be obtained using different surveys raises an issue of credibility with the public, as Governments could be seen as using the most convenient datasets.

In Layte et al. (2000), data for 1987 and 1997 is compared. If the basket of indicators is kept constant, consistent poverty drops from 16% in 1987 to 9.9% in 1997. This implies that the National Anti-Poverty target set in 1997 by the Irish Government for 2007 had in fact already been achieved by 1997 in terms of one of its key measures! Again, this clearly raises some issues with public credibility. If the basket of indicators were updated in 1997 to include those extra items that by 1997 the majority of people perceived to be a necessity, the consistent poverty measure in 1997 would in fact be 7.6% points higher, showing in fact a slight increase. The researchers, in this specific case, argue against updating the basket of indicators using confirmatory factor analysis and subjective measures as a benchmark for validating their results. However, this methodology might not

be completely transparent and lead to a type of measure that could be considered by the public as too absolute in nature.

In the UK, preliminary conclusions from the child poverty measurement consultation were published in May 2003. The document, in view of the consultation responses and the results from the present study, rules out the option of using a solely consistent poverty measure. "This is because of the lack of a settled approach to selecting items for a deprivation indicator and the need for periodic revisions of those items, which would introduce discontinuity into the time series"[16].

This paper argues, as many consultation responses did, that deprivation measures are a useful way to measure living standards in a more direct way than simply low-income measures. Furthermore, deprivation measures can shed new light on the characteristics of deprived families, in particular by looking at those families that are deprived but not on low-income and vice-versa. The analysis of the mismatch between deprivation and low-income, which emerged from this study, could better identify the driver of poverty and inform on appropriate policies. Further investigation is also needed to explain why deprivation increases at the bottom of the income distribution before it starts decreasing.

For these reasons, further methodological work is being undertaken in a number of key areas. Specifically on material deprivation, analysis is being carried out to identify a suitable sub-set of material deprivation items that could be added to the *Family Resources Survey*. As part of this analysis, researchers are also looking at possible ways of updating these over time. In addition, analysis to explore the degree of correlation between persistent low income and material deprivation is also underway.

However, if deprivation measures represent a useful analytical tool, they are not appropriate as the sole target to assess progress towards the eradication of child poverty. In particular, if we look at the characteristics of a good indicator set out in the consultation document, deprivation measures, and consequently consistent poverty ones, fail to meet important requirements[17].

In particular, they don't have longevity, as there is no agreed objective way of updating the basket of indicators to reflect changes in the public perception of poverty. For this reason they are not capable of generating a long-term robust time series. They are not fully open and robust to statistical scrutiny from experts as even statistical techniques such as factor analysis imply a degree of subjective judgement and are completely data driven – and what data to collect in the first place is an open problem. Finally, they might not be credible with the public, because, unless the basket of indicators is appropriately updated – and as mentioned it is not clear how – even over only a few years this approach could give an absolute measure showing unrealistically large drops in poverty rates.

[16] DWP, 2003, Measuring child poverty consultation: preliminary conclusions, p. 44.
[17] The desired qualities of a long-term measure of child poverty are presented on page 19 of the consultation document.

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In April 2002 the UK Government launched Measuring Child Poverty: a consultation document . One of the approaches to monitoring progress in the long term proposed in the consultation document was based on the definition of 'consistent poverty' as a combination of low-income and lifestyle deprivation. This paper explores this type of measure using British data, specifically the Families and Children Survey. This study highlights the benefits of complementing simple relative low-income measures with more direct assessments of living standards. However, even the use of statistical techniques such as factor analysis does not provide an easy answer as to how to construct such a measure. Setting a long-term target based on 'consistent poverty' alone would not satisfy some key characteristics of a good indicator such as longevity, robustness and credibility with the public.

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