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Universal versus Targeted Benefits: The
distributional effects of free school meals

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I. Introduction

British government policy over the past thirty years has seen a movement away from universal provision of welfare towards the targeting of welfare¹. Budget constraint considerations have provided the driver for this movement while efficiency considerations have provided the rationale for this policy shift. The advent of devolution in Scotland, and to a lesser degree Wales, has however created new policy forums in which the shift towards targeted benefits has been questioned and even reversed in a number of important fields. Scotland has seen a limited movement back towards universal entitlement with the abolition of up-front tuition fees for higher education and the introduction of free personal care to the elderly. Similarly, proposals for the universal provision of free school meals currently put forward to the Scottish Parliament represents a further attempt to reintroduce the principle of universality into the provision of welfare. While many, particularly within Scotland, may be highly critical of the extent to which the reversal of targeting in favour of universality has occurred and the extent to which these shifts represent a movement towards income redistribution within the population, they nevertheless reflect a real and significant departure from current government policy on the importance of targeted welfare provision.

Welfare provision in relation to children is a further key area in which this policy debate has emerged. The distribution of household resources within families has been the focus of attention highlighted by the continued link between household poverty and childhood and more recent concerns over the extent of diet-related ill health, particularly among children². Thus the debate over the importance of universal versus targeted welfare provision has been intensified when specifically related to children, whose only access to welfare is through the intermediary of a parent or carer claimant. Local authority initiatives aimed at providing welfare direct to the recipient via providing universal provision for children, including school-based free breakfast clubs and pilot projects for free school meals is thus further evidence of this shifting balance between universal and targeted benefit provision.

This paper looks at the issue of universality and targeting in relation to household income and size by examining the impact of the proposal for the introduction of universal free school meals to all children in full-time state education. The Free School Meals Bill submitted to the Scottish parliament in 2002 aimed to introduce a universal provision to all children of school age in state education. Using the British Household Panel Survey (BHPS) the paper provides evidence on the impact on household income for differing income groups arising from a

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¹ Universal is defined here as welfare which is provided independently of either employment or claimant status whereas targeted is defined as welfare requiring the claimant to satisfy particular, usually income based, criteria for receipt of the benefit.

² See Scottish Executive *Hungry for Success* initiative as an example.

universal benefit such as free school meals. While we choose free school meals as our example the impact of most universally applied monetary benefits, or indeed non-monetary benefits, could be considered using the methodological approach and dataset adopted in this paper. Thus the paper compares the existing system of welfare to a number of alternative systems that have been proposed, using changes in Gini coefficients to demonstrate the impact of changing the system of welfare provision used. In addition to both no provision and universal provision systems, the analysis considers a more focused targeting system (under the alternative assumptions of fixed and variable budgets). The paper therefore provides a general case of a universal benefit aimed at child welfare, either mediated through household income or via the provision of a welfare provision direct to children, indeed identical to child benefit itself.

The paper proceeds as follows. In Section II we outline the context in which the provision of universal welfare emerged and examines the policy debate which underlay the shift away from universality towards targeting. In so doing the paper demonstrates that welfare policy has always been limited by the conflict created between the desire to reduce poverty and the desire to limit the costs of the Welfare State. In Section III we then discuss the nature of the data used in the study and the methodology employed. This is then followed in Section IV by the results for the increase in benefit measured as the percentage increase of equivalent household income and the changes to gini coefficients derived from alternative methods of welfare provision. Finally, in Section V we conclude by exploring the importance of our findings for the current debate on universality versus targeting in welfare provision.

II. The Rise and Fall of Universality

The late-1970s saw a significant change in the patterns of child poverty. Child poverty had declined through the period from 1945 until the 1960s but rose rapidly from the late-1970s. By 1968 child poverty rates had fallen to around 1 in 10, approximately 1.4 million children, while by 1995-6 child poverty had risen to 1 in 3, approximately 4.3 million children (Greg, Harkness & Machin, 1999, p.163). This re-emergence of high levels of child poverty was not simply a reflection of changes in relative poverty levels but reflected the stagnation of absolute household income for households with children against rises in average living standards since the late-1980s. Thus child poverty resulted from a widening disparity between household incomes for those with and those without children.

These changes were remarkable not simply for the rapidity with which they emerged but also because of the long term trends which they reversed. Universality was a central theme in the introduction of the welfare reforms of the 1940s, beginning with the 1944 Education Act that introduced compulsory free secondary education for all children under 15 years of age. Similarly, the introduction of cash benefits, paid to all mothers, for families with two or more children were introduced with the 1946 Family Allowances Act and extended in 1975 under the Child Benefit system to mothers with one child (Barr & Coulter, 1990, p.280). While these acts focused specifically on children they were combined with the Industrial Injuries Act, the National Insurance Act and the National Health Service Act to become what is known collectively in Britain as the Welfare State.

The creation of the Welfare State needs to be understood in the terms in which it was introduced. The welfare measures introduced were not motivated by desires for wealth redistribution but at providing minimum standards, on a national basis, in order to deal with effects of the five 'giants' that had been the centre of debate in the interwar depression;

namely want, disease, ignorance, squalor and idleness (Fraser, 1989, 207-39). While William Beveridge's 1942 report argued for the need of minimum standards and the adoption of universality as a means of their creation the Benthamite utilitarian distinction between a deserving and non-deserving poor continued. Thus central to the provision of welfare was the ideological commitment to an insurance-based system of welfare entitlement and the self-financing of pension provision. As a result the targeting of welfare through means testing, though of reduced importance during the 1940s and 1950s, was never completely abolished.

In addition to dealing with the effects of the five giants there was an early recognition of the legacy of ill-health in Britain after 1945 and the budgetary constraints addressing this legacy imposed on government. While much of the apparent rise in welfare costs simply reflected the transfer of welfare provision from local to national government, and the limitations of government forecasting, there was nonetheless a real growth in total welfare expenditure (Crowther, 1988, Table 1). For example, for the National Health Service's first full year of operation costs had been projected to be £259m while in reality they came in at £358m, and by 1952 estimates and final costs were just below £400m (Stirling-Ross, 1952, appendix). At the same time the compulsory contributory insurance scheme, introduced to contribute towards the costs of the National Health Service, barely raised 13% of the costs at its inception and declined from then on. Thus means testing was incrementally reintroduced very early on due to budgetary constraints with prescriptions and dental treatment becoming subject to charges following the passage of the 1952 National Health Service Act (Stirling-Ross, 1952, 383).

A growing awareness of the cost of welfare saw further movements back towards increased means testing during the 1950s and 1960s as the government acted to limit the extent of provision. This was reinforced by a government acceptance that the costs of old age pensions would be funded by pay-as-you-go taxation, in the form of National Insurance rather than through a self-financed insurance-based system. Nevertheless, the commitment to universality of welfare remained broadly intact with just the level at which minimum standards were set being moved. The impact of these changes were such that by 1973, although the lowest decile income group had an income level before benefits of only 6.7% of the next lowest decile, after benefits were included their income rose to 86.7% of the next lowest decile's income (Glennerster, p.25).

While changes to the welfare system in the mid-1970s initially sought to further the impact of universal provision it was the rising cost of mass unemployment and its welfare provision cost, with welfare expenditure rising from 50.5% of government expenditure in 1973-4 to 55.7% of expenditure in 1977-8, that saw a rapid reversal of the universalistic approach (Le Grand, 1990, p.339). In 1978 the Supplementary Benefits Review explicitly linked the continued provision of welfare to the extension of means testing. Debate on welfare provision was now increasingly linked to its role in changing preferences and its reputed failure in creating a 'dependency culture'. The 1980s thus saw the return of nineteenth century language distinguishing the deserving and undeserving poor (Lowe, 1993, 314). In response government policy towards welfare provision now focused upon seeking mechanisms for intensifying market signals and encouraging incentives for recipients to enter the labour market. This change in ideological approach to welfare resulted in a number of important changes in welfare provision in the 1980s. Most importantly, the income-related aspect of many benefits, including unemployment and invalidity benefits was removed, pensions were now calculated on lifetime earnings, rather than the best twenty years, while their increases were tied to retail price inflation rather than earnings. Similarly, Family Credit, introduced in

1988, became a mechanism for topping up household income for those in low paid work (Webb, 1995, 19).

Despite these restrictions Lowe (1993, 319) and Le-Grand (1990, 350) point to the welfare state's continued importance, and even growth in the period, as evidence of its resilience and the social stability achieved in Britain, particularly during the industrial turmoil of the 1980s, as evidence of its success in its role as a safety net. However, more recent work has highlighted its inability to deal with the demographic changes taking place since the mid-1970s.

The re-emergence of high levels of child poverty in Britain during the 1980s derived from the rapid rise in income inequality, which in Britain rose faster than an other OECD country (Machin, 1996). Demographic change, with the growth of in diversity of employment status and household composition played an important part in these changes. Households were, unlike the period when the welfare state emerged, no longer characterised by relatively homogenous 'nuclear' households and were less and less likely to correspond to the pattern of a household with a single wage earner. Instead the number of single earners per family fell from 68% of households in 1961-63 to just 32% of households by 1991-93. Over the same period the numbers with two wage earners rose from 28% to 55% while, most significantly for welfare, the numbers with no wage earner rose from just 4% to 13% (Webb, 1995, figure 2).

Just as the employment status of those in households changed dramatically so to did the composition of households themselves. Between 1971 and 1991 the proportion of single parent families rose from 8% to 19% of families with children and at the other end of the age range, those of pensionable age rose from 11.4% of the population in 1941 to 16.5% by 1991 (Hills, 1993, 31-33).³

It is these demographic changes that have had a significant effect on poverty rates. Most importantly it is the incidence of workless households and the growth of part-time work for women which has had the greatest impact on the rise in child poverty rates. Over 53% of children living in poor households have no adult working, while less than 12% of poor children live in households with a parent working full time whose earnings are above the bottom quartile (Gregg, Harkness & Machin, 1990).

It is here that much recent work has highlighted the limitations of welfare policy. Gregg, Harkness & Machin (1999) highlight both the extent of household poverty where households include children and the inequality of expenditure on children for households in poverty. Thus Greg, Harkness & Machin maintain that:

'it is nevertheless clear that rising trends in child poverty measured on an income basis are also reflected in a wider dispersion of expenditures. As a consequence of a more pronounced incidence of low incomes, a large, and increasing, proportion of children are also losing out in terms of what is spent on them.' (Gregg, Harkness & Machin, 1999, 186)

Elsewhere, Brewer, Clark & Goodman (2003) conclude, pessimistically and critically, on government attempts to reduce the levels of child poverty through welfare provision. In

³ Pensionable age refers to women over 60 and men over 65 years of age.

examining the effect of welfare policy under the Labour government's first term of office they conclude that;

'child poverty has declined under Labour ... it has fallen by far less than was widely predicted. Both parts of this conclusion are robust both to the likely sampling error and to the precise poverty line used. Indeed, the Government's chosen poverty line (60% of the median income) has actually allowed a somewhat larger percentage point reduction in poverty than would have shown up under either the traditional British poverty measure (50% mean) or any alternative fraction of the median'. (Brewer, Clark & Goodman 2003, F257)

Thus the Blair government not only failed to deliver the reduction in child poverty campaigners and academics, interested in poverty reduction, had hoped for but that the government, cynically perhaps, chose the measure of change which showed the changes that did take place in the most optimistic light.

Finally, in examining the link between childhood poverty, adult educational attainment and limiting illness Benzeval, Taylor & Judge (2000) highlight two important relationships, namely that childhood poverty may result in adults being up to four times more likely to have no qualifications and that childhood poverty results in adults being up to twice as likely to have a limiting illness compared with better off children (Benzeval, Taylor & Judge, 2000, 384-5). They conclude that childhood poverty is strongly related to educational achievement. Further, they find that parental education and family composition both act as predictors of health outcomes for children and that poverty is a strong predictor of health and, finally, that these effects are long-lasting with childhood circumstances being linked to adult health outcomes.

Thus child poverty has effects beyond those immediately identifiable on the child itself and is linked to outcomes in adulthood and, indeed, may be transferred across generations. The issue of the relationship between welfare provision and childhood poverty has as a result, and not surprisingly, become central to current considerations on welfare.

In the analysis that follows we confirm the connection between household composition and childhood poverty, and demonstrate that the current system of free school meals provision is not only inadequate in terms of reducing inequality, as it fails to benefit large numbers of the very poorest in society, but we go on to show that as a mechanism for reducing inequality it is barely an improvement on no provision at all (the current system is primarily based on the criteria that recipients must be in households in receipt of either Income Support or Income-Related Job Seekers' Allowance). Consequently, we examine alternative systems of free school meal provision. Thus, we demonstrate the advantages of universal free school meal provision against a range of selection criteria for a more rational system of means testing than that used in the current, flawed system (this more rational system is based on the household's position within the income distribution, rather than receipt of a particular form of benefit payment, which may be only a poor proxy for household poverty⁴). Finally, in recognition of

⁴ The natural consequence of this alternative model of means testing is that the benefit is concentrated within the poorest families such that it minimises inequality. We acknowledge that this form of redistribution would not be possible for a school meal type benefit unless the qualifying child received two or more free school meals per day or we associated receipt of increased benefit with an increase in the quality of benefit. However, it would be more directly applicable if the benefit was a monetary benefit provided to the family, as could happen with other forms of welfare benefit.

the fact that free school meal provision *may* have to operate within a fixed budget, we examine the impact of means testing using this more rational system of means testing, comparing the results with the current, flawed system, thereby demonstrating the inefficiency of the current system.

III. The Data and Methodology

The empirical analyses presented in this paper utilises data drawn from the twelfth (2002) wave of the British Household Panel Study (BHPS), the latest available at the time of this study. This dataset, drawing respondents from all four constituent parts of the United Kingdom, seeks to interview all adults within a household⁵. The data collection process elicits both household level and individual level data from its respondents, and in this twelfth wave of the data we have usable information on 9,346 households. The analyses that follow are at the household level rather than the individual level.

The data collected from each household is a particularly rich source of data for this analysis. Included in the detailed household composition data are the ages of all household members and their relationship to one another, along with monthly income data disaggregated by source (the fine detail of this income data indicates which welfare benefits are received, enabling us to ‘reconstruct’ the current system of free school meal provision based around the receipt of either Income Support or Income-Related Job Seekers’ Allowance).

As can be seen from the raw data in Table 1, there exists an interesting pattern between the average level of monthly household income and household size. While average household income rises as household size rises from no children to two children, its rate of increase falls dramatically. Thus, the increase in average monthly household income falls from £690 to £65 as we move from having no children to one child, and then from one child to two children. Households with two children see a significant drop in the standard deviation of monthly household income as it becomes concentrated in a narrower distribution around the average. This is most likely explained by women dropping out of the labour market, or taking lower paid part-time work, as households become less capable of caring for two children while both partners continue to work full-time. Still more startling is the fact that as households move from having two children to having three or more children, average monthly household income *declines* by £141 per month, while the standard deviation of monthly household income also increases again. Thus, the raw data highlights both a wide disparity of incomes for larger households and still more startlingly a falling average monthly household income relative to smaller households. A higher proportion of larger households therefore face a significant problem of poverty⁶.

⁵ Thus, all adults within a household are interviewed, even if the household includes more than one family; This helps to explain why there are a very small number of high-earning households in receipt of income support.

⁶ This data alone suggests that the current system of reduced Child Benefit for the second and subsequent child, compared to the higher level of Child Benefit for the first child, is almost certainly regressive and therefore exacerbates child poverty.

Number of children in household	Number of households	Maximum household income	Average household income	Standard deviation of household income
0	6,298	£33,008	£1,827	£1,607
1	1,279	£61,323	£2,517	£2,357
2	1,208	£21,012	£2,582	£1,848
3 or more	561	£34,432	£2,441	£2,363

Such raw data, however, under-estimates the variable costs of raising children and as a result research on household income, expenditure and poverty adjusts for the differential costs of living for households of varying size. Housing and food costs, for example, will typically be much greater for larger households than smaller households. Therefore, without correction for household composition effects, household income data may be misleading, such that poorer large households could appear more affluent than richer small households. Thus, correcting for household composition effects was the first stage in our analysis. We calculated, for each household, their monthly pre-tax income (encompassing all income sources). This household income data was then adjusted, using the ‘McClements Scale’, for differences in household composition to generate a measure of equivalent household income. We therefore discuss the changes in poverty on the basis of analysis using this equivalent household income data⁷.

The McClements score rises as (a) the number of household members rises and (b) as the composition of the household shifts towards those member types with a higher cost of living, most typically adults. For a household incorporating just a couple the McClements score is one. Larger, more costly households, would have a McClements score greater than one while smaller, less costly households, would have a McClements score less than one. The raw monthly income data was corrected by dividing it by the McClements score, thus making single person households appear more affluent, and multiple person households appear less affluent, than is implied on the basis of just the raw household income data alone.

Table 2 below shows the distribution of this McClements-adjusted monthly income data against the unadjusted data⁸. The impact of these adjustments is to decrease the *apparent* disparity between the lowest and highest mean household incomes (at lower deciles the McClements adjustment ‘raises’ income, while at higher deciles the McClements adjustment ‘reduces’ income).

⁷ See Appendix One for further discussion of the McClements Scale and the construction of the equivalent household income data.

⁸ Note that the deciles utilised in Table 2 are calculated on the basis of the raw, unadjusted income data. In subsequent analyses the deciles are calculated on the basis of the McClements Score adjusted income data.

Decile	Raw income data	McClements Score adjusted income data	Percentage gain / loss due to adjustment
1 (lowest)	£246	£328	+33.33%
2	£611	£833	+36.33%
3	£845	£1,039	+22.96%
4	£1,113	£1,251	+12.40%
5	£1,436	£1,527	+6.34%
6	£1,829	£1,788	-2.24%
7	£2,264	£2,107	-6.93%
8	£2,815	£2,529	-10.16%
9	£3,590	£3,055	-14.90%
10 (highest)	£5,810	£4,636	-20.21%

This might, on the surface, seem inconsistent with the findings presented in Table 1 above, which showed that the households with the most children (and therefore with the largest McClements score) were in absolute terms poorer than those households with fewer children (and therefore using the McClements score would exacerbate the existing disparity). However, the reality when looking at *all* households is that the lower deciles have proportionately more single person households whose low incomes will be raised by the adjustment, while the higher deciles have more one or two child households whose high incomes will be reduced by the adjustment).

Table 3 makes this point abundantly clear. The effect of the McClements adjustment is to raise the monthly income figure for no children households by more than six percent, while the monthly income figure for households with three or more children is reduced by nearly forty percent. From an average monthly income peak of just short of £2,000 for households with either no child or just one child, the average monthly income figure drops for two children households and plummets for households with three or more children. The link between household composition (size) and poverty is thus clearly established.

Number of children in household	Number of households	Average monthly income (raw data)	Average monthly income (McClements adjusted data)	Percentage gain / loss due to adjustment
0	6,298	£1,827	£1,945	+6.46%
1	1,279	£2,517	£1,996	-20.70%
2	1,208	£2,582	£1,833	-29.01%
3 or more	561	£2,441	£1,474	-39.61%

The McClements Scale is not, however, the only scale that is available for researchers to use, and the detailed characteristics of whatever scale is adopted will clearly affect the detail of the results presented in Table 3. However, provided the scale follows the principle that larger households will, *ceteris paribus*, be higher cost households, the *pattern* of results will be consistent with Table 3. Even when one takes into account the possibility that the cost of *additional* children may be lower due to the ability to use items bought for the eldest child

when ‘kitting out’ younger children, this simply reduces rather than eliminates the extra cost of larger households.

Once we have calculated McClements Score adjusted monthly household income data, we can now turn to the benefit received. We fix the benefit to a household of a free school meal at the average cost of a school meal for those children who have to pay for their school meals. The Scottish Executive (2004) provided statistics on the cost and take-up of paid-for school meals in each of the local education authority areas in Scotland, and from aggregating these disaggregated figures we arrived at a Scotland-wide figure of £1.41 per school meal. The annual benefit from free school meals was calculated on the basis of five meals per week for 38 school weeks per year. This annual benefit was then divided by 12 to generate a *pro rata* monthly benefit. To make this data consistent with the monthly income data we applied the ‘McClements’ scale adjustment to it as well. Thus the monetary levels are all in equivalent amounts. In our analyses we implicitly assume that the benefit of free school meals is equivalent to the payment to the household of £1.41 for each school day for each child between the ages of 5 years and 15 years inclusive.

We recognise that viewing a free school meal as an implicit payment to the household of £1.41 can be challenged on the following grounds:

- the cost of producing the meal may not be equal to the price at which it is sold to those children who do not get free school meals; education authorities may charge a lower price to encourage more healthy eating amongst pupils, or conversely a higher price to offset some of the cost of free school meals.
- the welfare returns to meal ‘production’ expenditure in schools may differ from that in the household (e.g. due to economies of scale) and therefore the value of the free school meal may under-estimate the equivalent cost of production in the home.
- the free school meal is a benefit to the child that cannot be diverted for another use in the same way that an income payment could be; thus, a benefit given directly to the child may well enhance *household welfare* more than a monetary payment given to a parent (who may not use it to maximise *household welfare*).
- the benefit of free school meals in our calculations is based on a 100% take-up; every child between the ages of 5 and 15 years inclusive will receive 5 free school meals per week for 38 weeks per year; in reality truancy / illness, term-time holidays, children not in the state sector undertaking home tuition or attending private schooling, and finally and perhaps most commonly, parents’ preference for home-produced meals, will all ensure that the take-up is less than 100%.
- the £1.41 figure is based on Scottish data, and greater scope for economies of scale may result in a lower figure for the UK as a whole.

The net effect of these conflicting potential biases is extremely difficult to ascertain; while truancy may be more of a problem amongst poorer households other factors such as ‘quality’ may influence decisions of more affluent households. Nevertheless, in the absence of a more reliable measure this is the figure that we will utilise. Moreover, it is highly likely that whilst a different value may generate somewhat different results, the nature of the analyses we are

undertaking will mean that the general conclusions to be drawn from our analyses will remain valid.

Now that our McClements Score adjustment to all income data is now complete it is possible to assess the impact on the distribution of income of four alternative models for the provision of free school meals. The four models of provision are:

Model 1 : No free school meal provision

Model 2 : The current system of free school meal provision based on receipt of Income Support or Income-related Job Seekers' Allowance

Model 3 : A system whereby the children of the poorest x% of households are entitled to free school meals

Model 4 : Universal free school meal provision

It should be noted that Models 1 and 4 are special cases of Model 3, specifically, we obtain Model 1 from Model 3 when we set x% equal to 0%, and obtain Model 4 from Model 3 when we set x% equal to 100%.

IV. The Results

The first stage of our analysis involved a comparison of the welfare gains of Model 2 (the current system) and Model 4 (universal provision) compared to the no provision baseline (Model 1). The results are presented in Table 4 below.

The second column of Table 4 shows, for each household decile group, the percentage income gain arising from the current system based on Income Support and Income-Related Job Seekers Allowance.⁹ It would appear that this system is progressive in nature, with the percentage income gains to the household on offer from this system, highlighted by column (2), declining as we move up to higher income deciles.

⁹ It might seem strange that under the present free school meals system there is any benefit flowing to affluent households such as those in the tenth decile; however, the unit of observation is the household, and a very small number of households may include *both* a wealth family not in receipt of free school meals and poor family that is in receipt of free school meals.

Household Decile (1)	Gain moving from no provision to current IS system (2) (3)		Gain moving from current IS system to universal system (4) (5)		Gain moving from no provision to universal system (6) (7)	
	%	£	%	£	%	£
	1 (lowest income)	0.5874	1.57	2.1410	5.71	2.7284
2	0.5155	3.70	0.4552	3.26	0.9707	6.96
3	0.2619	2.50	0.3628	3.46	0.6247	5.96
4	0.0890	1.04	0.4101	4.82	0.4991	5.86
5	0.0517	0.73	0.4153	5.87	0.4670	6.60
6	0.0115	0.20	0.3764	6.46	0.3879	6.66
7	0.0036	0.07	0.3135	6.46	0.3171	6.53
8	0.0042	0.10	0.2503	6.24	0.2545	6.34
9	0.0020	0.06	0.1610	5.08	0.1630	5.14
10 (highest income)	0.0004	0.02	0.0518	2.67	0.0522	2.69

While column 2 shows that the benefit of moving from no provision to the current means-tested system, measured as a percentage of household income, declines from 0.587% to 0.0004% of household income as we move from the first through to the tenth household decile, column 3 suggests the current system is far less progressive than a measurement based upon the percentage change in household income might suggest. Column 3 shows that the largest absolute gains (£3.70 per household per month) is for the second decile, while the poorest decile receives less help (£1.57 per household per month) than the third decile (£2.50 per household per month). These results demonstrate that the current system of means-testing for free school meals, based on receipt of Income Support or Income-Related Job Seekers Allowance, is deeply flawed since many of the poorest households, in decile one, are given other benefits and therefore are not eligible for free school meals. Thus, percentage gains alone are deeply misleading in the sense that what matters is not only the percentage gains but also what these gains are a percentage of. Conclusion 1, therefore, is clear – the current system fails many of the most needy.

Columns 6 and 7 show the percentage and absolute benefit gains households receive from a universal provision of free school meals (compared to the no provision default) while columns 4 and 5 show the increase in benefit this implies over and above the benefits offered by the current system. Columns 6 and 7 clearly show that in both absolute and percentage terms the biggest gainers from the universal provision of free school meals are those in the lowest income levels (deciles 1 and 2). Of equal significance, columns 4 and 5 demonstrate that many households in the second and third deciles are also excluded from the current system of benefit. Thus we now have Conclusion 2 – it is the very poorest (deciles 1 and 2) households that gain the most from universal provision. If we consider the gains from universal provision in percentage terms, as seen in column 6, this is also true for the third decile.

However, perhaps the most interesting conclusions to be drawn from Table 4 concern the results in columns 4 and 5. One argument often made in favour of means-testing, and against universality, is that the additional gains resulting from a move from mean-testing to universality flow mainly to the better-off ‘middle classes’. It is indeed the case that the fifth,

sixth, seventh and eighth deciles receive larger absolute gains than the first decile, with gains ranging from £5.87 (fifth decile) through to £6.46 (sixth and seventh deciles) compared to 'just' £5.71 for the first decile. However, the gains for household deciles two and three indicate that a significant number of poor households with children, who fail to qualify for free school meals due to the restricted mechanism for entitlement, are now also recipients of benefits. Thus despite the benefits to wealthier households, columns 4 and 5 nevertheless demonstrate that sizeable gains are still flowing to the very poorest in society, particularly when viewed in percentage terms (column 4).

Further, a strong case can be made on four grounds that paying a few pounds more to the better-off 'middle' classes is a price worth paying if it directs significant welfare to the poorest households. First, stigma is suggested to play a significant part in reducing the take-up of free-school meals. In 2002, for example, some 17.6% of entitled children were not taking free school meals. The fact that 40.1% of eligible students in secondary schools fail to take their free school meal, compared to just 11.4% of eligible students in primary schools, suggests that stigma is a significant factor, especially in secondary schools (Scottish Executive 2004, Table 2). The Scottish Executive's *Hungry for Success* initiative has recognised the importance of stigma and has sought to reduce it by attempting to make the receipt of free school meals an anonymous process. For example, they have sought to extend the introduction of swipe card technology in schools.

Second, the involvement of better-off households in the provision of welfare may well introduce a positive externality reflected in debates over the quality of the welfare provided. As is well known parental involvement in schools is heavily influenced by background and class. Thus, better off families participation in the provision of welfare may well encourage the voice of consumers to be heard.

Third, the operation of any system of means-testing involves administrative costs to ensure that people not eligible to receive the benefit do not receive it. One perspective on the appropriateness of the means-testing follows from a simple cost-benefit analysis – comparing the costs of administrating the system with the benefit of having the system (fewer free school meals need to be provided). As the eligibility of the system is extended such that it gets closer and closer to universality, this simple cost-benefit analysis argues against means-testing on the basis that fewer and fewer children from better-off homes are being denied free school meals.

Finally, the raw figures do not take account of the numbers of households who send their children to fee-paying schools, outwith local education authority control, and therefore outwith the provision of free school meals. As a result the subsidy to 'middle' class families is over-estimated, particularly as we move up to the highest income scale. Unfortunately, the BHPS does not provide data allowing us to distinguish between households with children within, or outwith, the state-provided education system and therefore we include all households in the analysis.

The analysis conducted thus far has seen a comparison of the distribution of income across households by deciles using models 1, 2 and 4. Only Model 4 (universality) has been shown to effectively direct welfare at the poorest household groups. However, though Model 2 (the current system based on receipt of Income Support and / or Income-Related Job Seekers' Allowance) has been demonstrated to be a flawed system of means-testing, it does not automatically follow that all other potential systems of mean-testing will be equally flawed.

Indeed, as Model 3 suggests, a less arbitrary system based on genuine need rather than the peculiarities of the UK's benefits system might result in a much more desirable outcome than the current flawed system.

In order to test the validity of this hypothesis we need to reassess the mechanism for providing welfare. Model 3 suggests that there may be a mechanism of directing resources in order to minimize inequality, such that rather than consider the source of household income for benefit entitlement it is the household's position within the income distribution that determines the receipt of welfare. This is much more analogous to attempts at achieving a minimum income guarantee. This approach to minimising inequality can be undertaken in one of two ways, these differing according to the assumptions made about the size of the budget. First, as with the cases of Models 1, 2 and 4, there may be some percentage of the population which should receive a constant welfare benefit such that inequality is reduced to a minimum, with the budget increasing as entitlement increases ('variable budget'). The second, alternative approach would see the budget for any given welfare system fixed, with this budget spread across eligible households in such a way as to minimise the inequality between households ('fixed budget')¹⁰.

To assess the validity of these approaches we need to turn to a measure of household inequality, and our preferred measure is the Gini coefficient. The basic premise of Gini coefficients is that a smaller Gini coefficient is indicative of a less unequal distribution (see Appendix 2 for a fuller discussion on Gini coefficients). The three versions of Model 3 that we investigate are:

Model 3a : A variable budget model where a child's free school meal eligibility is determined by their household's place in the income distribution, and the per-child benefit on offer is independent of the total number of eligible children.

Model 3b : A fixed budget model that distributes a budget equal to the current system's budget for free school meals, and thus the per-child benefit on offer is inversely related to the total number of eligible children.

Model 3c: A fixed budget model that distributes a budget equal to that required to provide free school meals to the children of all households in the first five deciles; this budget, approximately twice as generous as that for Model 3b, permits us to see how sensitive the results are to a change in the level of the fixed budget.

For each of these three models we calculate new Gini coefficients as we extend eligibility one decile at a time, from the no provision scenario (analogous to Model 1 above) to the universal scenario (analogous to Model 4 above).

The Gini coefficients in columns 2, 3 and 4 of Table 5 provide an insight into the redistributive effects of these three different systems for free school meal provision. As we progress down the table the proportion of households eligible for free school meals for school age children increases (note that these deciles cover all households, not just those with school

¹⁰ In this second approach, the idea that poorer households may receive a higher level of welfare can be more readily applied to an income-based benefit than for a benefit in kind, such as free school meals, where it begins to lose its meaning somewhat. It would be more problematic for the children of households in receipt of the benefit to receive larger benefits as entitlement decreases, though 'breakfast clubs', free school meals outwith term-time or more nutritional meals could be ways to operationalise this.

age children). The first row of results show (for the sake of reference) the Gini coefficients obtained for the current system based on the receipt of Income Support or Income-Related Job Seekers' Allowance (based on the budget for that column).

Household Decile	Variable budget (2)	Current system budget (3)	50% entitlement budget (4)
Current IS system	0.37095	0.37095	0.37045
0 (no provision)	0.37143	0.37143	0.37143
1	0.37119	0.37078	0.37011
2	0.37092	0.37077	0.37009
3	0.37070	0.37080	0.37015
4	0.37046	0.37084	0.37022
5	0.37030	0.37088	0.37030
6	0.37013	0.37092	0.37039
7	0.36997	0.37098	0.37050
8	0.36987	0.37103	0.37061
9	0.36985	0.37111	0.37077
10 (universal provision)	0.37001	0.37120	0.37095

By examining column 2 of Table 5 we see how the Gini coefficient changes with a variable budget system described in Model 3a. The ‘variable budget’ places no constraints on the welfare budget, in other words when you double the number of children eligible for welfare you also double the budget. Thus, as we move through the data in column 2, from no deciles in receipt of welfare, through to universality, we move from a Gini coefficient of 0.37143 through to 0.37001, indicating a reduction in inequality across the distribution, though this is actually a U-shape with the minimum reached for the ninth decile¹¹.

The U-shaped distribution comes from the fact that as we approach universality giving free school meals to the very richest decile gives income the very richest in society and hence increases inequality across households. This is indeed an argument against universality in that it provides benefit to the ‘middle’ and ‘upper’ classes. However, surprisingly, inequality reduces up to and including the eighth and ninth deciles, and it is only for the very richest decile that this U shape appears.

Column 3 provides results for Model 3b, which fixes the budget at the level required for the current system based on Income Support and Income-Related Job Seekers’ Allowance. Under these circumstances, if we double the number of children eligible for free school meals then the value of benefit received by each recipient falls by fifty percent. Under this system we see two significant results – first, once again we are presented with a U-shaped curve (although this time the minimum Gini coefficient occurs for the second decile) and second, the minimum Gini coefficient (0.37077 for the second decile) is below the Gini coefficient for the current system (0.37095). In other words, welfare needs to be focused on the two lowest deciles of the household income distribution to minimise inequality.

¹¹ The Gini coefficients presented in this paper were generated with the ineqdeco.ado add-in component for Stata v8; when talking about the minimum point in the U-shape of Gini coefficients we limit our discussion to deciles rather than percentiles since this add-on component provides Gini coefficients to only five decimal places and finding the Gini coefficient-minimising percentile would require a greater number of decimal places than five.

However, although Model 3b does diminish the inequality seen with the current system, it is still the case that under this alternative model some below average income households (from the third and fourth deciles, for example), currently in receipt of free school meals (see Table 4, columns 2 and 3) would be worse off than at present were Model 3b to be adopted.

Finally, column 4, highlights the results of a fixed budget model based upon the budget required to fund the 50% entitlement described in Model 3c. This model is a more generous level of entitlement than that in Model 3b in that the budget is fixed at the (higher) level required to offer free school meals to all the school age children in the first five deciles. The results are however similar to those in column 3. Again we see a decline in the Gini coefficient up to the second decile, and again a lower Gini coefficient is achieved relative to the current system (0.37009 compared to 0.37095) but by the third decile inequality is again increasing.

The differences between Models 3a, 3b and 3c fundamentally relate to how we deal with the generosity effect. With the variable budget, generosity is directly proportional to the number of children in receipt of free school meals, such that generosity rises as more deciles enter into eligibility. With the current system budget, however, there is a fixed level of generosity that is simply redistributed more thinly as more deciles enter into eligibility; with the 50% eligibility budget the same principle applies, though the fixed level of generosity is fixed at a higher level (approximately twice the current system level).

Thus, the variable budget method merges both the progressivity and generosity effects, whilst both of the fixed budget models hold constant the generosity effect and thus allow us to examine the progressivity effect. The variable budget method has the advantage of being more realistic by extending the eligibility of welfare, in this case free school meals, which is unlikely to be undertaken at the expense of significantly reducing the amount spent on each meal, while both fixed budget models have the advantage of focusing on the impact of progressivity on extended eligibility.

All three methods provide a U-shaped curve when we graph Gini coefficients against eligibility criteria – as we extend eligibility the Gini coefficients (and therefore inequality) decline, before picking up again later on. However, the minimum points on these curves do differ dramatically. For the variable budget method the minimum Gini coefficient is reached with the ninth decile, whilst for the two fixed budget methods the minimum is reached with the second decile. Thus, the benefit of enhanced progressivity is reached at the second decile, but for the variable budget method the benefit from enhanced generosity exceeds the loss from diminished progressivity up to and including the ninth decile, after which the further loss of progressivity arising from the giving of free school meals to the school age children of the seriously rich outweighs the further generosity effects that such changes would entail, and thus the Gini coefficient at last rises again.

V. Conclusion

This paper has examined the impact of means-testing on the provision of a single welfare provision, namely that of free school meals. It has demonstrated that the current system of eligibility fails to deliver welfare to the poorest in society in two ways. First, as Table 4 demonstrates, many of the poorest households fail to qualify for the benefit and second, as Table 5 demonstrates, directing welfare at the poorest households would reduce inequality compared to the current system. However, as Table 5 also demonstrates, the paucity of

resources for the current system is so marked that devising a more egalitarian method for distributing the existing resources would require such a more narrowly-focused system that many households, currently in receipt of free school meals, would lose their entitlement and thus would be made significantly worse off; though these households generally do not have finances as precarious as those of decile one and two households, they would nonetheless be unable to suffer this loss of benefit without some difficulty. Thus, not only is the current system inefficient in directing resources to the most needy, it can also be argued that it would be insufficiently resourced even were it more efficiently operated.

If resourcing is not an issue then a very extensive eligibility should be preferred and, as we argued above, there are factors such as stigma and administration costs that suggests that universality makes more sense than eligibility up to and including the ninth decile. Certainly, the view that universality acts to benefit to the ‘middle’ classes appears grossly overstated. The second column of Table 5 suggests only the very richest decile can be considered to be in this group. This Table further demonstrates that income inequality is minimised in a universal system as opposed to any other targeting method of welfare provision.

This paper has highlighted two further findings. First, Model 3c shows that doubling the level of generosity of this particular welfare benefit whilst retaining targeting does not offer much scope for extending the assistance on offer to a wider group of recipients. Such is the depth of poverty in the poorest with-children households that the most effective use of additional resources is to further support the *desperately* poor households leaving little room for additional support for those households who are ‘merely’ *very* poor. An important reason for this result lies in the link (see Tables 1 and 3) between household size and income. Thus, larger households are concentrated in the lower income deciles and their higher costs simply exacerbate this poverty. Further, if resourcing is an issue, then the rate of eligibility under the current system (10.6% of our sample) is woefully too narrow. Our results suggest an eligibility rate of at least of 20% might be in order. Choosing this decile for the eligibility cut-off minimised the Gini coefficient under both of the fixed budget models (3b and 3c)¹².

Second, if you are going to have a system of means-testing then it makes sense to design it well, rather than rely on the implementation of a system based around the peculiarities of the UK social security system. Using the current system’s budget in Model 3b, we note that for each of the eligibilities ranging from just one decile all the way up to six deciles, we obtained Gini coefficients lower than that for the current system using this same budget (0.37095). Thus, in conclusion, regardless of whether one thinks the current system’s budget is adequate or desirable, it is hard to conclude that the current system represents anything other than a wholly inadequate method of reducing child poverty.

¹² That the 50% eligibility budget was approximately 105% the current system budget, and yet the minimum Gini coefficient was still obtained for the second decile, suggests a degree of stability in this result concerning the extent to which eligibility might be extended.

Appendix 1 : The McClements Scale

The McClements Scale is based on the notion that the different types of household member add different amounts to the cost of living for that household. The household's McClements Score is based on the following values:

Head of household	0.61
Spouse of head of household	0.39
First 'other' adult	0.46
Each additional 'other' adults	0.36
Each child \geq 13 years, < 16 years	0.27
Each child \geq 11 years, < 13 years	0.25
Each child \geq 8 years, < 11 years	0.23
Each child \geq 5 years, < 8 years	0.21
Each child \geq 2 years, < 5 years	0.18
Each child less than 2 years	0.09

Thus, a household encompassing two parents plus two children aged nine and six would have a McClements Score of 1.44 ($0.61+0.39+0.23+0.21$). The greater the number of household members, and the higher up the above table they tend to appear (there is a slight discontinuity involving the head of household's spouse), the higher is the household's McClements Score.

Appendix 2 : Gini Coefficients

Gini coefficients use a single statistic ranging from 0 (complete equality) to 1 (maximum inequality) to represent the inequality seen in a particular variable. Therefore, a lower Gini coefficient is indicative of reduced inequality, and if one assumes that reduced income inequality, *ceteris paribus*, enhances society's welfare, then lowering the Gini coefficient for household income can be construed as enhancing society's welfare.

However, an important point should be noted about Gini coefficients; rather than considering each value of the variable in the context of the entire distribution of that variable, each value is simply considered in terms of its position relative to the adjacent values in the distribution for that variable. If the highest-earning person in the world has some of their income taken away from them, then society is more equal because the second-highest-earning person in the world is no longer as poor relative to the person one place above them in the income distribution. This aspect of the statistic has implications when considering *why* two different distributions have different Gini coefficients – how do we decompose the change?

The change in Gini coefficients (ΔG) when we move from one free school meals system to another can be decomposed into the following effects:

$$\Delta G = -((\Delta P \times \Delta B) - R) \quad \text{\{Eqn 1\}}$$

Where ΔP is the change in progressivity, ΔB is the change in benefits on offer ('generosity') and R is the re-ranking effect. Thus, a move to either a more progressive system or a more generous system will have the effect of reducing the Gini coefficient, though this reduction can be offset by re-ranking of people in the distribution.

Using the current example of income distribution, re-ranking occurs where the provision of additional benefits to one person raises them above the person above them in the income distribution; in extreme cases, and depending on the additional benefits offered and the initial difference in income, this provision of additional benefits can result in an increase in absolute income for the initially-poorer person but little or no change in the Gini co-efficient; in most cases the re-ranking effect offsets only some of the progressivity and generosity effects.

The relevance of this to our study is that to the extent that poor with-children households rise above poor without-children households in the income distribution when we change the free school meals system, some of the real benefit of the change is not recognised because the re-ranking effect diminishes the change in the Gini coefficient, thus understating the welfare-enhancing effect of the change in the system.

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