Poverty Measurement and the Within-Household Distribution: Agenda for Action*

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ABSTRACT
Mainsteam poverty analysis is deficient because it ignores important within-household aspects. This point has been made by many, and stressed by feminists especially, yet mainstream poverty measurement practice remains unchanged. Why is this? What should we be doing? This paper examines anew the case for taking within-household factors into account in poverty measurement. The analysis reveals a number of unresolved issues including some problems with recent feminist arguments, but concludes that there is a good case for changing current practice. To demonstrate that this is feasible, four research projects are described. These are my agenda for action.

INTRODUCTION

People—not households or families—experience poverty yet it is standard practice to measure poverty at the level of the household or family. Household members are assumed to receive equal shares of their household's income. The equal sharing assumption has long been questioned (see, for example, Young, 1952), and recently especially by feminist writers. There is also increasing dissatisfaction with the suitability of money income as the measure of household members' experiences. The alternative measurement strategy, often recommended but rarely implemented systematically, is to open up the 'black box' that is the household. In this paper, I consider anew the case for doing this and set out an agenda for action.

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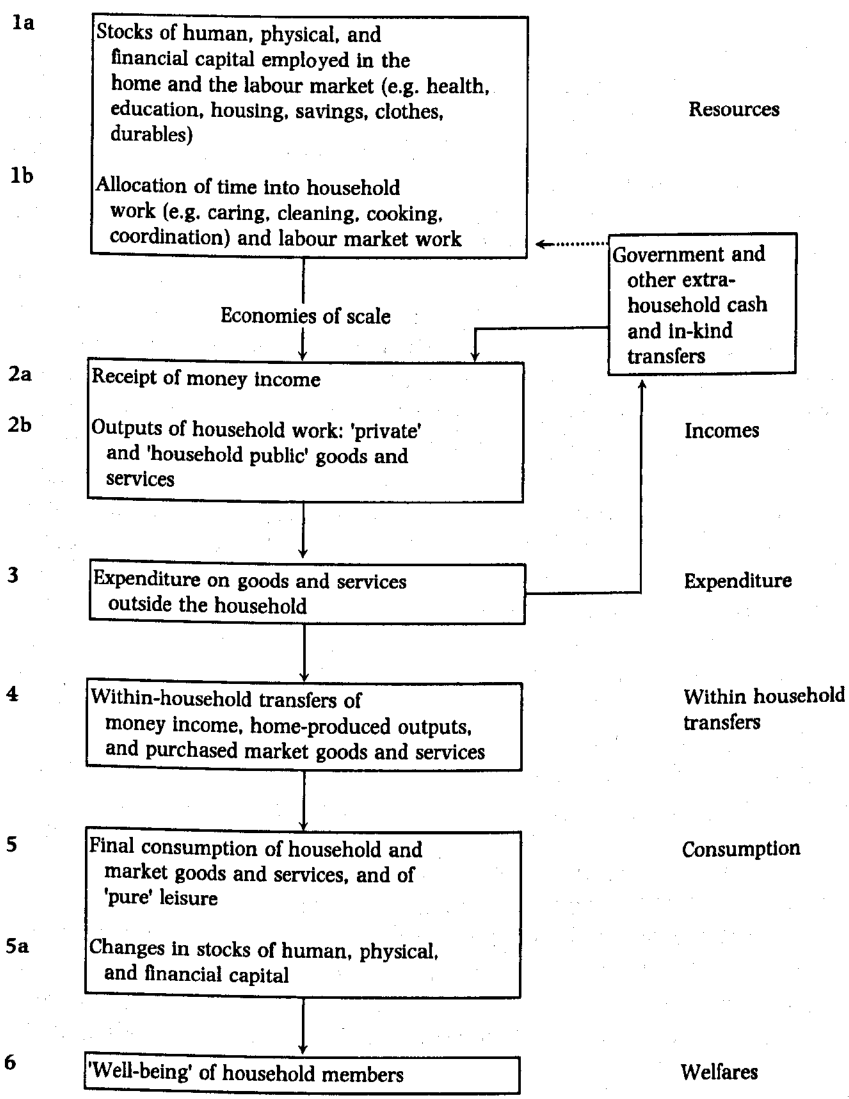
If we were to lift the lid on the household 'black box', what would we see? Figure 1 is a summary description. It is a schematic model of household 'production' showing how resource allocations of household members relate to incomes, expenditures, transfers and, ultimately, the 'wellbeing' of each of them. I shall show how different poverty measurement strategies emphasise different components of the household production process.

My basic reference point is the 'mainstream' approach to poverty measurement, the one that dominates current practice. The approach defines the poverty standard in terms of a single indicator, money income (or sometimes expenditure), and thus, in terms of Figure 1, focuses on just components 2a (or sometimes 3). Estimates of money income for each person are derived using the household income data contained in large household surveys and by assuming that individuals benefit equally from the income of the household to which they belong. A person is poor if they belong to a household with an income less than the poverty line for a household of relevant type. Aggregation across the people who are poor provides an estimate of overall poverty. UK examples of the mainstream approach include the 'official' low income statistics (DSS, (1990), Fiegehen, Lansley and Smith (1977), Beckerman and Clark (1982), Piachaud (1988), and Johnson and Webb (1989)). All use Family Expenditure Survey income data. The mainstream approach is predominant in most other countries too (see, for example, Sawhill's (1988) review of poverty in the USA).

The great advantage of the mainstream approach is its tractability. Focusing on money income eases difficult issues of *valuation*, while the equal sharing assumption avoids difficult issues of *allocation* amongst household members. This paper is essentially an analysis of the extent to which alternative strategies—ones taking more explicit account of within-household aspects than the mainstream approach—are able to address the allocation and valuation issues and yet remain tractable.

The paper is organised as follows. First I briefly review the arguments for taking better account of within-household factors (section 2), and then analyse possible explanations of why these arguments have not led to changes in mainstream poverty research practice (section 3). The analysis reveals a number of unresolved issues including some problems with recent feminist arguments, but concludes that there is a good case for changing current practice. In section 4, I argue that it is feasible to do so and demonstrate this by describing four research projects based on existing data sources. I should stress that the question addressed is not whether authors are aware of within-household issues (for they are). The



Note: the items listed are headings under which there are (potentially) entries for each household member.

Figure 1. *The household production process.*

question to be answered is: what can and should we do about those issues now?

Little distinction is made in the paper between a 'household' and a 'family' since I want to concentrate on the general issues which arise when income units encompass several individuals. In practice the distinction between households and families is important. For example, Johnson and Webb have shown using British FES data that, in 1983, 11.1 per cent of individuals had incomes less than half average equivalent income if equal sharing amongst families were assumed, but 8.1 per cent of individuals did if equal sharing amongst households were assumed (1989, Tables 1 and 2).

THE CASE FOR STUDYING THE WITHIN-HOUSEHOLD DISTRIBUTION

The mainstream poverty research practice of ignoring the within-household distribution has, according to the critics, two adverse side effects. One, such measurement practice provides biased estimates of the extent of poverty in aggregate. Two, valuable information about the composition of the poor, and relative poverty risks, is ignored. This second point has received the most attention because of its purported knock-on effects: valuable information about the underlying causes of poverty is lost, and incorrect conclusions about the consequences of particular anti-poverty policies may be drawn.

Bias in aggregate poverty measures

The first issue has been addressed by economists, and their analysis provides interesting, and perhaps counter-intuitive, results about the bias in poverty estimates arising if one incorrectly assumes equal within-household sharing.

Suppose we measure individual wellbeing using income, have some agreed poverty line, and want to summarise the extent of poverty using an aggregate index such as the number of people poor (the so-called headcount measure). Intuition suggests that calculations assuming no within-household income inequality will, at the very least, provide a lower bound on the summary index, so we can be confident that actual poverty is worse than that calculated. After all, surely those with the lowest incomes are worse off than the income pooling imputation implies.

Intuition can be an unreliable guide about bias. A household with household average income below the poverty line may well have a member who is not poor. Imputing him with average household income in calculations would lead to an *over*-estimate of the number poor. The problem is that although the standard method assuming equal sharing imputes mean household income to the poorest person in the household as well, this poverty-reducing effect is irrelevant overall if the poverty index is based only on the *number* of poor people. Only with poverty measures for which an income increase for a poorer household member is weighted at least as much as income reduction for a richer member does the mainstream approach always provide a lower bound estimate for certain.[1] (An example is the poverty gap measure.) These measures are not routinely used, however—the simple headcount has an enduring popularity—so we must recognise that aggregate poverty estimates assuming no within-household inequality will be biased in a way that is not easily gauged. To rectify this, within-household inequality must be directly addressed.[2]

Neglected dimensions of poverty composition and risk

The second issue, measurement of poverty composition and risk, is given great emphasis by feminist authors: see for example the papers in the volumes edited by Glendinning and Millar (1987), and Brannen and Wilson (1987), as well as the comprehensive survey by Millar and Glendinning (1989). In short, the feminist argument is that mainstream poverty research gives insufficient weight to a crucial dimension, gender inequality, a failing reinforced by the standard treatment of the within-household distribution which assumes away significant inequalities. Evidence is adduced for women having, relative to men, lower shares of household money income for personal use, and lower shares of household consumption. The feminist critique also emphasises deficiencies in standard measures of wellbeing, and money income in particular. The authors draw attention to gender differentials in time use patterns, especially female concentration in unpaid household work, and argue that a properly comprehensive measure, one incorporating valuation of household members' time use, would reveal the gender inequalities starkly. (On time use and poverty, see also Piachaud, 1987a; 1987b.) The case, then, is for a change in measurement approach (a greater concentration on items in box 1 in Figure 1), and the view is that this would lead to a fundamentally different assessment of the underlying causes of poverty from the standard one—one which focused on the economic disadvantage of women relative to men.

Gender inequalities are not the only reason for examining the within-household distribution: the other main one is concern about the division between adults and dependent children.[3] Decomposing aggregate poverty statistics by family size, and providing data about the number of children who are poor, is routine, but these calculations assume that children and their parents enjoy the same standard of living. The mainstream approach does not account for the fact that some parents make impoverishing sacrifices to maintain their children's living standards, and that some neglect their children.

WHY IS THERE LITTLE CHANGE IN MAINSTREAM PRACTICE?

The arguments reviewed provide *prima facie* evidence for giving greater attention to the within-household distribution.[4] I now consider whether the testimony stands up to cross-examination, concentrating on the feminist critique as that appears to be the most topical. Why has it not had a significant effect on mainstream poverty research practice? There are five reasons I can conceive of, of varying plausibility.

A dialogue between the deaf?

The first potential reason is apartheid in the research community. Evidence for the feminist case is typically derived using different research methods from those of mainstream work which are based on secondary analysis of large household surveys. The feminist literature draws on research in which small scale samples predominate, and in which there is a greater reliance on a range of qualitative indicators and a much greater interest in respondents' own opinions about their situation. With regard to the latter, note the relatively high proportion of interview dialogue reported relative to tables of numbers. As to sample size, consider the samples drawn on by some of the contributors to the Brannen and Wilson (1987) volume: 15 Norwegian women (Leira's chapter), 32 Afro-caribbean women (Thurogood's), 184 dual-earner households (Brannen and Moss's), 102 families with children (Graham's), and 200 mothers with children (Charles and Kerr's). The most well known work on financial allocation and management arrangements within households, Jan Pahl's (1989), was based on interviews with 102 households. Contrast this with the source used for most mainstream poverty analysis in Britain, the annual Family Expenditure Survey, which has information for more than 7,000 households (over 9,000 families and 19,000 individuals).

It seems that poverty researchers belong to one of two different tribes, each deaf to the dialogue from the other, and either unaware of the advantages of being a good listener or believing there is little to be gained from doing so. Many from the quantitative tribe are little moved by the small scale interview research results, and even sympathetic listeners are not always entirely convinced. For example, when Atkinson discusses the finding, cited by Pahl (1983), that a sizeable proportion of women who have left their husbands, report being 'better off' on supplementary benefit than living with their husbands, he comments that:

> This has to be interpreted carefully, not least because the personal circumstances may colour recollection. Those wives leaving their husbands are more likely to be drawn from those where family resources were unequally distributed and, if financial stress is a factor leading to marital breakdown, from those families which were in any case below the SB level. And the wives may be seeking to justify their decision. Nevertheless, this kind of evidence suggests that there are indeed grounds for concern (1989, p.19).

More general questions relevant to poverty measurement which are raised by this sort of reseach are: how representative are these samples? Are they statistically reliable? Are interviewee statements about their behaviour reliable guides to their actual behaviour? We need to know whether such issues are important for this research, or represent misunderstandings about it, or represent ignorance (arising from excessive tribal dabbling in a 'cult of the quantitative'). In other words, there needs to be much more explicit discussion, *with reference to poverty measurement*, of the relative merits of the different research methodologies, and of the extent to which they are complements or substitutes. (It should be recognised, of course, that poverty measurement is not usually the main aim of such qualitative studies.)

Different poverty concepts?

Even if the evidence from feminist studies is accepted for what it is, can one argue, second, that it does not tell us about poverty, but something else (inequality, perhaps)? This depends on what your conception of poverty is. Consider, for example, Millar and Glendinning's (1989) survey, and note that the section headed 'Women's poverty in Britain' contains for the most part a discussion of how women are *economically disadvantaged* in the labour market, and the state and occupational income maintenance and replacement systems.[5] If one espouses the view that poverty refers to a lack of consumption (Stein Ringen's (1988) concept of 'direct poverty'; see box 5a in Figure 1), then it must be difficult to see how such evidence is directly relevant. As to the evidence about differential time use (box 1), strong believers in poverty as an absolute concept may well be sceptical of arguments that people are poor because they have little leisure.[6]

Clearly the poverty concept underlying the feminist approach requires clarification. My own (re)interpretation is that it is similar to what

Atkinson (1989) labelled an 'individual's right to a minimum level of resources' (though he defined resources only in terms of income). An obvious objection to this wider concept is that such rights are satisfied by within-household sharing. The obvious rejoinder is that their *potential* satisfaction is no guarantee of their *actual* satisfaction. Relying on income pooling involves dependence on men who cannot necessarily be relied on to provide. Thus the feminist concept is more accurately described as 'individual right to a minimum degree of potential economic independence'. According to this interpretation a woman's earnings potential[7] and benefit and pension entitlements in her own right, and thus potential 'economic disadvantage', do become directly relevant.

As the case for this wider version of the minimum rights approach does not appear to have been much analysed, let me make the following comments.

The main arguments for a rights approach, wide or narrow, are based on more fundamental arguments about the value of positive freedoms. Once these are accepted, the key issue is how to characterise these freedoms. Perhaps the most well-known version is Amartya Sen's concept of personal capabilities:

> Concern with positive freedoms leads directly to valuing people's capabilities and instrumentally to valuing things that enhance these capabilities. The notion of capabilities relates closely to the functioning of a person. This has to be contrasted with the ownership of goods, the characteristics of the goods owned, and the utilities generated (1984, p.324).

Although the issue of how to operationalise capabilities and rights concepts remains open to debate (as Sen and his critics well recognise), the conceptual framework does provide some moral underpinning to the wider view. Most importantly, it is a thoroughly individualistic concept, and refers to individual potential to function rather than actual outcomes. Taking these aspects seriously leads us towards a concept of *independent* capabilities, and a measurement approach within which a woman's capabilities cannot be assumed satisfied simply by sharing a household with, that is being *dependent* on, a man. We can take the argument further.

If we were to suppose the opposite—capabilities are assumed satisfied by within-household arrangements and anti-poverty policy is organised accordingly—it can be argued that such a strategy is an abrogation of moral responsibility for ensuring that such arrangements do in fact occur.[8] See Robert Goodin's (1988) book for a forceful statement of this, together with arguments in favour of a basic moral duty to take steps to ensure that the potentially vulnerable cannot be exploited:

> Depending on their families for assistance subjects beneficiaries to the 'arbitrary will of another'. Families, by their nature, must enjoy substantial discretionary control over the disposition of family resources. Those dependent on those resources must, in some real sense, 'beg' those with discretion to supply them (Goodin, 1988, p.351).

Such arguments are reinforced if we move from a snapshot view of poverty and take account of changing experiences over time. (Notice that the household experiences summarised in Figure 1 depend on accumulated stocks of human, physical and financial capital, and hence the passage of time.) Even if one is confident that within-household arrangements at some given point in time are satisfactory, individual capabilities for economic dependence are significant because marriages break up, and partners die.

This argument could be developed in greater detail along the lines set out by Albert Weale, using his arguments for policies that enable an individual to achieve her personal 'project', where a 'project is defined by the purposes that a person pursues over time' (1983, p.24). The basic idea is summarised in his Principle of Autonomy which asserts that:

> All persons are entitled to respect as deliberative and purposive agents capable of formulating their own projects, and that as part of this respect there is a governmental obligation to bring into being or preserve the conditions in which this autonomy can be realised (1983, p.42).

Weale's 'autonomy' is thus akin to an explicitly dynamic version of Sen's 'capabilities'. (It should be noted, however, that neither gender nor within-family matters receive explicit mention in Weale's book.)

I conclude that the wider concept of poverty underlying the feminist critique either has not been sufficiently rigorously applied to the gender issue—and so is not generally well understood—or it is not generally agreed with. This helps explain why mainstream practice has changed little in response to the critique.

Different attitudes to gender inequalities?

A third potential explanation for unchanged practice is the view that evidence on within-household gender inequalities should be discounted because they are simply a consequence of prevailing widely-accepted norms about a woman's traditional role as dependent home-maker and carer and hence acceptable. This view cannot be immediately dismissed out of hand as expressions of support for traditional gender roles remain commonplace (and not only amongst men). Nevertheless, it is surely increasingly hard to claim universal acceptance for such a view. In any case acceptance of a traditional role for women does not necessarily imply condonation of all forms of gender inequality. Evidence about differentials in basic food consumption may be weighted differently from that on time spent cooking, cleaning and caring.

Another version of the argument is a 'revealed preference' one; that the significance of gender inequalities should be discounted because those affected do. Two alternative assumptions underlie this view, each questionable. The first is that women choose their domestic arrangements freely, in which case it can be asked why, if women continue to choose to live with inequality, we should be concerned about it. Obviously the argument ignores important constraints on choice. People cannot always separate, let alone divorce, immediately, even if they do not have any children. In any case, the costs involved are likely to slow the completion of desired changes in status. One interpretation of rising divorce and age-at-first-marriage rates is that there is in fact growing discontent with existing arrangements. The second assumption is that:

> This self-sacrifice on the part of women is ... a legitimate result of their altruistic and care-giving 'nature'. In effect the needs of women are assumed to be, if not less than those of men, certainly of less importance; 'self-denial is still seen as women's special share of poverty' (Land and Rose, 1985, p.86) (Millar and Glendinning, 1987, p.10).

The sexism underlying this assumption is pointed out by the authors cited.

A third version of the argument, and related to the second, is that the acceptable boundary of state intervention lies outside the household. For example, when discussing the definition of the 'income unit' and the administration of social security benefits, Dilnot, Kay and Morris have argued that:

> The forced distribution of considerable amounts of money from husband to wife might be resented by many people, including the authors of this book, who consider that the distribution of income between husband and wife is a matter for them rather than the government (1984, p.112).

As pointed out above, drawing on Goodin's work, the moral strength of this argument is weak. Governments have a responsibility to protect the vulnerable, especially children. Even if the incomes of husbands and wives are not of direct concern, the distribution between husbands and wives affects what other household members get (which is of concern).

Disagreement about the usefulness of the insights provided?
A fourth potential explanation is that mainstream practitioners are sceptical of the insights provided by incorporating the gender dimension, concerning either the causes of poverty or policies for its relief.

Recall that the feminist critique emphasises that a focus on the gender dimension 'involves far more than simply disaggregating data to produce statistics about the situation of women' (Millar and Glendinning, 1989, p.363). They make a case to show it would lead to a more insightful analysis of the structual causes of poverty, especially of that amongst women, hitherto largely 'invisible'. Contrast this analysis of the causes of poverty with the standard one. This typically stresses factors associated with changes in household composition over the lifecycle (including 'family size/number of children', and 'old age'), or 'exceptional circumstances' such as sickness, unemployment, or death of primary earner (see for example Atkinson's textbook, 1983, Chapter 10).

So there is certainly evidence of different analytical frameworks. What we do not have is any evidence about which is the more insightful regarding causes. Opinions about the *relative* explanatory power of either framework are therefore largely conjectural.

As for policy insights, consider the following argument.[9] Some relatively clear conclusions are implied by the little information about within-household inequality which we have already; for example, continue or extend the current practice of paying certain social security benefits directly to mothers. Having *additional*, more detailed, information would not alter these conclusions much, especially once one takes into account the severe constraints on governments' abilities to monitor and control within-household transfers, and hence the final distribution of income. To be most effective, governments should, at the margin, direct their poverty alleviation budget towards aspects which can be changed.

This argument is quite plausible, but it is open to question on two grounds. The first concerns whether the conclusions implied by existing studies are in fact relatively clear. To those who stick with an income-based poverty concept this may be so, but not to those supporting the idea of basic minimum rights to financial independence, especially in a dynamic sense. As these different concepts imply rather different policy measures, it can be argued that we need to know more about within-household aspects especially, say, from a lifecycle point of view. Second, and related, if one moves away from a purely income-based poverty concept, the constraints on action may be less than suggested above. Policy effectiveness depends on which goal is relevant. For example, statutory provisions which increase the state pension rights for people who break careers to care for children or elderly relatives have a clear impact on the financial independence of women. The impact of a £5 increase in family credit scale rates on the within-household income distribution (if that instead were the goal) may be less clear.

Is it infeasible to address within-household aspects?

The fifth potential reason for the persistence of the *status quo* is acceptance of the view that accounting for within-household aspects in poverty measurement is not feasible; that one can describe the extra components of the household 'black box' (as Figure 1 does), but not measure them. This view draws attention to data limitations and emphasises (i) problems of allocation—the difficulties of measuring the outcomes of unobserved redistribution processes and dealing with 'economies of scale'—and (ii) problems of valuation—largely the difficulties of accounting for the non-monetised activity, household time.

This may well be a correct diagnosis, but it is the wrong prescription. As Lazear and Michael point out, 'The rationale of data limitations is itself endogenous. There is [*sic*] so little data in part because there is so little apparent concern about currently accepted measures' (1988, p.21).

Given some evidence of within-household inequalities (and there is undoubtedly *some* evidence, though we may disagree about the extent of inequality), our responsibility as researchers is surely not to carry on blithely as if they do not exist, but to explore the consequences of supposing they do. They might in fact turn out to be relatively minor, but we cannot tell unless we have checked. Sen's comments about the difficulties of measuring relative needs apply equally well in this context:

> [the problem] ... is indeed a very serious one, and there can be hard problems of decidability. There is, however, the danger of falling prey to a kind of nihilism ... This takes the form of noting, quite legitimately, a difficulty of some sort, and then constructing from it a picture of total disaster. Sure enough, greater needs are hard to identify sometimes, but they are quite clear at other times (1973, p.78).

WHAT WE CAN DO

To back up my case, I am now going to set out an empirical research agenda emphasising feasibility rather than the opposite. Most of the work involves extending quantitative research of the mainstream type—largely because that is the sort I know best—but maybe that is no bad thing given the dialogue problems discussed above. I shall therefore retain the assumption that the poverty standard be defined using a single indictor, but I shall propose differently-defined indicators and different ways of summarising currently-used indicators, with the aim of taking better account of within-household issues.

The philosophy underlying the proposals is a relatively conservative one, and based on a belief in the virtues of sensitivity analysis: start by changing some of the assumptions or research procedures, and check what happens. To concentrate on the matter at hand I neglect some of the other measurement issues exercising the profession, such as whether poverty standards should be absolute or relative.

The first two and the fourth projects I discuss aim at taking account of gender dimensions, motivated by the feminist critique. The third is a strategy for exploring the division of expenditures between adults and children. All the projects could be undertaken using data sets that exist already.

Add new dimensions to conventional analyses

One of the clearest aims of feminist work is to destroy the 'invisibility' of women's poverty. It really is remarkable how little direct checking of the gender dimension has been done using conventional income definitions and data sets such as the Family Expenditure Survey. Of course there is some indirect evidence in, for example, breakdowns by household type (since most lone parents and the majority of the elderly are women), but I am not aware of tables summarising the extent of poverty in the UK disaggregated by gender *per se*.

The general lack of such information leads me to recommend first something very straightforward: use the mainstream allocation and valuation assumptions (equal sharing, money incomes), but go ahead and provide such gender decompositions, as well as breakdowns between adults and dependent children. Further breakdowns by age group would enable some analysis of gender-related lifecycle differences. These calculations would be so easy to do even sceptics would hardly have to put themselves out. Since it is of interest to know whether poor women (or poor children) are just below or way below the poverty line, we should also calculate poverty gaps and other measures more sensitive to the distribution of income amongst the poor. (This remark applies to all the strategies outlined.)

The feasibility of such a project has been demonstrated by Hauser and Semerau (1989) in their analysis of Waves 1–4 of the West German Socioeconomic Panel. Defining poor individuals as those living in households with equivalent incomes below 40 per cent of average household equivalent income, they show that in 1983, 6.5 per cent of females were poor and 6.1 per cent of males. In 1986, the corresponding figures are 9.2 per cent and 8.5 per cent (1989, Table 14). Thus there are small gender differentials in poverty rates and in their growth over time.[10]

Those who prefer a multiple indicator/'style of living' approach to poverty measurement could, of course, carry out analogous decompositions. This has been done only once before as far as I am aware, by Mack and Lansley when discussing 'the lack of socially perceived necessities' (1985, Table 4.1). Interestingly, their conclusion is that 'the picture presented holds for both men and women. There were only two items for which there was a statistically significant difference between the sexes: a holiday, which more women went without because they could not afford it, and a hobby, which more women went without because they did not want it' (1985, p.88–9). The robustness of the no difference result deserves to be checked: one might argue that the list of items chosen to represent necessities, or the allocation of items such as washing machines to all persons in a household, hides significant gender differentials. This is nothing but another version of the argument that we should change the sharing assumptions.

Change the sharing assumptions

I want to consider now how we might do this while continuing (for the moment) to use money income as the indicator of living standards. Changing the sharing assumptions enables us to address the issue of bias in aggregate measures as well as decomposition and risk aspects.

To get an idea of the potential range of estimates the most obvious assumption to explore first is 'no-sharing'. The first stage in the analysis would be to allocate each wage to the appropriate wage earner, and social security benefits and occupational benefits to the person who receives them.

I am aware of only three UK studies that have used this no-sharing assumption, and only one has used it to measure poverty explicitly. Townsend (1979, pp.186–8) provides two tables on the 'make-up of household income' broken down by gender. He comments that 'the fact that fewer women than men have any individual income, and have smaller incomes even when they do have any, is striking' (1979, p.187). Piachaud shows that among non-pensioner couple families in the 1977 Family Expenditure Survey, the woman's income was on average 15.4 per cent of combined gross income and 16.7 per cent of combined net income, though the proportions vary significantly with household income level and number of children (1982, pp.473–4). Focusing more specifically on poverty, Atkinson classified individuals according to their income relative to the income support level. Drawing on analysis by Holly Sutherland using the FES-based tax-benefit model TAXMOD (projections for April 1990), he says that:

> ... taking couples as the unit, we find that 9 per cent had incomes below the IS level. If we look at the position of men and women separately, taking a standard of half this amount, then we find about 5 per cent of husbands and 50 per cent of wives are below. The existence of a differential is not unexpected but the magnitude is striking. This provides some measure of the potential significance of the issue ... (1991, p.10).

Imputations using the no-sharing assumption show, not surprisingly, women and children concentrated at the bottom of the income distribution, with many of the children having no income at all. This is an unrealistic picture of the distribution of command over resources, since although we might concede that wives get little from their husbands, it is difficult to argue that children get nothing at all: parents make transfers to them. There is a second factor to take into account as well: 'there are usually economies of scale realised in larger households: thus the effective income resulting from any given money and nonmarket income tends to rise with household size' (Fuchs, 1986, S253). The reason is that: 'Three people do not need proportionately more bathrooms or cars than two people; buying and cooking food in bulk is cheaper; clothes can be handed down from older to younger children' (Deaton and Muellbauer, 1980, p.192).

Thus across families of different sizes there are two opposing effects on the money income of an adult: larger families get greater effective command over resources from each £1 from economies of scale, but less command per pound the more children they have.[11] In mainstream analyses it is routine to account for these factors by adjusting incomes using an equivalence scale and I shall now show how the same procedure may be adapted to produce a 'minimal sharing' distribution.

I suggest, following Fuchs (1986), that the difference between actual household income and equivalent household income (which is child-related), is split equally amongst the children.[12] Multiply each adult's individual income by a factor equal to the number of adults in the household divided by the number of equivalent adults. This gives each adult's adjusted income. If there are dependent children present, subtract total adult adjusted income from total (unadjusted) adult income, and allocate the resulting amount equally between the children. To clarify the proposal, and to compare it with the conventional imputation procedure, here is a simple numerical example.

Suppose a man earns £290 per week, his spouse £10, and their baby, nothing. This is the unadjusted distribution. Assuming equal sharing, everyone gets £100 (= £300/3). To adjust for economies of scale and children, suppose the equivalence scale allocates the first adult 1.0, each additional adult 0.8, and each child 0.3. The scale rate for this family is thus 2.1. Assuming equal sharing, each person's adjusted income is £142.9 (= £300/2.1). Assuming minimal sharing, the father's income is £276.2 (= £290 × 2 ÷ 2.1), the mother's £9.5 (= £10 × 2 ÷ 2.1), and baby's, £14.3 (= £300 —276.2— 9.5). (Note that a man earning £290 per week and living alone would be imputed £290 in all four distributions.) The example is summarised in Table 1, Case A (figures rounded to nearest pound).

I believe this gives a better picture than the unadjusted no-sharing distribution. Nevertheless, we should be aware of its implicit assumptions. Note first that the amount allocated to children is completely independent of the distribution of income between the parents. If the mother's income changed to £100 and the father's to £200, the baby's adjusted income under minimal sharing is still £14.3. (The mother's becomes £95.2, the father's £190.4. See Case B in Table 1.) The reason is that the modified equivalence scale factor makes equiproportionate adjustments to each adult's income. What is being assumed is that the parents reap equal shares of the benefits from economies of scale, and that each contributes in equal proportions to baby. Both suppositions are questionable, as the feminist literature reminds us.

There are alternative assumptions, but they too are not without problems. For example, one could explore the consequences of assuming husband's and wife's (equivalent) incomes were in some fixed ratio (say four to three), and that each parent contributed some share of personal income to children. One could look at bias in aggregate poverty measures, but analyses of the gender composition of poverty would be less meaningful because of the division rule adopted at the outset. Similarly one could not say much about the adult/child division if one used a strategy that began with assumptions about the share of household income children get. Moreover, it does not help to change to making assumptions about what women (or children) get in absolute, rather than share, terms. Then the assumptions, together with the choice of poverty line, predetermine the number who are poor.

The simple assumptions are not such a problem, however, as long as the aim is just to explore the consequences of changing from the standard

TABLE 1. *Different within-household distributions arise from different sharing assumptions*

	Mother	*Father*	*Baby*
Case A			
Actual income received	10	290	0
Income assuming equal sharing	100	100	100
Adjusted income with equal sharing	143	143	143
Adjusted income with minimal sharing	10	276	14
Case B			
Actual income received	100	200	0
Income assuming equal sharing	100	100	100
Adjusted income with equal sharing	143	143	143
Adjusted income with minimal sharing	95	191	14

sharing assumptions. But sometime we will have to incorporate more realistic assumptions, and ones that allow for sharing patterns that vary with household characteristics in a more sophisticated way.

Development of the sort of work that Jan Pahl and others have done on financial arrangements within the family could play an important complementary role here. Sharing patterns appear to vary with household level and principal income source (Pahl, 1983), and it would be useful to pin down this, and other, relationships more tightly. Piachaud's (1982) study is the only one I am aware of that uses Family Expenditure Survey microdata to try and shed light on who in households does the spending and on what.

Economists have taken a rather different approach when doing this. I am going to review next an estimation method that has been used by some to characterise the allocation of expenditure between adults and children and its variation with household characteristics.

Model the adults/children expenditure split

The work I focus on is that by Lazear and Michael (1986; 1988).[13] Their 'modest advance' (1986, S217) assumes a household's income is equally distributed amongst children and amongst adults (so the gender dimension is ignored), but does allocate income between parents and children. Their argument is as follows.

There are some goods which can be classified as consumed exclusively by adults, namely tobacco, alcohol and adult clothing. Now assume that the ratio of expenditure on these observable items to total adult expenditure does not depend on the number of children in the household. Although this ratio is unobserved for most households, it *is* observed amongst childless households. So estimate the ratio using data for this group—allowing for variations according to a range of socioeconomic characteristics using regression analysis—and use the results to impute a figure for adult expenditures to households with children. Finally, allocate observed household income to individuals using the imputed individual expenditure shares.

The procedure is implemented using the 1970 and 1979 US Current Population Surveys, and comparisons made between the distributions of 'LMINC' (individual income estimated using the Lazear/Michael method) and per capita income (that is, assuming equal sharing). The authors report that:

> Our major finding is that, although there is some overlap between per capita income and LMINC, there are important differences. The distribution of LMINC is more diffuse than that of per capita income. Children are more likely to be found in the lower tail and less likely to be found in the upper tail of the LMINC distribution (1986, S217).

In the per capita distribution a child received an income 100 per cent as large as that of an adult in the same household; in the LMINC distribution, the corresponding figure was 40 per cent on average, and in almost a quarter of the families, only about 25 per cent.

It would be interesting to check whether British data would yield similar results, and Family Expenditure Survey data could be used to do so. While the Lazear/Michael method has some undoubted advantages, we should, as the authors and their critics remind us, also be aware of its deficiencies.

First, two of the three observed adult expenditures, alcohol and tobacco, are notoriously subject to measurement error (under-reporting in particular). If the error were simply random the estimates may be little affected. On the other hand, it is quite likely that it is systematically related to household type. A single man living alone and a young father may both spend the same on alcohol, but if the former under-reports to a greater extent, this leads to an over-estimate of the amount spent on children. There is also the issue of whether Lazear and Michael's 'adult goods' are consumed exclusively by adults.

Second, there is the question of how to allocate the benefits of household public good expenditures, or economies of scale. These were ignored above, though one can rationalise this by supposing that the adults to children ratio of benefits is exactly the same as the adults to children ratio of private good expenditures. This has some intuitive attraction, but is, of course, an arbitrary assumption (see my earlier comments). The alternatives are arbitrary too—for example, splitting the benefits on an equal per capita basis, or using some sort of equivalence scale adjustment, as earlier.

Third, income shares are assumed to equal expenditure shares. Smith has pointed out that because 'the savings rate increases with income, the dispersion of the income distribution produced by Lazear and Michael would presumably be greater than the distribution of consumption' (1986, S243).

Fourth, and perhaps most obviously, the assumption that the ratio of observable adult expenditures to total adult expenditures is independent of the number of children is questionable. The assumption is equivalent to supposing parental preferences are what economists call 'separable' between adults' and children's consumption, and it is worth quoting Gronau's clarification of what this means and whether it is reasonable.

> Separability does not rule out the assumption that parents care for their children and care what their children consume. Weak separability rules out the case that children's composition of consumption affects parents' preferences for their own consumption (that is, the marginal rate of substitution between any two goods consumed by the parents). Thus the assumption is consistent with parents' stuffing their children with spinach but is inconsistent with their starting to eat spinach themselves to set a personal example. More seriously, it is inconsistent with children's affecting their parents' pleasure from watching television, going to the ball game, or listening to a Bartok quartet. The importance of these interactions between parents' and children's consumption is not clear and calls for more empirical evidence (1988, p.1189).

Gronau concludes that 'after consideration, it looks like an assumption one can live with (though not without reservations), and in fact most economists have taken it for granted' (1988, p.1189). Moreover, in his 1991 paper he shows that separability implies some testable predictions about consumption patterns and he argues that these are not rejected by his data (which are the same as Lazear and Michael's). I conclude there are no grounds for hasty rejection of the separability assumption, nor thence the estimation method.[14]

A more fundamental objection might be that this approach, and all the others described so far, ignore time use factors and thereby provide a misleading picture.

Rework analyses incorporating valuations of time use

In this section I make some suggestions that attempt to take account of this view. Before doing this it is useful to explain how time use has typically been incorporated in economists' analyses. Drawing attention to its deficiencies motivates my discussion of how to incorporate within-household aspects, and facilitates a critique of recent feminist analysis.

Two accounting identities are the basis of the usual summary of a household's resources of time and money. Total time available (T) consists of time in the labour market (M) and time in leisure (L)

$$M + L = T \text{ (time)} \tag{1}$$

and consumption expenditure on market goods and services (C) is constrained by the sum of earnings (the wage rate, w, times M) and total non-labour income (V), so

$$wM + V = C \text{ (money).} \tag{2}$$

Note that each household is usually treated as if it were a single adult: within-household aspects are ignored. (To simplify exposition I have assumed a single accounting period, so there are no net savings, and I have ignored taxation.)

To provide an aggregate measure of household resources, rewrite equation (1) as $M = T—L$, and substitute it in (2), to derive

$$wT + V = C + wL. \tag{3}$$

'Full income', on the left hand side, is thus spent on consumption of goods and on leisure. Notice how these equations link together items in each of boxes 1 to 3 in Figure 1.

The procedure suggests that a better picture of the income distribution is gained by augmenting estimates of a household's money income ($wM + V$) with the value of its members' leisure time (wL), and a number of studies have done precisely that.[15] However, their valuation and allocation assumptions are both questionable.

First, time at home is not perfectly substitutable for time in the labour market, particularly for women (note, too, that no distinction is made between work in the home and 'pure' leisure). Hence the going market wage may not measure the true opportunity cost of an hour at home. Simply substituting (1) into (2) assumes the converse. True full income is (cf (3))

$$wM + \omega L + V = C + \omega L, \tag{4}$$

where ω is the shadow price of an hour, not necessarily equal to w (and may be zero for the involuntarily unemployed).

Second, and most obviously, within-household inequalities are simply ignored in the specification. Not only is money income assumed equally shared, but so are home time activities. We need to modify the specification to represent household production and household members' experiences better.

To consider alternative assumptions I rewrite the household full income constraint (4) in a form that explicitly identifies the individuals involved, and which makes a distinction between pure leisure (L) and household work time (H). For a couple household, full income is

$$w_f M_f + \omega_f L_f + \lambda_f H_f + V_f + w_m M_m + \omega_m L_m + \lambda_m H_m + V_m$$
$$= C_f + \omega_f L_f + \lambda_f H_f + C_m + \omega_m L_m + \lambda_m H_m. \quad (5)$$

Subscripts f and m identify females and males. Coefficients λ and ω are the shadow prices of H and L.[16]

Equation 5 characterises household full income but the fundamental issue is: how is this allocated amongst household members? A woman's personal full income has five components: the share of her own money income she keeps; the share she gets of the man's money income; the value of her personal leisure time; and her share of the proceeds of her own, and the man's, household work. We can describe this by writing

$$\alpha(w_f M_f + V_f) + \beta(w_m M_m + V_m) + \omega_f L_f + \gamma\lambda_f H_f + \delta\lambda_m H_m, \quad (6)$$

α, β, γ and δ are the respective share parameters. The earlier subsection discussed, in effect, how to allocate the first two components only (with no-sharing, $\alpha = 1$ and $\beta = 0$). Now there are additional issues of allocation (deciding values for γ and δ), and valuation (deciding values for ω_f, λ_f and λ_m).

This framework shows that the issues are more complex than the feminist literature allows. For example, Millar and Glendinning's argument that 'the failure to recognise and assign value to the time spent by women on unpaid work means that the extent of their poverty is greatly under-represented' (1989, p.376) can be seen to consist of a range of disparate, and sometimes conflicting, elements. The emphasis on low values of β and of w_f relative to w_m has already been mentioned. Less clearly, it is also argued that it is 'women who are responsible for most of the "home production" (with the possible exceptions of DIY and machine maintenance) ... However this time is invisible and given no value as a resource in the measurement of poverty' (Millar and Glendinning, 1989, p.377). In effect, the first sentence argues that H_f is high (and H_m low), while the second appears to stress a very low λ_f. The two factors have opposing influences on full income, and so their argument is not consistent. Millar and Glendinning go on to say: 'Although the time women spend in household management and domestic labour enhances the living standards of the whole family, women alone bear the cost of this because only their labour market participation is restricted by domestic work' (1989, p.377). The first part of the sentence appears to emphasise a high $\lambda_f H_f$ but the second a low ω_f. So again it is not clear what the essence of their case is.

Clarification of the feminist case in future research would be useful, and presumably would tie in with discussion of the relevant poverty concept (see above).

Although I have sought to emphasise some of the difficulties arising when incorporating time use, I have not meant to imply that nothing would be gained from some exploratory empirical work. As Piachaud has put it, 'analyses which expose some of the complexities involved serve a purpose, however inconclusive they may be' (1982, p.482).

What I recommend is that we start by not trying to value and allocate all the outputs of household production; that is, ignore the last two components of (6), and the corresponding ones in the analogous man's equation (as well as in (5), the household equation used for the equal sharing derivation). Concentrate efforts first of all on finding a definition of personal leisure time. That there is room for debate about this is acknowledged—is taking the kids to the park child care (so excluded), or relaxing fun (so included)?—but I am sure a range of workable definitions is feasible.

Second, value leisure time. We could, for example, value that of full time labour market workers using their observed wage rates, and that of the others using imputed wage rates derived from the wage distribution of participants with the same characteristics. Fuchs (1986) does this, and also explores the consequences of varying the imputed wage rates by 25 per cent either way.

Third, derive the full income equal sharing and minimal sharing distributions. Adjustments can then be made for economies of scale and the presence of children, as discussed above. (The same caveats apply, of course.) For statements about poverty, some poverty line is required, and specification of this raises some new issues (unless one is content to use, say, some percentage of mean or median full income). From a budget standard point of view, there is the question of what should be in the time part of the budget. As Piachaud stresses:

> Any definition of a poverty level implies some assumption about time inputs into home production. Should it be assumed that unemployed and retired people spend the same time ... preparing food as employed people? Do they do so? It is not clear what assumptions are appropriate but it might be better if they were made explicit (1987a, p.156).

For an interesting illustration of how to measure poverty using a two dimensional time and money poverty standard, see Vickery (1977).

All these suggestions are predicated on the existence of suitable data. Ideally one requires a time budget survey that includes information on household incomes as well as the activities of household members. The recently conducted ESRC Social Change and Economic Life (SCEL) Time Budget Survey (Gershuny, Jones and Godwin, 1988) is the only British source I am aware of that fulfils these criteria. It has the right sorts of variables but unfortunately there are only about 400 households where both SCEL respondent and partner provide good week diaries. Also, 'Household members other than respondents and partners (i.e. those household members not directly involved in any other SCEL survey exercise) seem to have very low rates of participation' (Gershuny, Jones and Godwin, 1988, p.4).

Perhaps the most productive way forward is to combine data sets. Respondents to time budget surveys can be matched with individuals in the Family Expenditure Survey according to a range of personal characteristics and thence activity data imputed. Fuchs (1986) has shown this is feasible, using the 1975–76 University of Michigan Time Budget Survey (data for 674 individuals) to impute numbers of 'nonmarket hours' to individuals in the 1/1000 samples of the US Censuses of Population of 1960 and 1980. In fact, British data sources are probably better suited for such an exercise, because they are available for several years and are larger. The number of individual diaries with good data is about 1,800 in the SCEL survey, around 1,550 in the 1983/4 ESRC national time budget survey, and similarly in the BBC national surveys for 1961 and 1974/5 (Gershuny *et al.*, 1986). Jenkins and Gershuny (1989) provide more details about how 'full income' distributions could be estimated by matching FES and time budget data.

CONCLUDING COMMENTS

It is obvious that incorporating within-household aspects in poverty measurement raises difficult issues of allocation and valuation. It is much less obvious that we should continue to follow the widespread practice of acknowledging these problems, but then doing nothing about them. As Lazear and Michael put it, 'this tradition, although firmly established, is neither necessary nor wise' (1988, p.12). There is much we can and should do with existing resources.

Although some progress can be made, it is limited progress nonetheless. In particular it appears that we can make headway looking, on the one hand, at the distribution between husbands and wives or, on the the other hand, at the distribution between parents and children, but doing both satisfactorily is substantially more difficult.

Finally, some comments on methodology. I have focused on empirical measurement using the information on (full) incomes to be found in large household surveys, an approach closely related to the mainstream one. It is but one approach amongst many nonetheless, and I would welcome greater cross-fertilisation between approaches in future. I have already drawn attention to the potential complementary role of interview research on financial arrangements within marriage.

Theoretical work can also play a role. It may be, for example, that a range of multiple indicators better capture the experience of individuals within-household than estimates of (full) income do. This is especially relevant if one prefers consumption-based poverty measures to the resource-based ones I have focused on (that is, items in Figure 1, box 5a rather than boxes 1 to 3). However, it is difficult to summarise multiple indicators information in a satisfactory way, as the debate about Townsend's (1979) deprivation threshold indicates. (Also, see Mack and Lansley (1985) and Mayer and Jencks (1989).) We need more research on how to summarise experience and formulate poverty lines using multi-dimensional measures.

There is a burgeoning economics literature on household decision-making which is almost entirely theoretical (Apps and Rees, 1988; Chiappori, 1988). The potential for mutual feedback between this and the empiricist approach I have taken needs to be explored further.

NOTES

1 The condition is an informal statement of what is known as the Transfer Axiom in the measurement theory literature—see, for example, Seidl (1988).

2 The arguments have been illustrated empirically by Haddad and Kanbur (1990) using Philippine data on the food consumption of individuals (and hence of households as well). Using calory intake as a measure of individual wellbeing, they demonstrate '(i) The neglect of intra-household inequality is likely to lead to a considerable understatement of the levels of inequality and poverty. (ii) However, while the patterns of inequality revealed by household level data are somewhat different to those revealed by individual level data, these differences can be argued to be not dramatic' (1990, pp.866–7). Whether or not these results apply more generally is the task we need to address.

3 However, the two dimensions overlap to the extent that women are primarily responsible for children.

4 Of course not all evidence about within-household experience has been derived from small scale interview research. Some information about gender differentials in household work has been derived from quantitative analysis of large scale surveys such as British Social Attitudes, and those used by Jay Gershuny and collaborators (1986). An example of 'large scale' interview research is Vogler's (1989). She classifies the financial allocation systems used by 1,211 households in the ESRC/SCELI data set according to Pahl's (1983) typology. It remains the case,

however, that these are primarily 'one-off' studies, and not regularly updated in the way Family Expenditure Survey analyses are.

5 The remainder of their section considers explicitly within-household outcomes. Note also that most of the chapters in Glendinning and Millar (1987) concern economic disadvantage outside the home.

6 For instance, Joseph and Sumption say 'A family is poor if it cannot afford to eat' (1979, p.27). If presented with the results of, say, Charles and Kerr (1987) on family food consumption differentials, Joseph and Sumption would probably argue, I conjecture, that such data indicate inequality not poverty, and perhaps even draw attention to incidence of 'unnecessary' consumption of chips, cake, biscuits, puddings and sweets.

7 Millar and Glendinning criticise the view that the 'extent of low pay among women is ... irrelevant to the extent of poverty among women because "really" women are dependent upon men for their standard of living. The assumption is not only inaccurate but is actually damaging to women because it uses the financial dependence of *some* women to justify ignoring the lower resources of *most* women' (1987, p.11).

8 Distinctions between a 'household' and a 'nuclear family' become particularly relevant in this context. The potential vulnerability of dependent children is obvious, but less clear are the rights (and desires) of non-dependent children and grandparents to be supported from a communal pool, and their obligations to contribute to one.

9 This was put to me by Tony Shorrocks at the ESRC Workshop where I presented an earlier version of this paper.

10 Hauser and Semerau also provide breakdowns by three age groups (-17, 18–64 and 65+), and nationality of household head (German, foreign-born), and repeat the calculations raising the poverty standard to 50 per cent of average household equivalent income.

11 It is typically assumed that the second effect is larger than the first, and that this differential gets smaller the larger the family: check the equivalence scale cited.

12 Fuchs compares the economic status of adult women with adult men in the US, rather than poverty *per se*. He does not look at the incomes of children.

13 Gronau (1988; 1991) has developed and implemented a very similar procedure. See the discussion by Deaton and Muellbauer (1986) too. They relate the estimation procedure to the literature on estimation of equivalence scales from expenditure data (and the Rothbarth method especially).

14 Smith has suggested that 'Lazear and Michael do for adults on a gender basis what they have attempted to do for adults and children' (1986, S244), but the division of adult observable expenditures between males and females is problematic. Of the three categories cited earlier, adult clothing is the only one that could be used, but even this is questionable. Who wears the Levis?

15 Virtually all the empirical studies are North American: see, for example, Fuchs (1986) and Garfinkel and Haveman (1977). The only UK work I am aware of is a section in Layard and Zabalza (1979). The household full income distribution has a higher mean than the household money income distribution and a different composition: one earner couple households are moved up the distribution by more than two earner couple households are. Conclusions about the design of tax and benefit systems have been drawn from this: if full income is assumed a better measure of 'ability to pay' (or need), then the former group is under-taxed relative to the latter (Apps and Jones, 1986). However, rather different conclusions may arise from analysis of the *personal* full income distribution combined with a system of independent taxation.

16 Note that intra-household transfers of market goods and household production (items in Figure 1 box 4) cancel out. Hence, children, if present, do not 'appear' in the equation.

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