

Family Size Equivalence Scales and Survey Evaluation of Income and Well-Being

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FAMILY SIZE EQUIVALENCE SCALES
AND SURVEY EVALUATIONS OF
OF INCOME AND WELL-BEING

Bruce Bradbury

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**FAMILY SIZE EQUIVALENCE SCALES AND SURVEY EVALUATIONS OF
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ABSTRACT

The determination of the different needs of families of different compositions is necessary in order to ensure horizontal equity in tax/transfer policies. Despite the seeming simplicity of the problem, a consensus as to the appropriate means of determining relative need remains elusive.

One approach which has been proposed has been to use social surveys to analyse the relationship between subjective evaluations of well-being and incomes. This paper examines such methods, and discusses the key assumptions upon which they rest. An explanation is advanced as to why these methods may lead to an understatement of the differences in relative needs of different family types.

1. THE EQUIVALENCE SCALE ISSUE

What level of economic resources does a family of one size require to attain the same level of well-being as a family of another size? In other words, how are such different families to be made 'equivalent' for the purposes of analysis and social policy?

Larger families will, in general, require more resources to maintain the same standard of living. However this will rarely be simply in line with the number of persons in the consumption unit.¹ This is for two reasons. First, there are economies of scale in housing and other needs – two can live more cheaply than twice one. Second, some people have greater needs than others. Infants, for example, require less food and take up less space than adults. Depending upon the application of the equivalence scale, other factors, such as the low housing costs of owners, the ability of farmers to grow their own food, or the presence of disabled persons, may also be taken into account.

The object of an equivalence scale is to enable a comparison of the economic resources, relative to needs, of different families. Typically, equivalence scales have been developed with regard to *income*. This is because income is the best summary measure of the ability of people to consume the goods and services of the market economy, without running down assets. More practically, equivalence scales have historically been developed in order to ensure horizontal equity in the various income-based tax/transfer schemes of capitalist states.

Whilst it is in this narrow sense that equivalence scales are discussed here, it is important to note some limitations, and correspondingly, some possible extensions to this approach. It is clear that income cannot represent a complete measure of the economic resources available to families. Apart from wealth (physical and human capital), other resources stem from inter-household transfers (e.g. from other extended family members), and most importantly for social policy, services directly provided by the state. Any income-based equivalence scale can only be interpreted in the context of the existing patterns of non-income based resource flows. Changes to these patterns will alter the requirements of different families for incomes to meet their needs.²

¹ For simplicity of presentation, households, families and income units are treated here as synonymous - though for practical applications of equivalence scales it is important to distinguish these different units.

² For example, cuts in government educational subsidies would increase the income requirements of families with children relative to those without.

In principle, equivalence scales could be developed on a broader basis to describe equivalent levels of housing quality, wealth, social participation etc. For example, the nature of housing needed to attain minimum standards would be expected to vary in a well defined way with family size. This is relevant to the equitable provision of state housing services. The 'evaluation' methods of equivalence scale calculation discussed below can easily be modified to look at these other indicators of well-being – though for many of these indicators there is probably a greater degree of consensus of what constitutes equivalent levels.

A further important consideration is that families' levels of well-being are generally considered as conditional upon family structure. That is, the contributions that children themselves make to the families well-being are not included. Pollack and Wales (1979) argue that in a 'perfect contraceptive society' a revealed preference argument would lead to the conclusion that people choose to have children in order to maximise their own total welfare. Hence there is no need for compensation for the extra costs of children, because the fact that they are chosen implies that they yield benefits also. Even if parents do not have complete control over their family structure, they may still obtain some benefit from the presence of children.

This is not the approach adopted here for three reasons. First, equivalence scales are often applied to situations where income support is to be provided to those with unexpectedly low incomes through unemployment, illness or family breakup. Thus any choices relating to child rearing may have been made under different circumstances. More fundamentally (in wealthy countries at least), fertility is also a public good – on which most societies are dependent for their existence. Hence political decisions on appropriate equivalence scales are invariably assumed to be conditional upon persons fertility decisions. Additionally, viewing children as consumption goods chosen by the parents ignores the childrens' own well-being.³

Approaches to measuring equivalence scales

There are many approaches that have been developed to determine income equivalence scales. They can be categorised as the political, budget, and expenditure methods.

The tax/transfer systems of advanced capitalist societies have equivalence scales implicit in their structure. As these scales have arisen as the result of political processes in each country they will undoubtedly reflect, at least in part, prevailing community attitudes of

³ Though it should be noted that in both the expenditure and evaluation methods of equivalence scale calculation it is the *parents'* well-being which serves as the point of comparison between families of different sizes.

equity across families. However, it is not clear that they will do this adequately. The recent history of administrative equivalence scales for families in Australia shows that changes have often evolved more as a result of dynamics of the administrative system than as a result of any pluralist decision making (e.g. the non-indexation for inflation of the child components of pensions and benefits). Alternatively, they have been influenced by equivalence scales constructed independently of the local political process. The recent changes in income support policy for families with children in Australia were influenced by a wide range of calculated equivalence scales. For the creation of such independent equivalence scales we must look elsewhere.

The most widely used approach, particularly for the setting of poverty lines for different families, is the budget approach. This involves experts, experienced in the living conditions of low income families, drawing up lists of necessities for families of different types. This method suffers from the obvious arbitrariness of such a procedure - an arbitrariness which has increased as living standards have risen and consumption patterns have become more complex.

This complexity of consumption patterns also causes problems for some of the expenditure based measures. The most simple of these draws on 'Engel's law' that the proportion of income spent on food (or other necessities) decreases as living standards increase, together with the fact that larger households need to consume proportionately more necessities than smaller. The proportion of income spent on necessities can thus be used as a measure of family well-being, and used to determine equivalence scales. However, with food becoming a smaller component of total expenditure, and no other clear group of necessities emerging, this method has become increasingly problematic. The relevance of this method has even been criticised for relatively simple economies (Deaton and Muellbauer, 1986).

Several methods have been used which attempt to generalise this model to take account of spending on all commodities. These can be interpreted in terms of the theory of consumer demand, where households are assumed to adjust their consumption patterns to maximise their welfare, or 'utility'. The consumption expenditure required (the cost) of attaining a given level of well-being is assumed to be a function of the level of well-being chosen, and the composition of the consumption unit, with larger units requiring more expenditure to reach the same living standard. (Because we are comparing different family compositions at the same point in time, variations in prices can be ignored.) An equivalence scale can then be defined as the ratio of the costs for different family compositions. Formally, the equivalence scale for a family of composition a^h relative to one of composition a^r is defined as,

$$m = \frac{c(u, a^h)}{c(u, a^r)} \quad (1)$$

where $c(u, a)$, is the minimum cost of attaining a welfare level of u with given composition a . If the family of composition a^h is larger than the reference family a^r , we would expect that the income⁴ required for that family to reach a given level of welfare would be greater, and hence $m > 1$.

An equivalent definition is to describe this relationship in terms of the 'indirect utility functions' of the different families,

$$u = u(x, a^r) = u(mx, a^h) \quad (2)$$

where x is the total expenditure of the reference household. That is, to attain the same utility level of u , a household with composition a^h needs to spend m times more than the reference family of composition a^r .

These utility functions are estimated indirectly from the demand functions for different commodities. However this process is far from trivial, involving substantial data requirements, together with the use of restrictive assumptions. Indeed Deaton and Muellbauer, in discussing one of the most prominent of these models suggest that

In practical applications, however, it will always be extremely difficult to estimate the parameters of the Gorman-Barten model. (1986, p.740)

Whilst it may still be possible to use such methods with judicious choice of assumptions, two decades of research have failed to produce a generally accepted methodology. Hence the interest in alternative approaches.

2. THE EVALUATION APPROACH

All the above methods have in common that they try to measure the relative welfare levels of different families *indirectly*. Administrative equivalence scales are valid if the different welfare levels are able to permeate and influence the political system to impose equity. Budget based measures are derived from the experts' conceptions of commodities required to attain satisfactory living standards, the food ratio method assumes that the proportion of total expenditure on food represents a measure of relative welfare, and the more general consumption based measures attempt to derive cost functions, and hence equivalence scales, from overall patterns of expenditure.

⁴ For simplicity, total income and expenditure of the family unit are treated as synonymous.

By contrast, the methods discussed below attempt to *directly* evaluate either the cost or utility functions. This has a number of advantages, not least being the relative simplicity of the methodology used. Though, as shall be demonstrated in a later section, these methods still rely on some critical assumptions for their validity. The essence of all these evaluation methods is to use questionnaires or similar instruments to measure people's *subjective evaluations* of welfare or utility levels and their relationship to incomes.

This is a major step away from the usual use of the concept of utility in economic demand theory. Utility is usually taken, by definition, to be that which is maximised by behaviour – an abstract concept not intended for measurement. However it should be noted that the consumption theory based equivalence scale calculations also make stronger assumptions than is usual in demand theory,

It must always be borne in mind that such welfare comparisons are being made *across* households so that, by making the leap from behavior to welfare, we are assuming that two households who behave identically have identical welfare levels. (Deaton and Muellbauer, 1980, p191-2)

The evaluation methods described here make no equation of consumption behaviour with welfare. Instead, they assume a particular relationship between the well-being of individuals and their responses to questionnaires. In Table 1 a classification is given of the different subjective methods used to calculate equivalence scales. They are divided here on two dimensions.

- Whether people are asked to evaluate their own family's situation, or whether they are called upon to evaluate a range of hypothetical families of different composition, and
- Whether the attitudinal response is in terms of *welfare levels* corresponding to given incomes, or in terms of *income levels* required to reach given welfare levels.

The four methods are discussed in detail in the next few sections. Following this the empirical results obtained from these methods are contrasted with those of alternatives. The final section attempts to account for the divergences between the different techniques, and to discuss the limitations of the evaluation approach.

Table 1 Different Evaluation Methods for the Calculation of Equivalence Scales

Scope	Response	Used by	Example questionnaire instrument
Own Family	Welfare	Dubnoff, Vaughan and Lancaster (1981)	"How do you feel about the income you (and your family) have?" (answered on a seven point delighted/terrible scale)
Own family	Income	"Leyden school"	"Please try to indicate what you consider to be an appropriate amount of money for each of the following cases? Under my (our) conditions I would call an after-tax income of: about \$.... very bad about \$.... bad ... about \$.... very good"
Hypothetical families	Welfare	Dubnoff (1985)	Respondents were presented with a list of hypothetical families of different incomes and compositions, and asked to describe each of them on a scale ranging from "poor" to "prosperous".
Hypothetical families	Income	Rainwater (1974)	"Now I'm going to describe several different couples in their thirties and forties - and their levels of living. For each description I give you, please tell me the income that that family probably has so that they can live at that level"

Own living standards response

This method asks respondents to evaluate their level of satisfaction with their current economic circumstances. The level of income required by different family types to attain the same average level of satisfaction is then used to determine an equivalence scale.

Dubnoff, Vaughan and Lancaster (1981) use Andrews and Withey's Money Index, the unweighted sum of two questionnaire items, answered on a seven point delighted-terrible scale. The items are 1) "How do you feel about the income you (and your family) have?", and 2) "How do you feel about your standard of living - the things like housing, furniture, recreation, and the like?"

The derivation of equivalence scales from these responses can be described formally in terms of the definition described in equation (2) of the previous section. Given a measure of a person's level of well-being, their income and their family composition, and some assumptions about the functional form of the relationship between them, it is relatively easy to derive equivalence scales. Dubnoff *et al* do so in the following way. They assume that satisfaction can be modelled as a linear function of log income and dummy variables for different family sizes. That is,

$$u = b_0 + b_1 \ln(x) + b_2 X + e \quad (3)$$

Where x is family income, X takes on the value zero for the reference household, and 1 for the comparison household, and e is a random error term of zero mean and constant variance. Additional dummy variables may be added for other household compositions. After this relationship is estimated, the expected satisfaction levels for the two different households are equated, as in (2), to obtain the relationship,

$$b_0 + b_1 \ln(mx) + b_2 = b_0 + b_1 \ln(x) \quad (4)$$

This can then be solved for m to yield

$$m = \exp(-b_2/b_1) \quad (5)$$

Clearly, the method rests upon the ability to assign a metric to the measure of satisfaction used. This may not be such a major stumbling block however. The delighted-terrible scale is clearly ordinal, and so it should be possible to experiment with a range of monotonic transformations of u in equation (3). In principle there exist methods for determining which monotonic transformations provide the best fit to the

data. Also, we may note that a *linear* transformation of the satisfaction measure will have no effect upon the equivalence scale estimated.⁵

The expression for m in equation (5) can be interpreted in the following way. If the comparison family is larger than the reference family, b_2 will be negative, reflecting the amount on average by which the income satisfaction of the comparison family is lower at any given level of income. The larger the absolute magnitude of b_2 , the more compensation required to give the different families the same level of well-being. The amount of income required, however, will be a function of the relationship between income and satisfaction, b_1 . If this relationship is strong, less monetary compensation will be required to increase satisfaction by a given amount.

If income is included in equation (3) in linear, rather than log form, an *additive* equivalence scale can be generated, where the comparison family will require a constant amount of income above the reference family's income. Again, the exact specification of the relationship between income and satisfaction is an empirical question. In general, the equivalence scale would not be expected to be the same at all levels of income.

Own income response

This method is similar in concept to that of the previous section, except that here respondents are given a description of a satisfaction level, and asked to reply with the level of income they would need to attain that level of welfare. An example of the type of questionnaire instrument used is given in Table 1. A substantial literature has developed over the last two decades interpreting the results of such income evaluation questions centred around Leyden University in The Netherlands. Here, only those aspects of this literature directly relevant to the study of equivalence scales will be discussed.

Kapteyn and Van Praag (1976) analyse this data within the framework of the 'Welfare Function of Income' model, whereby the responses to the income evaluation question are used to construct a metric utility measure for each respondent. In practice this involves fitting a log-normal distribution to the answers, summarising the multiple responses into two parameters. However, as has been more recently realised (Van Praag and Van Der Sar, n.d.) these strong assumptions are not required in order to calculate equivalence scales. In fact, it is possible to derive equivalence scales from each welfare level (e.g. the income required to feel 'very bad'). The Welfare Function of Income should be

⁵ The addition of a constant will only alter the value of b_0 , which does not appear in equation (5), whilst the multiplication of u by a constant will result in magnified values for b_1 and b_2 which will cancel out.

considered as one method (but not the only method) of summarising the different equivalence scales obtained at each welfare level.

The method of Goedhart, Halberstadt, Kapteyn and Van Praag (1977) is another variant of this general approach, though here the question is more explicitly aimed at obtaining estimates of poverty level equivalence scales (as well as poverty lines). They use the question,

We would like to know which net family income would, in *your* circumstances, be the absolute minimum for *you*. That is to say, that you would not be able to make both ends meet if you earned less.

In my (our) circumstances I consider the following net family income the absolute minimum: _____

Asking people this question is thus a way of directly measuring the cost function of equation (1). That is, people are asked the cost of attaining a given welfare level. Equivalence scales can be simply derived by taking the ratio of the average response to this question for people in the comparison family type to that of the average response of those in the reference family.

However, there are problems with this simple approach. People's welfare evaluations are not immutable measures of well-being. Rather, feelings of economic well-being are influenced by many factors other than the need to consume goods and services. Or, in other words, needs are socially determined. The wider implications of the social determinations of needs are taken up in the penultimate section of this paper. To begin with, however, it is important to take account of the fact that the answers people provide to such questions will be heavily influenced by their own incomes. This phenomenon is described by Kapteyn and Van Praag (1976) as 'preference drift'. To quote Van Praag and Van der Sar,

If one's income is \$10,000 a year, there is a good chance that he will estimate a *good* income at \$20,000, but if one's income happens to be \$50,000 he may estimate a *good* income at \$70,000. (n.d., p.5)

Indeed, if family type B has a lower income than family type A, this may lead to family type B giving a lower response to the income evaluation question than A, even though family B may be larger. This reversal is clearly an undesirable property of any equivalence scale. No useful policy purpose is served by a scale with such properties (though the results may be of interest to the political scientist). The equivalence scale should only reflect needs stemming from demographic composition, rather than needs generated by present consumption.

Whilst this apparent reversal of the expected equivalence scale for these two hypothetical families could be dealt with by holding income constant in the comparison, even if the two family types have identical income distributions the preference drift effect will produce distortions. Take, for example, an income evaluation question which asks people to give the level of income which represents a 'satisfactory' level of income for their family. There will be a tendency for people to respond to this question with a level of income similar to their own, because this is the level of income to which they have become accustomed. Note that this may occur whatever the size, and hence needs, of the family. If this tendency is very strong, and the two families have identical income distributions, then we will find that the levels of income 'required' by the two families will be very similar – despite the greater 'demographic' needs of family B.

The reported needs of families of different sizes will thus tend to be constrained to their current incomes. This is again an undesirable feature for an equivalence scale. Note that this problem does not occur with the 'own satisfaction' model of the previous section. In that model, the preference drift effect will tend to reduce the variation of the satisfaction index, as people tend to give answers near the middle of the scale. However, as was noted, such linear transformations will not alter the value of the equivalence scale obtained (assuming the functional form specified in equation (3) is correct).

However, it is possible to control for this preference drift in the 'own income response' method. Whilst the answer to the questions will tend to be close to the respondent's current income, there is one situation where this is not a problem. That is when the 'true' response to the question is the same as the current income. In this case, the preference drift will have no impact, because the answer is already the same as the current income. Thus, the method of the 'Leyden school' is to adjust the simple responses to the income evaluation question to provide an answer to the question *'what is the level of household income for a family of given size, such that that household will qualify its own income as representing a given utility level (e.g. 'satisfactory')'*.

One way to answer this question, and control for preference drift, is to only look at those households who give answers to the income evaluation which are near their present income. But this would not take advantage of the information gathered from other families. The alternative, and that described here, is to model the relationship between income, family composition and well-being, and to impute the answer to the above question. This process can be described as follows. From the responses to the income evaluation question, the constrained cost, $c^*(u,a,x)$, of reaching a given level of well-being, u , for a given family type, a , and income, x , is estimated. This equation is then solved to find the level of income at which a family would describe its *own* income as

being at the utility level u . At this level of income the constrained cost will be equal to the unconstrained cost, which in turn will be equal to the level of income.

The method is best illustrated using a specific functional form. It is assumed that the observed relationship between the stated income required, c^* , current income, x , and family composition dummy variable X , for a given welfare level can be represented as;

$$\ln(c^*) = b_0 + b_1 \ln(x) + b_2 X + e \quad (6)$$

When $c^* = x$, the person will be evaluating their own income as being at the given welfare level, and so at this point the unconstrained cost will be equal to the constrained cost. Thus from equation (6) the value of x is found for which $c^* = x$. This is given by,

$$x = \exp \{(b_0 + b_2 X) / (1 - b_1)\} \quad (7)$$

For the reference household, a similar cost function can be calculated (with $X=0$), and the equivalence scale derived as;

$$m = \frac{c(u, a^h)}{c(u, a^r)} = \exp \{b_2 / (1 - b_1)\} \quad (8)$$

This equation can be interpreted in a similar way to equation (5) above. The parameter b_2 represents the additional income that the comparison family sees itself as needing to reach a given welfare level. This is then inflated by a factor of $1/(1-b_1)$, which will be greater than unity, to take account of the tendency of the response to be constrained to current income. The parameter b_2 on its own, may be thus considered as providing an *income constrained equivalence scale*.

Hypothetical income response

A natural extension to the 'own income response' question is to ask people what they consider the income required to attain given levels of living for *a range of hypothetical family types*, rather than just their own family. This method also has strong parallels with the budgetary method, long used for the setting of poverty level equivalence scales. The difference here is that, instead of a panel of experts making the judgments, a random sample of the population as a whole is asked.

An early study to use this method is that of Rainwater (1974). The preamble to his main question is listed in Table 1. Respondents were presented with five different family types, who were each described as living at a certain level (in poverty, getting along, comfortable, prosperous or rich). They were asked what would be the lowest income the families could have and still be described as living at that level. The combinations of

family size and living levels were varied in different interview forms, so that overall there were 25 different family size/living level combinations asked.

Like the 'own income response' method, this method also attempts to measure the cost function directly. Equivalence scales across the family types at each living level can be estimated by taking the ratios of the average incomes said to be required to reach that living level. Compared to the method of the previous section, this would seem to have a number of advantages.

First, it avoids the complications induced by the preference drift effect. Under the own income response model of the previous section, answers tend to be constrained by the respondents' current income. Whilst the respondents' income may still influence their average response in this case, the income variation requested by the question is now *independent* of the variation of own incomes. That is, respondents' own incomes may influence the average level they give for all family types⁶, but will be unlikely to affect the relativities they place between family compositions (except perhaps for family types that the respondent views as close to their own).

Second, the simplicity of the method is important. The goal of the research is much more visible in the questionnaire instrument itself. It is thus easier to describe the equivalence scale that results – one based upon public perceptions of different needs. Hence debate over the implications of the derived scale may be more informed.

Third, the method allows the researcher to directly specify the different family compositions. This allows a balanced design, whereby information can be collected efficiently about small groups in the population. For example, everyone in the sample could be asked about the relative needs of single parents, rather than just single parents themselves.

However, there are also disadvantages. Because the family compositions are hypothetical, there is a strong limitation in the diversity of situations that can be covered. The methods which ask about the respondents' own situation are in general more flexible, limited only by the availability of different family types in the survey. It is much easier to get detailed knowledge of a family by asking a series of questions about respondents' own families than to construct a series of exceedingly detailed descriptions of hypothetical families.

⁶ Rainwater's analysis is ambiguous as to whether this occurs to any great extent. Using social class as a proxy for income he finds little association between own status and responses to these questions – except for the 'rich' evaluation level (1974, p.99). However another, similar, analysis of the responses to the Gallup poll 'getting along' question shows a significant relationship between own income and response (p.55).

More importantly, people may have only limited knowledge of the needs of people in different family types. Or, the simple descriptions of families in the questions may represent a wide range of different families to the respondents. Both these factors will introduce a good deal of 'noise' into the data. Whether they will create biases in the average responses is less clear. Social stereotypes of different families might be expected to play an important part in the formation of judgments about family types of which the respondent knows little.

Hypothetical living standards

Just as the relationship between one's own income and satisfaction have been examined from two directions, so have the relationships for hypothetical families. The alternative approach to Rainwater's hypothetical income responses, is to ask people to describe the economic well-being of families of different types and with different incomes (Dubnoff, 1985). Dubnoff argues that,

This is more likely to be a task which individuals perform as a part of their everyday lives – we commonly make judgments about who is rich, poor, or just getting along. (p.287)

He uses a similar questionnaire design to Rainwater to produce a range of combinations of family types and incomes. However with this method incomes are given and living standards asked for, where in the previous method living standards are given and appropriate incomes sought. As with the 'own living standards' method, an interval scale was applied to the ordinal valuation adjectives.

The process of moving from the questionnaire responses to equivalence scales is the same as for the 'own living standards' model.

3. COMPARING THE RESULTS OF THE EVALUATION AND OTHER APPROACHES

How do the equivalence scales derived using these methods compare with those obtained via alternative methods. In Table 2, a selection of simple equivalence scales derived using these methods is presented. As well as scales derived from the literature, a scale is also presented based on some recent 'own living standards' Australian data. This data, and the method of construction of the scale is described further in Appendix A. Also, a selection of scales derived using other methods is included. These include the OECD suggested scale, the Australian pension system scales, and the average scales produced by a range of studies using the budgetary, proportional (Engel) and consumption theory approaches.

Table 2 Some Simple Family Size Equivalence Scales

Method	Family Size ¹				
	1	2	3	4	5
<i>Own family: income response</i>					
'Absolute minimum' living standard - the Netherlands (Goedhart et al, 1977)	0.81	1.00	1.13	1.24	1.32
'Very bad' - the Netherlands (Van Praag and Van der Sar, n.d.)	-	1.00	1.14	1.23	1.32
'Very good' - the Netherlands (Van Praag and Van der Sar, n.d.)	-	1.00	1.11	1.19	1.26
<i>Own family: well-being response</i>					
Boston area (Dubnoff et al, 1981)	0.67	1.00	1.05	1.15	1.24
Australia, 1983 (appendix A)	0.80	1.00	1.57	2.55	2.25
<i>Hypothetical families: well-being response</i>					
Non retired families - Boston area (Dubnoff, 1985)	0.79	1.00	1.15	1.28	1.38
<i>Hypothetical families: income response</i>					
Boston area (Rainwater, 1974, p.105)	-	1.00	1.12	1.27	1.30
<i>Other methods</i>					
OECD equivalence scales (OECD, 1982)	0.59	1.00	1.29	1.59	1.88
Australian pension system, 1988 ²	0.60	1.00	1.14	1.29	1.45
Average of Budgetary Scales ³	0.67	1.00	1.19	1.40	1.62
Average of Proportional Scales ⁴	0.62	1.00	1.24	1.48	1.70
Average of Consumption Theory Scales ⁵	0.64	1.00	1.17	1.31	1.47
Overall geometric mean ⁶	0.64	1.00	1.20	1.38	1.59

- 1 For most scales it is assumed that households comprise either single persons, or couples with children; that is a family size of 1 is a single adult, of 2 is a couple, of 3 is a couple with one child etc.
- 2 Assuming all children aged under 13.
- 3 Geometric mean of 8 published budgetary scales (from Whiteford, 1985, Table 5.1).
- 4 Geometric mean of 21 published proportional (Engel method) scales (ibid).
- 5 Geometric mean of 20 published consumption theory based equivalence scales (ibid).
- 6 Overall geometric mean of 54 published equivalence scales (ibid).

Whilst differences in the definition of family size and scope of the data undoubtedly introduce difficulties of comparison there is one point that stands out. The attitudinal scales seem to be generally much flatter than the scales calculated by other methods. The exception to this is the scale developed in Appendix A of this paper though, as discussed in that appendix, sampling error could well account for the observed discrepancy. For the other evaluation studies, the levels of needs of the different family types are significantly closer to each other than when estimated by alternative methods.

Additionally, research using the evaluation methods which has attempted to explore the variations in needs for more detailed family composition descriptions has also produced atypical results. Kapteyn and Van Praag (1976) explored in some detail the patterns of equivalence for families of different age compositions. They found that needs, as measured by the income evaluation question, did vary significantly with the age of household members. However, contrary to much other research (see Whiteford, 1985, for a summary) they found that needs as a percentage of family income varied with the age of the *adults* in the family, but *not* with the age of the children.

Why does the evaluation method produce these results so apparently divergent from (most of) the alternative methods? First, it should be noted that the differences may not be as great as they appear at first sight. Whilst the needs of children in Kapteyn and Van Praag's model remain a constant proportion of family income whatever their age, they may still be increasing in absolute terms. This is because family incomes are, on average, higher for families with older children. A more flexible model which allowed the effect of children's age to vary with income level may have found that for families reliant on state income support, where incomes do not increase with age, the absolute growth in children's needs with age may be also a proportionate increase.

Goedhart, *et al*, have an explanation for the relative flatness of the evaluation equivalence scales,

We believe that the moderate increase in [equivalence scale] with family size is a better approximation of a *constant welfare* family equivalence scale than the values usually obtained... our small estimates of the increase in needs reflect the fact that the preferences within the family shift in such a way that material needs do not increase very much. For example, a two-person family (husband and wife) may be accustomed to a life-style which includes relatively high holiday expenditures. When the first child is born, the parents decide to spend their holidays at home, thus saving money which may be used to compensate for the additional expenditures caused by the increase in family size.

In our opinion, substitution possibilities of this kind are not fully taken into account in current literature on the family equivalence scale. (Goedhart, Halberstadt, Kapteyn and Van Praag, 1977, p.516)

It is indeed plausible that models which take account of such substitution possibilities will lead to flatter equivalence scales. However the reasons for such substitution need to be carefully considered. In Goedhart *et al's* example people with children may substitute away from holidays either because their tastes change and they no longer desire such holidays, or because they now find such holidays to be too expensive. If the latter is the case only some of the substitution should be allowed as compensation for the decreased expenditure. The way in which such substitution should be modelled lies at the heart of the equivalence scale problem (see Muellbauer, 1977, for a discussion of this issue within the consumption theory approach).

Another possibility is that this flatness arises from the fact that the evaluation approaches endogenise the contribution of children to well-being. That is, the presence of children themselves may increase the respondent's feeling of well-being, leading to a more positive response to the evaluation question. However, it seems more likely that respondents would tend to separate their general level of well-being, which might include the benefits associated with having children, from their level of satisfaction with their financial situation.⁷

Should such substitution be taken into account? Are there other explanations for these divergent results? This issue is taken up in the next section, where it is argued that a simpler explanation can be found for these results.

4. REFERENCE GROUP EFFECTS

Do these questionnaire methods measure 'welfare', 'well-being' or any other concept which researchers, and policy makers, are trying to equalise when they calculate equivalence scales? Whiteford, for one, thinks that the expressions of such attitudes, at least with regard to the 'own family' measures, do not comprise a valid operationalisation of welfare.

Living standards are made up not only of people's own evaluations of their situation, but also of general community evaluations and the actual consumption of goods and services. (1985, p.86)

The issue of 'community evaluations' and the hypothetical families approaches will be returned to below, and the formidable problems of using consumption patterns to

⁷ This example serves to reinforce the distinction between the standard economic concept of 'utility' and the concept of 'economic well-being' that is used in the evaluation approach. Utility is a concept for dealing with the *choices* that people make which may involve many other factors than what people might describe as their economic well-being. For the purposes of equivalence scale analysis, it is not at all clear which concept is the more relevant.

describe welfare have already been briefly touched upon. But it does appear that there are further problems with the link between questionnaire evaluations and well-being. The criticism which this section will present of the evaluation approach will be developed first in terms of the 'own family' models.

Own family models

Why do people give particular responses to these attitudinal questions? Above, it has been assumed that responses vary in line with 'needs' and also own income. It is important to spell out these issues more formally. One assumption is that the descriptors of well-being used should have a natural shared meaning. Van der Sar, Van Praag and Dubnoff argue this on the simple basis that 'If words would not convey approximately the same concepts between people, that people would not *understand* each other' (1986, p.6). This assumption does not seem to be particularly problematic.⁸

However, as is elaborated most clearly in the literature dealing with the 'own income response' method, other factors, other than shared meanings of descriptors of welfare, also influence responses. The analysis of this data has assumed that such responses will be influenced by respondent's own income levels, and has endeavoured to statistically control for this.

But current income is not the only factor influencing one's welfare evaluation of income. Recent literature on the welfare function of income has attached much importance to the effects of *social reference groups* on people's responses to such income evaluation questions (see Kapteyn and Wansbeek, 1985, for an overview). Such reference groups comprise those persons to whom people refer (e.g. friends, neighbours, work-mates etc.) when they are evaluating their own living standards. People whose social reference group has a high standard of living will tend to have high expectations themselves, and hence tend to express a need for a greater level of income to achieve a given level of well-being (even when their own income is held constant).

Empirical investigations have shown that such effects have a significant impact upon the responses to income evaluation questions (Van Praag, Kapteyn, and Van Herwaarden, 1979). This study measured the effects of reference groups by classifying individuals on the basis of their education, labour market status, occupation, location and age and examining the relationship between the average incomes of other persons with the same

⁸ Though for some studies, such as Hagenaars (1986), or Van Praag, Hagenaars and Van Weeren (1982) where attempts are made to compare welfare evaluations developed in different language communities, this may be more questionable.

characteristics, the income of the respondent, and the answer to the income evaluation question.

However, related research on equivalence scales has been unable to fully incorporate these effects. Kapteyn (1977) made an attempt to estimate family equivalence scales whilst accounting for such reference group effects. However,

Due to severe multicollinearity it is hard to draw hard conclusions from his results, but it appears that the allowance for preference interdependence definitely affects the equivalence scales obtained. (Wansbeek and Kapteyn, 1983, p.256)

This result should not be unexpected. If, for example, social reference groups comprised families exclusively of the same demographic composition as the respondents' families then it would be, in principle, impossible to separate out the reference group effects from the family size effects.

More generally, there are a host of factors other than individuals' own 'needs' and resources which might determine their responses to these subjective measures of well-being. As Ratchford notes,

This evaluation likely reflects a variety of things, such as peer income, past incomes, expected incomes, aspiration level, educational attainment, lifestyle, satisfaction with current standing. Whether one would wish to call this variety of things 'welfare' seems problematic. (1985, p.373)

These other extraneous influences upon peoples' answers will not *necessarily* cause problems for the estimation of family equivalence scales from this data. If all such factors are included under the rubric of 'reference group effects' it can be asserted that, *equivalence scales derived using these attitudinal methods will only be valid if reference group effects are independent of family composition.*

This can be illustrated first with a hypothetical example. Consider the equivalence scale derived from either of the 'own response' methods which compares the needs of sole parents to that of couples with children. Sole parents, in general, have lower incomes than couples. If sole parents tend to judge their standard of living relative to other sole parents, the income they will require to judge themselves at a given level of well-being will be lower than if they judged their standard of living relative to the community as a whole.

Such effects may well be responsible for the discord between the equivalence scales generated by the attitudinal approach and those attained by other means. The overall lack of responsiveness of the attitudinal scales to family size may reflect some tendency for families to judge their standard of living relative to other families of the same

composition. If this was entirely the case, the equivalence scale would be equal to unity for all groups.

This is easiest to see for the 'own satisfaction' model. Assume that the average response over the whole population to the question is a 'satisfactory' evaluation. Assume further that in each demographic group, people who have incomes above the average for that group give a response higher than 'satisfactory' and those with lower incomes a corresponding lower response. If equation (3) holds, the average response in each group will be a 'satisfactory' level of well-being, equal to the population average. Hence b_2 will equal zero, and m in equation (5) will equal unity.

Whilst the results obtained indicate that the constraint is not total in this respect, clearly some correlation between reference groups and family composition could act to flatten the equivalence scales obtained.

Similarly, the observed age relationship of equivalence scales obtained by Kapteyn and Van Praag (1976) may be due to such reference group effects. They found that families with older parents had greater needs but that when this was controlled, the ages of the children were not relevant. Moreover, in their more detailed analysis of different education groups they note that,

The age functions seem to reflect the average behaviour of incomes over age in the various education categories. Why is this so? An obvious answer is: because people refer to their social environment. When people in the social environment of an individual (i.e. people of the same education and age) get higher incomes then the individual under consideration wants a higher income as well. (Kapteyn and Van Praag, 1976, p.330)

Note that the model controls for the changes in expectations of the respondent's *own* income, but does not control for changes in the incomes of the respondent's social reference group.⁹ If we wish to treat such expectations as valid measures of needs, as Kapteyn and Van Praag apparently do, then this method is appropriate. But this leads to implications such as higher levels of needs for the highly educated, or those from wealthy social backgrounds. These are not usually considered policy relevant categorisations on which to base equivalence scales. Even if categorisations which explicitly single out such groups are not made, a particular demographic group containing relatively more people with high expectations will lead to that group's needs

⁹ It should be noted that Kapteyn and Van Praag's conclusion of increasing needs with parental age was only estimated up to retirement age. Following the argument above, we might expect indicated needs to decrease for older groups. It is also worth noting that if Kapteyn and Van Praag had interviewed *children* rather than parents, they may have obtained quite different results.

being overestimated. If the own incomes of respondents are not considered a valid basis on which to calculate equivalence scales, then why should their reference groups?

Of course if the reference group effects are *independent* of (or can be statistically separated from) demographic composition these problems do not arise. Whether this is so is an empirical question – though not one that is likely to be definitively answerable given the complexities of social interactions. However we can think of categories where this might be approximately true. For example, families with one as opposed to two children might be expected to have similar reference groups and expectations. With the aid of this *assumption*, the attitudinal measures may be used to derive equivalence scales of some validity.

Hypothetical family models

The use of hypothetical families, rather than the respondents' own families provides another way of avoiding these reference group, or expectation, effects. This is because with this method, the demographic factors which influence peoples' expectations are independent of the variations in demographic factors across which the equivalence scales are to be calculated.

However, there are other problems particular to these models. As was noted above, the need to describe the hypothetical family structures in the questionnaire limits the extent of detail of family composition that can be studied. Further, this method introduces an additional communication barrier to that of the 'own family' method. In both cases, the questionnaire instrument must attempt to obtain a consistent linkage between the respondents' perceptions of economic well-being and questionnaire answers. Whilst the practical problems involved in measuring this relationship are considerable (see Piachaud, 1987), the use of hypothetical families places an additional burden on the instrument. The questionnaire must be able to convey consistent descriptions of all relevant aspects of the composition of the hypothetical family. To the extent that different respondents interpret different descriptions of family types to mean different things, an additional element of 'noise' will be introduced into the data.

A related issue is that the respondent may have little knowledge of the living conditions of people in the hypothetical families. This will again introduce an additional element of noise into the data. More seriously, it may also lead to biased results. Possibly, respondents faced with describing the income needs of a family they know little about will err on the side of describing the needs as similar to more familiar family types. This would also bias the equivalence scales obtained by making them flatter than would be obtained if the people were familiar with the family types.

Alternatively, in the face of a question which they know little about, responses given may reflect underlying values of the deserts of different families. Walker describes research which shows that,

Notions akin to the distinction between the deserving and undeserving poor caused civil service managers to ascribe lower needs to single parents and the unemployed than they did to other supplementary benefit claimants. (Walker, 1987, p.218)

Whilst such information on public attitudes towards the deserts of different families may be of interest, the goal of research is usually to provide some *independent* evidence of families' needs. Results from this approach need to be interpreted with reference to assumptions about social attitudes to different population groups.

As well as these issues specific to the hypothetical family models, there are other issues of a practical nature that need to be tackled in order to apply either the 'own family' or 'hypothetical family' models. It is not the object of this paper to describe these in detail, but there are a number of areas where further research is required. Since the questionnaire is the central instrument of the evaluation approaches, any serious application of such methods would need to experiment with different forms of the instrument. As the example given in Appendix A illustrates, questionnaire items which only loosely measure the desired concepts of economic well-being can make practical application of the methods very difficult (even if it can be assumed that the 'noise' is random).

The focus of the method on income alone has also been criticised. Veit-Wilson argues that,

Sociologists concerned with attempts to understand the whole of the conception of needs and deprivation, and the part which financial poverty plays within it in a particular complex of social policy and the social division of welfare, will find the income proxy approach finally unsatisfactory... (Veit-Wilson, 1987, p.194)

This is perhaps too harsh a criticism. Income based equivalence scales (and poverty lines) are at least directly relevant to a specific aspect of social policy (the cash tax-transfer system) even if they can only be interpreted in the context of the current structure of other policies (service provision, benefits from employment, intra-family transfers, etc).

5. CONCLUSIONS

None of the research to date using the evaluation methods has claimed to have found 'the' answer to any one of the equivalence scale issues confronting social policy today. Generally, these methods have been described as supplementary to the existing body of research on equivalence scales.

However, for these methods to have any impact on these issues, their fundamental assumptions must be valid. The key assumptions of these methods are that the responses to the questionnaire instruments will be systematically related to the economic well-being of families. However, the formation of subjective evaluations is a complex process, influenced by, among other things, the social environment of the individual. Literature which otherwise has much in common with the evaluation approaches has demonstrated the importance of such social reference groups. However it has not been possible to integrate this knowledge into the calculation of equivalence scales. For the 'own evaluation' methods, it is necessary to assume that respondents from different family types have a common reference environment on which to base their responses. Whether this assumption can be made remains a matter for conjecture. This phenomena provides an explanation of why the evaluation methods may tend to understate the diversity of needs of people in different families.

The 'hypothetical families' methods are able to avoid this problem, but may also understate this diversity if respondents' ignorance of different families encourages conservative responses. Possibly surveys which use a combination of different evaluation approaches may be better able ascertain the importance of these problems, but this remains to be seen.

REFERENCES

- Australian Values Study survey, 1983 [machine-readable data file]. Data collected by Roy Morgan Research Centre. Melbourne: Australian Values Study Steering Committee [producer], 1984. Canberra: Social Science Data Archives, The Australian National University (distributor), 1986. 1 data file (1228 logical records) + accompanying user's guide (242p.).
- Bradbury, B., Rossiter, C., and Vipond J. (1986) **Poverty, Before and After Paying for Housing**, SWRC Reports and Proceedings No 56, Kensington, Social Welfare Research Centre, University of NSW.
- Deaton, Angus and Muellbauer, John (1980) **Economics and Consumer Behaviour** Cambridge University Press, Cambridge.
- Deaton, Angus and Muellbauer, John (1986) 'On Measuring Child Costs: With Applications to Poor Countries' **Journal of Political Economy** 94(4):720-744.
- Dubnoff, Steven (1985) 'How Much Income Is Enough? Measuring Public Judgments' **Public Opinion Quarterly** 49:285-299.
- Dubnoff, Steven, Vaughan, Denton and Lancaster, Clarise (1981) 'Income Satisfaction Measures in Equivalence Scale Applications' in **American Statistical Association, 1981 Proceedings of the Business and Statistics Section**, Washington.
- Goedhart, Theo, Halberstadt, Victor; Kapteyn, Arie and Van Praag, Bernard (1977) 'The Poverty Line: Concept and Measurement' **Journal of Human Resources** XII 4:503-520.
- Hagenaars, Aldi J. M. (1986) **The Perception of Poverty**, North-Holland, Amsterdam.
- Kapteyn, Arie (1977) **A Theory of Preference Formation**, Unpublished Ph.D. thesis, Leyden University.
- Kapteyn, Arie and Van Praag, B.M.S. (1976) 'A New Approach to the Construction of Family Equivalence Scales', **European Economic Review**, 7:313-335.
- Kapteyn, Arie and Wansbeek, Tom (1985) 'The Individual Welfare Function, A Review' **Journal of Economic Psychology**, 6:333-363.
- Muellbauer, J. (1977) 'Testing the Barten Model of Household Composition Effects and the Cost of Children', **The Economic Journal**, 87:460-487.
- Organisation for Economic Co-Operation and Development (1982) **The OECD List of Social Indicators**, OECD, Paris.
- Piachaud, David (1987) 'Problems in the Definition and Measurement of Poverty' **Journal of Social Policy**, 16(2):125-146.
- Pollak, Robert A. and Wales, Terence J. (1979) 'Welfare Comparisons and Equivalence Scales' **American Economic Review**, (papers and proceedings), 69(2):216-221.
- Ratchford, Brian T. (1985) 'The Individual Welfare Function, A Comment', **Journal of Economic Psychology** 6:365-374.
- Rainwater, Lee (1974) **What Money Buys: Inequality and the Social Meanings of Income**, Basic Books, New York.

- Van der Sar, Nico L., Van Praag, Bernard M.S.; Dubnoff, Steven (1986) **Evaluation Questions and Income Utility**, mimeo.
- Van Praag, B.M.S., Hagenars, A.J.M and Van Weeren, H. (1982) 'Poverty in Europe' **Review of Income and Wealth** 28(3):345-359.
- Van Praag, B.M.S. and Van Der Sar, N.L. (n.d.) 'Household Cost Functions and Equivalence Scales', mimeo.
- Van Praag, B.M.S., Kapteyn, Arie and Van Herwaarden, Floor G. (1979) 'The Definition and Measurement of Social Reference Spaces', **The Netherlands' Journal of Sociology** 15:13-25.
- Veit-Wilson, J. H. (1987) 'Consensual Approaches to Poverty Lines and Social Security', *Journal of Social Policy*, 16(2):183-211.
- Walker, Robert (1987) 'Consensual Approaches to the Definition of Poverty: Towards an Alternative Methodology', **Journal of Social Policy**, 16(2):213-226.
- Wansbeek, Tom and Kapteyn, Arie (1983) 'Tackling Hard Questions by Means of Soft Methods: The Use of Individual Welfare Functions in Soci-Economic Policy', **Kyklos** 36,2:249-269.
- Whiteford, Peter (1985) **A Family's Needs: Equivalence Scales, Poverty and Social Security**, Research Paper No.27, Development Division, Department of Social Security, Canberra.
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APPENDIX A.

This appendix describes an application of the 'own living standards' method to derive equivalence scales from some recent Australian data. In 1983 a survey entitled *The Australian Values Study Survey* was carried out as part of an international project to compare fundamental values in different countries (Australian Values Study survey, 1983). The survey was a probability sample of approximately 1,200 Australians, conducted by trained interviewers in the respondents' homes. Data items collected by the survey included a measure of people's satisfaction with their financial situation, gross family income and demographic composition of the household.

In the first part of Table A1, these variables were used to calculate a simple family equivalence scale, following equation (5) in the text. The elimination of cases with missing values on any of the variables used here reduced the sample for analysis to 919 persons.

The results for this simple model (Model 1 in Table A1), where financial satisfaction was modelled simply as a function of family composition and income, do not seem at all plausible. Single adults are not significantly different from couples, and the addition of the first child more than triples the needs of the family. Even the very wide approximate confidence intervals do overlap the accepted range of results. The overall explanatory power of the model is also very low ($R^2=0.07$).

Dubnoff, Vaughan and Lancaster (1981), in employing a similar technique, introduced a number of additional variables into the model to control for other influences upon subjective financial satisfaction. The variables they used included region, age, and perceived financial change over the past year and five years. In Model 2 of Table A1 a similar set of variables are added to those of Model 1. As well as being used as controlling variables, these variables may also be used to construct equivalence scales in their own right if the categorisation is judged to be policy relevant.

The inclusion of these additional variables improves the fit of the model substantially ($R^2=0.27$), and substantially alters the values of the family size equivalence scales. They are now closer to, but still quite divergent from, those found in the literature. However the the high standard errors of the estimates mean that these differences could be due simply to sampling error. A much larger sample, or a better measurement instrument, would be required to resolve this issue.

Table A1 Effect of Income and Demographic Variables on Satisfaction with Financial Situation.

Dependent variable - financial satisfaction. 'How satisfied are you with the financial situation of your household?' Scale of answers ranging from Dissatisfied (1) to Satisfied (10).

Independent Variables	Model 1				Model 2			
	b	't'	Equiv Scale	Confidence Interval 1 -2s.e. +2s.e.	b	't'	Equiv Scale	Confidence Interval 1 -2s.e. +2s.e.
Household structure								
1 + 0	0.21	0.7	0.71	(0.27 1.88)	0.11	0.4	0.80	(0.25 2.49)
1 + 1	-1.08	-1.7	5.75	(0.65 ∞)	-0.55	-0.9	3.13	(0.23 ∞)
1 + 2+	-2.20	-4.2	35.31	(4.11 ∞)	-2.40	-5.0	145.11	(6.71 ∞)
2 + 0 *	0.00	N.A.	1.00		0.00	N.A.	1.00	
2 + 1	-0.69	-2.7	3.06	(1.26 7.43)	-0.33	-1.5	1.98	(0.77 5.14)
2 + 2	-0.74	-3.2	3.32	(1.46 7.52)	-0.45	-2.1	2.54	(0.97 6.62)
2 + 3+	-0.75	-2.9	3.37	(1.36 8.36)	-0.44	-1.8	2.49	(0.84 7.35)
3+	-0.77	-3.5	3.48	(1.56 7.75)	-0.46	-2.3	2.60	(1.04 6.48)
Log family ann. income	0.62	5.8			0.48	4.5		
Head aged < 30 *					0.00	N.A.	1.00	
Head aged 30-64					0.40	2.6	0.44	(0.21 0.92)
Head aged 65+					1.07	3.7	0.11	(0.03 0.47)
Family finances:								
Better than last yr.					0.40	2.5		
About the same *					0.00	N.A.		
Worse					-1.60	-9.8		
Positive affect scale					0.15	3.0		
Male					0.06	0.3	0.88	(0.38 2.03)
Home owner *					0.00	N.A.	1.00	
Purchaser					-0.43	-2.6	2.41	(1.12 5.20)
Renter					-0.87	-5.0	6.08	(2.00 ∞)
Main income earner					-0.02	-0.1	1.04	(0.45 2.39)
Age finished education					0.02	0.8		

Notes:

* Reference group

¹ Calculated through a Taylor-series approximation of the variance of b₂/b₁.

∞ Represents values greater than 10.

The age at which respondents finished education, their gender, and whether they were the main income earner had negligible effects upon responses to the satisfaction variable. Those whose financial situation had recently deteriorated were much more dissatisfied, and those with a generally positive affect were more satisfied.¹

As in the study by Dubnoff *et al*, financial satisfaction was found to increase with age. The scale implies that those aged over 65 would need only one twelfth of the income of those aged under 30 to attain the same level of satisfaction – income and family composition held constant. How this result is to be interpreted is not clear. It may be due to increasing resources, as people acquire assets (though housing tenure is controlled for), it may reflect future aspirations (with those expecting higher future incomes dissatisfied with their current incomes), it may reflect the impact of historical growth in real incomes, or may be a result of changing needs or tastes as people grow older.

Whether any of the issues are relevant to social policy is problematic. But the multiplicity of interpretations should give a reason to pause in interpreting the family composition equivalence scales. Moreover this result is the opposite of that found by Kapteyn and Van Praag (1976), who found increasing needs with parents' age. Possibly this discrepancy points to the fact that the 'own income' and the 'own living standards' methods, despite being conceptually complementary, may not be measuring the same thing.

Finally, housing tenure has a major impact upon perceptions of financial satisfaction. This result is in accord with recent research on the effects of housing costs on poverty in Australia which found private tenants to be particularly disadvantaged (Bradbury, Rossiter and Vipond, 1986). This is a reflection of the effect that wealth holdings have on needs for income. Those who fully own their own housing need to spend little on accommodation costs, while renters need to spend much more. The situation of purchasers is more varied, depending upon the level of equity they hold in their dwelling.

In this case the conclusions drawn from the evaluation approach *are* relevant to policy. However, given that in this case the needs of the different tenures stem from measurable economic differences (housing costs), it may be more sensible to devise policies for support on the basis of these more concrete measures.

¹ This was measured by the Bradburn Positive Affect Scale, based upon 5 questionnaire items (see Australian Values Study survey, 1983).

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