HOUSEHOLDS, GOODS, AND WELL-BEING

BY STEIN RINGEN

University of Oxford

Household economies translate goods into well-being through production, co-operation, and distribution. Between market goods to households and well-being to persons, value is added. Income is a measure of goods, consumption well-being is measured by equivalent income. An absolute interpretation of equivalent income is argued as the value to persons of consumption well-being after household economies. Guidance is suggested on the choice of equivalence scales, and for the measurement of well-being and inequality.

1. WELL-BEING AND INCOME DATA

Well-being is defined in terms of consumption, i.e. in principle as objectively observable. I take a person's well-being to be equal to the value of the consumption to which he or she has access. Consumption is generated, in part, in households. Hence, the well-being of persons is determined, in part, by economies within the household.

The problem: how to measure consumption well-being with the use of income information, given the fact of household economies. I am not at all concerned with income or the distribution of income as such, only with income information (income data) organised (some would say "manipulated") so as to reflect consumption well-being.

2. HOUSEHOLDS AND PERSONS

Household Economies

Household economies consist of production, co-operation, and distribution.

Households command *goods*; persons consume *services* from goods. By household *production* I understand activities in the household through which goods are created. The household adds goods of its own making to the goods it can acquire in the market (or receive through transfers). Examples are maintenance, caring, cleaning, cooking, and the like. In these activities, goods from the market or from transfers may enter as production inputs. Households may be differently inclined towards household production and differently effective in such activities.

Some goods are private and some more or less public within the household. Goods that are capable of being public, only become public when several persons co-operate in their use, as they do when they form households. A house is a public

good only if several persons live in it. By household *co-operation* I understand the joint use by household members of goods that are public within the household. Through co-operation, consumption efficiencies result. Public goods can deliver services again and again to several persons. In co-operating, the household exploits this possibility and can generate additional services without acquiring additional goods. These efficiencies are determined by household structure (size and composition) and by behaviour. Other things being equal, larger households are more consumption efficient than smaller households because there is more potential for co-operation (although there may be diminishing marginal returns because of congestion). The more households choose to co-operate, or the better they are able to do so, the more consumption efficient they will be. If co-operation breaks down or turns into conflict, there may be no or negative consumption efficiencies in the household.

By *distribution* I understand the allocation of services to household members. Individuals may have different *needs*, e.g. children compared to adults. This means, for example, that two persons may each have the same well-being from different joint volumes of available services. Thus, the value to a person of the services to which he/she has access is relative to his/her needs. Differences in needs are not specific within households, but the structure of needs within the household influences the well-being that can be derived from given services. Hence, in addition to efficiency effects between goods and services, there are needs effects between services and well-being.

If what matters "at the end of the day" is well-being to persons, small-household populations are more "expensive" than large-household populations, as are populations with relatively more adults compared to populations with relatively more children (assuming children have lower needs).

The Unit Problem

There are two units of analysis: the household and the individual. Analyses of goods and well-being move back and forth between these two types of units.

Goods are the raw materials of well-being. Goods are not consumed directly by persons, but are used by and distributed in households. In the analysis of goods, the household is the first-order unit of analysis. (We may in the next round turn to the individual as the unit, for example if we want to know the volume of goods per person.)

Well-being is observed in the status of household members, after household economies. In the analysis of well-being, the individual is the first-order unit of analysis. There are three reasons. First, empirically, the end outcome of household economies are not known until it is known how these outcomes are absorbed by household members. Second, philosophically, the phenomenon of well-being resides with individuals and with individuals only. Groups, from families and upwards to populations, do not have well-being in any other meaning than as some aggregate of the well-beings of the members of the group. Third, normatively, only with the individual as the unit of analysis (or by weighting each household by the number of household members, which is the same thing) can each person in a population be given the same weight (count equally) in determining the social

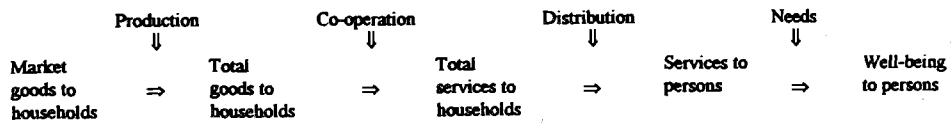| Production		Co-operation		Distribution		Needs	
⇓		⇓		⇓		⇓	
Market goods to households	⇒	Total goods to households	⇒	Total services to households	⇒	Services to persons	⇒ Well-being to persons

Figure 1. Household Economies from Market Goods to Well-Being

condition. This is the democratic approach to the measurement of well-being, akin to the one person, one vote principle in politics.

The processes of household economies between market goods and well-being are illustrated in Figure 1. In single-person households, production and needs may intervene between market goods and well-being. In multi-person households, also co-operation and distribution apply. Generally, household economies add value, although theoretically value might be lost if households waste rather than produce goods or fight rather than co-operate.

Implications

Some consequences for measurement now follow. In all measurement of well-being, the logic is necessarily to first establish individual well-beings and then aggregate. This is the cause whether we want to know the level of well-being in a household, group or population, or the degree of inequality of well-being. In no measure of this kind is there any issue of weighting: each person counts equally.

Since the individual condition is established after household economies, and since we need to know individual conditions before we can know the social condition, in principle nothing can be said about the social condition before the analysis has been carried through household economies.

In multi-person households, as long as efficiencies are positive, the value of aggregate well-being is higher than the market value of available goods. The difference between the value of goods and aggregate household well-being is the *value added* through the transformation of goods into services and services into well-being. This carries through to populations: aggregate well-being in a population is higher than the sum value of goods available to households.

In comparative analyses, comparisons in terms of goods and in terms of well-being may, and usually will, give different results. Between societies, for example, if household structures are different, there might be less difference in well-being than in goods. Over time in a given society, if there are changes in household structure, trends in well-being would be different from trends in goods (economic growth).

In the measurement of poverty, there are several relevant measures which are ambiguously related depending on household economies. If persons in poverty are defined as persons with a well-being below a specified minimum, households in poverty would be defined as households which do not command sufficient goods to protect all household members against poverty in well-being. Since poverty among persons can result from distributions within households, there could be poverty among persons without poverty among households (but not the other way). Since efficiency and needs effects intervene between goods and well-being, the relationship between the incidences of poverty among persons (well-being) and among households (goods) would depend on household structures and

behaviours. A final measure is the poverty gap, which would be defined as the additional goods needed by households in poverty to pull poor persons out of poverty in well-being. The poverty gap would then not be a function of the incidence of poverty among persons and the degree of poverty among the poor, but of these factors *and* household structure and behaviour.

Equality and Equity

A society that values equality would seek equality of well-being between persons. Due to different consumption efficiencies in households (beyond differences in size), equality thus defined would result from some unequal distribution of goods between households. A distribution of goods between households which could generate equality of well-being between persons, might be said to represent equity between households. The similar logic applies within households. If household members have different needs, equality of well-being within the household would result from some unequal distribution of services between persons. A distribution of services between persons which would generate equality of well-being, could be said to represent equity between persons. Hence, equality of well-being in society would be achieved with equity in the distribution of goods between households and equity in the distribution of services within households.

3. EQUIVALENT INCOME

The accepted specification of income in the analysis of well-being is equivalent income (household income divided by the household's equivalence factor as determined by the equivalence scale applied).

Unadjusted income is a measure of goods, "cash income" of the value of goods that can be bought in the market and "full income" of the value, in addition, of goods produced in the household and other non-market goods.

Equivalent income is usually interpreted as a *relative* measure. This is a purely theoretical estimate which enables normative comparisons between households of different composition or between individuals belonging to households of different composition (controlling for the difference in household composition). In the relative interpretation, equivalent income measures do not necessarily express any real value; equivalization is a matter of normalising across households.

Equivalent income can, however, also be interpreted as an *absolute* measure, namely of consumption well-being, meaning the real value to the individual of the consumption services to which he/she has access after household economies, given the household's goods and relative to the market value of those goods (cf. Ringen, 1991). Equivalization is now a matter of estimating real values for individuals (and subsequently households), and not only of normalising across households.

The absolute interpretation requires a method of equivalising in which the value added in households between goods and well-being is capture in real terms. Depending on composition, households require different volumes of additional goods for each additional household member in order to generate the same well-being to all household members. This is the efficiency effect. With increasing

household size, this effect is usually positive in that less additional goods are needed for each additional household member. The needs of the additional person may be higher or lower than the needs of original household members, and this will obviously influence the volume of additional goods required. This is the needs effect.

Per capita adjustments of income are usually not valid in the measurement of well-being because they recognise neither efficiency nor needs effects in household economies. Therefore, some scaled adjustment is needed. A wide range of equivalence scales are in use in current empirical research and the choice of equivalence scale matters strongly for measurement results (Buhmann *et al.*, 1988, Coulter *et al.*, 1992). Under the absolute interpretation of equivalent income, restrictions are imposed in the required method of equivalizing which make the range of valid equivalence scales more narrow than under the relative interpretation. To enable absolute interpretation, the scale must, firstly, be normalised around a "reference household" in which there are no efficiency effects between goods and services and no needs effects between services and well-being. This might be the single adult household. Second, in order to read the equivalent income estimate as expressing a real value, the scale must assign the weight of 1.0 for the single/first adult and weights for subsequent household members expressed as fractions thereof. Hence, in single adult households equivalent income would be equal to income (well-being equal to goods). In other types of households, equivalent income would be different from income, and this difference would reflect the value added between goods and well-being. Finally, to reflect both efficiency effects and needs effects, the scale must differentiate between both the number of household members and the types of household member by needs. Given the absolute interpretation of equivalent income, there is, in other words, a "correct" structure for the equivalence scale. Scales which are not normalised around the weight of 1.0 for the single adult household are excluded (e.g. scales which assign the weight of 1.0 to a couple), as are scales based only on the number of household members (which could recognise efficiency effects but not needs effects).

What remains would be to determine the precise weights in the scale to reflect efficiency and needs effects. This is unresolved in the literature because not enough is known about household economies (cf. e.g. Deaton and Muellbauer, 1980; Nelson, 1992). However, with the absolute interpretation, the relevant alternatives are limited to scales which assume different strengths in the efficiency and needs effects, i.e. to scales which are more or less "flat" or "steep" in the profile of weights. The consequence is that with the application of any equivalence scale with a "correct" structure, it would usually be straightforward in which direction relevant alternative specifications would pull measurement results.

A scale which satisfies the structural criteria for absolute interpretation is the original "OECD scale," which uses these weights: single person/first adult = 1.0; subsequent adults = 0.7; children = 0.5 (OECD, 1982). The assumptions are: no value added on top of the volume of goods (and no waste) in single person households, differences in needs only between adults and children, and that each additional person represents the same requirement for additional goods irrespective of the number of household members and the order in which additional members are introduced. With this equivalence scale, a household of, for example,

two adults and two children would have an equivalence factor of 2.7 and the equivalent income would be household income divided by 2.7. That would, then, be a measure of the well-being of each household member, given household income and assuming equity in the distribution of services, i.e. to each in proportion to needs (in this case: all adults the same, all children the same but less than the adults). A "flatter" equivalence scale would give a higher equivalence factor (e.g. 3.0 if the scale were 1.0 −0.8 −0.6) and a "steeper" scale a lower factor (e.g. 2.4 if the scale were 1.0 −0.6 −0.4). The more consumption efficient the household, the lower the equivalence factor and the higher the equivalent income relative to household income.

Some extensions are possible towards more sophisticated differentiations in the equivalence scale, within the recommended structural logic. Differences in needs might be specified more carefully, e.g. between categories of adults and categories of children. In this case, one would have to define more carefully the reference household, which might be, for example, the single gainfully employed male aged 30–50. Negative economies of scale are possible, e.g. if the second person in a household is a handicapped person. A more careful distinction could be introduced between population categories on the assumption that efficiency and/or needs effects are socially differentiated, in which case scales with different degrees of steepness or flatness would apply to different categories of household, e.g. by age, income, level of education, rural/urban residence, and obviously between countries. In comparisons between countries (or regions) price structures could be relevant (Atkinson and Micklewright, 1992). If we apply the same equivalence scale to households with the same structure, we also assume that they have identical markets. If markets are different, e.g. in the relative prices of goods that are public in the household, there might be different scale economies. For example, if housing is cheaper, efficiency effects would be weaker. If in addition to household structure we consider household behaviour, there might again be different efficiency and needs effects in households with the same structure, which might for instance be the case between one-earner and two-earner families. If behaviour changes over time, efficiency and needs effects may change independently of household structure. For example, if the power of children to demand quality goods increases (new labels rather than old hand-downs), needs effects might weaken. Eventually, things get pretty complicated and in the end we might need changing tailor-made equivalence scales for all households.

4. EMPIRICAL ILLUSTRATIONS

A range of estimates for Britain in 1976 and 1986 are given in Table 1, using Family Expenditure Survey data, adjusted for over-time comparability (Coulter et al., 1994). Equivalization is by the OECD-scale. All estimates are based on disposable income. Household production is disregarded. Within-household distributions are assumed equitable. Precise definitions are given in the table.

The intention is to illustrate (1) value added, (2) the difference between economic growth and trends in well-being, and (3) the difference between valid and invalid measures of inequality of well-being.

TABLE 1

GOODS, WELL-BEING AND INEQUALITY

	1986	1976	86:76
Goods (mean income, 1986 £s)			
1. Income per person	3,799	2,981	1.27
2. Income per household	9,708	8,186	1.19
Well-being (mean equivalent income)			
3. Well-being per person	4,870	3,894	1.25
4. Well-being per household	12,443	10,691	1.16
5. Value added (%)	28	31	0.90
Inequality (Gini)			
6. Well-being per person, between persons	0.291	0.250	1.16
7. Well-being per person, between households	0.299	0.260	1.15
8. Income per person, between persons	0.315	0.278	1.13
9. Income per household, between households	0.350	0.317	1.10
10. Well-being per household, between households	0.379	0.349	1.09
N persons	18,276	19,621	
N households	7,153	7,146	
Persons per household	2.56	2.75	
Children per household	0.63	0.75	
Children per household with children	1.84	1.94	

Definitions
1. Sum of household income, divided by the number of persons.
2. Sum of household income, divided by the number of households.
3. Equivalent income allocated to each household member, summed up across persons and divided by the number of persons.
4. Equivalent income multiplied by the number of household members, summed up across households, divided by the number of households.
5. The difference between equivalent income and income (per person or per household), relative to income.
6. Equivalent income allocated to persons, distributed across persons.
7. Equivalent income allocated to households, distributed across households.
8. Income per person, distributed across persons.
9. Income per household, distributed across households.
10. Equivalent income multiplied by the number of household members, allocated to households, distributed across households.

Note: All estimates are based on disposable cash income, including cash transfers and after direct taxes, 1986 GB £s.

Value Added

Household income represents the value of goods available to the household (free goods, taxes, savings, and periodicity disregarded) and equivalent income the value of well-being. In 1986, mean income per person was £3,799 (and income per household £9,708). This translates into a mean value of well-being for persons of £4,870 and mean household well-being of £12,443. The difference between income and well-being is a measure of value added in the processes between goods and well-being. In 1986, the value added was 28 percent of income. In 1976, the value added was higher, 31 percent.

These are the results with the OECD equivalence scale. A "flatter" equivalence scale, assuming less consumption efficiency, would give less value added; and a "steeper" scale more. In 1986, the value added according to the two closest alternative scales (1.0 −0.8 −0.6 and 1.0 −0.6 −0.4) would be 19 and 38 percent

respectively. Hence, although the range of valid equivalence scales is narrowed down by the absolute interpretation, the sensitivity of results to the choice of equivalence scale remains strong.

A value added in the household of roughly 30 percent is a remarkably high figure, considering that this reflects only the transformation of given goods into well-being. In addition, there is the production of goods in the household which is not considered in the present exercise. Estimates elsewhere, based on conservative assumptions, suggest that household production may typically add 50 to 60 percent to the value of market goods and that the value added including production may typically be in theorder of 100 percent of market goods (Ringen, 1996).

The reduction in value added from 1976 to 1986 reflects a move towards less consumption efficiency in households as a result of reducted average household size, including fewer children per household. Change over time in the value added can be interpreted as a measure of the "cost" to society of moving towards smaller households (or the "gain" if household size increased). If the movement towards smaller households were a result of voluntary choice (young people establishing own households earlier, old persons managing longer on their own), this might be considered just another indication of increasing prosperity, in which case there would be a cost in consumption well-being, but possibly no welfare loss. In effect, the change may be a combination of choice and non-choice (aging, divorce, lower fertility), in which case there might be a welfare loss but possibly not identical to the cost.

Economic Growth

Economic growth is usually measured by per capita income, i.e. before household economies. The rate of growth thus measured is, in the British data, 27 percent over the ten years. The preferred measure of well-being is by equivalent income, i.e. after household economies. This measure shows a lower rate of change, approximately 10 percent lower, the same, obviously, as the reduction in value added.

We could say that the value of economic growth (as conventionally measured) to persons has been undermined to the effect of 10 percent by reduced consumption efficiency in households resulting from the move to smaller households. With this magnitude of effect in a society like the British one, i.e. in an industrial market economy, where the economic role of households is typically regarded as having become marginal, and over no more than ten years, one must assume there are all the greater effects in the comparison of well-being between societies with radically different household structures and/or market/household divisions of labour, e.g. industrial and developing countries. Since household structure is usually not stable in time and space, measures derived before household economies would be seriously suspect if intended to reflect well-being, be it in comparisons between societies or over time within societies. (The estimates incorporating household production show, for the same period, a reduction in the value of household production of 10 to 12 percent, and that all together about a third of economic growth is "lost" to persons as a result of less production and less consumption efficiency within households. Cf. Ringen, 1996.)

Inequality

A valid measure of inequality in well-being is between persons, after household economies. This is given in specification (6) in Table 1.

Four additional specifications are estimated, which are all in use in the literature, but which are not valid as measures of inequality in well-being according to the logic argued presently, either because of mis-specification of the unit (household rather than individual), mis-specification of well-being (unadjusted rather than adjusted income), or both. Specification (7) is invalid because it is based on the household as the unit, specification (8) because it uses unadjusted income, specification (9) for both reasons, and specification (10) again because the household is the unit. Specification (10) is valid as a measure of aggregate well-being, but not for the measurement of inequality of well-being since it distributes across households and not persons.

The different specifications give noticeably different results. All show inequality to have increased (which is consistent with known trends, cf. Goodman and Webb, 1994), but they differ on the extent of inequality and the rate of change. The preferred specification, (6), gives a lower level of inequality but a higher rate of change than any of the four alternative specifications. (The difference is least between the preferred specification and alternative (7) which measures the same range of variation but over a smaller number of units.)

Alternative Efficiency Assumptions

Since the valid alternative equivalence scales are limited to those with the same structure but either flatter or steeper profiles in the weights, the consequences of applying alternative relevant equivalence scales are clear enough. The use of a flatter scale would in all cases reduce the difference between the results of preferred and alternative measures—less value added, higher rates of change in average well-being, higher levels of inequity, and lower rates of change in inequity. The use of a steeper scale would have the opposite results.

5. CONCLUSIONS

1. Income is a measure of goods, not of well-being. Given the fact of household economies, the use of income data in the measurement of well-being requires radical manipulations of the data from the form in which they are available. Once the data are in the appropriate form, we are no longer observing income or the distribution of income, but only using income information to reflect underlying well-being. There may be advantages in avoiding the income terminology in the reference to well-being and limiting its use to the reference to goods. (In fact, it is probably correct to say that income data are *only* information and that there is no single economically or sociologically meaningful underlying reality to be called "income." Hence, income information may need to be manipulated in different ways depending on what underlying reality one wishes to measure, e.g. well-being, reward for effort, or purchasing power. Hence, also, there is no such thing as *the* distribution of income.)

An absolute interpretation is argued of the equivalent income measure as the value to each household member of his or her equitable share of consumption services, given the goods available to the household. Guidance is suggested on the "correct" structure of equivalence scales, when applied to the measurement of well-being. This narrows the range of valid alternative scales, compared to the valid range under the more conventional relative interpretation of the equivalent income measure. However, the specific weights in equivalence scales remain unresolved and the choice of weights continues to matter strongly for measurement results.

In empirical studies it is now common to test the sensitivity of results by applying alternative equivalence scales to the population under observation. However, one and the same equivalence scale may not be "correct" for all categories of households. A different strategy, which has so far not been much explored, could be to test for alternative equivalence scales applied to categories of households within the population, assuming different scale economies in, for example, elderly households and in young households wth children.

2. Once the "black-box" of the household is opened, household economies turn out to be remarkably complex. In economic parlance the term "production" may sometimes be used for the entire process of translating goods into well-being. In households, however, there are at least three distinct processes which need to be identified separately: a process of creating goods (which I call production), and a process making goods public (which I call co-operation), and a process of distributing services from goods.

In terms of consumption well-being to household members, as much value may be generated in the average household as the value that flows to the household through market activities.

3. It is argued that inequality of well-being should be measured between persons, after household economies (including adjustments for differences in need). This specification is applied to Britain for the period 1976 to 1986, a period of known rising income inequality. Results are compared to the results of other specifications which are considered less valid because one or both criteria are not satisfied. The preferred specification shows the level of inequality to be lower but the rate of rising inequality to be faster. Since the alternative specifications are common in the literature, it is possible that the body of literature on income inequality in Britain may exaggerate the extent of inequality and underestimate the increase in inequality, if what one has in mind is the distribution of well-being.

4. Economic growth is usually measured by per capita income. It is argued that this measure is seriously suspect if intended to reflect trends in well-being because household economies are ignored. In the case of Britain, it is demonstrated that the per capita measure exaggerates the rate of growth in well-being.

It is suggested that the per capita measure would also tend to exaggerate differences in well-being between societies, in particular between developed and developing economies.

5. If policy goals are in terms of well-being but means limited to influencing goods (for example if politicians are reluctant to intervene in internal household affairs), the analysis of policy effectiveness would have to take in household economies. For example, in order to determine what additional goods (economic

growth) would be needed to increase the level of well-being in the population by a certain fraction, it would be necessary to take the analysis "backwards" from individual well-being to household goods. The additional goods necessary would then depend on the structure and behaviour of households and the distribution of goods between households. If, over time, there is less consumption efficiency in households, there would have to be *increasing* rates of growth in goods in order for there to be *stable* rates of growth in well-being.

If society seeks to maximise aggregate well-being, additional goods should be allocated to the most consumption efficient households. If society seeks to equalise well-being, additional goods should be allocated to poor households. If society wants both, it could face a dilemma of contradictory goals if poor households were relatively consumption inefficient.

Households with children are "market inefficient" because parents (mothers) must devote time to children and are less free to pursue work careers. There is, hence, an opportunity cost of children in the form of income foregone. Households with children are, however, comparatively consumption efficient because they are larger and have more members with lower needs than non-child households. From a situation in which households with children are located towards the lower end of the income distribution, which is generally the case in contemporary industrial economies (Palmer *et al.*, 1988), redistribution of income to households with children would be a recommended policy whether society seeks to maximise or to equalise well-being.

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