



institute of social studies  
the hague, the netherlands

# National Accounting and Subsistence Production in Developing Countries

Jan J.P. van Heemst



# National Accounting and Subsistence Production in Developing Countries

Some Major Issues

Jan J.P. van Heemst

March 1984

Institute of Social Studies

The views expressed in this publication are those of the author and not necessarily those of the Institute of Social Studies.

---

© Institute of Social Studies  
The Hague, 1984

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of the copyright owner.

ISBN 90-6490-012-4

Printed in The Netherlands

## 1. INTRODUCTION

In the majority of the developing countries a significant part of the privately produced output, i.e. the output generated outside the public sector, is not exchanged through the market. Although this is a well-known fact, it has regularly been the subject of discussion among national accountants, because the proper accounting for certain parts of this unmarketed output in national accounts causes specific problems which are not encountered with regard to other (especially marketed) output.

Privately produced output which is not marketed comprises in the first place goods and services that have been produced for own use by their producers or by members of the household to which the producers belong. It also includes output which is exchanged on a barter basis with other households. Furthermore it may include output, especially of an infrastructural character, that has been produced on the basis of communal labour arrangements for public use within the local community.

The production of output for own use (whether as an intermediate item, a consumer item or an investment item) takes place in rural as well as urban areas. In the rural areas this kind of production is found in particular where traditional ways of life and production relationships prevail, and where peasant farming constitutes the major economic activity. A characteristic of peasant farming is that a substantial part of the output is intended for own consumption.<sup>1</sup> Furthermore, one may also observe that the local social reality within which peasant farming takes place, and of which it forms a part, often has such traditional features as reciprocal neighbour relationships, obligations to participate in communal labour activities and the like. These features imply the generation of output which is not exchanged in the market. As such the peasant economies constitute at the same time the kind of communities in which communal labour efforts leading to (unmarketed) constructions for public use can be observed.<sup>2</sup> In addition one could say that most barter transactions take place in peasant societies.

Returning to production for own use, it should be made clear that in most developing countries, this kind of activity is by no means limited to

---

The author is grateful to his colleagues at the Institute of Social Studies who commented on an earlier version of this paper.

peasant farming. It may also appear among those earning a money income as wage-earners or in self-employment, in rural or in urban areas. These activities supplement the money income if it is insufficient to support a decent level of living.<sup>3</sup> Finally, production for own use may also occur in constructions by modern, agricultural or non-agricultural enterprises in both rural and urban areas.

From what has been said above it will be clear that privately produced, non-marketed output emerges in various socio-economic contexts which may be located in rural as well as urban areas, although in most developing countries the greater part of this output is generated in the rural areas, particularly in the sectors which, from a social point of view, are more traditionally organised and in which peasant farming plays a predominant role.

National accountants have often considered the problems related to incorporating the privately produced, unmarketed output in developing countries in national accounts. They refer in particular to the unmarketed output produced in the more traditionally organised, rural societies, either for own use or for public use in the local community. In doing this they use the terms 'subsistence' output and 'non-monetary' output more or less synonymously to describe such output. These terms normally do not refer to bartered output, which is considered relatively unimportant for most of the developing countries, or to output which is produced for own use by modern enterprises. Since this paper deals mainly with the national accountants' discussions, the terms 'subsistence' and 'non-monetary' will be used in the way they are conventionally used, and they will also be used interchangeably.

The incorporation of 'subsistence' or 'non-monetary' output in national accounts gives rise to a number of problems. Since subsistence output does not pass through the market - i.e. it is neither sold nor bought - its value cannot be measured by referring to the money flows involved in acquiring it. Its value also cannot be directly related to a sales price. These factors imply that on the one hand, quantities of the goods and services have to be estimated, while on the other one has to look for appropriate prices in order to eventually arrive at aggregates which express the values of the various kinds of subsistence output.

The selection and application of suitable techniques for estimating the quantities raises various important issues, which are largely related to the fact that most subsistence production takes place within the rural

household. Since these households are units of production and consumption, they have their own economic and social structure as well as behaviour, which is different from that of other economic entities (e.g. modern enterprises). In order to accurately measure the various economic activities which households carry out and the output - including subsistence output - resulting from these activities, one must understand how these households behave and are organised economically. This understanding should be reflected in the approach that is adopted in surveys aimed at making these measurements.<sup>4</sup> Therefore the questionnaires used in such surveys simply cannot be derived from the types used for measuring economic activities in, for example, the enterprise sector.

The issues regarding the adoption of prices for valuing subsistence output have to do first of all with the question of the kind of prices to be used, since in principle various kinds of prices (i.e. consumer prices or producer prices) could be chosen for this purpose. Another issue is how to calculate the prices to be assigned (or imputed) to subsistence output. However, these problems with measuring and valuing are often preceded by problems with categorising non-monetary output that should be covered by the estimations. This is because it is not always clear, from a theoretical point of view, which categories should be considered as output of an economic character (especially as far as certain types of services are concerned).

The need to pay due attention to incorporating subsistence output in national accounts, and to the problems which accompany measuring and valuing the quantities involved, stems in the first place from the fact that the share of non-monetary output in the total output of a considerable number of developing countries is still quite significant. This is the case despite the fact that in most developing countries this share is gradually declining because of, among other things, gradual changes from peasant farming to production for the market and, more in general, increasing specialisation in economic activities. Table 1 gives an idea of the relative importance of subsistence activities in the economies of developing countries. This table is based on data collected by the OECD Development Centre during the mid-1970s. One may conclude from it that in 68 per cent of the 48 countries listed subsistence production accounted for 10 per cent or more of total GDP, while in 39 per cent of the countries it accounted for as much as 20 per cent or more of total GDP. It

should be realised, however, that the percentages in Table 1 are based on existing estimation procedures, which (as will be discussed in more detail below) sometimes result in underestimation. Thus the actual share of subsistence activities in GDP may be considerably larger.

Table 1. *Frequency Distribution For 48 Developing Countries in Terms of Shares of Subsistence Value Added in Total GDP*

<i>Subsistence value added as % of GDP</i> <sup>1</sup>	<i>Countries</i>	<i>Frequencies</i>	
		<i>No.</i>	<i>%</i>
40% or more	Ethiopia, Niger, Rwanda	3	6
30-39%	Mali, Upper Volta, Malawi, Uganda	4	8
25-29%	Tanzania, Mauritania	2	4
20-24%	India, Korea, Malaysia, Dahomey, <sup>2</sup> Botswana, Kenya, Sierra Leone, Togo, Angola, Mozambique	10	21
15-19%	Cameroon, Madagascar, Rhodesia, <sup>3</sup> Swaziland, Taiwan	5	10
10-14%	Iran, Sri Lanka, Philippines, Vietnam, Thailand, Dominican Republic, Ivory Coast, Zaire, Senegal	9	19
5-9%	Greece, Jordan, Nicaragua, Venezuela, Mauritius, Zambia, Hong Kong, Ecuador, Iraq	9	19
less than 5%	Cyprus, Malta, Mexico, Argentina, Guyana, Jamaica	6	13
		48	100

<sup>1</sup> GDP at factor cost for a recent year.

<sup>2</sup> Now Benin.

<sup>3</sup> Now Zimbabwe.

*Source:* Blades 1975: 11. The terminology is slightly adjusted.

Although the data in Table 1 relate to the situation around 1975, it can safely be assumed that they are still representative for the situation in

most developing countries, since in most of these countries the decline in the share of subsistence output is very gradual.

Another important reason for ensuring that subsistence output is included adequately in national accounts is the very fact that, as mentioned above, its share is declining, whether gradually or drastically, in a number of developing countries. An adequate and accurate treatment may prevent national accountants from making the error of dealing differently with output that was formerly produced for subsistence purposes, and thus not accurately accounted for, when it is marketed. Such an error would lead to improper estimates of growth rates, among other things.

A proper treatment is, however, also required in view of the fact that subsistence activities in developing countries are, generally speaking, carried out by people who to an important extent belong to the poorer sectors of society. As such they may belong to the target groups to which development policies should be geared. It stands to reason that adequate information on the economic activities of these groups, and on their levels of living, will be preconditional for properly designing and executing policies directed at them.

The following sections present a brief review of the major issues in the discussion of how national accounts should treat 'subsistence output' in the sense this term is normally used in these discussions.<sup>5</sup> This review is structured around the three main areas mentioned above: the categories of subsistence output to be covered, the methods for estimating quantities and the prices to be adopted for valuation purposes.

## **2. COVERAGE OF THE VARIOUS KINDS OF SUBSISTENCE OUTPUT**

What kinds of subsistence output, and what types of productive activities generating this output, should be dealt with for national-accounting purposes? This question has theoretical as well as practical aspects. Beginning with the theoretical ones, one may first ask which types of activities should in principle be covered when making estimations and valuations. Various theoretical positions might be adopted, depending on the views one has about the functions and uses of a national-accounting system. One approach argues that such a system is supposed - in principle - to record all output generated by activities of an economic

nature. This implies that - at least in principle - any type of output resulting from economic activity should be included, irrespective of whether it is monetary or non-monetary. However, this immediately raises the subsequent question of what is meant by 'economic' activities in this context.

Although no perfect agreement exists in the literature on this point, a certain convergence seems to emerge in the views that have been expressed more recently on it. One can conclude from these views that activities are considered to be economic if the goods and services that are to be associated with them can be produced by somebody other than the person who uses or consumes them - i.e. when the transfer of these goods and services between people is possible, at least in principle. Since it is clear that goods will, generally speaking, almost by definition satisfy this criterion, the practical use of it will be of special importance when one is dealing with services. As Hill (1979: 34) remarked:

Goods can be easily recognised in practice, and the problem is to have an operational criterion which enables the production of services to be distinguished from other activities around the home or elsewhere. The fact that a service must be capable of being produced by another economic unit than the consumer of the services provides that criterion.

This criterion, which has also been advocated by Hawrylyshyn (1977), who calls it the 'third person' criterion, is evidently to a large extent equivalent to a criterion which considers whether the service (or good) in question may at least in principle be subject to purchase. This criterion is referred to by, for example, Kendrick (1979: 350), who remarked:

I define as economic those activities undertaken primarily for the sake of the resulting income or product, while non-economic activities are undertaken primarily for their own sake - social, recreational, and other leisure-time pursuits. This is consistent with the criterion that non-market services could as well be purchased under favourable supply conditions, but not the non-economic activities.

Finally, Usher (1980: 129) proposes, in a similar vein and in the same context, to include in national accounts 'the value of goods and services acquired outside the market sector but that might have been purchased with money under a different but plausible form of economic organisation'.

Thus although the 'third person/transfer/purchase' criterion is perhaps an arbitrary one, it may nevertheless generally serve as a guide in

concrete situations for determining what kind of activities should be considered economic and what kind should not. It indicates that all activities generating non-marketed output that lends itself in principle to transfer or purchase by third persons should be considered economic. It goes without saying that when this criterion is applied, a wide range of subsistence-output categories can be defined as economic. When, moreover, the view is held that the accounting system should in principle include all output resulting from economic activities, a very wide coverage of the many categories of subsistence output should be aimed at, ideally speaking.

However, the position may also be adopted that in concrete situations, national-accounting systems may serve different purposes, and that the coverage of non-monetary activities should therefore depend on the purposes for which the accounting system is actually used. This paper is not the proper place to delve deeply into the question of the different uses of the national-accounting system in developing countries in order to derive the exact position that should be adopted for each case. A few pertinent points, however, on the uses of national accounts and the implications for coverage should be mentioned.

In the first place it may be noted that national accounts are almost universally used for determining the growth of output, income and expenditure. In order to show growth adequately, the coverage of non-monetary output in developing countries should preferably be fairly wide. This is important in view of the possible occurrence of monetisation (i.e. the change from subsistence production to production for the market). This is necessary in order to prevent output that was formerly of a subsistence nature - and as such not covered - from incidentally being covered when it is marketed. Should this happen, the growth rate would be overstated. In light of this reasoning it seems logical to cover at least those non-monetary output categories which are likely to be replaced by monetary ones when an economy becomes more specialised, i.e. more monetised. According to Blades (1975: 54) the prime candidates for coverage include the output of subsistence agriculture, food processing, handicraft production and building, while in some cases forestry activities, water collection and crop storage will also need to be covered.

Another important purpose for which the national accounts should be able to provide data on production, income and expenditure is that of analysing the situation in, and the formulation of plans for, special target

groups in an economy. This is particularly significant for the poor, many of whose activities are largely of a subsistence nature. As far as this purpose is concerned, Blades (1975: 55) argued that by implication the coverage of subsistence output may include fairly minor activities, such as firewood collection, foraging for bush products, water carrying etc., even though such activities may not contribute substantially to total output. The justification for this would be that these activities are important for a key group in the population, both in terms of the contribution such activities make to the group's total output as well as in terms of the labour inputs involved.

From what has been said so far about the coverage that would be desirable from a theoretical point of view, with regard to certain specific objectives of national accounts it can be concluded that a relatively wide coverage should be aimed at, generally speaking. However, this aim conflicts with the various practical problems which will be encountered in estimating quantities and values of subsistence output and which often hamper the realisation of wide coverage. These problems derive largely from the fact that subsistence output is not marketed and therefore is not included in records on turnover, sales or purchases. Consequently the estimation methods which use such records cannot be applied. One therefore has to rely on alternative estimation methods, which involve the measurement of quantities on the one hand and the selection of prices on the other.

The accurate measurement of quantities can only be realised through field surveys. Ideally speaking such surveys should take into account as much as possible the specific features of the rural household economy, in view of the fact that subsistence production is predominantly carried out by rural households. However, if carried out properly such surveys are quite time-consuming. This is because the households involved in subsistence production normally do not keep records or accounts of any kind, so that the methods used in collecting data on production and consumption are based mainly on the observations and measurements made by the survey teams. Furthermore, collecting data through field surveys is often hampered by the fact that the communities of households involved in subsistence production are located in relatively remote areas, which are not easily accessible to surveying teams. All in all these are not favourable conditions for implementing wide and accurate coverage.

It can be assumed that mainly due to these practical problems, many types of non-monetary activities are not covered at all in the national accounts of many countries, or perhaps are only partly covered. An impression of the activities that are not covered can be gleaned from findings of the survey made by the OECD Development Centre in the 1970s. A large number of developing countries was questioned about their treatment of subsistence activities in their national accounts; Table 2 summarises some of their responses. From this table one may conclude not only that many important subsistence activities that are clearly of an economic nature have not been covered by a considerable number of countries, but also that a wide variety of coverage patterns exists among the countries.

Indeed in light of the various practical problems mentioned, most of the recommendations made here for coverage of subsistence output aim to combine theoretical desirability with practical feasibility. These recommendations often boil down to a coverage pattern which is wider than usual, while at the same time certainly not including all the types of economic activity that could be considered for inclusion.

It may be useful to refer here to the set of recommendations presented by the United Nations in its revised system of national accounts (SNA). The revised SNA (see United Nations 1968: 96) recommended the coverage of non-monetary output resulting from the following activities: (i) production of primary products, i.e. the characteristic products of agriculture, fishing, forestry, mining and quarrying; (ii) imputed rental incomes of owner-occupiers; (iii) building and construction; (iv) processing of primary commodities by their producers in order to make such goods as butter, cheese, flour, wine, oil, cloth or furniture for their own use, regardless of whether these manufactures are offered for sale; and (v) production of other commodities which the producers consume in their households and also produce for the market.

This revised set of recommendations certainly seems to be more appropriate than the original one, which advised the coverage of only the output intended for own use that had been produced by primary producers (i.e. those engaged in agriculture and related activities and in mining and quarrying). On the other hand for the non-primary producers it advised that all primary production for own use should be included, as well as all production for own use in the producers' own trade. This advice led to the exclusion of potentially large amounts of non-monetary

Table 2. Non-monetary Activities Covered in the National Accounts of 70 Developing Countries, Summarised by Region

Region	Agriculture, etc.						Building and construction			Imputed rents		Water carrying	Other activities		
	Crops	Livestock	Forestry	Hunting	Fishing	Food processing	Handicrafts	Dwellings	Other buildings	Construction	Urban			Rural	
Africa: Francophone <sup>1</sup> (13 countries)	no.	13	13	11	8	11	7	9	10	2	1	9	8	1	0
	%	100	100	85	62	85	54	69	77	15	8	69	62	8	—
Africa: Other (20 countries)	no.	19	19	17	10	16	9	10	16	10	4	15	15	4	4
	%	95	95	85	50	80	45	50	80	50	20	75	75	20	20
America (15 countries)	no.	15	15	6	2	9	1	4	7	6	4	15	13	0	0
	%	100	100	40	13	60	7	27	47	40	27	100	87	—	—
Asia (19 countries)	no.	19	17	14	2	15	10	12	11	9	6	18	18	0	2
	%	100	89	74	11	79	53	63	58	47	32	95	95	—	11
All countries <sup>2</sup> (70 countries)	no.	69	67	50	24	53	27	35	45	28	15	60	57	5	6
	%	99	96	71	34	76	39	50	64	40	21	86	81	7	9

<sup>1</sup> This includes Cameroon, Congo-Brazzaville, Benin, Ivory Coast, Madagascar, Mali, Mauritania, Morocco, Niger, Senegal, Togo, Tunisia and Upper Volta.

<sup>2</sup> This includes three European countries: Greece, Cyprus and Malta.

Source: Blades 1975: 16.

output of a clearly economic nature, as has been shown by Blades (1975: 48-50).

Several authors commented on the United Nations' revised recommendations, and some observed that they are rather limited in terms of the types of production covered. Webster (1974: 48), for example, pointed to the fact that they apparently exclude such important tasks as collecting and transporting water and milling grain. However, he was of the opinion that this should not be considered regrettable, since wider coverage would aggravate the problems in obtaining reliable data, with the result that more statistics of dubious reliability would be included in the national accounts.

Furthermore, Seers (1977: 8) mentioned several subsistence activities whose apparent exclusion from coverage he considered a serious weakness of the revised recommendations. These are the following:

- the collection of primary products other than food, e.g. water, firewood, flowers, hides, skins etc.;
- such processing activities as hand-crushing rice and maize or making cloth and ornaments;
- those services within the household that are provided by relatives and neighbours either without payment on a reciprocal basis or on the basis of customary obligations, and which in a more commercial economy would be either paid for (e.g. haircutting and hairdressing, pulling teeth, nursing, childminding, carrying messages, and wedding and funeral ceremonies) or supplied by the government (e.g. education, religion and medicines).

These comments illustrate that the revised recommendations, perhaps regrettably, exclude certain types of activities from coverage, but that good practical reasons can be advanced for doing this. One should note here, however, that certain types of subsistence activities may be more important in some countries than in others. For this reason the exclusion of some activities by the revised recommendations may be more serious in some cases than in others. It is therefore advisable to treat the recommendations in a flexible way.

The various theoretical and practical considerations presented above lead to the conclusion that in principle, it would be desirable to follow the revised SNA recommendations on coverage, since they might, among other things, facilitate international comparison. They should, however, be applied with flexibility in view of possible differences

between countries in the importance of certain types of subsistence activities. Adequate coverage of the more important types of activities will certainly contribute to more adequate comparisons of monetary and non-monetary output and as such to the proper estimation of growth rates. Obviously the availability of reliable data for these purposes is essential to a proper analysis of all kinds of economic questions, and also to formulating a wide range of developmental policies and strategies.

### 3. ESTIMATING QUANTITIES

As was observed above, the inclusion of estimates of the aggregate values of subsistence output in national accounts requires that, on the one hand, estimates be made of the quantities involved; on the other hand it requires the adoption of unit values which are appropriate for this purpose. This section focusses on some of the issues related to the approaches that may be adopted for estimating quantities.

One way of classifying the different approaches is to distinguish direct methods from indirect ones. When direct methods are used, the data on the output in a particular period are primary, i.e. they are obtained by taking a census survey or sample survey. When a census survey is made, data on subsistence activities may be collected as a by-product of a survey which is wider in scope and which may also cover monetary activities, as would be the case with an agricultural census survey.

Because of the high costs census surveys are normally held only once in five or ten years, so that information from such sources is not frequently available. This is also generally true of sample surveys, in which estimates of the total quantities involved are obtained by applying a 'blowing-up' procedure. When a census survey is conducted, data are normally obtained by means of the production approach, i.e. those being surveyed are questioned in their capacity as producers, and data are collected about the destination of their output. Although the production approach is also used in sample surveys, a so-called 'consumption' approach is more frequently applied in such cases. This type of approach estimates subsistence production and consumption through information collected by questioning those being surveyed in their capacity as consumers, and data are collected about the consumption or use of the quantities in question.

The issue now arises of which approach is preferable. Blades (1975: 56) generally preferred a consumption approach to a production approach, not only in estimating agricultural crops but also in estimating other subsistence output. In his view it is clearly better to measure the consumption of the producers' own products when it takes place, instead of asking the producers to forecast the eventual disposal of their output. Blades' preference is shared by Fisk (1975: 260-261): in referring to crop production he argued that in many cases, the total quantity of a crop grown and the quantity of that crop which will be used for own consumption are difficult to estimate accurately over a reasonable period of time and at a reasonable cost, because both are subject to fluctuations caused by changes in seasonal conditions and other factors. Although this is true, one should realise that if a consumption approach is adopted, the consumption patterns observed, and especially those in food consumption, will also be subject to seasonal fluctuations. Thus if an adequate picture is to be obtained of subsistence consumption over a one-year period, the survey should be designed such that it takes account of variations in the quantities of products consumed caused by seasonal fluctuations. This in fact means that the sample must be observed during the different seasons of the year.

A household survey is the obvious instrument for implementing a consumption approach. During the survey period a sample group of households is visited, and information is collected on the items consumed or otherwise used, the services received and rendered, the ways in which goods and services have been obtained (i.e. through purchase, own production etc.), the sources of monetary and non-monetary income, the economic activities in which the household members are engaged etc. As was mentioned above, measurement of the various quantities of items used and consumed is done by the survey team to an important extent, since the households do not normally keep records.

In order to properly estimate the quantities of subsistence output the household survey can in fact generally be said to be the most appropriate kind of survey. This is because such surveys take the household as their unit of reference, which is important since the bulk of subsistence output is generated by (rural) households. The survey can therefore be designed, at least in principle, in such a way that it takes into account the character and dynamics of the (rural) household as much as possible.

For a number of years now the United Nations has been active in pro-

moting and supporting the development of household-survey capabilities in developing countries through its National Households Survey Capability Programme (NHSCP). The objective of this programme is to build permanent national capabilities to carry out continuous household surveys that are carefully planned to yield up-to-date, integrated statistics in a diversity of fields that reflect national priorities and concerns. This is done in the recognition that the household plays a key role in development in developing countries. Indeed it is argued that it is not only in the household that the impact of development on living conditions must be measured; it is there, however, that much productive activity is organised which is, at least in a large number of countries, mainly of a subsistence nature, especially in the rural areas. Therefore the only systematic way to investigate the household as a complex economic and social unit and to measure its role in national activities is believed to be by establishing a national household-survey capability.

If a certain country has such a capability, it seems obvious that its potential may be used (among other things) for measuring subsistence activities and the outputs associated with them. It is therefore advisable to exploit this capability to the fullest as far as subsistence activities and their measurement are concerned. Use of this reliable and accurate survey instrument reduces the necessity to rely on other kinds of direct or indirect methods. If the capability is set up in an effective and efficient manner, the costs of each subsequent survey may be expected to gradually decrease. At the same time the quality of the data collected in the successive surveys may be expected to improve.

Since so far both the census surveys and the sample surveys are in most cases organised rather infrequently, the majority of the annual estimates continue to be made in an indirect manner, e.g. through extrapolation of the latest survey information. In many cases this is done by relating the survey information proportionally to the estimated increase in the rural population or rural households. In its simplest form this procedure may be algebraically presented as follows:

$$Q_t^i = a_i^* P_t$$

while

$$a_i^* = Q_o^i / P_o$$

The quantity of product  $i$  produced or consumed in period  $t$  ( $Q_t^i$ ) is supposed to be equal to a constant  $a_t^i$  multiplied by the population in period  $t$  ( $P_t$ ). The value of the constant represents the *per capita* production or consumption as calculated from the survey data collected in a previous period. Given an estimate for  $P_t$ ,  $Q_t^i$  may thus be calculated.

It stands to reason that the appropriateness of these procedures depends on the validity of the assumptions implicit in them, e.g. the validity of the assumption of constant *per capita* production or consumption in the equation above. Unfortunately many examples may be given of extrapolations such as these, where the underlying assumptions are questionable. The situation is even worse, however, if the annual estimates are not even related to previous survey information. Cases can be cited in which all the annual estimates are based exclusively on information about technical or biological ratios, such as the (assumed) life-span of buildings, the milk yield of cows or the rate at which hens lay eggs. These ratios are then related to census data on the population, households, livestock etc. If these ratios have not been obtained from reliable, representative surveys, their dependability may be quite doubtful. This is the case if they are provided by, for example, government officials in a Public Works Department or by a Ministry of Agriculture, who may rely on their general experience (see Webster 1974: 47). Therefore any possibility of checking the ratios through a reliable sample survey, even of the smallest dimension, should be welcomed. If this is not feasible, it will be useful in some cases to compare the ratios with data from surveys on other areas or countries. Although this should be done with care, it may shed further light on the plausibility of such ratios.

In a number of cases ratios are used to arrive at estimates of the value added, given estimates of the gross output. These ratios assume that the proportion of gross output on the one hand to intermediate input on the other is fixed. Although in principle the use of such ratios may be quite acceptable, care should be taken to ensure that they adequately reflect the relationships between intermediate input and gross output in subsistence production. To be more specific, the danger here is that ratios are used which have been derived from survey data that are not exclusively related to subsistence production, but which may refer to monetary activities as well. One should realise, however, that the input structure of goods and services produced for the market may differ significantly from that of those produced for own use, and this results in

different input-output ratios. Therefore these ratios should be adopted very cautiously.

#### 4. VALUATION

In order to express subsistence output in terms of monetary aggregates, certain values have to be imputed for the quantities involved. Table 3 will be used as a basis for discussing some of the theoretical and practical problems involved in selecting and applying appropriate values. This table shows the kinds of valuation procedures which are generally adopted for the different kinds of output in making national accounts.

Table 3. *Kinds of Output and the Valuation Procedures Commonly Applied in National Accounting*

<i>Kind of output</i>	<i>Valuation procedure</i>	
	<i>Market prices</i>	<i>Value or cost of input</i>
Marketed output	x	
Non-marketed (subsistence) output with marketed equivalents	x	
Non-marketed subsistence output with no marketed equivalents		x

Marketed output is normally valued, implicitly or explicitly, in terms of market prices of one kind or another. A similar valuation procedure is followed for non-marketed (i.e. subsistence) output which has marketed equivalents, i.e. when there are identical or similar goods and services also passing through the market. The market prices adopted in this procedure are, as much as possible, the same as those used in valuing the marketed equivalents. If there are no marketed equivalents for a certain kind of subsistence output, as is particularly the case with many kinds of services rendered in more traditional societies, an attempt is normally made to value such output on the basis of the value or costs of the inputs used in producing that output, because no market prices associated with marketed parallel output can be referred to.

One well-known question of principle is whether it is correct to use existing market prices in valuing subsistence output with marketed equivalents. It is argued that if that output had passed through the market, the market prices might have been different, in particular if the quantities of subsistence output involved were relatively large. However, this argument is hypothetical, since it would generally not be possible to indicate whether, and by how much, the existing market prices would have changed, unless one were to use very complex and sophisticated market simulation models. The practical problems involved in this kind of approach do not make it a very feasible one, and one is therefore left with accepting the existing market prices for valuation, at least if one wishes to maintain an element of comparability between marketed output on the one hand and more or less identical subsistence output on the other. This reasoning seems to be followed very widely, for in almost all actual instances subsistence output with marketed equivalents is valued on the basis of existing market prices of one kind or another.

If one accepts the valuation convention described above, the next issue to be faced is the kind of market prices that are to be used. The first problem here is the choice between producers' prices on the one hand and retail prices on the other. The answer to the question of which kind of price will be more appropriate depends largely on the view one holds on the meaning of the national-accounting aggregates and on the main purposes of the accounting system. Actually the possibility that the valuation of goods and services in an accounting system may require the use of more than a simple set of values was already acknowledged quite some time ago by Hicks (1940: 106), who wrote:

... it seems to transpire that the right system of weights to be used for valuing the National Income depends upon the purpose for which the calculation is to be used. As National Income calculations are used for all sorts of purposes, we may have to be prepared to use more than one system of Weights. It is not at all obvious without examination that the same system of weights which is appropriate for comparing real income over time is also appropriate for studying questions of distribution. There may be more than one Money Value of the Social Income, each corresponding to a different purpose of calculation.

Without probing too deeply into the matter it may be said, however, that when - as seems to be common nowadays among the national accountants - the opinion is held that the aggregates should be seen as an expression of the amount of goods and services produced during a cer-

tain period, and not so much as an expression of the general level of welfare, producer prices will be more appropriate because they better reflect the value of the inputs actually sacrificed in producing the commodities in question.<sup>6</sup>

Although this reasoning is straightforward, applying it to the valuation of subsistence output implies that it may to some extent impair the comparability between subsistence output and marketed output, since the latter is in many cases valued at retail prices, certainly if it is made up of final products. In light of this problem it might be worthwhile to reconsider the suggestion made by Billington (1963: 9-16), who recommended that subsistence output be valued at retail prices in the income and outlay accounts of the households, while in production accounts it should be valued at producer prices. He interpreted the differences as resulting from the simultaneous use of these two kinds of prices as value added generated in rural household services. This approach is not entirely free of problems (see Blades 1975: 61), and although it has been advocated by a number of experts, it has only been applied in a very limited number of cases. The revised SNA recommends that 'producers' values . . . should, as far as is practicable, be assigned to commodities in terms of market prices at the producing unit of identical items at the moment the commodities are produced' (United Nations 1968: 95, para. 6.16). However, in many developing countries (agricultural) products are not sold at the site of production (i.e. at the farm) but at certain centrally located buying points, such as larger or smaller markets. Hence the prices received by the producer (i.e. the farmer) may be said to contain certain elements of trade and transport costs. The question whether such prices, when used to value subsistence output, should be adjusted to a farm-gate price by deducting implicit transport and distribution costs generally seems to have been answered in the negative. Blades (1975: 62) argued that by any common-sense definition, these prices are already producer prices, since they are received by the producer. Moreover, they accurately reflect the costs involved in production, even though some of them include marketing costs, because the producer in a traditional marketing system often can sell some of his products only if he is prepared to transport and distribute them.

Another issue is how the prices to be used in imputing values should be collected and processed. Prices may vary considerably during the accounting period in question, and they may also vary between different

regions. The variations over time may be caused by seasonal fluctuations in supply, given a certain level of demand (in the case of agricultural products), or by shifts in demand etc. Variations between regions simply reflect the regional differences in supply and demand conditions. It will be clear that these variations and fluctuations should be taken into account as much as possible when prices are collected.

If an average figure is used to represent the price of a certain commodity during the accounting period, sufficient information should be available about the price of the product in various regions and during various time spans. With the help of this information a weighted average can be constructed, and the appropriate weights can be applied. A straightforward application of a weighted price average of a marketed product for purposes of valuing subsistence output may not always be correct. This is because usually the weights applied in calculating the average are the relative quantities sold. In general there is no reason to believe that the relative amounts in which quantities of a certain product are sold in various regions or during various accounting periods are the same as those in which quantities of the same product have been used for own consumption in these regions or during these periods. Hence it should be emphasised here (as elsewhere; see van Heemst 1979: 23) that for valuation purposes, price weights should be used which reflect the patterns of subsistence consumption as much as possible.

Let us now turn to what happens when subsistence output is such that no marketed equivalents exist, so that one cannot fall back on prices that are derived from actual market situations. Besides many traditional services in which this is the case, an example of this which is often referred to is the construction of huts in rural areas. Huts are built for own use and are therefore hardly comparable to the other types of dwellings that are constructed for sale. Thus it is difficult, if not impossible, to use a market price for valuing the huts constructed during the accounting period. As indicated above, the valuation procedure normally applied in such situations is to take the value or cost of the major inputs used in production. Since labour seems to be the only major input that is scarce in the example of hut construction, the value of the labour used is frequently taken as a proxy for the value of the hut. This implies the use of a certain wage rate, which is then multiplied by the number of hours of labour spent to construct the hut. The aggregate estimate of the total value of producing the hut is then obtained by multiplying the value per hut by the total number of huts constructed.

One problem with the approach outlined above is the selection of an appropriate wage rate. Usually the solution adopted is to use the average wage rate for unskilled labour prevailing in the area concerned. The implicit assumption here is that this rate would reasonably reflect the opportunity cost of the labour involved in constructing the hut. Various authors (e.g. Tiwari 1977: 12) have expressed hesitations about the validity of this reasoning, since in their view no real alternatives for employment exist in many instances, so that reference to a particular wage rate seems arbitrary and meaningless.

Perhaps the only realistic way to account in comparative terms for the labour put into a particular subsistence activity is to refer to the time devoted to that activity, since time is the only unit of measurement which enables a comparison with other subsistence activities carried out by the household in question (see O'Loughlin and Ewusi 1972: 385 and Blades 1975: 63). However, it is clear that accounting for subsistence activities in this way rules out the possibility of arriving at monetary aggregates. Therefore the linking up with estimates in the monetary terms applied to market transactions can no longer be realised. The only alternative for avoiding this situation seems to be to accept the use of a wage rate which in some cases is selected on questionable grounds.

A somewhat different procedure - which also involves using wage rates expressed in monetary terms - is one which aims at obtaining an aggregate value estimate of output, especially in the cases where no marketed equivalents exist, by taking as its basis only the estimates of quantities (and values) relating to inputs, and entirely ignoring the quantity estimates of output. Using the example of hut construction once again, this procedure would amount to estimating the average time spent by the household in constructing the hut. Thereafter this estimate would be multiplied by a certain wage rate and by the total number of households concerned.

The problem with this procedure is that while it renders an estimate of aggregate value, that estimate does not involve a direct quantity estimate of the output (huts in this example). Thus it may be less accurate, in particular if the relationship between labour input and output is not a stable one but subject to variations. For this reason preference should be given to using the method mentioned earlier, which involves a quantity estimate of the output together with a value estimate of the inputs per unit of output. It was mentioned above that in many cases labour is the only

scarce input that plays a role. However, to the extent that other inputs also play a significant role, estimates of their value should be included as well. The sum of the value estimates for the various inputs renders an expression of the total value of the item concerned.

## 5. FINAL REMARKS

Let us conclude this paper by summarising the recommendations which have emerged from this discussion and then by making a few points about how the various kinds of estimates of subsistence activities should be presented in national accounts.

*Coverage of the various kinds of subsistence output.* - It is recommended that:

- at least the kinds of subsistence output referred to in the Revised SNA of the United Nations be included;
- in addition the kinds which are likely to become (more) monetised be covered;
- in some cases also the kinds which are particularly associated with the activities of certain target groups be covered.

If these recommendations are followed, and if one also indicates in the accounts which kinds of subsistence output and activities have actually been covered, one creates conditions which will enable (a) an adequate comparison between monetary and non-monetary activities, (b) an adequate insight into the socio-economic situation of particular target groups and (c) a certain degree of international comparison.

Implementing these recommendations is likely to result in increases in the costs of collecting data on subsistence activities in most countries. The advantages gained may, however, well justify these increases. Moreover, the increases may be limited if the appropriate kind of sample surveys is used. This will be the case especially in countries that have permanent national household-survey capabilities.

*Estimating quantities.* - It is recommended that:

- a consumer approach rather than a producer approach be adopted. In doing this, if the countries in question have a permanent national household-survey capability, this should be used as much as possible.

The adoption of a consumer approach instead of a producer approach in many cases implies taking on comparatively higher costs. As was indicated above, these costs may remain within acceptable limits, in particular when a national household-survey capability is used. In individual cases a longer-term, cost-benefit analysis that assesses the various alternative approaches may shed more light on this issue. However, it is recommended that:

- If use is made of ratios, proportions etc. which have not been derived from present or previous surveys, their reliability should be checked, if possible, against similar parameters derived from surveys applied to other areas or countries.

*The valuation of quantities.* - It is recommended that:

- For subsistence outputs that are final products and have marketed equivalents, an attempt should be made to value output not only in terms of producer prices but also in terms of retail prices, since this will enhance comparability with marketed output;
- If averages are used to express the price of a certain item during the accounting period, an effort should be made to use price weights that reflect the actual pattern of subsistence production as much as possible;
- For output that has no marketed equivalents, an attempt should be made to obtain aggregate value estimates by using direct methods, i.e. by also using quantity estimates of that output.

The recommendations made here regarding the valuation of quantities are all likely to lead to some increases in costs compared to the present practices of most countries. Following these recommendations may lead to cost increases, but as with the other recommendations made here, the increases would be justified by the advantages they offer.

One final recommendation should be made about how subsistence activities are presented in the national accounts. In the first place the importance of *separately* listing the estimates of monetary activities on the one hand, and those of subsistence activities on the other, should be stressed. This is necessary because estimates of subsistence activities are generally less reliable than those of monetary activities, and hence they have different margins of error. As a result the subsistence estimates have to be treated more carefully than the monetary ones (see Barkay 1957: 360), and of course this can only be done if the estimates

are listed separately. There are, moreover, other good reasons for doing this, as has been pointed out by various writers (see e.g. Blades 1975: 73). One reason is that separate listings are useful from an analytical point of view, since the determinants of the subsistence aggregates are often different from those of the monetary ones. Furthermore, policy formulation requires that each of the aggregates be explicitly presented.

In my opinion this final recommendation - which is regularly made, but seemingly not often followed as yet - could easily be complemented by another suggestion already referred to earlier in this paper, which is that an indication should be given of the main types of subsistence activities covered by the subsistence aggregate. In the first place such an indication of coverage may be useful for making proper intertemporal comparisons, especially when coverage changes over time. In light of the wide variety in coverage patterns (which were referred to above) in different countries, such an indication also seems necessary in the cases where international comparisons of national-account aggregates are made, e.g. by international agencies. These indications enable more meaningful comparisons to be made, while providing them in principle should not create any problems.

## NOTES

1. A range of studies is available dealing wholly or partly with the behaviour of peasant farmers with respect to production and consumption, the decisions they take on production for own consumption and for the market, the shares in each kind of production etc. Readers interested in this are referred to e.g. Clark and Haswell 1964, Shanin, ed. 1971 and Wharton 1970.

2. For an interesting overview of the various kinds of cooperative labour in rural societies and the various types of output resulting from it (including public-use constructions realised by communal labour efforts) see Moore 1975.

3. For an interesting example of the significance of this kind of production for own use (i.e. own consumption) see Evers 1981, which presents a case study on income supplements through production for own use in Jakarta, Indonesia. According to Evers' survey data, during the survey period the value of this production contributed an average of about 18 per cent to the total consumption expenditures of households in East Jakarta. Furthermore, the study concluded (1981: 94) that such production plays a major role in the household economies of the poorer groups.

4. The importance of using the household as the unit for analysis and measurement in studying rural economies in developing countries can hardly be overstressed. Casley and Lury (1981: 183) argued that 'The majority of the population living in rural areas and dependent mainly on agriculture cultivate, harvest, sell and consume agricultural commodities that the household has produced as an operating unit. The household is bound together not merely by social ties, but by economic forces . . . '.

5. It may be noted that some of the problems dealt with here apply not only to the kind of privately produced, non-marketed output that is normally referred to as 'subsistence' or 'non-monetary', but also (at least to some extent) to some other kinds, such as bartered output.

6. This does not mean that producer prices are always adequate reflections of the value of the inputs sacrificed in production. Imperfections in the organisation and functioning of markets, the presence of oligopolistic and monopolistic elements, as well as the presence of tariff and tax structures often create large or small discrepancies between prices and the value of the inputs used. One is, however, bound to accept these deviations once one has decided to value output in terms of market prices in the national accounts, regardless of whether this output has been marketed or not.

## REFERENCES

- Barkay, R.M. 1975. 'National Accounting as a Planning Tool in Less Developed Countries: lessons of experience', *The Review of Income and Wealth*, Series 21, No. 4 (December): 349-370.
- Billington, G.C. 1963. 'A Minimum System of National Accounts for Use by African Countries and Some Related Problems', in L.H. Samuels (ed.), *African Studies in Income and Wealth*. London, Bowes and Bowes, pp. 1-51.
- Blades, D.W. 1975. 'Non-Monetary (Subsistence) Activities in the National Accounts of Developing Countries'. Paris, OECD Publications.
- Casley, D.J. and D.A. Lury. 1981. *Data Collection in Developing Countries*. Oxford, Oxford University Press.
- Clark, C. and M. Haswell. 1964. *The Economics of Subsistence Agriculture*. London, MacMillan.
- Evers, H.D. 1981. 'The Contribution of Urban Subsistence Production Incomes in Jakarta', *Bulletin of Indonesian Economic Studies*, Vol. XVII, No. 2 (July): 89-96.
- Fisk, E.K. 1975. 'The Subsistence Component in National Income Accounts', *The Developing Economy*, No. 3 (September): 252-279.
- Hawrylyshyn, O. 1977. 'Towards a Definition of Non-Market Activities', *The Review of Income and Wealth*, Series 23, No. 2 (May): 78-96.
- Heemst, J van. 1979. 'Some Issues in Connection with the Improvement of the Social Accounting Systems of Developing Countries'. Occasional Paper No. 78 (December). The Hague, Institute of Social Studies.
- Hicks, J.R. 1940. 'The Valuation of Social Income', *Economics*, Vol. VII, No. 2 (May).
- Hill, T.P. 1979. 'Do-It-Yourself and GDP', *The Review of Income and Wealth*, Series 25, No. 1 (March): 31-39.
- Kendrick, J.W. 1979. 'Expanding Imputed Values in the National Income and Product Account', *The Review of Income and Wealth*, Series 25, No. 4 (December): 349-364.
- Moore, M.P. 1975. 'Co-operative Labour in Peasant Agriculture', *Journal of Peasant Studies*, Vol. 2, No. 3 (April): 270-291.
- O'Loughlin, C. and K. Ewusi 1972. 'Social Matrices and Indicators in the Traditional African Economy', *The Review of Income and Wealth*, Series 18, No. 4 (September): 377-391.
- Seers, D. 1977. 'Statistical Needs for Development', Sussex, England, IDS Communications 120.
- Shanin, T. ed. 1971. *Peasants and Peasant Societies: Selected Readings*. Harmondsworth, Penguin Books.
- Tiwari, S.G. 1977. 'Estimational Problems of Non-Monetary Production in the Island Countries of the Pacific'. Mimeograph.
- United Nations. 1968. 'A System of National Accounts', *Studies in Methods*, Series F., No. 2, Rev. 3. New York.
- Usher, D. 1980. *The Measurement of Economic Growth*. Oxford, Basil Blackwell.
- Webster, S.J. 1974. 'Problems of Determining and Measuring the Reliability of

National Accounts in Developing Countries', *The Review of Income and Wealth*,  
Vol. 20, No. 1 (March): 41-53.  
Wharton, C.T. 1970. *Subsistence Agriculture and Economic Development*.  
London, Frank Cass.

---