NATIONAL ACCOUNTING AND INCOME DISTRIBUTION

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Conventional national accounts are often seen as concentrating on the production process, on how goods and services are produced, rather than on consumption, or who the products serve. Production finances consumption via income generation, distribution and re-distribution. This paper demonstrates this inter-action by elaborating a full economic accounting matrix, and takes both theoretical and practical considerations into account. The aim is to explore how far the revised SNA can and should give emphasis to issues of income distribution and consumption.

THE ACCOUNTING MATRIX FRAMEWORK

The system of national accounts (SNA, [1]) presents accounts for three types of economic activities: production, consumption and capital formation under-taken by four sectors of the economy: enterprises, households, government and the rest of the world. This information can be presented in the form of an accounting matrix shown schematically in Figure 1. The first four columns represent the production accounts of the four sectors and the first four rows the means of financing production, that is from sales. The next four columns represent consumption and the corresponding rows the financing of consumption. These accounts are referred to in the present SNA as income and outlay accounts since by inclusion of saving as a balancing item of consumption the columns represent total expenditure and the rows total income of each of the four sectors. The last four columns represent the acquisition of capital and the four rows the means of financing this. Since each account contains a balancing item (value added, savings or net borrowing), the total of the entries for any row must be equal to the total of the entries in the corresponding column.

Subject to this constraint that row and column totals must be equal for corresponding accounts, the matrix can appear in many forms. For example, a very usual formulation shows only a single line for capital and suppresses null rows and columns often placing the remaining rest of the world entries to the extreme left and bottom of the table. In contrast to this aggregation, disaggregation is also possible and depending on the objective of the user any area of the matrix can, in principle, be opened up to show the interaction among sub-sectors of interest.

The 1968 SNA, which is based on such a matrix, paid particular attention to the production account. The disaggregation of production activity by sectors was replaced by disaggregation by producers (establishments) and this practice of sectoring the production account one way and the consumption and capital

Account		Production				Consumption				Capital Formation			
	Sector	E	H	G	R	E	H	G	R	E	H	G	R
Finance of production	E	IC	IC	IC	—	—	FC	—	EX	CF	CF	CF	—
	H	IC	IC	IC	—	—	FC	—	EX	—	CF	—	—
	G	—	—	—	—	—	—	FC	—	—	—	CF	—
	R	—	—	—	—	—	—	—	—	—	—	—	—
Finance of consumption	E	OS	—	—	—	DI	IN	SB	DI	—	—	—	—
	H	WS	HI	WS	—	DI	TR	BN	TR	—	—	—	—
	G	IT	IT	—	—	DT	DT	—	IN	—	—	—	—
	R	IM	IM	IM	—	DI	TR	IN	—	—	—	—	—
Finance of capital formation	E	CC	—	—	—	SV	—	—	—	NB	—	—	—
	H	—	CC	—	—	—	SV	—	—	—	NB	—	—
	G	—	—	CC	—	—	—	SV	—	—	—	NB	—
	R	—	—	—	—	—	—	—	SV	—	—	—	NB

Key to Entries
Sectors

E   Enterprises
H   Households
G   Government
R   Rest of world

Transactions

IC   Intermediate consumption
FC   Final consumption
EX   Exports
CF   Capital formation
OS   Net operating surplus
WS   Wages and salaries
HI   Wages, salaries and household enterprise income
IT   Indirect taxes

IM   Imports
DI   Dividends and interest
IN   Interest
SB   Subsidies
TR   Transfers
BN   Benefits
DT   Direct taxes
CC   Consumption of fixed capital
SV   Saving
NB   Net borrowing

Figure 1. Schematic accounting matrix

accounts another became known as dual sectoring. However, because the financing of production related not to producers but products, yet another capacity of the accounting matrix framework was exploited. A further set of rows and columns was introduced which showed which products comprised each producer's output. These entries were confined to the intersection of the rows for producers and columns for products and because of its nature this sub-matrix was termed the make matrix. As well as having an obvious and useful economic interpretation, this matrix constitutes a transformation matrix (or a set of screen accounts) which permits production to be disaggregated one way and the financing of production another, but for these still to be reconciled within the extended accounting matrix. This is shown in Figure 2.

PRODUCTION VS. CONSUMPTION

This articulation of the accounting matrix caught the imagination of both data compilers and users and it became common to refer to that part of Figure 2 within the heavy border as an absorbtion matrix and to present this and the

Account			Production		Consumption			Capital Formation	All
	Sector 1				E	H	G	All	R
		Sector 2	Products	Producers					
Financing of Production		Products		A		FC	FC	CF	EX
		Producers	M						
Financing of Consumption	E			OS	DI	IN	SB		DI
	H			HI	DI	TR	BN		TR
	G			IT	DT	DT			IN
Financing of Capital Formation	All			CC	SV	SV	SV		SV
All	R		IM		DI	TR	IN		

Key to Entries
A   Absorption of product by producers
M   Products made by producers
Rest as in Figure 1

Figure 2. Alternative accounting matrix

make matrix as a supply and use table or part of a set of input/output tables. The fact that these were still presented apart from the rest of the accounting structure had two consequences. Firstly, many users coming to economic accounting via input/output were (are) unaware of the full accounting matrix to which these matrices logically belong. Secondly, compilers were encouraged to continually elaborate the make and absorbtion matrix at the expense, and often exclusion, of the lower sub-matrices of Figure 1, especially the central one showing the transfers between the various sectors of the economy. The input/output tables showed production in detail and consumption in aggregate and the previous thrust of development economists was to ensure that production diversified and grew and an increase in consumption was felt bound to follow.

Various commentators, especially Pyatt and his associates [2], argued that this concentration on the production process was insufficient; that consumption rather than production should be the ultimate concern of policy-makers and that distributive and redistributive features of the full accounting matrix should not only be restored but given greater prominence. A matrix expanded to permit such analysis is generally referred to as a social accounting matrix (SAM), recalling Hicks' "Social Framework," though it is the emphasis on the areas for attention not the basic accounting framework that distinguishes a SAM from the general economic accounting matrix shown in Table 2.1 of the SNA.

Figure 3 shows how disaggregation of household consumption and financing of consumption tables would appear if they were viewed as self-standing in a way similar to the make and use matrices. If no disaggregation is attempted only the total would appear and constitute the normal income and outlay account for households, but note that even this would be an innovation for many countries who only compile production accounts. Clearly, however, if interest lies in seeing

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Account		Consumption Account		
	Sector	Household Types		Total
Financing of Production	From sale of Products	Final Consumption	(FC)	
	Total			
Financing of Consumption	Receipts by Enterprises (E)	Interest paid	(IN)	
	Household types (H)	Transfers paid	(TR)	
	Government (G)	Direct taxes	(DT)	
	Rest of the World (R)	Transfers paid	(TR)	
Financing of Capital Formation	Receipts to capital account of Household types (H)	Saving	(SV)	
		Total Expenditure		

Account		Financing of Consumption		
	Sector	Household Types		Total
Production	Receipts from Enterprises(E)	Wages and Salaries	(WS)	
	Household types (H)	H'h enterprise income (HI)		
	Government (G)	Wages and Salaries	(WS)	
	Total			
Consumption	Receipts from Enterprises (E)	Dividends and Interest (DI)		
	Household types (H)	Transfers received	(TR)	
	Government (G)	Benefits	(BN)	
	Rest of the World (R)	Transfers receive	(TR)	
		Total Income		

Note the financing of Consumption account is transposed from the format normally used in a SAM

▨ Entries appearing in input-output tables

▨ Entries appearing in income and outlay accounts

Figure 3. Detailed accounts for the household sector

how household consumption and industrial production are inter-related, some disaggregation is necessary. The question therefore is what disaggregation is appropriate for household income (from wages and salaries and operating surpluses of household businesses) for consumption and for transfers.

The question of how the household sector should be sub-sectored has been discussed at length in the context of the present review of the SNA, where an important question is how far can and should distributive aspects of income and consumption receive emphasis in the new Blue Book. The discussion began in the fourth Expert Group meeting on the SNA review devoted to issues concerning the household sector. This discussion is summarised in paragraphs 50 to 59 of the report of that meeting [5]. Many criteria can be put forward as a basis for dividing the household sector, but for an examination of the process of economic development some categorisation according to income was thought to be the most instructive for exploring the patterns of household consumption and the interaction of the household in productive activity. This analytical requirement concerning the household as a unit is not immediately appropriate to survey requirements, which identify and classify households according to the socio-economic status of a given individual within the household. As a compromise it was suggested that the person providing the main source of income to the

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household should be the reference person (a term to be preferred to head of household). Classification of the household according to the socio-economic status of this reference person would then approximate sectoring households according to income and in a way that was practical for implementation *ex ante* as a basis of survey design etc. as well as *ex post* for analytical purposes.

Despite the difficulty of reaching agreement on detailed sub-sectoring which would apply to all countries, it was felt that the first level of disaggregation of the whole sector should be between entrepreneur (that is the owner and operator of a household business), employee and other, with a further disaggregation of the first two categories relating to industry and with the third distinguishing property owners, pensioners and recipients of transfers. Subsequent sections of the present paper proceed to examine how far such disaggregations could be implemented taking into account data compilation practices and the prevalent constraints on major extensions to these.

DISAGGREGATION OF HOUSEHOLD INCOME

Although production data are regularly characterised according to the international standard industrial classification (ISIC), they usually represent an aggregation of more diverse data sources. Surveys of industries typically cover only the large firms (and not even all of those despite the frequent use of the term census) and they are often restricted to manufacturing. Production in agriculture, construction and services are generally compiled from diverse sources. Within services quite different methods may be adopted for distribution, transport and the producers of government services, for example. Across all industries the degree of participation of small firms including household enterprises will vary and so will the statistical procedure for estimating their contribution to output and consequently to household income. Merging this information into a standard industrial classification gives international comparability at the expense of destroying information on the participation in the production process of quite different types of producers and production methods.

Suppose we postulate an economy where industry may be characterised as in Figure 4. The type of activities are still arranged according to ISIC but within each heading disaggregation can distinguish significantly different groups of workers. Such a breakdown is often thought of in relation to developing countries, but many of the features are common to even the most industrialised. The common agricultural policy of the European Community is largely predicated by the existence of significant numbers of peasant farmers. Street traders are to be seen on the streets of Washington, D.C. as well in the capitals of Latin America. Taxi drivers and small construction firms abound in every country. Not only do the data sources for these different groups vary but other characteristics may be highly correlated. Farmers by definition work in rural areas. Most civil servants work in towns, often in the capital city. Even if mines and large industrial plants are not originally located in towns they tend to create conurbations around them for their workers, whereas small scale activities are more dispersed. Thus it may be possible to present data relating to employees by geographic region as well as by industry with minimal extra burden placed on the data compiler.

Industry	Category		
Agriculture			
Subsistence	H	R	N
Commercial estate	E	R	C
Manufacturing			
Handloom textiles	H	R	N
Textile factory	E	U	C
Furniture—commercial	E	U	C
—artisanal	H	R/U	N
Chemical plants	E	U	C
Construction			
Large firms	E	R/U	C
Small firms	H	R/U	N
Electricity and Water	E	U	C
Services			
Government	G	U	N
Banks	E	U	C
Distribution—large	E	U	N
—small	H	U/R	N
Transport—large	E	U/R	C
—small	H	U/R	C

Key to Entries

H	Household enterprise		U	Predominantly urban
E	Corporate enterprise		R	Predominantly rural
G	Government		C	Capital intensive
			N	Non-capital intensive

Figure 4. Typical industry categorisation

Another possible disaggregation concerns the type of organisation. Small scale activities will tend to be household enterprises (unincorporated enterprises in present SNA teminology) and as such their income and outlay and capital formation accounts will appear in the household and not the enterprise sector. It has been recognised that production accounts should also be compiled for households since misidentification of inputs into these activities produces errors in the estimation of private consumption and thus of GDP. Thus being able to distinguish households from corporate enterprises will be necessary for the data compiler as well as being of interest to the analyst wishing to explore the role and variation over time of the participation of small scale enterprises.[1].

In the past the distinction between the formal and informal parts of the economy has frequently been equated with a distinction between modern and traditional aspects. As Uma Choudhry [in 3] pointed out, however, although there is a high coincidence between modern and formal activities and between informal and traditional, the two distinctions are different: one relating to the type of organisation which is characterised here as the distinction between household and corporate enterprises and the other to the type of technology being used. Pursuing this approach it can be seen that the production data as

[1]This distinction is similar to, but less ambiguous than, that between the often used terms formal and informal.

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disaggregated in Figure 4 can also be classified according to whether it is capital intensive ("modern") or not. Such an analysis permits examination of how much, for example, household income increases either through compensation of employees or household enterprise income if an increase in production of textiles is due to increasing activity of a modern factory rather than an increase of handloom weaving and what the consequent demand for imported inputs is.

It is also possible, of course, to consider a cross-classification between household and corporate enterprises with capital intensity. Peasant farming at least in many developing countries is typically a non-capital intensive activity undertaken by household enterprises. A handicraft co-operative is a (possibly quasi) corporate enterprise, but also non-capital intensive. A freelance computer programmer is a household, but capital intensive, enterprise and so on. The identification of such distinctions can be of interest in its own right, even if it is restricted to an analysis of the production accounts, but the main purpose of elaborating the possibility here is to examine the interrelation with possible disaggregations of household consumption, to which we now turn.

DISAGGREGATION OF HOUSEHOLD CONSUMPTION

Disaggregated information on household consumption typically comes from household surveys and since the analysis is undertaken ex-post any characteristic may be chosen as the discriminator. Very often the breakdown is by class of total household income but other characteristics are often postulated including the size of household, educational status of the head of household, industry of employment of the head of household and so on. As has been seen in the case of make and use matrices, different classifications may be used for consumption and its financing by means of a converter matrix but the fact remains that variables such as those just listed do not relate easily to the breakdown of household income likely to be available from the production accounts.

Income from employment in production is related to a person not to a household. The relationship between the individual and household income will depend as much, or more, on the number of people in the household, and whether they are wage earners, as on the income of a specified individual. While a higher level of education typically would be associated with higher income, there are too many incidences of un- or underemployed graduates and of non-graduate tycoons for this to be a wholly satisfactory criterion to use. Most industries employ staff covering a wide range of skills and remuneration and it is not clear that the consumption pattern of a clerk is closer to those of his managing director than to those of a clerk in a quite different industry, but on a similar salary. The question of the choice of appropriate disaggregation of households has been discussed in Pyatt [4] where he emphasised the desire from an analytical point of view of choosing *ex ante* rather than *ex post* characteristics, such have been discussed in connection with the breakdown of income above.

We may suppose that when disaggregated household consumption data are available some means may be found to analyse them in a way commensurate with the availability of income data. However it must be recognised that in very few countries is disaggregated household consumption data available on a regular

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basis and in many it is not available at all. Very many countries determine household consumption as a residual in the GDP expenditure identity and even when commodity flow techniques, based on the availability of detailed input/output tables, are used to check the plausibility of such estimates, both in aggregate and by commodity, they can say little, if anything, about how patterns of consumption vary across household types. Due to the growing interest in how changes in economic structure affect different household groups, such a lack of information effectively prohibits the statistician from providing a quantified basis for policy analysis. If a breakdown exists for a single year, modelling techniques, together with information on changing income patterns, may allow simulations of changing consumption patterns to be undertaken but the model results cannot be tested against reality unless reality is measured directly at least on an intermittent bench-marking basis. If there is to be a change in emphasis to studying consumption more and production less, the inevitable conclusion is that data compilation resources also must be realigned accordingly.

THE ROLE OF TRANSFERS

The sub-matrix where the production account intersects the financing of consumption shows the primary distribution of income, payments made to individuals as wages and the earnings of household enterprises. Consumption of goods and services appears in the alternate sub-matrix where the financing of production account intersects the consumption account. Assuming for the moment that disaggregated consumption data are available and that a congruent disaggregation of households has been introduced into both the consumption and financing of consumption accounts, a comparison between these two sub-matrices shows whether the patterns of consumption are more or less equal than the patterns of income and by how much.[2]

The main explanation for why these patterns differ is the redistribution of income by means of transfers between sectors which is portrayed in the sub-matrix at the intersection of the consumption account and its financing. It is only by means of such transfers that households not involved in the production process, notably the old and unemployed, are able to consume. The transfers concerned include taxes paid by households to government and benefits paid by government to households, transfers to and from the rest of the world, dividend and interests received by households from enterprises with interest paid and transfers between the types of households also distinguished.

The relative importance of each type of transfer will vary from country to country and possibly over time according to institutional arrangements, cultural patterns and the consequences of history and geography that may make many households dependent on remittances from abroad. In many industrialised countries the responsibility for redistributing income has for long been mainly the function of government through the balancing of taxes and benefits. In poorer countries the responsibility is still often found at the level of the family. Even in very poor rural households the level of remittances made would represent a level

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[2]Annex I outlines the case when these categories are not identical.

of taxation that most governments would feel unable to enforce at this level of income if the redistributive process were to be institutionalised.

DATA ON TRANSFERS

While admitting the economic and theoretical importance of these transfers the statistician may yet plead the difficulty of compiling such data, but while difficult the problem is not wholly intractable. Household surveys designed with the intention of reconciling income and expenditure (which is of course the best quality control mechanism at the data collection stage) must necessarily collect such information and once collected it can be analysed according to the same criteria as other income and expenditure. This source of data is especially significant for transfers between households which are not easily observed otherwise. Government transfers to and from households are usually determined by income levels and may need transformation to be conformable with other information, but are available. Remittances to and from abroad, where important, usually have distinctive characteristics that also facilitate their identification with other categories: for example, border workers are geographically identifiable; construction workers are industry specific.

There is another powerful argument in favour of trying to identify these transactions, which helps in estimating them and stems from the balancing property of the accounting matrix. Intermediate demand which represents the intersection of the production account and the finance of production is not only of intrinsic economic interest but is the means by which supply and demand are balanced at the degree of detail chosen, usually commodity by commodity. Indeed it is this benefit to the data compiler as much as the desire of analysts that leads to sometimes extensive itemization of commodities. The compatible disaggregation of household income and expenditure information allows the juxtaposition of matching components and the calculation of the transfers necessary to bring these into equilibrium. Even where little firm data exists, heuristic knowledge of the probable relative magnitudes of such transfers would allow an assessment of their plausibility which could be of inestimable value in evaluating the adequacy of the estimates of household enterprise activities. Such techniques are often thought repugnant by statisticians because of the degree of approximation involved. However the reason national accounts are compiled by people and not just by machines is precisely because of the subjective judgement that people can employ. It seems strange that statisticians have been accustomed to making such judgements in relation to production processes and especially distribution margins—areas where few national accountants have practical experience—but are reluctant to do so in relation to household income and expenditure—an area where everyone has direct, timely and accurate personal experience.

THE USER'S PERSPECTIVE

The non-supply of disaggregated consumption accounts for households, whether because of theoretical reservations or resource constraints, has generally been matched by non-demand from economists and policy-makers. In large

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part this reflects the conventional wisdom that prevailed for much of the last twenty years: that industrial development was the appropriate vehicle for economic growth and the "trickle down" effect would automatically distribute the benefits equitably. The manifest inadequacy of this prescription in Sub-Saharan Africa and the re-emergence of sustained high levels of unemployment in industrialised countries have brought attention back to the effects of the changes in economic structure on people, on the process of consumption, its financing and on the interaction of production and consumption.

The elaboration of an accounting matrix with a disaggregated household sector gives a descriptive picture of this interaction at a single point in time. The question remains of how the analyst will use such a matrix. An overview of modelling applications of SAMs is given in Pyatt [6]. Since there is no single widely accepted model associated with such a matrix to parallel the input/output model, much of the model development based on SAMs has allowed great flexibility in model specification. Somewhat perversely this flexibility may have militated against their more general acceptance because it is less easy to assimilate and apply such models than the ready made solution of the input/output model.

Another reason for the relatively limited practical application of SAM based models is the lack of a fully established accounting framework. There is of course a chicken and egg situation between the SAM database and the SAM model. In a climate where all statistical offices are facing resource constraints, new analyses cannot be prepared "just in case" a user appears, but when the need for a SAM based model arises there is frequently no time to reformulate the data and undertake the consequent balancing exercise necessary to provide an adequate database. This impasse, though understandable, tends to further distance the user and producer of statistics and adds weight to the accusation that statistians are not alert to the emerging policy issues.

CONCLUSIONS

In reviewing the possible role of information on income distribution and redistribution in the new SNA it is necessary to review the theoretical possibilities, the practical applications, resource costs and motivation.

The accounting matrix in the present SNA elaborates both production and consumption accounts and no theoretical innovation is needed to incorporate the latter. A change of emphasis is necessary, however, to call attention to the role of the household as consumer and the need for disaggregated household information to study the interaction between production and consumption. Only by compiling consumption and finance of consumption accounts for disaggregated household types can national accountants contribute to the debate on how much tax rates impede incentives or how vulnerable sections of the community are to be protected from the consequences of major structural adjustment of the economy.

The decision to incorporate a production account for the household sector in the new SNA provides a first step for demonstrating the interaction between the production accounts for household and corporate enterprises and the financing of consumption account for households.

Considerable information on disaggregating value added by region, type of enterprise and capital intensity is intrinsic to the process of establishing GDP by industrial origin and could be shown explicitly with minimal extra resource cost. This information is of interest in itself and a suitable prerequisite for fully articulating household accounts. By contrast automatic aggregation according to a criterion such as ISIC is inimical to studying the behaviour of the household sector.

Accounts for consumption and the financing of consumption disaggregated by types of household can only be compiled if, in addition to data on income from participating in production, data are available on expenditure and on transfers. For expenditure data there is no substitute for direct measurement, at least on an occasional basis. If the needs of policy makers so dictate, this may imply a reallocation of data compilation resources to provide this basic information.

If disaggregated consumption data are not available, then disaggregated accounts cannot be compiled and the discussion on transfers is moot since for all household types transfers are small relative to final consumption.

Where data on income from production and on expenditure are available, data on transfers to and by households and between household types is necessary to complete the consumption and financing of consumption accounts.

The provision of such data is undoubtedly difficult but without it the quality control exerted by the balancing properties of the accounting matrix cannot be used to verify and improve the estimates of other sections of the accounts, especially the income generated by household enterprises.

By elaborating the theoretical structure of household accounts within the overall accounting matrix and by illustrating the practical steps to implementation, the new SNA can demonstrate how to improve both the quality of the accounts and their relevance to newly-emerging policy issues.

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ANNEX I

Although it simplifies presentation and understanding if the same classification can be used for household income and household consumption, this is not strictly necessary. As for the distinction between products and producers, two sets of rows and columns can be inserted in the accounting matrix.

The data on consumption will appear in the column showing households disaggregated by the categories available for consumption. The data on financing of consumption in the rows shows households disaggregated by, say, the category for income from employment. The rows for consumption categories and columns for income categories will be empty except for the intersection which will show the mapping from one categorisation to the other. The closer the categories the more this matrix will be dominated by a mix of large entries and zeros.

This is shown schematically in the figure below.

Account	Production		Consumption			Capital Formation	
Financing of	Sector	All	Household income types	Household expend. types	E, G, R	All	
Production	All	*		FC	*	*	
	Household income types	WS + HI		(2)	DI, BN, TR		Total income by household income types
Consumption	Household expend. types		(1)				Total income by household expenditure types
	E, G, R	*		IN, DT, TR	*		
Capital Formation	All	*		SV	*	*	

Total expendi- Total expendi-
ture by house- ture by house-
hold inc. types hold exp. types

(1) Matrix showing how income received by household income types is allocated across household expenditure types.
(2) Matrix of inter-household transfers showing transfers paid by expenditure type to income type.
 * Entries as in Figure 1. All abbreviations as in Figure 1.

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