

Household production and income: some preliminary issues

by Luisella Goldschmidt-Clermont¹

1. Introduction

The 19th century industrial revolution and the spreading of mass production in several areas of the economy induced economists to assume that household production for own consumption was doomed to disappear under the impact of economic development. Since the 1920s, attempts were made in several countries to determine the economic significance of this production by assessing the amount of labour it absorbs and its imputed monetary value (For a review, see Goldschmidt-Clermont, 1982 and 1987a). The corresponding research developed mostly in academic circles and in a few national statistical offices: more and more precise measurements of labour became available through time-use research while monetary valuations developed in the context of national accounting. The results came as a surprise: even in countries considered as having reached the highest levels of economic development, households' unpaid labour and product constitute a large share of the economy. In the face of these results, researchers involved in the micro analysis of household income are now wondering whether the value of the goods and services generated by households for their own consumption should be accounted for at the micro level and, if so, how to proceed.

The present paper aims at contributing, for researchers on household income accounting, some of the experience acquired in the context of national accounting on the monetary valuation of households' non-market production. No attempt is made in this paper at analysing different concepts of household income.

Household production: definitions

In 1934, Margaret Reid gave a formal definition of what, in the early days of national accounting, was named "housewives' services":

"Household production consists of those unpaid activities which are carried on, by and for the members, which activities might be replaced by market goods or paid services, if circumstances such as income, market conditions and personal inclinations permit the service being delegated to someone outside the household group" (Reid, 1934, p.11).

The SNA (System of National Accounts, 1993) devotes several paragraphs to the activities covered by Reid's definition:

- under the heading the General Production Boundary, one reads:

"Economic production may be defined as an activity ... that uses inputs of labour, capital, and goods and services to produce outputs of goods or services (para. 6.15) ... activities

¹Consultant, Bureau of Statistics, ILO, Geneva.

such as washing [i.e. laundering], preparing meals, caring for children, the sick or aged ... fall within the general production boundary” (para. 6.16);

- under the heading the Production Boundary in the System, one reads:

“The production boundary in the System [i.e. SNA system] is more restricted than the general production boundary. For reasons explained below, production accounts are not compiled for household activities that produce domestic or personal services for own final consumption within the same household, except for services produced by employing paid domestic staff. Otherwise, the production boundary in the System is the same as the more general one given in the previous section” (para. 6.17).

As a result, all goods produced by households for own consumption should be included in the central framework of national accounts while services should not. SNA justifies this position by the need to maintain the stability of the time series and by the need to preserve some of the purposes (mostly analysis of markets, of inflation or deflation, etc.) served so far by national accounting which would be hindered by the inclusion of the large sector of household services (paras. 1.21 and 6.19 to 6.29). Further reasons, related to the SNA concept of income, are given:

... inclusion in the System of "the production of domestic and personal services for consumption within the same household, is not simply a matter of estimating monetary values for the outputs. If values are assigned to the outputs, values have also to be assigned to the incomes generated by their production and to the consumption of the output" ... (para. 1.21)

... "Imputed values have a different economic significance from monetary values...if the incomes were to be available in cash, the resulting expenditures might be quite different. ... If choice were offered paid employment would likely be preferred because of the greater range of consumption possibilities it affords." ... (para. 6.21)²

Economists accounting for household production have to resort to monetary values as they do for market production. Monetary values (of market production and of non-market production) are definitely not an entirely satisfactory measure of value-to-consumer. However until better tools are devised, monetary values, observed or imputed, are the only tool available for setting up aggregate measures of an economy which, to the vast majority of people, offers very limited opportunities (if any) for choosing between paid employment and production for own consumption.

We commented at some length elsewhere on the System Production Boundary (Goldschmidt-Clermont, 1996). In short, the theoretical distinction between goods and services (which SNA applies only to household production), is weak: for instance, 1993 SNA classifies meal preparation as production of a service, while carrying water is classified as production of goods; the opposite might well be argued. Above all, the distinction is not operational in the context of households'

²This concern for the economic significance of imputed values appears in the SNA only in the context of domestic and personal services produced for own consumption, and not of the production of housing services by owner-occupied dwellings, the imputed value of which is included in the central framework.

productive activities: according to SNA, meal preparation is production of a service because the meal will be consumed immediately; however if part of the same food is frozen for storage, does it become production of goods? Food processing (an activity included within the SNA boundary) is situated on a continuum of which the last stage is final cooking before meal consumption; to draw a divide on this continuum is artificial, particularly in economies where subsistence agriculture is a major factor. The distinction thus turns out to be almost unapplicable in field work and household produced goods are most likely to remain unaccounted for in the central framework.

Accounting for household production can best be achieved, not in the central framework, but rather in a satellite account linked to the central framework (Goldschmidt-Clermont, 1987; System of National Accounts, 1993, Chapter XXI): the satellite uses the same accounting methods as the central framework and borrows data from it as needed. Meanwhile the satellite leaves undisturbed the central framework which continues to fulfill its traditional functions for the market sectors of the economy.

We favour an approach in which the satellite draws a complete picture of all non-market production of households (goods and services) by borrowing non-market items included within the System boundary (e.g. water carrying) and supplementing them with data not included in the central framework (e.g. maintenance and small repairs of dwelling and equipment). If, for some purpose, aggregation of market and non-market production is required, double counting can be avoided by eliminating the corresponding categories. For instance, if the purpose is to compare the respective shares of market production and of non-market household production, researchers may eliminate, from central framework aggregates, items of household production which have been borrowed by the satellite account.

Attention might be drawn here to a few minor distinctions. Household production can be market-oriented (e.g. sold or formally exchanged in the market) or non-market (e.g. consumed without undergoing a market transaction); the object of this paper is non-market household production. The terms "for own final consumption" or "own-account production" (which are often used in this context) should be understood broadly: the definition extends to production by households for the benefit of related households, either specific (e.g. provision of inter-generational assistance) or general (e.g. provision of unpaid community services).

"Extended" is used for qualifying economic concepts that include estimates for non-market household production of services: extended product, extended income, extended consumption, etc.; they correspond to the General Production Boundary.

Identification of household production activities

Market production activities are easily identified because they give rise to market transactions: the corresponding labour inputs are remunerated and the product is sold. Non-market productive activities are, by definition, non-transacted: labour is unpaid and the product is not sold. However not all unpaid household activities are productive in an economic sense. In order to distinguish between productive and non-productive unpaid activities, the SNA paraphrases Margaret Reid's criterion,

currently called the "third person criterion":

"It is also possible for a unit to produce a service for its own consumption provided that the type of activity is such that it could have been carried out by another unit"(para. 6.9).

It is important to note here that the criterion is based on the "type of activity": to listen to music is typically a non-productive activity; no one else can carry out this activity for me. It may generate personal satisfaction (utility), but no one else can generate this utility for me. In the same way, self-education also is a non-productive activity: I am the only one who can store knowledge in my brain. Self-education may have repercussions: personal, social or economic (on earnings for instance): it is an investment in human capital as are investments in health; it is not production. This approach, although still debated by some, is in line with the SNA (paras.1.52 and 1.53).

Also worthwhile noting: the criterion is not that an equivalent activity be available for pay in the market; market circumstances vary from one society to another because of economic, political or cultural factors. For instance, in some societies it is socially inappropriate to delegate to a paid outsider the care of an ill household member; still, economically speaking, the type of activity is such that it can be carried out by some one else.

Categorization of household production activities

The categorization of household production activities relies mostly on the experience gained in time-use studies. Individuals' activities and the corresponding amounts of time are recorded over a determined period of time (usually one to three days) by field observation (diary recording, telephone interviews, participant observation, etc.). The data are collected by means of population surveys or by an ethnographic approach, and are subsequently aggregated according to categorizations which vary with the purposes pursued and the social characteristics of the countries under consideration. - A large number of time-use studies have been performed on all continents; their results are accessible in the specialized literature. The Human Development Report 1995 (United Nations Development Programme, 1995, pp. 87-98) discusses a few of these studies spanning over 31 countries: 13 industrial countries, 9 developing countries and 9 countries in Eastern Europe and the Commonwealth of Independent States (CIS). We shall limit ourselves to two examples, one study, under the auspices of the United Nations International Research and Training Institute for the Advancement of Women (INSTRAW), mostly oriented towards developing countries and one project, under the auspices of EUROSTAT.

INSTRAW issued in August 1994 a draft report entitled "Measuring and Valuing Unpaid Contribution: Accounting through Time-use" (INSTRAW, 1994). Its preparatory work was used in a study entitled "Valuation of Household Maintenance Work and the Satellite Account: Nepal" (Acharya, 1995) performed by the Institute for Integrated Development Studies (IIDS) in Kathmandu, under contract with INSTRAW. Household maintenance activities encountered in the sample households are classified in 17 categories: meal preparation, cleaning of kitchen and dishes, fuel collection, water collection, shopping, cleaning of house, laundering, mending and repair, child education, child care, care of the elderly, care of the sick, self transport, personal development, religious

activities, social services and other household work.

EUROSTAT contributes to the coordination of the preparatory work towards a harmonized European Time Use Survey (ETUS), a concerted project including several countries. The activity list is being tested in national pilot studies for its applicability in a satellite account of household production (Niemi and Pääkkönen, 1999)³. It includes 14 broad categories: food preparation, household upkeep, making and care of textiles, gardening and pet care, [minor] construction and repairs, shopping and services, household management, child care, adult care, informal help to other households, formal volunteer work, productive exercise and travel. This activity list was used in a study entitled "Proposal for a Statellite Account of Household Production" performed by Statistics Finland (Varjonen et al., 1999).

2. Orders of magnitude

Several estimates have been made for assessing the economic significance of production which lies between the general economic boundary and the SNA boundary. All these estimates deal with the volume of labour inputs measured in time units; some go further and estimate the monetary values of labour inputs and of household product. As illustrations, we shall briefly summarize the results of macro-economic estimates performed in Nepal and in a set of industrial countries, and one micro-economic estimate performed in Indonesia. The valuation methods used in these studies differ; they are discussed in section 4.

Nepal

A survey was conducted as a methodological exercise to test the feasibility of direct valuation at market prices (see section 4 below). The survey was carried out in eight districts of Nepal (Acharya, 1995). Districts were selected so as to capture urban and rural areas and the geographical and ecological variations characteristic of the country; 276 households were surveyed. The data were collected through focused interviews and the administration of structured questionnaires. As repeatedly stated by the author, the data are not representative of Nepal as a whole. Nevertheless keeping in mind this limitation, interesting indications come out of the results.

³The approach adopted in the EUROSTAT proposal is to include in the satellite account only the productive activities which lie outside the national accounts' production boundary; the satellite account is seen as a complementary tool registering only the production which goes unregistered in the central framework. One difficulty with this approach is that, although, in principle, all goods produced by households for own consumption are to be recorded in the central framework, in practice the corresponding data gathering will be very difficult to achieve in the context of national accounting practices (and also because of the non-operational distinction between goods and services discussed above). A non-negligible part of households' production is likely to remain unrecorded.

Volume of labour inputs

Time-use data were available from an earlier national representative survey. Hours per household per day (Acharya, 1995, table 3.6, p.31):

- meal preparation is the single largest household productive activity, both in urban areas (5.74) and in rural areas (6.09);
- cleaning kitchen and dishes require in addition in urban areas (1.14) and in rural areas (1.45);
- fuel collection and water collection require respectively in urban areas (0.37 and 0.30) and in rural areas (1.46 and 0.77);
- cleaning house: urban areas (1.26) and rural areas (0.87);
- child care: urban areas (1.40) and rural areas (1.92);
- shopping: urban areas (0.67) and rural areas (0.68);
- etc.

Value of production

In million Nepalese Rs. (table 5.4, p.48):

GDP	116.128
Additional non-market products (a)	51.802
Household maintenance (b)	314.295

(a) Goods for household consumption not recorded in GDP although according to SNA 1993 they should be included.

(b) Services for household consumption.

According to the figures obtained and keeping their limitations in mind, the goods and services produced for household consumption and household maintenance represent a value three times as large as GDP.

Thirteen industrial countries and Bulgaria

In 1994, data were supplied by fourteen countries for a study supported by the UNDP Human Development Report Office: Australia, Austria, Bulgaria, Canada, Denmark, Finland, France, Germany, Great Britain, Israel, Italy, Netherlands, Norway and United States. The corresponding measurements were performed between 1985 and 1992, that is before the 1993 revision of the SNA; the classification of activities thus corresponds to the earlier SNA rules: household production of goods is included in non-SNA activities. The data originating in these studies are discussed in detail in Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995 and 1999; they are here grossly summarized.

Volume of labour inputs

The time-use studies thus supplied yield the following orders of magnitude:

- in the fourteen countries, extended (i.e. SNA plus non-SNA) economic activities require on average, depending on the countries, between 6:00 and 7:40 hours per day, the remaining time

being devoted to non-economic activities;

- in eight countries, non-SNA activities absorb roughly as much labour time as SNA activities, while in all other countries but one, non-SNA activities absorb more time than SNA activities;
- in all countries but one, food preparation requires the largest share of non-SNA time.

Trend data, available only for three countries, show, during the 1960s, 1970s and 1980s, a decrease in economic time of the total population and of each gender, a trend towards equalization of each gender's contribution to economic time, a decrease in production time for traditional household goods and services with the exception of child care, and an increase in household management and shopping time.

Table 1 presents estimates of the value of labour and of production. Although the reported results provide us with orders of magnitude, they should not be compared cross-nationally because of differences in time-use data collection, in wage determination, in the handling of intermediate and capital consumption, in inclusiveness, etc.; these differences account for part of the range of values obtained. (For details, see Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995).

Value of non-SNA labour inputs

Monetary valuations of unpaid household labour were supplied by only a few countries, some of them providing several valuations. They all *imputed the market wage of polyvalent substitute household workers* to unpaid labour. The resulting valuations are influenced by the structure of market wages in the country under consideration and by the extent of inclusiveness of the wages used (net wages, gross wages or all labour costs).

Grossly summarized, the valuations reported in the UNDP study yield the following orders of magnitude for non-SNA labour, taking the national GDPs as measuring rods:

- with labour costs, 45 = 10 percent of GDP;
- with gross wages, 39 = 6 percent of GDP;
- with net wages, 26 = 5 percent of GDP.

Value of non-SNA product

Valuations of *non-SNA product* were performed at cost of inputs (see section 4 below) using these imputed values for the unpaid labour factor; they yield the following orders of magnitude:

- the three lower bound estimates (Denmark, Finland and Germany) obtained with total labour costs are close to half the value of GDP.

Extended private consumption

Households' extended private consumption consists of what they buy and consume without further processing (e.g. an ice-cream cone) plus what they produce themselves and consume directly.

Table 1: Value of labour and value of production in SNA and non-SNA activities (percent of GDP)

Country Survey date	Value of Labour			Value of Production				
	SNA ^a	Non-SNA ^b		SNA ^c	Non-SNA ^d			
		net wages	gross wages	labour costs		net wages	gross wages	labour costs
Australia 1992 ^e	51			72	100			86
Denmark 1987 ^f	56 ^g	21 ^g		37 ^{g h}	100			43 ^h
Finland 1990 ⁱ	56			45	100			46
France 1985 ^j			33	36	100			
Germany 1992 ^k	55	31	45	54	100	33	47	55
Norway 1990 ^l				38	100			
Bulgaria 1988 ^m	85				100	47	71	84

Notes:

- a. Compensation of employees.
- b. Imputed wages of substitute household workers (generalists).
- c. GDP.
- d. Gross value added at cost of inputs.
- e. Ironmonger, 1994. Population aged 15 +.
- f. Population aged 16-74.
- g. Mollgaard and Rormose, 1995.
- h. Bonke, 1993.
- i. Vihavainen, 1995 and Hamunen, 1994. Population aged 15 +.
- j. Chadeau, 1992. Population aged 15 +.
- k. Schaefer and Schwarz, 1994. Population aged 16 +; Old Länder only (i.e. former territory of the Federal Republic of Germany).
- l. Dahle and Kitterod, 1992. Population aged 16-79.
- m. Zachariev, Todora, Tcsekova and Mantchevska, 1994. Population aged 0.1 year + (i.e. the entire resident population), thus a different population basis than in the other studies; the values of labour and production are affected by this difference (for details, see Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995).

In the SNA perspective, private consumption is assumed to be households' final consumption. However it includes goods and services which are used as intermediate inputs (e.g. vegetables) in non-SNA production, and which will be transformed in the final product to be consumed (e.g. a soup); it also includes durables some of which are used in production (e.g. refrigerators). SNA assumes all durables are consumed at the moment they are bought, while in the extended economic perspective, productive durables are consumed gradually over their life time and are accounted for as input in production.

In the extended production perspective, intermediate inputs and durables used for production are deducted from SNA private consumption. In other words, in the satellite account, a value, provided by the central framework, is modified in order to be incorporated in the extended accounting system. This new value is called *SNA modified private consumption*.

Extended private consumption is the value obtained by adding up SNA modified private consumption and households' non-SNA product. The estimates provided by Finland, Germany and Bulgaria indicate that

- non-SNA production contributes some 60 per cent of extended private consumption.

Data from Bulgaria⁴, if confirmed, appear to contradict the widespread belief that households can compensate a loss in market consumption by increasing their non-market economic activity. A possible explanatory hypothesis is that non-market production is partly dependent on market production: for instance, if no paints are available, or if no money is available for buying paints, households do not repaint their dwellings.

Standardized extended private consumption

Extended consumption can be compared across countries, across time, across population groups. Such comparisons can however be very misleading from the socio-economic point of view because they do not account for differences in the amount of labour required for achieving the consumption levels under consideration: a given consumption level reached with lower labour inputs may be considered more favourable from the human point of view, as less economic time means availability of more personal time. It is possible to overcome this problem by integrating the two data sets: consumption levels and labour time. This can be achieved by standardising labour time (Kusnic and Da Vanzo, 1980; see section 4 below). The procedure consists of hypothesising the same amount of labour time for both entities to be compared (e.g. countries) and of calculating what consumption would have been in each if labour time had been equal to the chosen standard. By applying this procedure to extended labour and extended consumption, a value is obtained called standardized extended private consumption. The procedure is illustrated with Bulgarian data.

⁴Special gratitude is expressed to Jana Ilieva of the Bulgarian National Statistical Institute and Mantchevska of the V. T. Bank in Sofia who calculated the data as a reply to a question addressed to participants in the study.

Table 2: Bulgaria 1971, 1977 and 1988 - Labour time and extended private consumption

	Observed		Standardized	
	extended labour time per person ^a (h:m/day)	ext. private consumption per capita ^b (U.S.\$) ^c	extended labour time per person (h:m/day)	ext. private consumption per capita (U.S.\$) ^c
1971	8:40	2736	8:00	2516
1977	8:19	3198	8:00	3075
1988	7:03	2137	8:00	2440
1971-1988	-18.6%	- 22%	-	-3%

Notes:

a. Niemi and Anachkova, 1992.

b. Ilieva and Mantchevska, 1994.

c. Values expressed in U.S.\$ at estimated PPPs of the year under consideration:

1 BGL=1.170 US\$ (1971); 1.075 US\$ (1977); 0.410 US\$ (1988).

Table 2 shows that between 1971 and 1988, in Bulgaria, per capita extended private consumption declined by 22 percentage points while per capita extended labour time declined by 18.6 percentage points. In the present study, extended labour was arbitrarily standardized at 8 hours per person per day. The standardized data indicate that the decline in consumption is strongly related to the decline in economic time: if Bulgarians had worked the same amount of time in both years, the decline in consumption would only have been of 3 percentage points.

The same procedure, applied to cross-national data or across socio-economic groups within one country, would allow meaningful comparisons permitting integrated appraisals of levels of living.

Indonesia

Evers (1981) on the basis of a random sample of 1,083 households in East Jakarta, calculated at current local market prices the value of production for own consumption: "agricultural production still carried on even in the completely urbanized areas of Jakarta, in small house plots, in vegetable gardens along canals, railway lines and roads ...animals are kept, construction and maintenance of houses, collection of firewood and water, processing of food, sewing of own clothes, health care, recreation

and transport, and food transfers from the rural subsistence sector". Taking consumption expenditures as a measuring rod, he found that subsistence production contributed 18 per cent to the total consumption expenditures of households; half the workers [in the informal sector] had to add more than 30 per cent in terms of subsistence production to their incomes in order to survive.

3. Socio-economic significance of household production

The macro-economic orders of magnitude presented in the preceding section show that not only in developing countries but also in industrialized countries, households' production of goods and services is of high economic significance and plays a major role in household consumption. The micro-economic data provided by Evers' study in Indonesia illustrate the strategic importance of subsistence production for low-income households. All these data signal that households' production is too large to be neglected in income studies.

Transtemporal data provided from Bulgaria (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1999, table 3, pp.525-6) afford us a glimpse of the socio-economic implications of the distribution of labour and of production between market-oriented activities and production for own consumption: *households' non-market production is partly dependent on the market sectors of the economy*; the household on its own cannot entirely compensate losses incurred in the market. This is only a glimpse of the vast unexplored domain of the interface between market-oriented and non-market production. Several factors have an impact on the aptitude of households to produce for own consumption and on the productivity of the corresponding activities; let us take just a few examples: access to capital (e.g. land and equipment for food production), access to intermediate goods and services, geographic and temporal availability of unpaid labour, environmental characteristics (e.g. climate), etc. In other words, the more developed economically a society, the better it can support the productivity of households' non-market production. This is just one aspect of the vicious circle of poverty.

Inversely, *market production is dependent on household production*. The strategic significance of the latter is not reflected by its relative contribution to GDP. As described in an excursion into socio-economic fiction we committed elsewhere (Goldschmidt-Clermont, 1992), the entire functioning of the economy would be disrupted if those performing unpaid domestic services were suddenly put to sleep by a powerful wizard. Others would have to take over the provision of food and of basic essentials for themselves, for children and for the handicapped; while they were performing these domestic services, crops would not be harvested, transportation services, mining, industrial production and so on would be disrupted and less or no monetary income would flow into the household for purchasing the goods and services the economy might still be able to produce.

One of the problems of economic development is to find how to move from a low consumption level in which household production plays an important role, to a higher consumption level while avoiding confusion between actual advances and externalities such as excessive industrial and urban concentration and their concomitant social, economic and environmental costs. Nowadays solutions are sought in the monetary perspective of the market economy. We believe this is a dead-end track

from which it is not possible to step out unless the role of household production and its interface with the market sectors are acknowledged. The few available data seem to indicate that household production which was expected to gradually dwindle out, is in fact here to stay. Economic statistics and economic analysis should account for this fact.

At the household level, the two kinds of production are perceived as necessary and as complementary. Market-oriented production gives access to monetary income which in turn gives access to goods and services which cannot be produced by the household: clean water supply, mechanical energy, advanced health services, formal education adapted to the labour market, technical goods contributing to better housing, to medium range and long range transportation, to communication, etc. Household production is in a better position than the market for providing personalized services: basic education in tune with the social environment, personal care of adults and of children in tune with social norms and individual tastes, etc. In addition to these subjective qualifications, households perceive their own productive activities as a way to save money, to forego expenses. The vast majority of human beings perceive their own time and labour as free resources as opposed to money, a scarce resource: only above a certain level of monetary income does the choice arise between purchasing and producing. Economic development and increasing market penetration give rise to new desires for goods and services only available by means of money through the market, thus inducing households to pursue certain traditional production activities. Households are aware of the connection between market and non-market economic activity. Households however do not value their production in monetary terms; they appreciate in qualitative terms the goods and services they produce as a contribution in kind to their level of living, not as an income.

Economists concerned with the measurement of poverty need to find a way for assessing a level of consumption consisting of apples and pears which, although they cannot be added, are both fruit contributing to quench human hunger. For lack of better solutions, economists are compelled to translate household production into monetary terms; extreme care must however be applied when performing the exercise.

4. Valuation methods

This section discusses how the valuations are performed and what are the methodological requirements for establishing meaningful valuations in relation with extended income studies and with policy formulation.

In national accounting, the value of a product is by convention equated to the price at which it is sold. In cases where the product is not sold, there is no price; the SNA then proposes two valuation alternatives: the preferred method is a direct valuation of output taking as a starting point the price at which the product or part of it may be sold; the “second choice” method is a valuation at cost of inputs (System of National Accounts, 1993, para. 6.85). These two alternatives have been used for the monetary valuation of household product. We shall first describe the second choice method as it is the most frequently used; we shall then proceed with the preferred method.

Valuation at cost of inputs

This procedure consists of valuing the product at the sum of intermediate consumption, compensation of employees, fixed capital consumption and taxes on production less subsidies. The SNA recommends this procedure for collective services such as public administration, defence, education and health services, etc. i.e. for goods and services which are supplied free or are sold at prices which are not economically significant, (System of National Accounts, 1993, paras. 6.41f, 6.90 and 6.91). In these cases, the value of labour is the amount actually paid to employees; no imputation is required.

When this procedure is applied to household production, as labour is unpaid it is necessary to value the labour factor at imputed wages. Several kinds of wages have been used for this imputation. (For a methodological discussion, see Goldschmidt-Clermont, 1982). The valuations of the thirteen countries and Bulgaria, reported in table 1, were performed at cost of inputs. The wages used for the imputation were those of polyvalent household employees (generalists), i.e. employees who can perform, within the household premises, all or most of the productive activities performed by unpaid household members.

This valuation method requires the availability of time-use statistics and of wage statistics.

Valuation at cost of inputs cannot cope with simultaneous activities; this a serious drawback as several household activities are performed simultaneously, but only one can be accounted for in a given time period. This is a problem in particular with the activity "care of own children" which is mostly occurring while performing other tasks and thus usually remains unaccounted for.

Direct valuation at market prices

In national accounting, direct valuation at market prices is recommended as the preferred method for goods and services produced for own final use and included within the System's production boundary (e.g. agricultural product retained by farmers' households for own consumption). We therefore argue that it should also be used for non-SNA production in the satellite account (Goldschmidt-Clermont, 1993a and 1993b). The gross output value of non-SNA production is obtained by imputing the prices at which the household sells part of its output or, when no part is sold, the prices at which the household can buy an equivalent market product. The net output value may be calculated by subtracting household's intermediate inputs and fixed capital consumption. Hourly returns to labour (the actual value of unpaid labour) can be computed by dividing net output value by hours of work

This output-based valuation method requires the measurement in physical quantities of household outputs: for instance, number and kinds of meals prepared, number of children taken care of, kilograms of laundry washed, etc. Such data on the volume of household output are not readily available in most countries; only once were they collected in a national representative survey covering all household productive activities (Finland, 1980-86). They were also collected in several studies of particular household activities (Chadeau and Fouquet, 1981; Goldschmidt-Clermont, 1983; Sanik and

Stafford, 1983; Hill, Martha, 1985; Bivens and Volker, 1986; Chadeau and Roy, 1987 and 1989; Fitzgerald and Wicks, 1990; Dulaney et al., 1992; Fitzgerald, Swenson and Wicks, 1996).

In order to facilitate the ground-breaking work required for the establishment of data bases on the volume of household output, Goldschmidt-Clermont (1993b) proposed a shortcut which considerably reduces the data collection burden in countries where time-use data are available. This shortcut was successfully tested in an experimental project supported by INSTRAW in Nepal (Acharya, 1995). Later, a small research project, supported by the Swiss National Fund for Scientific Research, was set up at the University of Geneva, Laboratory for Applied Economics; it aimed at developing the missing methodological experience for all household production activities (Goldschmidt-Clermont, Pagnossin-Aligisakis and Samii-Etemad, 1996 and 1998). The formulation of the Geneva questionnaire benefited from earlier studies which had measured outputs. One unexpected result of the research was to find that households do not experience difficulties in answering questions on the volume of their production. Several valuation problems were solved, among which the difficult ever returning problem of how to value child care. When the project came to an end all household productive activities had been explored: for many activities, satisfactory solutions had been found while, for the remaining other activities but one, valuation methods had been identified and were ready for testing. The project could however not be pursued because of lack of funding.

One of the advantages of direct valuation is that it steers clear of some subjective assessments: as long as a product is generated, it is accounted for at its market price. Whether the unremunerated producer enjoyed the activity is irrelevant, while wage-based valuations have to choose between valuing the corresponding time as work or as leisure (non-work). Another advantage of direct valuation is that it can account for simultaneous activities.

Discussion

Household production for own consumption is a non-market activity which is "more non-market" than others: both the labour factor and the product are untransacted. As a result, one value has to be borrowed from the market: either imputed wages for a valuation at cost of inputs, or imputed product prices for a direct valuation of household output.

The popularity of valuation at cost of inputs stems from its relative ease of application in countries where detailed time-use statistics and wage-statistics are available. However imputed wages do not reflect the actual returns accruing to the household for its productive activity; they only reflect the chosen market value of labour: they are linked to market characteristics, among others, to the availability of low cost female labour power.

We shall illustrate this statement with examples from African and Asian studies which provide comparative data on market wages and on returns to labour for household production. (For easy reference, see Goldschmidt-Clermont, 1987a, where the Asian studies quoted below are summarized and reviewed). To our knowledge, unfortunately no similar comparisons were performed in industrial countries.

In Botswana, Mueller (1984) calculates marginal labour productivity in rural households for several non-market activities and compares these returns to daily average wages. The marginal productivity of male labour comes to 0.18 to 0.22 Pula per day; the marginal productivity of female labour is slightly lower. Daily average wages vary, for men, between 1.26 and 1.50 Pula per day depending on education level; women's wages are 0.54 Pula per day. Commenting on her results, Mueller offers the following explanations: "Opportunities for wage labour are quite limited in Botswana, particularly for women and children.Autarchical modes of production imply that asset-poor households often use family labour to a point where marginal returns from work are very low ..." (pp.335-336). "In Botswana, the marginal productivity of work time in rural self-employment is very low. People with small holdings of productive assets may be forced by their poverty to pursue some work which adds only minimally to income. They may also slow their work pace in accord with the available time or in accord with their nutritional status. The marginal productivity of some time inputs by children is close to zero (although average productivity is no doubt positive)" (p.357) These data show that the use of market wages for valuing non-market work would be inappropriate as it would overstate the value of non-market work.

In the Philippines, Cabanero (1978), on the basis of a representative sample survey of 573 rural households calculated households' market wages and imputed "home" wages. She computed the "home" wage by multiplying the gross output value of home produced goods for household consumption and for sale (farm tools, furniture and fixtures, woodwork and woodcraft, repairs, home-sewn clothes, embroideries, woven materials, food preparation, washing clothes for others) by the share of the individual's time in total household time devoted to this production. (This "home" wage rate is utilized in valuing all home production including child care and housework). She finds that, in general, home wages are higher than market wages for all income classes, holding age constant. In other words, imputation of market wages would inadequately estimate the value of household production, understating it.

In Indonesia and Nepal, Nag, White and Peet (1978 and 1980), carried out anthropological field investigations of relatively isolated villages, including 20 Javanese medium- and low-income households and about 50 (106 for part of the year) Nepalese intermediate caste (Thami) households, observed during 18 to 22 months. They estimated the returns per hour of labour in different market-oriented activities at prevailing prices and wages; for instance the returns per hour of labour were estimated for "preparation of food for sale", a market-oriented activity very similar to the subsistence activity "household food preparation". In these villages, agricultural wage labour brings the greatest economic returns: in Java, the wage for ploughing (own animals) was 70-90 Rp./hour, for harvesting, 16-20 Rp./hour while the returns on handicrafts varied from 1.5 to 3 Rp./hour, on animal husbandry from 1 to 12 Rp./hour, on food preparation for sale from 2.5 to 6 Rp./hour. The same conclusion may thus be drawn from this study as from the preceding ones: imputation of market wages would inadequately estimate the value of household production, in this case overstating it.

In Malaysia, Kusnic and Da Vanzo (1980), studied a random sample of 1,064 urban and rural households. The purpose was to examine the distribution of four measures of household income of increasing comprehensiveness:

- market income (the sum of monetary receipts derived from formal market transactions),

- total observable income (includes in addition in-kind income, transfer income, value of housing services and cottage industry income),
- total actual income I (includes in addition to total observable income, the value of housework),
- total actual income II (includes in addition to total actual income I, the value of cooking and caring for own children).

Household product (except cooking and child care) was valued directly at market prices. Their "results show that conclusions about the extent of income inequality within Peninsular Malaysia or among its ethnic subgroups are very sensitive to how broadly income is defined. As an illustration, one measure -mean household market income- yields a conclusion that Chinese income is 177 per cent higher than Malay income, while another plausible measure -median urban per adult total actual income II- reduces this number to only 17 per cent." (p.viii)

Kusnic and Da Vanzo observed that "The poor in Malaysia appear to attempt to compensate for their relatively low market income by producing many goods and services for their own consumption ... But the poor tend to work relatively long hours at these household production activities and hence forgo relatively large amounts of potential leisure consumption. Ignoring this implicit cost of household production tends to bias estimates of the relative welfare position of the poor upward. Standardising for leisure consumption causes considerable changes in households' rankings in the income distribution" (pp.v-vi). The authors thus propose three alternative measures accounting for variations in number of hours worked (and hence of leisure consumption) by evaluating the corresponding income measure at a common number of hours for all adults in the sample. These new income composites are denoted as

- standardized observable income,
- standardized actual income I
- standardized actual income II.

The studies just quoted use direct valuation at market prices; so do many other studies in developing and in industrialized countries. Although it is widely recognized that, for accounting purposes, this is the best procedure for valuing households' production for own consumption, two reasons are invoked for not applying it systematically in Western countries. The first is that no data bases exist on the volume of households' outputs; the second is that not much experience is available yet as to how to proceed. Clearly, if every time the valuation of this production is undertaken, one continues to use valuation at cost of inputs *even though it produces unsatisfactory data*, never will experience be acquired nor will data bases be set up.

Conclusion

How do these different valuation methods meet the requirements for an enlargement of the concept of income by associating to it the value of household production ?

Valuations at cost of inputs should be ruled out for extended income studies. The above discussion indicates that valuation at cost of inputs, because it is based on the multiplication of the number of hours of unpaid work by a wage, is inappropriate for several reasons:

- it relies on two assumptions which are contradicted by field observations: first, that hours of unpaid work yield the same returns as hours of market work and second, that all hours of unpaid work yield the same returns;
- market wages used for the imputation reflect factors related to the labour market which are extraneous to household productivity;
- it leads to a paradox: in their attempt to simply survive, people tend to put in a large number of unpaid work hours yielding lower and lower returns, while with valuation at cost of inputs, the more they work, the higher their product is valued.

Direct valuations at market prices are the most appropriate for extended income studies. Although prices also reflect market factors, they correspond to what the household perceives as a forgone expense. The more people produce for their own consumption, the more they save their scarce monetary resources for purchasing items they cannot produce themselves. Data on the volume of household product are collected at the household level, as are data on household monetary income: *from the point of view of data collection, the method is thus particularly adapted to its application to income studies.*

5. Relating household income and product

This section presents a few suggestions about the feasibility of associating the value of household production for own consumption to the traditional components of household income. The objective of the exercise is to grasp more comprehensively the total amount of goods and services available to the population, their value and their distribution between different population groups. In particular this would permit to refine the definition of poverty levels used in the formulation of poverty alleviation policies.

The macro-economic orders of magnitude and the micro-economic valuations presented in the present report illustrate a fact: in industrialized economies as well as in developing economies, household production for own consumption constitutes a sizeable fraction of households' consumption. In order to assess the level of living of a household, it is thus necessary to account for the goods and services it produces and consumes directly; their distribution in the population may be quite different from the distribution of the traditional components and their inclusion when accounting for income may modify the ranking of population groups in relation to poverty.

Household produced goods and services do not fall as manna out of a blue sky: they require access to means of production and investments of work (time which can be measured, physical energy and expertise which cannot be measured). These factors must be accounted for when associating the value of household product to household income, in particular when comparing different populations. Time-use data are a precious tool for assessing not only the amount of extended work (market work plus unremunerated household work), but also the amount of time available for personal activities (physical recuperation, education, leisure, social activities, etc.) which are elements of the level of living.

Although embedded within the "general economic boundary", household production operates

under circumstances differing partly from those governing market production. In particular, household production affords more flexibility in the use of productive resources, mostly of labour. On the other hand, household production affords little flexibility at the consumption level because it is not tradable: the value of home laundering cannot be traded for a bus ticket, nor can it be used for paying taxes. In other words, the imputed value of the goods and services consumed by the producing household should not be flatly added to its monetary income in order to compute an extended income.

For households, the link between monetary income and their own production lies at the consumption level: both contribute to consumption. Households balance consumption from the two sources according to the available possibilities, to their needs and to their aspirations.

For the integration of the value of household production and of traditional income concepts, our suggestion is to focus not on income but on consumption. Section 2 illustrates, with examples from three countries, how the integration can be achieved, in national accounting, between data on market production recorded in the conventional national accounts and measures of household production assembled in a satellite production account. This integration occurs at the consumption level by means of an innovative concept ("SNA modified private consumption") which facilitates the association of market and non-market product, while presenting them in two separate accounts.

In a similar way, at the micro-economic level, it should be possible to present the value of household production and to analyse it in a *satellite consumption account* next to the traditional income components, after deduction of intermediate consumption and capital consumption expenditures.

The methodology of direct valuation at market prices, already used in earlier studies mentioned in section 4, should be pursued and developed in particular along the lines drawn in the Nepalese study (Acharya, 1995) and the University of Geneva study (Goldschmidt-Clermont, Pagnossin-Aligisakis and Samii-Etemad, 1996). Data collection (nature and volume of household product, amount of labour time invested in production), which requires to be performed at the household level, is similar to data collection on household income. The price of equivalent market products and the cost of intermediate inputs (goods and capital consumed in the production process) may in some countries be available from statistical sources; where not available, the data may be collected from local informants.

Goods and services produced by households should be included in the consumption account. The distinction between goods and services proposed by the SNA should be disregarded.

Hourly returns to unpaid labour, extended consumption and standardized extended consumption are powerful indicators for the objectives pursued.

References

Acharya, Meena. 1995. Valuation of household maintenance work and the satellite account - Nepal. Kathmandu: Institute for Integrated Development Studies (IIDS), August, 78 pp.

Bivens, Gordon; Volker, , Carol B. 1986. "A value-added approach to household production: The special case of meal preparation", in *Journal of Consumer Research* (Worcester, Mass.), Vol. 13, September, pp. 272-279.

Bonke, Jens. 1993. Household production and national accounts, University of Copenhagen, Institute of Economics, Discussion Paper 93-07.

Cabanero, Teresa A. 1978. "The 'shadow price' of children in Laguna households", in *Philippine Economic Journal* (Quezon City), Vol. 17, No. 1-2, pp. 62-87.

Chadeau, Ann. 1992. "What is households' non-market production worth?", in *OECD Economic Studies*, 136, 29-55, September.

—; Fouquet, Annie. 1981. "Peut-on mesurer le travail domestique ?" in *Economie et Statistique* (Paris), Vol. 136, Septembre, pp. 29-42.

---; Roy, Caroline. 1987. "La production domestique des repas", in *Données Sociales* (Paris). Juin. pp. 410-416.

--- ; ---. 1989. Etude de la fonction de production domestique des repas par catégorie de famille. Paris: Association pour la recherche sur la consommation et les activités domestiques. Mai. 106 pp. (Miméo).

Dahle, Anne B.; Kitterod, Ragni H. 1992. Time use studies in evaluation of household work. Paper presented at the 19th Nordic Statistics Meeting, Reykjavik, July 22-25.

Dulaney, Ronald A.; Fitzgerald, Jorn; Swenson, Matthew, s.; Wicks, John, H. 1992. "Market valuation of household production", in *Journal of Forensic Economics*, Vol. 5, No. 2, pp. 115-126.

Evers, Hans-Dieter. 1981. "The contribution of urban subsistence production to incomes in Jakarta", in *Bulletin of Indonesian Economic Studies* (Canberra), Vil. XVII, No. 2, July, pp. 89-96.

[Finland], Ministry of Social Affairs and Health, Research Department. 1980-86. Housework Study. Helsinki, Official Statistics of Finland, Special Social Studies, Fourteen parts.

Fitzgerald, John; Wicks, John. 1990. "Measuring the value of household output: A comparison of direct and indirect approaches", in *Review of Income and Wealth* (New York), Series 36, No.2, June, pp. 129-141.

--- ; Swenson, Matthew S.; Wicks, John. 1996. "Valuation of household production at market prices and estimation of production functions", in *Review of Income and Wealth* (New York), Series 42,

No. 2, June. pp.165-180.

Goldschmidt-Clermont, Luisella, 1982. *Unpaid Work in the Household: A Review of Economic Evaluation Methods*. International Labour Office, Women, Work and Development Series No. 1. 148 pp.

---. 1983. "Does housework pay ? A product-related micro-economic approach", in *Signs* (Chicago), Vol. 9, No. 1, Autumn. pp. 108-119.

---. 1987a. *Economic evaluations of unpaid household work: Africa, Asia, Latin America and Oceania*. International Labour Office, Women, Work and Development Series No. 14. 225 pp.

---. 1987b. "Assessing the economic significance of domestic and related activities", in *Statistical Journal of the United Nations Economic Commission for Europe* (Geneva). Vol. 5, pp.81-93.

---. 1989. "Valuing domestic activities", in *ILO Bulletin of Labour Statistics*, 4, pp. ix-xii.

---. 1992. "Measuring households' non-monetary production", in Paul Ekins and Manfred Max-Neef (eds), *Real-life economics; Understanding wealth-creation.*, London and New-York, Routledge, pp.265-282.

---. 1993a. "Monetary valuation of non-market productive time; Methodological considerations", *The Review of Income and Wealth*, Series 39, December. pp. 419-433.

---. 1993b. "Monetary valuation of unpaid work: Arguing for an output measurement", *Bulletin of Labour Statistics*, 4, pp. xi-xviii. (Presented at the International Conference on the Measurement and Valuation of Unpaid Work, Ottawa, Statistics Canada, April 28-30).

---. 1996. Discussion of chapter 4, H. Luetzel, "Household sector income, consumption and wealth", in John W. Kendrick., *The new system of national accounts*. Boston, Dordrecht, London: Kluwer Academic Publishers. pp.141-147.

--- ; Pagnossin-Aligisakis, Elisabetta. 1995. Measures of unrecorded economic activities in fourteen countries, United Nations Development Programme, Human Development Report Office, Occasional Paper N! 20. (Out of print, but available in Background Papers for the Human Development Report 1995, pp. 105-155, UN Sales number E.96.111.B.3).

--- ; --- ; Samii-Etemad, Chokoufeh. 1996. Valorisation monétaire du travail non-marchand des ménages; Expérimentation, par étude de cas, de la méthode de la rémunération effective. Rapport Scientifique au FNRS, Programme National 35, Femmes, Droit et Société. Université de Genève, Laboratoire d'Economie Appliquée. 89 pages. (Brief summary available in English: "Direct measurement of households non-market production; A methodological contribution". Paper presented by the International Labour Office to the ECE/INSTRAW/UNSD Joint Work Session on Gender Statistics. Geneva, April 1998. 10 pp. Mimeo.)

--- ; ---. 1999. "Households' non-SNA production: Labour time, value of labour and of product, and contribution to extended private consumption", in *Review of Income and Wealth* (New York), Series 45, No. 4, December. pp. 519-529.

Hill, Martha S. 1985. "Investments of time in houses and durables", in F. Thomas Juster and Frank P. Stafford (eds), *Time, Goods and Well-Being*, University of Michigan, Ann Arbor. pp. 205-243.

Ilieva, Jana; Mantchevska. 1994. Private communication.

INSTRAW. 1994. *Measuring and valuing unpaid contribution: Accounting through time-use*. United Nations International Research and Training Institute for the Advancement of Women, Santo Domingo, D.R. August. (Draft report). 105 pp.

Ironmonger, Duncan S. 1994. "The value of care and nurture provided by unpaid household work", in *Family Matters*, 37, 46-51, April.

Kusnic, Michael W.; DaVanzo, Julie. 1980. *Income Inequality and the Definition of Income: The case of Malaysia*, Santa Monica, California, Rand Corporation (R-2416-AID), June.

Mollgaard, Elisabeth; Jensen, Peter Rormose. 1995. *On the Measurement of a Welfare Indicator for Denmark, 1970-1990*, Rockwool Foundation Research Unit, Danmarks Statistik, Copenhagen.

Mueller, Eva. 1984. "The value and allocation of time in rural Botswana", in *Journal of Development Economics* (Amsterdam), Vol. 15, Nos. 1-3, pp. 329-360.

Nag, Moni; White, Benjamin, N.F.; Peet, R. Creighton. 1978 and 1980. "An anthropological approach to the study of the economic value of children in Java and Nepal", in *Current Anthropology* (Chicago), Vol. 19, No. 2, June 1978, pp. 293-306. Also published in Hans P. Binswanger et al. (eds.), 1980, *Rural household studies in Asia*, Singapore, Singapore University Press. pp. 248-288.

Niemi, Iris; Anachkova, Bistra. 1992. "Sharing of housework", in *Housework time in Bulgaria and Finland*, Statistics Finland, Studies, n! 193, 12-41.

Niemi, Iris; Pääkkönen, Hannu. 1999. "Evaluation of time use pilot data", in Varjonen, Johanna, et al., *Proposal for a satellite account of household production*, Appendix 1, pp. 65-77.

Reid, Margaret G. 1934. *Economics of household production*. New York, Wiley and Sons.

Sanik, Margaret M.; Stafford, K. 1983. "Product accounting approach to valuing food production", in *Home Economics Research Journal* (Washington), Vol. 12, No. 2, pp. 217-227.

Schaefer, Dieter; Schwarz, Norbert. 1994. "Wert der Haushaltsproduktion 1992", in *Wirtschaft und Statistik*, 8, 597-612. (English translation, *Value of Household Production in the Federal Republic of Germany, 1992*, mimeo, available from Statistisches Bundesamt, Wiesbaden).

System of National Accounts. 1993. Inter-Secretariat Working Group on National Accounts: Commission of the European Communities (EUROSTAT), International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations and World Bank, Brussels/Luxembourg, New York, Paris, Washington DC.

United Nations Development Programme (UNDP). 1995. *Human Development Report 1995*. New York, Oxford University Press. 230 pp.

Varjonen, Johanna; Hamunen, Eeva; Sandström, Taru; Niemi, Iiris; Pöökkinen, Hannu. 1999. *Proposal for a satellite account of household production*. EUROSTAT Working Paper n! 9/1999/A4/11. May, 21. 92 pp.

Vihavainen, Marjut. 1995. *Calculating the Value of Household Production in Finland 1990: The input-output table*. Helsinki, Statistics Finland, Working Paper no. 6.

Zachariev, Peter; Todorova, Boyka; Tsekova, Nikolina. 1993. Unpublished data derived from *Statistical Reference Book, Economics of Bulgaria*, 1993, Private communication, 1994.

