

THE ROLE OF THE SATELLITE ACCOUNTS IN THE SNA

VERA NYITRAI

During the last decades several special UN, EUROSTAT, OECD meetings dealt with the problems of satellite accounts. In the Hungarian statistical publications *dr. György Szilágyi*¹ made known the concept as well as the history of these kinds of balances, in the latter article he outlined some practical characteristics of the R+D satellite account.

In this paper I try to deal with several advantages of the satellite balances, underlining those aspects that meet with general consensus at the international discussions, with their possible role in the Hungarian SNA in the future and to illustrate these by presenting two kinds of the satellites namely the environmental as well as the household accounting.

Consensus on the use of satellite accounts

When the actual form of the SNA was approved by the Statistical Commission of the UN in 1993 it became clear that the SNA must be a closed system containing the most important kinds of activities, but not all of them. There are several activities in the national economies with growing importance which cannot be part of the System of National Accounts, among others some of the unpaid production. So these fall outside the conventional accounts. But this fact does not mean that they have to be excluded from traditional accounts.

The statistically best developed countries were looking for the way to join the statistical data and information of these activities to the SNA and the best solution of these processes seemed to be such kind of accounts which would complement the traditional economic accounts by using disaggregated data of physical as well as of monetary accounting.

The pioneers of these topics had to answer (among others) the following questions.

– What is the goal of a satellite account: analysing the special activities in the framework of SNA or to describe the actual role, the development of this activity by using physical accounts together with monetary indicators in balance sheet forms?

– What is the main concern with inputs from the examined activity to the national economy or with outputs from the economy to the analysed activity? Different kinds of approaches were used by several experts starting either from the supply or from the demand side.

¹ See *dr. Szilágyi, Gy.*: Statisztikai integráció részmérlegekkel. *Statisztikai Szemle*. 1987. No. 8. 766–778. p.

– How can the physical accounting be balanced with the monetary accounts? It is quite clear that from the point of view of the SNA monetary indicators (balance sheets) have determining roles. Recognising the need of different users, however, physical accounts have to be the starting point for getting acquainted with the actual situation and these balances can cover most of the natural assets.

– Are there any preferences among the possible topics of satellite accounts listed in the last publication of the SNA? If these could be found, are they internationally the same or not?

In answering such and other questions, it is rare to find general consensus. The national practice of different statistical offices as well as international organisations (World Bank, IARIW, OECD, etc.) indicated that it is quite general to elaborate independent accounts for several topics in connection with the standard national accounts of the interested country. This is the aspect of the Netherlands, USA and the UK as well. The international organisations tried to involve developing countries in solving such kinds of problems (see: IARIW meeting in Tokyo, 1996, dealing with environmental accounting) but nowadays using satellite accounting remained the problem of statistically more developed countries. Therefore one of the most successful forum dealing with special aspects of satellite accounts in the framework of SNA is the London group, established in 1994. This group meetings were examining aspects of these kinds of accounting systems, analysing how far a common approach could be identified and agreed, and where there are still significant differences in the point of view of country-experts. The June 3-6 1997 meeting in Paris and the Ottawa meeting prepared several recommendations for identifying the problems and some of their details for elaborating a synthesis of comments.

The result of these special meetings is that it is time to enlarge the scope of elaborators and users of satellite accounts especially in those countries where the SNA system is practically well-known and used for analyses.

The possible role of satellite accounting in the Hungarian SNA

Having in mind the development of the SNA in Hungary during the last five-six years, it can be stated that the integrating role of the SNA in the Hungarian economic statistics has reached a relatively high level. This means that the GDP has been calculated on branch basis since 1998 with the collaboration of the interested departments of the Hungarian CSO. This new calculation has a significant consequence, namely the departments measuring the contributions of their branches (agriculture, industry, services etc.) to the GDP are charged not only of the results of the calculations but also of analysing the structure of the produced GDP by subsectors, examining the productivity and its changes based on the GDP/persons employed, etc. These analyses could draw the attention of the interested departments (and other users of these kinds of information) to the lack of more detailed data of several transactions.

As to my opinion: branch-departments, which are accustomed to use physical and monetary indicators of the branches belonging to the scope of their departments, could recognise the significance of the use of SNA data by presenting the role of the individual branches in the value added in respect of the whole economy and by measuring the relationship of several industries with other ones within the production boundary.

The widening tasks of the individual departments can make them more interested in compiling special satellite accounts in close connection to the national accounting sys-

tem. A good example can be the construction of tourism accounts namely in Hungary, tourism plays a significant role in the balance of payment.

Under the heading of tourism several traditional indicators are collected, for example: number of tourists, international tourist arrivals detailed by countries, expenditures of international arrival per day and by purposes of travel, number of persons arriving on package tours, length of stay of foreign tourists and its details by kinds of accommodation, data of Hungarians travelling abroad. As it can be seen, these indicators are measured partly in physical units, partly in value (HUF or USD). These indicators do not contain the transaction processes which affect the production or the consumption sides of the accounting system. For this aim several complementary information sources are needed, with a few estimations among them as well. This can be a typical example for internal satellite account, which is used to reorganise production, transaction and consumption which take place within the presently compiled SNA accounts, aiming at the more enlightening ones of the important parts of the whole system. This is only one example, but others could also be mentioned. These internal satellite accounts have a common feature, all of them can be accounted in monetary terms and most of them have several complementary indicator series in physical units.

These internal satellite accounts can enlarge the scope and topics of economic analysis backed by balance sheets.

There is another group of satellites: the external satellite accounts which provide freedom to use non-monetary units when compiling them. The advantage of these satellites is the possibility to account non-market transactions as well and to combine their analysis with the traditional elements of the SNA. Without overestimating the results gained by the Hungarian SNA experts until now it can be stated that time has arrived to start colouring the picture provided by traditional accounting and the construction of a few kinds of satellite accounts (internal and/or external) could well serve this goal. In the following part of this article I would like to present two examples.

Environmental Satellite Account

As it is well-known measuring the present status of the environment belongs to the subjects stressed by the EUROSTAT and has a great interest among the Hungarian users as well.

Having many physical indicators describing this status is only one side of an ideal solution. (For this aim a large and rich volume has been published recently by the Hungarian CSO.) There appeared another need at the national and the international level to compile an integrated accounting system. In 1993, when the present form of the SNA was approved, an interim handbook was published by the United Nation Social Development (UNSD) bearing the title of: *Integrated Environmental and Economic Accounting*. It is called 'interim' because this is not a universally agreed approach to environmental accounting but it has provided the possibility for discussing the experiments of countries till 1992–1993, the different kinds of recommendations and the problems appearing during the progress of this work.

The first problem is to distinguish two aspects: those concerned with environmental goods and those with environmental services.

Environmental goods are products for example natural forests, wildlife, sub-soil deposits etc. They are subjects of economic activities and these processes can be evaluated in monetary form as well. It has to be underlined that from the point of view of the accounting the stocks of such goods must be measured. This means that it is not too complicated to establish several balance sheets based on the annual transactions of these goods.

More problematical is the measurement of environmental services, which cover several functions provided for example by air and water, as environmental sinks for residual and waste. It also has to be mentioned, that for the most part there is no monetary consequence of the use of the so-called sinks. Only an indirect measurement can be imagined of the use of water or air by approaching from the side of natural regeneration and their cost. For the statisticians elaborating balance sheets based on monetary transactions of environmental services, it seems to be pure estimation with the danger that estimations made by environmentalists could be subjective and far from statistical reality. So the first step has to be to concentrate on balance sheets of environmental goods which is the trend in the most developed OECD countries.

The approach recommended by the UNSD aims to concentrate on an environmentally adjusted GDP (named EDP).

This can be adjusted for both depletion and degradation in a purely accounting (therefore statistically correct) framework.

There exists another approach as well used by the Netherlands, the so-called NAMEA system, which is a modelling system containing several measured and other estimated indicators.

The London group tried to find a common approach based on both of these systems but no kind of analysable practice could be found up to now. From the theoretical background the following has to be stated.

- An environmental and economic accounting can be based on a matrix, in which the horizontal table of supply and use of products is overlaid by vertical balance sheets. The intersection can show which assets are used in which kind of production processes.

- The scope of the environmental accounts is different in the two solutions mentioned above. According to the UNSD recommendations, there is no income in the environmental accounts, while the Netherlands' system includes all the SNA flow accounts. As to my opinion, to be consequent to the SNA means environment zero output and negative value added.

- An important problem to be solved is: how can internal environmental protection be separated into a part responding to the own activity and the same part relating to repercussions. Some estimations are needed for making that distinction.

- The question of an 'integrated system' arises also in practice. According to the opinion of some experts this means that relatively complete physical asset accounts need to be combined with similar monetary data-system. In practice separate rows and columns are needed for articulating monetary as well as physical indicators of the different kinds of environmental phenomena and flows. A good example is the structure of material energy balance combined with the natural resource accounts, containing data on the opening and closing stocks and the flows during a concrete period (a year or so). But this is a relatively simple example, for several other environmental goods (solid, liquid, gase-

ous residuals) and their type, it is not possible to compile such a parallel matrix in physical and in monetary units. I have mentioned this example for illustrating the problem of integrated system and the fact that no kind of internationally recommended solution has been found up to now.

One of the most important indicators is the value of environmental costs. The UN recommendation divided costs into two categories:

- costs caused: ‘costs associated with economic units actually or potentially causing environmental deterioration by their own activities’, and
- costs borne: ‘environmental costs borne by economic units independent of whether they have actually or might potentially cause environmental deterioration’.

The grounds of such categories are hardly disputable, but their use in the SNA practice could generate more problems. A suitable approach could be the use of imputed (and not objectively measured) costs for describing costs born by productive industries as well as cost caused by different industrial or household units.

The actual situation of the environmental accounting presented at the twenty-ninth session of the UN Statistical Commission (10-14 February, 1997) is the following:

- there are different kinds of methodological works carried out by the UN Statistics Division, published in the form of a handbook of national accounting on integrated environmental and economic accounting. Special agencies as the FAO, WHO, UNEP, World Bank, EUROSTAT have been active not only in elaborating methodology but also in some areas of technical co-operations;
- however, in this field, there can be no consensus found on a range of concepts and valuation of data;
- the paper presented to the UN Statistical Commission stated also that there is a duplication in the area of technical co-operation which is unavoidable for the time being.

By describing the present situation it has to be stated that at international level the work on environmental satellite accounting is still at an early stage, several industrialized and statistically developed countries collected experiences, so there is no need to wait for a clear international recommendation. The handbook elaborated by the UNSD gives a good basis, and – as usual in the Hungarian statistical practice – our own statistical experiments can help in finding a relatively simple, perhaps not final approach for compiling environmental satellite accounting system connecting with our SNA system.

Household Satellite Account

Another typical example for the need of a satellite account is the household statistics which belongs both to the economic and to the social statistics. The household is namely a unit of production and unit of consumption as well. As it is well known SNA 1993 does not include unpaid services in the sector of households, but this form of SNA contains a recommendation: to use a household satellite account. It has to be mentioned that several productions within the household are included in the traditional SNA, for example production of agricultural goods, which has a significant ratio in the Hungarian households production, some kinds of housing repair, theoretically the services of owner occupied housing, but these cannot easily be measured. Most parts of the household services are excluded from the SNA, especially the unpaid services.

In the SNA manual, the following text can be found:

- a) 'The own-account production of services within households is a self-contained activity with limited repercussions on the rest of the economy...'
- b) 'As the vast majority of household domestic and personal services are not produced for the market, there are typically no suitable market prices that can be used to value such services...'
- c) 'Imputed values have a different economic significance from monetary values. The imputed incomes generated by the imputed production would be difficult to tax in practice...'

Some other arguments advanced against measuring and valuing unpaid work of household could be continued, but several arguments could be listed in favour of taking into consideration those kinds of work if not inside of the SNA, then in a satellite accounting.

One of the significant reasons is that welfare measurement is not possible without drawing our attention to the unpaid work realized by household members. This is only one side of the problem. Another aspect is that in Hungary we have to concentrate on assessing most kinds of productive resources of the economy and work performed by households belong to these. Taking into account the household-production means that we have to take into consideration their consumption as well.

As to my opinion we have to learn from the experiences of developed countries in this field as well and the best example is given by the Office for National Statistics of the United Kingdom. Several interesting articles describe the UK practice. From these it has become clear that in the process of compiling satellite accounts for the household sector, the following steps are needed.

1. Finding a suitable definition for the household production. This is not easy, because different definitions are used in different national practices, having in mind that household production in the formal economy are as often substitutes as complements. It depends on the domestic situation of the country and it is not the same in the country at different times. For example at that time when unemployment is relatively high, more kinds of household activities substitute the production in the formal economy. When the welfare situation has become better, several kinds of household activities go to the formal economy (for example: some car-repairs, laundering, gardening etc.).
2. To find the best solution of measuring distribution intermediate and final consumption of the household section. (Intermediate unpaid part of household work is for example driving to and from workplace.) For the aim of measuring the activities, the balance of time statistics could help but from these sources only hours spent on different kinds of household work can be acquired. The next step has to estimate the value of the time used.
3. To decide the use of an input or an output approach when compiling the household satellite account or to use both of them. Input accounts can be based on time used for different kinds of work. Output account means estimations of the value of unpaid domestic production.
4. To compare the results of the pilot household satellite accounts with other statistical information and to analyse the figures.

From this very crude outline, mainly the difficulties of the compilation of household satellite accounting could be derived. It has to be added, however, that this satellite can serve more aims; therefore this has to be an integrated part of the widely defined up-to-date SNA's scope.