PROBLEMS OF DETERMINING AND MEASURING
THE RELIABILITY OF THE NATIONAL ACCOUNTS:
HUNGARY'S EXPERIENCES

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Economic realities can be described in national accounting only by certain approximative means and presumptions; therefore they cannot be measured with absolute accuracy. However, because of their great importance these investigations must fulfil as far as possible the reliability required for the economic control and planning of the national economy, in accordance with predetermined concepts and methods.

The reliability of national accounting is favourable in Hungary, as they are based mostly (92 percent) on the bookkeeping data of enterprises, cooperatives and institutions. The bookkeeping system is uniform in all economic organizations, in conformity with central regulations, and it takes into account the demand of computations for national accounting.

Despite these favourable conditions lesser or greater contradictions can be found in the national accounts every year. The absolute measure of the differences is not significant; however, if compared to the annual increase it results in uncertainty of 15 percent. The uncertainty is reduced by the fact that the sign of differences is the same every year.

The author classifies the causes of uncertainty in national accounts into four groups: 1. problems of the time shift of the connected economic processes and of their accounting; 2. effect of the enterprise interests; 3. inadequacy of methodological regulation; 4. inaccuracy of data surveys and processing. The study deals with the special factors of inaccuracy occurring in constant price accounting. Inaccuracy of the most important aggregates, for instance that of the volume index of the national income, comes to 0.5–0.7 percent which results, in the case of a yearly 5 percent "real" increase in the index, in reliability limits of 10 to 15 percent.

In the concluding part of the study the author points out that in Hungary the unexplored contradictions are not shown as "statistical discrepancy" but they are included in the various aggregates on the basis of considerations discussed in the study.

1. REQUIREMENTS AND POSSIBILITIES

Similarly to other countries, the information derived from national economic computations occupies in Hungary an important place in economic control, in short and long-term planning of the national economy, and in economic research. Its importance is bound to grow in the future, particularly as the modelling of economic processes becomes a regular activity. It is thus understandable that the acceleration of these computations and the raising of their reliability emerges as a repeated demand.

Naturally, not only the statisticians, but also the users of the data are aware of the fact that data of an accuracy usual in many other fields of statistics, e.g. in demography, cannot be expected from national economic accounting. But, due to its task and nature, it is not necessary that the national economic aggregates should be of an "absolute" accuracy. If the order of magnitude of the individual activities, together with their growth rates and the fundamental relationships among the various aggregates, is well expressed by national economic computations from the macroeconomic point of view, they have performed what they are called upon to do.

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But it is not accuracy alone that determines the information value of statistical data in general and thus of the results of national accounts. The information value of the data depends mainly on the extent to which they can be utilized in economic decisions. As explained by István Huszár, then President of the Hungarian Central Statistical Office, at the 38th Session of the International Statistical Institute held in Washington in 1971, quick publication of data containing perhaps some greater error may be as valuable for economic leadership as the later publication of more exact data. The three basic requirements imposed upon the data supply, accuracy, rapidity and smallest possible costs, are in contradiction with one another. Therefore, statistical offices typically in individual concrete fields of statistics have to weigh these three requirements. In their decisions the guiding principle is how they can best mitigate the losses in information due to concessions in other fields.

Precisely because acceleration of data supply greatly increases the value of the information to be derived from them, the Hungarian Statistical Office gives information about the results of national economic computations several times a year. In October of the current year "expected" data, and in February of the next year "preliminary" data are published about the most important aggregates. Experience has shown that these less exact but early data are much better utilized by the operative management of the economy than the "exact" final data covering the whole system but published 11–12 months after the period in question.

When the reliability of the national economic computations is examined, the question emerges as to what the criterion of "absolute" accuracy is. Tacitly, we set out from the assumption that the national economic computations may be considered as absolutely exact if they *fully* correspond to the concepts and methods of the accounting system (MPS or SNA) worked out for the purpose of such computations. The prescriptions of a complex national accounting system may be indeed considered as a good standard, partly because they accurately define the contents of every important aggregate, and partly because they demand numerical consistency among the individual aggregates.

However, in judging the degree of reliability it must not be forgotten—in itself a grave problem—that even the accounting system measures the real economic processes by accepting various assumptions and neglecting important factors right from the outset. It is well known, for instance, that the measurement of value in the system is closely related to the prevailing price system. Relative prices, however, at least in Hungary, frequently deviate greatly from the relative proportions of social inputs. Or: goods which are not traded at all or only much after the period examined are expressed in money form. In other cases, it is the external form of appearance rather than the functional economic contents by which a distinction is made between goods serving to satisfy present needs and those serving future needs (e.g. technological development, scientific research). For these and similar reasons the information on the rate of economic growth and the structure of the economy obtained from the national economic accounts can be accepted only with reservations from the point of view of a "higher" economic judgement—even if the data were absolutely exact in statistical sense.

Attention should be drawn to this circumstance because the reliability of information derived from national economic accounts is frequently over-estimated. This happens mainly in the sense that the individual statistical data are considered perfect expressions of the concepts denoted by them. In some cases greater than justified importance is attributed to differences amounting to some tenths of a per cent in the growth rates of a given year. No doubt, such ideas are suggested by the fact that the results of national accounting are presented today in publications reaching the volume of a book. Readers find in them a whole series of balances, accounts and tables and, from the first page to the last, all data are in complete harmony with each other. The data cover every phase and aspect of the production process and questions as to the antecedents and consequences of processes are answered by data shown as exact numerical values. This complexity unavoidably makes readers forget the assumptions mentioned above. This knowledge, however, is indispensable for the correct interpretation and use of the data.

Of course, the "degree of reliability" of the results of national economic computations cannot be measured in this sense. But making this appreciated in the necessary place and to the necessary extent is a task of the statistician in the same manner as searching for the inaccuracies in the statistical sense and reducing them to a minimum as far as this is possible.

In the following section this study will deal with the factors affecting the reliability of national economic computations in Hungary, with the extent of this effect and with the methods of eliminating the differences due to the inaccuracy of and the contradictions between the data.

2. Character of the Statistical Sources for National Economic Computations

The reliability of the national economic accounts in the statistical sense depends mainly on the exactness, detail and completeness of the statistical sources available on the economic activities in the country. In this respect conditions in Hungary are relatively favourable. The means of production are preponderantly in state and co-operative ownership, that is, in the hands of organizations keeping authentic, legally regulated records of all aspects of their economic activities. Economic activity performed in the framework of these legal entities represented in 1971 92 percent of all economic activities in the country measured by gross output. Only 8 percent of national production originated in the private sector including auxiliary farming where no records are kept on economic activity. But even of the latter figure, 5 percent was small-scale agricultural production, taking place "in the open", and more easily accessible to statistical observation than the industrial or service activity of the private sector.

Beyond the advantages due to ownership relations a further favourable condition for national economic computations is the circumstance that the legal entities must keep books in a way regulated in detail and uniformly by the state. The bookkeeping system covers all aspects of economic activity, that is, the production and income processes, as well as the value of assets and liabilities.

Relying on these records enterprises and other institutions prepare reports, also in a centrally prescribed form. These reports are processed and summarized by the Ministry of Finance according to several criteria, and handed over also to the Statistical Office. The annual data are available 4–5 months after the year in question.

The bookkeeping system and the reporting system based on it supply essentially all the information necessary for the national economic computations. In Hungary the regulation of the bookkeeping system belongs to the competence of the Ministry of Finance, but the Minister of Finance formulates this system in agreement with the President of the Statistical Office. This right of the Statistical Office offers the possibility of enforcing the statistical requirements to the greatest possible extent in bookkeeping. The harmonization of the bookkeeping and the statistical systems covers the concepts, the classifications, methods and, finally, the data and details to be covered in the bookkeeping reports.

Following from its task, bookkeeping must serve primarily the internal management and control purposes of the individual enterprises, cooperatives and institutions. Since from the "enterprise aspect" the importance and judgement of certain economic processes differs from the "macro-economic viewpoint", frequently there is no "one-to-one" correspondence between the concepts and methods applied in the records of the economic units and those of national economic computations. In such cases the enterprises supply as a complement the "transfer items" necessary for rearranging the "enterprise data" into national economic ones. For example, from certain miscellaneous costs they separate the wage costs, material costs and taxes.

Thus, for more than 90 percent of economic activities there is full-scope information available, based on detailed bookkeeping, well checked and complex in nature.

The situation is different with respect to the private sector and the complementary activities of the population. On the production carried on in small-scale agricultural farms relatively detailed data are supplied by agricultural statistics (area, average yields, harvest, livestock, etc.). But it follows from the institutional conditions that for this production the data sources are less satisfactory than the data collected from the enterprises. Observation is most deficient regarding the activities of artisans, private retailers and private services. Since, however, this sector is of a relatively small weight in the economy, it does not influence significantly the accuracy of national economic computations.

While in Hungary bookkeeping reports supply the most important and the most numerous information for national economic computations, several other sources of information are also used. Further information is needed for essentially three reasons:

(a) There are economic processes not covered by bookkeeping data, e.g., production in the private sector and in the small-scale farms of the population; or consumption of the population. In these cases statistical observations relating to the field in question are the primary source.

(b) It is mainly in the sphere of income distribution that the data on incomes received and paid are necessary from the aspect of the "other" partner. Therefore, important sources of information in national economic computations are those

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provided about the budget, the credit operations of the banks, and international payments.

(c) Precisely in order to control the reliability of the national economic computations it is necessary to utilize "traditional" statistical data on production, distribution, labour, etc. collected from enterprises and institutions by the central statistical apparatus and other organs.

This means that under present conditions the scope of information about economic activity is so wide that for *computing a single item of the national economic accounts the results of two or three more or less independent observations can be used*. Thus, in the final analysis, the national economic computations rely on several parallel data sources. Great efforts have been made in Hungary to ensure that uniform concepts, classifications and methods should be applied by the various organs in their data collection and processing. Even if this has not been fully achieved as yet, as regards the most important aggregates of national accounts the situation is relatively satisfactory. Where concepts differ, efforts have been made at least to reveal the items causing the differences. This many-sidedness and multiple control greatly enhances the reliability of national economic computations and simultaneously narrows the intervals within which the values of the individual aggregates may vary.

Under the above conditions the expectation would be justified in Hungary that in national economic accounting:

—all aggregates are established nearly at the same time and relatively shortly after the period in question,
—the degree of reliability of each aggregate is almost identical,
—the manysided set of data belonging to the system of national economic accounting is in logical, conceptual and numerical harmony from the first stage of processing.

Unfortunately, in spite of the favourable conditions, these expectations are not fulfilled in practice. Owing to causes to be mentioned later, in every year inconsistencies appear within the national economic computations, their extent being rather different by aggregates, and due to the relatively long time necessary for their clarification the publication of the final data occurs at a later data than would be desirable.

It is difficult to judge to what extent the reliability and speed of national economic computation in Hungary is better or worse than in other countries. It can however be definitely stated that the computations improved in 1968 are— owing to the uniformity of concepts and to increasing the complexity of the system—essentially more reliable than the earlier ones.

3. MEASURING THE DEGREE OF RELIABILITY OF THE NATIONAL ECONOMIC COMPUTATIONS

Information about the reliability of national economic computations in Hungary can be obtained from the following comparisons performed in two directions:

(a) Confrontation of data worked out in the framework of national economic accounts from different aspects; and

(b) Confrontation of data sources used for the purposes of national economic accounts with information from various parallel data collections.

It must, however, be acknowledged that these two types of control do not yield an unquestionable answer to the question. In principle it may happen that some economic activity remains hidden in all sources of information and thus cannot be revealed by collation of the existing data. Such activities are, e.g. the various services performed by the population after working hours (repairs, fittings, etc.).

As regards comparisons within the system, *the more extensively and multidimensionally the system encompasses the economic processes*, the more numerous the data available for assessing the degree of reliability of the accounts. If, e.g., we measure real economic processes not only by a two-sided confrontation of the production and utilization of goods, but arrange them in a 50- or 100-sector input–output table as well, the inaccuracies of the statistics used will emerge more clearly. The data on production and utilization can be checked even better if the system presents full-scope accounts on the origin, distribution and use of incomes. It is, of course, assumed that independent information is available for these processes, or at least for their most important elements.

Since 1968 in Hungary the system of national economic accounting has embraced essentially all processes required for both in the revised SNA and MPS. As is known, both the MPS and the SNA constitute complex accounting frameworks where most aggregates are meshed with each other like cogwheels. The collations and confrontations offered by the full system, and even demanded by it, are innumerable. On the basis of investigations of this kind the following can be stated for Hungary:

The degree of accuracy of the data is different in the various parts of the national economic system. The uncertainty is relatively great as regards the data on intermediate consumption and, in this context, on gross output. The reliability of the value added computation is enhanced by the fact that detailed information is available in the individual branches on such elements of the new value created as wages, various taxes, subsidies, and operating surplus. The expenditure from these incomes can be observed in parallel among the receipts of the population and the budget. The data are deficient and thus less reliable on the processes of income distribution taking place outside the budget, among enterprises, or between enterprises and the population, or among various budgetary institutions. There are well supported data available on fixed capital formation both from the side of production and from that of financing, while the uncertainty is greater for data on stockbuilding. Within final consumption, the value of the goods consumed by the population is more firmly based than "public consumption".

The following table shows how the crude results of final computations of Net National Product in 1971 at current prices differed in three different cross-sections:

NNP as the difference between gross output
   and intermediate consumption of the
   individual branches   320.9 billion Forints

NNP as the sum of the end uses of goods
   (exports less imports)   324.8 billion Forints
NNP as the sum of primary incomes
   (wages, indirect taxes, operating surplus)   321.8 billion Forints

The differences among these global aggregates, if compared to the absolute figures, cannot be considered large. They hardly exceed one percent. But in terms of inaccuracy in the growth rate of national income, the magnitude of the error is insupportable. In the last five years the annual increment of net national product in Hungary has been between 20 and 30 billion Forints. The above differences between the aggregates of 3.0 and 3.9 billion Forints make the computation of the increment to this extent uncertain, corresponding to about a 15 percent confidence interval.

In reality, however, the reliability of the growth rate is better even regarding the crude results than would seem from the above data, since in the last five years the differences among the sum of the three values have been of a similar order of magnitude, and, what is even more important, the *direction* of the deviation agreed.

In assessing the reliability of the national economic computations important assistance is given by the above mentioned *parallel* statistical sources. With their aid it is not so much the synthetic aggregates (gross output, national income) about which information can be obtained but rather their partial aggregates.

Confrontations and collations of parallel information serve essentially a double purpose:

(a) They aid the general improvement of the details of national economic computations and reveal contradictions among the synthetic categories through the partial aggregates.

(b) The parallel sources usually supply for a given field data grouped according to several points of view, and these can be well used for disaggregating the synthetic national economic categories. At the same time, the multidimensional collation and checking performed in the framework of the national economic computations means the practical realization of the integration and coordination of statistical sources.

Two examples will be mentioned from Hungarian experience of this kind.

The global sum of *wages* included in the cost of production is available for the purposes of national economic computations from the bookkeeping data of enterprises. Wage statistics, however, collect data on the wages (salaries) paid by enterprises to employees in different occupations (executives, technical staff, skilled workers, etc.), under what title were wages paid (basic wages, supplements, premia, etc.), the earnings of men and women, of permanent and seasonal employees, etc. The concept of "wages" used in wage statistics is in harmony with the same concept used in national economic accounting. Therefore, the "wages" in national economic computations are checked against wage statistics and, after elimination of the differences revealed, wage statistics as a "complementary" system linked to national economic computations offer possibilities for detailed analysis.

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The situation is similar with data on *fixed capital formation*. Enterprises report in their annual reports on the value of goods used for fixed capital formation in the current year. The specialized statistics on these phenomena, however, collect data on the concrete kinds of fixed assets, their technical parameters, the duration of construction, the origin of machinery (domestic or imported), etc. In this way not only can the data be checked by branches, but the relevant aggregate in the national accounts can be broken down almost optionally.

It must, however, be noted that a complete harmony of the individual specialized statistics with the national economic computations could not be achieved. Smaller differences emerge even in the field considered most ideal. The differences cause much concern for the representatives of both fields of statistics, and, therefore, the search for them is conducted mostly in common. The representatives of national economic computations contribute to the common efforts a better knowledge of national economic interrelations, while the representatives of the specialized statistics contribute their knowledge of the concrete relations and problems. But, for both subjective and objective reasons, the conditions and possibilities are rather different.

The information value of the results of national economic computations depends—as indicated in the introduction—upon rapidity as much as accuracy. Of course, the rapidly supplied data must also reach a certain degree of accuracy. The following table shows how the indices published as *preliminary* ones for the major aggregates at the beginning of the year (February) differed from the final ones published at the end of the year (November) in Hungary in the last three years.

TABLE 1

PRELIMINARY AND FINAL VOLUME INDICES OF THE SOURCES AND USES
OF NATIONAL INCOME IN HUNGARY, 1969–71

	1969		1970		1971	
	Prelimi-nary	Final	Prelimi-nary	Final	Prelimi-nary	Final
National income originating	106.0	108.0	105.0	104.9	107.0	106.5
of which: Industry	104.5	104.5	108.5	108.1	105.6	105.7
Construction	108.5	109.4	110.1	109.9	107.2	106.6
Agriculture	109.0	112.3	84.8	81.9	110.6	108.7
Use of national income						
Consumption of material goods by						
the population	106.0	105.8	107.2	108.0	106.0	105.6
Public material consumption	106.0	110.2	109.0	117.4	107.4	110.2
Total final consumption	106.0	106.3	107.4	109.1	106.2	106.1
Net fixed capital formation	102.8	110.2	124.1	126.0	109.3	118.8
Increase of stocks	64.6	59.3	136.3	97.1	269.1	199.9
Total net capital formation	92.5	96.5	126.2	121.2	130.5	127.0

As can be seen, between the preliminary and the final indices there are in some years and in respect of some aggregates rather considerable differences. As

regards the reliability of estimates, the preliminary data can be grouped into two main classes. To the first belong the aggregates reflecting objective processes depending on the volume of live and embodied labour inputs, as e.g. industrial output or that of construction. These processes can be well approximated with the aid of monthly indices relating to the first 9–11 months of the year. Essentially the same holds for the consumption by the population. Another part of the aggregates, however, depending on special circumstances, may undergo essential modification in the last period of the year (as e.g. the balance of exports and imports), or may depend on some subjective qualification (e.g. whether a new factory will be declared as ready for operation by the end of the year or not). In this second group may be classified the index of agricultural production, which is seriously influenced by the production results of crops which are harvested late. As can be seen from the table, the early estimates of data belonging to this second group are considerably less reliable than is the case with the first group of data.

4. Main Reasons for the Inaccuracies of National Economic Computations

The causes of contradictions and inaccuracies of the national economic computations outlined above may be classified into the following four main groups (with respect to computations at current prices):

(a) measurement problems due to the time lags among processes,
(b) influence of enterprise interests,
(c) insufficiency of methodological regulation,
(d) inaccuracy of observation and processing of data.

Each of these is composed of several individual and special cases, appearing in different forms.

(a) The completion of transactions *takes a shorter or longer time* depending on the nature of flows. In some cases, e.g. with goods imported from far places, the full transaction may take months. In income distribution, however, most problems are caused by the fact that the sum of some income type, e.g. the profit tax, is different if it is delimited between years by the criterion of *origin* or by that of actual *payment*. A considerable and annually rather fluctuating magnitude is represented by the commodities and money "in float" on the last day of the year, i.e. to be found in transport means, the post office and financial institutions. The prescriptions with regard to bookkeeping and statistical methodology regulate in detail the delimitation in time, so that the various transactors account for the processes ending in the next year in a synchronized manner. In spite of this, the desired harmony from the viewpoint of national economic accounting could not be fully achieved.

(b) The influence of *enterprise self-interest* on the data supplied may be rather different from country to country depending on ownership relations, the system of taxation, the legal regulation of statistical data supply and many other factors, but its assertion must everywhere be expected. In Hungary, owing to the socialist ownership relations, this effect is smaller in enterprises and cooperatives

than in the case of private enterprises, but it can undoubtedly be felt. Self-interest appears mainly in the material and moral appreciation of the local management. For instance the increasing of salaries, the possibilities of capital formation, the obtaining of certain government supports and/or credits closely depend on indices expressing the magnitude and profitability of production. Which of these indices are important may differ among periods and countries, depending on the concrete system of economic management. In Hungary, e.g., in the fifties it was the plan fulfilment of gross production value, i.e., the relation between actual and planned gross output, that served as a basis for judging enterprise performance. In the present period, however, enterprises are judged primarily by the size of operating surplus.

Understandably, enterprises are interested in shaping the indices, on the basis of which their management is evaluated, and which entail serious financial consequences, in a way that is most favourable from their own points of view. They can do so within the framework of legal possibilities. Among the many thousand types of economic transactions there are hundreds of marginal cases from some viewpoint. It thus depends on the enterprises whether they classify them, from the aspect of qualifying criteria, as items having positive or negative effects. For example, a part of complementary costs accompanying an investment project may be considered as costs either of current production or of investment (trial operations, training). The treatment of such items is far from being indifferent in terms of the value of operating surplus.

The distortions of data due to the influence of enterprises can most frequently be eliminated only by checking on the spot. According to Hungarian experience, the distortions due to the interests of the enterprises affect mainly the boundary between intermediate consumption and fixed capital formation. But audits carried out by the tax authorities have proved that the corrections necessary because of incorrect accounting do not reach 0.5 percent of national income. Furthermore, the effect is of the same order of magnitude each year and of the same direction.

(c) *The methodological regulation of economic processes* cannot be so complete, either in bookkeeping or in statistics, as to provide unequivocal orientation for every individual case emerging in life. The special cases are rather frequent which can be judged only after careful weighing and review from the viewpoint of the system of national economic computations to fit them to the general principles and secure at the same time a consistent accounting in the whole system. Obviously, if the judgement of such cases is left to the enterprise accountant or statistician, erroneous data may be supplied even without special interests.

(d) However careful the organization of data collection, however great efforts are made to train the responsible personnel, smaller or greater inaccuracies unavoidably occur in the recording and processing of statistical data, owing to mistakes, insufficient knowledge of the prescriptions or carelessness. A considerable part of these dangers can be eliminated by the introduction of complex tables and forms which make the mistakes obvious by collating the related data within a table or between several tables. These can be thus corrected by the data supplier himself or they can be easily revealed by checking them. There exist,

however, smaller possibilities for checking such complementary data as are supplied by the data suppliers outside a closed-system table (as a list).

5. PARTICULAR PROBLEMS OF COMPUTATIONS AT CONSTANT PRICES

When, after completion of national accounts at current prices, values of the aggregates at constant prices reflecting real processes are established, a new essential factor is added to the sources of errors hitherto listed: the uncertainty of measuring price changes. In respect of the price indices, the former "data supplier" becomes the "data user" and examines the price indices with a critical eye, from the following points of view:

— in the present stage of development, when there are rapid changes in the quality and specification of products, to what extent is a price statistic capable of realistically distinguishing "true" price changes from "true" quantitative changes;

— are the price indices available for the deflation of the different aggregates in harmony with each other and with the requirements of national economic computations as regards their coverage, weighting and classification.

As regards the first problem, insofar as the possibilities and methods of price statistics are identical for every aggregate, that is, they approach reality in a uniform manner or are lagging behind it uniformly, there is no way to enter into the merits of the problem in the scope of national economic computations.

As regards other problems, the national economic computations are called upon to solve several tasks of principle and practice, which cannot be circumvented. When deflating the individual aggregates with the existing price indices, usually there emerge new and frequently greater contradictions between the two sides of balances and accounts in comparison to the differences emerging in computations at current prices. The reason is that in practice the harmony between the price indices relating to individual aggregates is not ensured, and, as a matter of fact, frequently it cannot be ensured completely. The various price indices are constructed according to a pattern best comforming to the requirements of measuring prices and volume in the given field, and frequently these differ regarding production and utilization. But, in some cases the differences between price indices derive from a different interpretation of changes in prices and in volume. In such cases by raising the requirement of harmony with national economic accounting influence can be exerted towards a more realistic measurement of volume.

Besides inaccuracies of a statistical nature, the harmony of data in computations at constant prices is seriously infringed upon by "economic" (conceptual) contradictions. The characteristic types of the latter have already been shown, among other places, in the papers of the working group on the system of price and volume indices, held in Geneva in the spring of 1973 under the auspices of the Statistical Commission of the United Nations. The most important of these are:

— changes in average prices due to shifts in the proportions of products sold at different prices in various markets;

—price changes due to changes in the average transport distance of products;

—entering of trade services into the distribution process of products, or their ceasing, or change in the weight of these services;

—measurement of changes in the structure of production and utilization with a weighting system of an ever more distant period.

The differences between the volumes of production and use of goods on this account are usually mixed with differences resulting from the lack of harmony between price indices. Since the numerical value of the individual effects can be established only in a few exceptional cases, the nature of "mistakes" thus appearing and their size related to the individual aggregates generally remains hidden for the statisticians performing the computations.

In Hungary the difference between the aggregates of sources and uses computed at constant prices moves between 0.5–0.7 percent after three to four years from the base year (See Table 3.). This deviation corresponds to a 10 to 15 percent uncertainty for a 5 percent annual "true" growth rate. This difference emerges after starting from aggregates balanced at current prices. Under some conditions, such differences might be judged to be high. In Hungary, the annual change in the average price level is generally about 2 percent. The explanation for the difference is to be found in the fact that on the production side the aggregates of gross output and of intermediate consumption are separately deflated, and their volumes are respectively three and two times the volume of value added. Thus, a 0.3 percent inaccuracy in the price index of gross output influences the volume index of value added by 1 percent.

In this context, it must be still observed that, while in computations at current prices the contradictions within the system can be fully attributed to certain deficiencies of statistics and, therefore, the statistician is justified in aiming at exact agreement, in the computations at constant prices he cannot have any such aspiration, owing to the conceptual contradictions just mentioned. This fact considerably influences him in the approach to the reduction or elimination of the contradictions.

6. Actual or Seeming Elimination of the Inaccuracies in National Economic Computations

A great part of the differences between the crude results of the national economic computations can, depending on the time available and on the concentrated or fragmented occurrence of the deviations, be eliminated in a statistically supportable manner. Inaccuracies are fundamentally revealed by the checking of data against each other, their comparison by components, and the exposure of differences in contents, time and methodology, as has been mentioned above. Improvements made in subsequent years of course simplify and facilitate this task. The reliability of the data will therefore improve with the progress of time. It is well known, however, that not only the "usual" differences must be revealed each year, but in every year there emerge a great number of new phenomena upsetting the earlier established agreements. These problems present themselves like shock-waves, mostly in years when there are major changes in the

TABLE 2

THE CRUDE AND FINAL RESULTS OF THE MAJOR ECONOMIC AGGREGATES
IN HUNGARY IN THE COMPUTATIONS FOR 1971 AT CURRENT PRICES

Billion Forints

| | | Revealed deviations | | | | | |
| | | | Collation with | | Other | | |
	Crude Results	Differences in Accounting Over time	Budget Receipts and Expenditure	Special Branch Statistics	Other Conceptual and Numerical Collation	Unrevealed Differences (net)	Final Data Published
I. *Sources of net national product*							
Industry	114.9		-0.9 $+0.5$				114.5
Construction	28.6		$+0.1$				28.7
Agriculture	59.2			$+0.6$	$+1.2$		61.0
Other branches	118.2		$+0.2$ $+0.2$	$+0.6$		$+0.4$	119.6
Total of resources	320.9		$+0.1$	$+1.2$	$+1.2$	$+0.4$	323.8
II. *Use of net national product*							
Consumption by the population	213.5			-0.1		-0.5	212.9
Public consumption	37.3		-0.4	-0.4	$+0.9$		37.4
Net fixed capital formation	74.4	-0.9				$+0.5$	74.0
Increase in stocks	21.5	$+1.2$ $+0.9$			-0.7	-0.7	22.2
Import surplus	-21.9	-1.2		$+0.4$			-22.7
Total of uses	324.8	0.0	-0.4	-0.1	$+0.2$	-0.7	323.8
III. *Income components of net national product*							
Wages and incomes of individual producers	161.1		$+0.6$ $+0.4$	$+0.7$	$+1.8$	$+0.3$	164.9
Indirect taxes (net)	66.4	-0.4	-0.4 -0.3 -0.9 $+0.6$	$+0.3$		-0.1	65.2
Operating surplus	94.3		$+0.1$	-0.7			93.7
Total of incomes	321.8	-0.4	$+0.1$	$+0.3$	$+1.8$	$+0.2$	323.8

Cumulative inaccuracy: In sources of NNP   4.7 billion Forints
In uses of NNP   8.8 billion Forints
In the income components of NNP   7.6 billion Forints.

organization of economic units, in the system of economic control and management, in the order of price formation and taxation.

The manysided collating and checking work performed in the course of final computations takes much time. It is mainly owing to this work that the final data become available at a relatively late date, much later than the users would like them. Partly because the information value of the final computations diminishes rapidly with the progress of time, and partly because there is no fixed point for revealing certain inaccuracies and mistakes, the computations must be closed at a certain date. Before the closing of the final computations in Hungary about two-thirds to three-quarters of the contradictions between the crude results of the national economic accounts are successfully traced. Of course, the reliability and unequivocality of the clarification is different for different data. This depends to a large extent on how the data confronted have been derived.

After the possible collations and corrections there still remain differences for the revealing of which there is no information available. Table 2 shows the order of magnitude of corrections made between May and October in the course of collating information derived from different sources. The table distinguishes between revealed deviations and unrevealed inaccuracies.

It emerges that in Hungary the unrevealed inaccuracies do not exceed 0.2–0.4 percent for the most important aggregates. This also means that the annual value and volume indices of these aggregates are uncertain to the same extent. It may be assumed with some justification that these annual inaccuracies even out in the longer run and do not influence the average growth rates computed for 5 or 10-year periods. But this statement holds only for the values at current prices. Depending on the reliability of price indices, the aggregates at constant prices may present a distorted development even in the longer run. But there are relatively few objective criteria for checking this.

The question emerges what should be done about the remaining differences. In principle, choice can be made from two solutions. One is that the differences between sources and uses, or receipts and expenditure, be shown in the publications as a separate item. This procedure seems to be correct and, as testified by the National Accounts Yearbook of the UN, several countries proceed in this manner.

The other solution is that the unrevealed contradictions are made to "disappear" by distributing them among several aggregates in a more or less arbitrary way.

In Hungary, based on the following considerations, the second solution is applied. The explicit balancing item in the national economic computations suggests erroneous ideas about the degree of reliability of the data. However this item be called, it is interpreted by the users of the data as being either non-covered production or non-covered utilization. In reality, the inaccuracies in the final results and internal details of the computations are usually greater than what the balancing items imply. The size of the balancing item is, for example, not influenced by the economic activity remaining hidden to statistical observation, that is, which does not appear in either sources or uses. Further, the balancing items reflect only the balance of the mistakes in the individual partial aggregates. As

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TABLE 3

THE CRUDE AND FINAL RESULTS OF MAJOR ECONOMIC AGGREGATES IN
1971 AT 1968 PRICES

Billion Forints

	Crude Results	Finally Published Results	Difference (net)
I. *Source of net national product*			
Industry	110.6	111.8	+1.2
Construction	24.8	25.1	+0.3
Agriculture	55.7	55.7	
Other branches	105.4	105.0	−0.4
Total of resources	296.5	297.6	+1.1
II. *Use of net national product*			
Consumption by the population	202.6	203.1 .	+0.5
Public consumption	33.5	33.7	+0.2
Net fixed capital formation	63.5	66.4	+2.9
Increase in stocks	17.7	17.1	−0.6
Import surplus	−22.7	−22.7	
Total of uses	294.6	297.6	+3.0

shown in Table 2, the absolute (cumulative) sum of the individual inaccuracies is many times the sum of the balanced deviations.

The above arguments may be considered to hold for aggregates at constant prices in the same manner as for those at current prices. True, the justification for the balancing item could be here supported by conceptual factors, yet the fundamental problems would remain unsolved. The basic problem in measuring volume is to what extent price statistics can separate the value index into its two components in a proper way, with a particular view to the rather great role of subjective judgements in this process. Further: owing to the nature of things, the measurement of volume involves a substantial abstraction, namely, an *assumption* on how the value of the individual aggregates *would have* changed, *had* the prices remained on the level of the base year. The further we get from the base year, the more forced this assumption is. The numerical effect of this assumption usually competes with the "usual" inaccuracy of statistical observations and national economic computations. Therefore, an explicit "inaccuracy item" would have here an even greater deceptive effect than in computations at current prices.