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The Unitary System of Economic and Social Classifications and Nomenclatures

Any time we have to deal with large groups of objects, documents and phenomena — in any domain of activity — one of the major problems which has to be solved is that of adopting corresponding classifications. Without a modern system of classification, the activity of many sectors could not take place normally and operations would be too slow.

Such a necessity appears even more obvious for the statistical activity and science, whose subject of research are the mass social phenomena.

The classification of objects, documents, phenomena, human activities fulfils three main functions:

— it is the basis of order and keeping evidence in any economic and/or social unit;

— classification is a premise for studying the structure of various ensembles, a fact that makes it an indispensable instrument of social-economic statistics;

— the role of classification is also important for the solution of the problems raised by scientific terminology and the terminology used in economic activity. Thanks to it, the use of a number of notions with concrete or abstract character is being ensured uniformly.

The introduction of mechanized and automized means of data-processing is strictly conditioned by the existence of some nomenclatures and code-classifications, which should allow for the arrangement of data in systems full of significance.

1. NOTIONS AND DEFINITIONS

The term of classification is used to define the operation deviding and ensemble on several classes, each characterized by a higher degree of homogenity than the ensemble we start from. [1])

[1]) A large exposition on the theoretical issues on classification concept can be found with Z. Dobrowolski, Etude sur la construction des systèmes de classification. Ed. Gauthier-Villars Paris, 1964.

— The notion of ensemble used in this definition represents a collectivity (multitude) of "units", whose component elements have at least one common characteristic feature, due to which the respective ensemble becomes distinguishable as against other multitudes, at the same time forming a separate class.

— The common features of all units or the class character of a given ensemble form the meaning or the name of the class.

— Any class must have also a given extension: starting out from the definition of the common features of the elements belonging to a given class, the sphere of action of the class is established on the basis of the principle that all units having these characteristics belong to one and the same class and it is only them that can be members of it. The limits of each class must be very clearly established, the various classes reciprocally excluding each other. A clear delimiting of the sphere of inclusion of each class can be achieved only through the division of the ensemble, on the basis of a unitary devision system. Two different criteria to form a given class can not be used simultaneously.

The operation of classification implies the existence of four elements to operate with.

a. an ensemble to undergo an operation of arrangement for all its component elements;

b. the elements of the ensemble, formed of distinct units, univocally identifiable and distributed into various classes;

c. well-defined characteristics, which should serve both as a basis of the division of the ensemble and to the description of the classes and the establishment of the units belonging to the various classes;

d. a symbols system with the aid of which the various classes and titles of classification (names given to columns) are expressed in abridged forms, also used for the transposition of the elements of classification into symbols used with data processing installations.

The number of classes an ensemble can be divided into depends on the variety of forms under which the characteristics used as division basis, may appear. In dividing an ensemble several characteristics can be successively used, each applicable in a different phase of the classification operation; thus derived classes with ever narrower spheres of inclusion, but more and more homogeneous, will appear.

As build-up basis for the derived classes, the most characteristic and most general property for the given phase is being selected. The derived classes are more exactly defined than the classes preceeding them, since their content is enriched by the implication of some supplimentary specific features; more concrete and less general. The increase of the degree of definition of an ensemble through its division into derived classes, is one of the essential characteristic functions of classification.

A classified ensemble, that is divided over several "steps" and into ever more limited classes becomes an ordered ensemble. To classify means to put in order sets of objects or phenomena by grouping them into classes. It is obvious that the division of units into classes is not an endless process,

but in the case when not only the delimitation of the class, but the nominalization of the ensemble's each and every component element is being pursued. In this case we reach the stage or "catalogue" or "nomenclature" — which as a matter of fact is the limit-line of classification. A nomenclature includes the units either in alphabetic order, or according to some other systems or criteria. Nomenclatures may be exhaustive when they include all possible units, or selective, when they contain only part of them, according to some well-determined necessities.

Upon the elaboration of classifications, two logical methods may be considered:

— the deductive method, with the aid of which, starting from an established pattern of the classification structure the ensemble is devided into classes and sub-classes along successive steps following a logical chain of the basic homogeneous elements.

— the inductive method, which starts from the identification of the elmentary units, successively grouped in ever larger groups, till the out-limits of the ensemble is reached. Practice shows that both methods are combinedly used.

The division of the ensemble into derived classes or the grouping of the units into classes, acceptable to ever higher exigencies, must include the whole ensemble undergoing classification and the total number of classes obtained must be equal to the sum of the ensemble. Consequently each unit will have to be includable, according to the criteria of adopted classification, into only one class.

2. THE NECESSITY OF A UNITARY SYSTEM OF ECONOMIC AND SOCIAL CLASSIFICATION AND NOMENCLATURES.

Parallel with the widening of the sphere of statistic researches and with the development of the statistics-methods-studied-human activities, we notice a proliferation of the number and types of statistic classifications and nomenclatures, the stage having been reached when in some cases for the same category of objects or phenomena more than one differing classifications and nomenclatures are being used. Planning and accountancy acting, under the data-bank aspect, to a great extent over the ensembles proper to statistics, only the approach being different, have also contributed to the elaboration of more classifications and nomenclatures, a phenomenon which partly cancels their basic function; that of facilitating the concentration of data and their comparison in time and space.

Referring to the situation in the United States of America, Wassily Leontieff, Nobel Prize Winner, the creator of the input-output method said this in front of the American Economic Association, in his capacity of Association Chairman:

"The shift from casual empiricism that dominates much of today's econometric work to systematic large-scale factual analysis will not be easy... The spectacular advances in computer technology increased the economists' potential ability to make effective analytical use of large sets of detailed data... What is, however, urgently needed is the establishment, maintenance and enforcement of coordinated uniform classification systems... Incompatible data are useless data... How far from a tolerable, not to say, ideal state our

present economic statistics are in this respect, can be judged by the fact that because of differences in classification, domestic output data can not be compared for many goods, with the corresponding export and import figures. Neither can the official employment statistics be related without laborious adjustments to output data, industry by industry... An unreasonably high proportion of material and intellectual resource devoted to statistical work is now spent not on the collection of primary information, but on a frustrating and wasteful struggle with incongruous definitions and irreconcilable classifications" [1])

The statisticians and the other end-users of classifications have always felt the disadvantages of the proliferation of non-unitary classifications and nomenclatures, but were unable to do too much to change this tendency.

The explanations should be sought for in two directions.

First, the difficulties emerging with such a construction which should include into a final system the variety of economic, social and technical phenomena. Add to this the sets of statistical data, accumulated with time, for various indicators, which, with changing the classifications, should be re-calculated to remain useful. This would be an operation neither easy nor riskless.

The second cause is the fact that along the long period of manual data-processing, there did not exist a factor to impress the objective necessity of a unitary system of classifications, achieved on the basis of clear and rigurous principles; there did not exist a clear understanding either of the role and functions of such a system. This new understanding emerged parallel with the introduction of mathematical patterns in the technique of economic analysis, of planning and long-term forecasting and with the extension of automated data-processing in informational systems working at national level.

The mathematical patterns require that the variables used, the input and output data should have a unitary methodological foundation and sphere of inclusion. In its turn, the electronic technique of calculations can be efficient only if it is used for profound and multilateral data analysis; however, this possibility of multilateral combination and analysis — with data obtained from various sources — can be made best use of only in the case there is a system of classifications and nomenclatures able to ensure the definition, collection and structuring of data on a unitary, comparable basis.

So it appears very reasonable why the Decision of the Romanian Communist Party Central Committee of April 18,1972 on the improvement of the social economic data system envisages — as a major task to attain this goal and for a good organisation of management and planning activity — provides for measures "for the improvement of the classification of the branches of the national economy; the working out of the nomenclatures of state socialist industrial, agricultural, constructions and transport units, of the nomenclature of professions and jobs in the national economy as well as other nomenclatures and classifications required by the various domains of activity. [2]).

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[1]) W. Leontieff: Theoretical assumptions and non-observed facts"; The American Economic Review, March 1971 pp 5, 6.

[2]) — "Scinteia". no. 9126/April 22, 1972

3. THE NOTION OF THE UNITARY SYSTEM OF ECONOMIC AND SOCIAL CLASSIFICATIONS AND NOMENCLATURES

The concept of the unitary system of economic and social classifications and nomenclatures implies three basic elements:

— the existence of more than one classification and nomenclature making up the system.

— the economic and social nature of the multitudes (ensembles) which are the subject of the respective classifications and nomenclatures;

— the link, full interdependence and compatibility between the various specific classifications and nomenclatures, conditions which ensure the system character of these statistical instruments. Within the system each and every classification fulfils a well determined function, but not independent from that of other classifications. All together constitute the skeleton after which the statistical, accountancy, technical, planning data are selected, processed and analysed within economic-social information/data system. The unitary character of this system facilitates the bringing together and combination, in the same process of analysis, of some data referring to different phenomena, by their nature, or data supplied by differerent sources. This probability of combination of the various data considerably increases their significance and informational content as against the situation when they are each analysed and interpreted in isolation.

The unitary system of economic and social classifications and nomenclatures is an ensemble of multiple classifications and nomenclatures meant to cover all multitudes of economic and social phenomena and units implied in the economic and social information/data system. Within the system an important place is held by the following categories of phenomena and units, which must be inventoried, classified and codified:

— social activities;
— products and services, as concrete results of various social activities;
— merchandise for domestic or foreign trade;
— territorial administrative units;
— economic and social units with diverse activities whose aim is the production of goods and assets and services for the population;
— production technological processes;
— fixed assets and other production funds;
— lands:
— population and labour force;
— occupations, professions, trades, jobs;
— financial operations, incomes, state expenses, expenses of economic and social units, family budgets, etc.

This list is not exhaustive; it reveals only the main components in the absence of which we can not speak about a unitary system of economic and social classifications and nomenclatures.

When we refer to their place of application, we find basic or national-interest classification or classifications of limited use, generated by the specific needs of some enterprises, industrial groups or institutions. The classifications of national interest serve to the processing of data supplied by enterprises and to obtaining — through successive combinations — of indicators at

the level of the territorial administrative units, of industrial groups, ministries, economic branches and the whole of the economy. These classifications must be unique, independent of the informational systems using them: statistic, planning, financial, transports, foreign trade, technical-material supplies, a.s.o. The range of utilisation of national-interest classifications is getting wider to the extent they are conceived on a structure detailed enough, considering the needs of information/data at every level of management, so that a necessity of internal classification should, in general, not appear.

From the point of view of the system structure, its basic elements, those which form the nucleus of the system, must be very clearly established, having a decisive role in its construction and possibilities of development. In our opinion the classification of products (merchandise) and of services constitute the core of the unitary system of classification and the nomenclature of the economic and social units represents the primordial element for the organisation of the information-flow in the national economy.

Actually, the aim of any social activity is the production of goods and services, without which society's existence can not be conceived. That is why the other types of classifications, as for instance that of social activities, of working-tools, machines and installations, of professions and jobs, a.s.o. can not be conceived independently if we wish to create a system in the true sense of the word, but in close relationship starting from the basic groups of goods and services. Each and every activity, profession, occupation, fixed assets can be defined by reference to the groups of products and services they place at the disposal of the national economy. The priority character of the classification of goods and services does not diminish the specific role of the other types of classifications and their own functions, which must be taken into consideration.

Our national economy has since 1972 a general classification of products and services [1]), worked out on modern bases, rigurously kept up-to-date by the introduction of the new products; a classification which may be used — in the sense we have indicated — also for the development and improvement of the other classifications.

As far as the nomenclature of the economic and social units is concerned (enterprises, industrial groups, cooperatives, agricultural farms, other economic organisations, educational establishments, research institutes, health-units, administrative institutes, institutes of research, health units, administrative bodies, ministries, civic organisations a.s.o.), its special importance for the informational system derives from the fact that the entire social activity is being organized within these units. The data on production and social-economic activity is formed in these units, which, at the same time, constitute the basic network the informational system of the national economy is organized upon. The nomenclature of the economic and social units fulfils the following functions:

— serves as unique, centralized, exhaustive record — kept up to date — of all economic and social units in economy;

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[1]) General classification of products and services in the S.R. of Romania vol. I intr. Vol I—VIII.

— supplies elements for the elaboration of nomenclatures of units of statistical observation or necessary comparative data for statistical research, particularly to the organisation of statistics in departamental and territorial profile;

— serves as basis of sampling for the creation of sample units of observation, on the basis of the principle of random selection;

— it is used for the organisation of data-files within data-banks;

— may serve in the carrying out of various studies on the organisational structure of the national economy and its evolution;

— by its system of codes — which includes also a number of identification, unchangeable in time, for every unit — the nomenclature facilitates the transposition into an economic form of the unit's name on different documents, eliminates the necessity of some large-scale coding operations with statistical report processing, allows for the identification and grouping of units into systems of automated data processing.

Such a nomenclature, also based on a modern concept, will be applied to the informational/data system in our country, not later than the end of this year.

The link between the nomenclature of the economic and social units and the classification of products and services is being realized, within the system, through the classification of social activities by branches of the national economy. (The classification of the branches of the national economy). This classification aims at grouping the economic and social units into homogeneous classes from the point of view of their object of activity, termed as "branches" and "sub-branches". The branches and sub-branches are forms of manifestation of the historic process of the social division of labour, having a dynamic character. In the conditions of the technical-scientific boom and of the economic development of the various countries, the social activities become ever more diverse and ever more different with new branches or sub-branches appearing and acquiring larger and larger economic importance.

The criterion of listing the economic and social units into branches or sub-branches, is the nature of these units' activity. In the event various activities are taking place in a unit, this is listed with the branch (sub-branch) which corresponds to the preponderent production or activity. However this principle begins to fail to satisfy requirement, on account of several motivations:

— more and more units unfold a complex activity, so that their listing, according to the principle of preponderence, with one single branch or sub-branch no longer is a case of exception and leads to an erroneous presentation of reality;

— the complexity of the national economy's leadership demands a higher degree of precision and more details in the supply of economic data, in other words, the formation of ever more homogeneous branches;

— new activities acquire a higher importance in the economic structure.

Because of all this the opinion is ever more widespread according to which the basic unit in the classification of social activities should no longer be the enterprise in its ensemble, but its sub-divisions, established either according to organisational criteria (section, work-shop, office, work-front, mine, derrick, farm, etc.), or more rigurously, according to the criterion of groups of products or services they are responsible for. In this sense an enterprise or another economic-social unit may be listed with several branches or

sub-branches. [1]) As a matter of fact this principle has, to some extent, been applied even up till now, for instance the annex units of agricultural farms or the canteen with an industrial enterprise. These are not listed with the industrial or agricultural branches respectivelly, but with agriculture and goods-circulation. However the transports sections in the industrial and constructions enterprises are listed, from case to case, with the respective industrial and constructions branches. In this case a disparity appeared between the indexes of the economy's endowment with transport vehicles and those of transportation volume, which include only the activity of specialized enterprises.

Changing the grouping unit into the classification of branches has three important consequences:

— leads to the appearence of much more homogeneous and more accurately delimited branches and sub-branches which is a positive fact; this as a matter of fact, is also a premise for establishing more accurate connections between the system's classifications;

— amplifies the work of record-keeping and data processing in units, an undesirable phenomenon; larger difficulties appearing with the determination of financial indexes;

— raises a number of problems on the re-calculation of the dynamic series, comparisons with the past and changing the already published data, difficulties appearing every time methodological changes are operated.

The direct link between the classification of branches and that of products and services can not be achieved in a corresponding manner, as long as the first uses as grouping units the enterprises or other similar units. Only by adopting a common grouping unit — the product of the service — we shall secure an organic link between the two classifications. To better understand the advantages of such a connection — despite the difficulties this connection encounters — we shall refer to the opinions of the authors of the draft, now under elaboration, on "the standard international classification of all goods and services", worked out under the sponsorship of the UN Statistical Comission [2]).

We note that this classification — worked out in a clear systemic concept — ensures the direct link with the international standard classification of branches (ISIC) by the fact that starting from the divisions of the latter, which represent four-digit coded activities, further develops them forming six and respectivelly eight-digit codes positions and sub-positions which include homogeneous goods and services. Thus the very content of the classes, representing branches of activity is defined by concrete products and services. More than that, the classification of goods and services indicates the code-number of the corresponding positions in the standard international trade classifcation (SITC) as well as the Brussels Customs Nomenclature (NDB).

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[1]) In foreign reference material more recently distinction is being made between the "branch", which is formed on the basis of grouping some homogeneous products and the "sector" which is a branch based on "establishments" (sections) and which do not have in all cases a homogeneous production.

[2]) Nations Unies-Comission de Statistique; Projet de classification internationale type de tous les biens et services (CIBS) 3/457; June 17, 1974.

According to the authors of the draft we have just mentioned, the existence of a classification of goods and services linked to the classification of branches is indispensible for the analysis of the relationships between exports and imports, on the one side, the domestic production and consumption, on the other side, and the equilibrating of the trade ballance.

A similar necessity appears in the analysis and ballancing of various resources, for the discovery of "bottle-necks" in production or the difficulties of marketing, for planning the development of the various enterprises.

The control of the flow of production in the economic system and the analysis of the links between branches (the input output analysis) are facilitated if there is an organic link between the two classifications.

The application of a systemic concept upon the elaboration of the branches' classification compell one to ensure for each branch and sub-branch a "specialisation coefficient", which should be as high as possible, as well as a high "covering coefficient" of production, forming the specific features of each branch.

4. MAIN PROBLEMS OF THE BUILDING UP AND IMPROVEMENT OF THE UNITARY SYSTEM OF ECONOMIC AND SOCIAL CLASSIFICATIONS AND NOMENCLATURES

Despite the fact that classifications and nomenclatures are as old as statistics itself, up till now we have not had a complete applicable theory in this field of activity. It is true, however, that the experience acquired in time with the creation of the various classifications of national or international character has led to the elaboration of some principles which are more or less observed in practice. The difficulties of operating radical changes in the present informational system and maintaining at the present level of the comparability in time and space of the data accumulated, act as a braking factor in the promotion of the more scientific principles. On the other hand, a given pressure for faster changes is exerted by informatics, whose requirements for the application of some perfectly logical, unitary and simple solutions — generated by the computer characteristics — is running against the complexity and lack of uniformity in the organisation of economic units and in the relations between the socio-economic phenomena.

Among the principles of working out classifications we note:

a. the principle of grouping the units to be classified according to objective economic criteria.

— the ensurance of the classes' concordance with the social division of labour;

— compliance with the needs of the analysis of the social reproduction process, in all phases and under all aspects;

— the use of objective technical-economic grouping characteristics in a succession linked by their importance for practical activity;

b. the principle of maximum homogeneity of the formed classes;

c. the principle of using the multiple characteristics of classification, which should allow for the utilisation of data in resolving the diversity of tasks and obligations in economic activity;

d. the principle of univocality in grouping the units: each unit should be listed with only one class and the classes reciprocally exclude each other;

e. the principle of the possibility of amplifying the classification; this is very important for those ensembles which show a faster rate of evolution, for instance products and services;

f. the principle of the codes being economical.

The task of improving the system of classifications and nomenclatures calls for the settlement of a considerable number of problems, some of general order, others specific to each and every operation.

A first problem is that of giving to all domains of economic and social activity classifications and nomenclatures for which data are collected, processed and analysed. This implies a quantitative and qualitative inventory of the present situation, the establishment of priorities and the elaboration of a plan of action for replacing and reprojecting of the existing classifications and the working out of the still missing ones.

A second problem, very important, but very difficult too, is that of working out a clear and comprehensive concept on the structure, functions and mode of projecting of the system of classification. It is necessary that in the elaboration and organisation of the classifications system we should start from a systemic vision of the national economy and of its component parts, stress having to be laid on the integration of all classifications and nomenclatures into a national, coherent and unitary system. It is a well-known fact that every classification or nomenclature has the function of providing a unitary language and the possibility of deciphering information and data, similar to a dictionary. This of course is an important aspect, but covers only the formal part of the matter. From the point of view of the basic aspects, any classification must ensure the possibility of studying the structures of the classified ensemble, both statically and, mainly, dynamically. In this sense a good classification can not be limited to stay at the level of a more or less conventionally conceived language, obviously valuable for its unitary character, but not sufficing for the analysis of the structures and dynamics of phenomena. It must truthfully reflect the most essential qualitative elements by the establishment of homogeneous classes of full social and economic significance. At the same time it must be flexible enough to facilitate the multiple analysis of phenomena. For instance, a classification of products conceived only from the point of view of the producer, ignoring more or less the viewpoints of the consumer, would be doomed, from the very beginning, to a limited range of utilisation. If we wish that the data referring to production and those pertaining to domestic and foreign trade are given their entire significance, it becomes a must to use the same nomenclatures of products in both phases of the process of reproduction, and their grouping must be done according to criteria convenient both to industry and trade. In the same sense, a classification of the national economy on branches which would not allow to render evident some fully developing branches, which upon the elaboration of the classification were in phases of inception, may get out-dated very fast, much faster than the normal operational period of such a work. It's no secret that the frequent changes in the structure of a classification exert a negative influence on the series of data, which can not be always

recalculated or recalculated fast enough; that is why projecting a classification of the type we are advocating needs a clear vision of perspective.

Similarly, a classification of the national economy in which the branches — due to the principle of grouping the enterprises according to their preponderent productions — are not homogeneous enough, may serve as source of orientational information, but will be of no help for profound studies over the structure of the national economy and for the scientific substantiation of long-term development plans. Only a classification in which the branches are highly homogeneous and detailed enough may be a workable instrument in the settlement of some concrete problems, economically important, as for instance the discovery and removal of "production bottle-necks" creating difficulties in the normal planned activity, the ensurance of correct proportions for the branches' development, their supply with productive capacities, skilled labour force, a.s.o.

A theoretical and practical problem that has to be solved with any classification is the establishment and definition of the elementary unit of classification. This problem appears mainly in the case of the classification of the national economy by branches, where the traditional unit of classification has been, in Romania and in other socialist countries, the enterprise. Due to the increasing complexity of many economic units, the use of the enterprise as classification unit proves to be less and less convenient, the idea gaining ground that a more homogeneous organisational unit, as for instance the section, the farm should be used. The advantages of building up branches by grouping sections and other similar units are clear, but the implementation faces major difficulties in obtaining data at this level, linked with the present mode of the organisation of records, especially accountancy records. Such an option will obviously imply changes in the methodology of index-calculations, in the cases when the enterprise method with repercursions over the continuity of the series of statistical data are used. That is why a decision on this line must be proceeded by the minute study of all implications.

At present an improved project of the classification of the national economy by branches is in the stage of being finalized. Upon its working out special stress has been placed among other things on widening the possibilities of information over the structures, through increasing the number of economic branches (for example a new branch has been delimited: "the economy of waters"), through shifting onto the second stage of a considerable number of sub-branches, previously included in lower stages, raising the degree of homogeneity of the classes, a.s.o.

The improvement of the system of classifications and nomenclatures stands in connection with yet another problem, less studied so far, but which is of not neglectable interest in the rational use of classifications and nomenclatures, that of ensuring the junction between the micro, mezo and macro levels of the economy. This implies a unitary system of hierarchisation of nomenclatures on several levels, to each level responding a given number of unchangeable-in-time columns (positions), which facilitate the transition from the individual to the over-all, in concordance with the necessities of the management bodies at various levels. The main characteristic feature of this system

is the fact that the nomenclatures are arranged and inter-related similar to connections of roof-tyles. They have the advantage that at every level of aggregation the respective nomenclature covers the whole sphere. The essential item in building up such a system is the establishment of the number of columns (positions) for each and every level, so that the organized data, according to the respective nomenclatures, should correspond to the needs of ever more uses and to allow easy handling.

The continuous extension of Romania's economic, scientific and technical relations with all socialist countries as well as with other countries, the correct appreciation of the stage of development as well as Romania's place in the world economy require the permanent possibility of making comparisons with other states. On account of this, the improvement of the system of classification must be done in such a way as to create possibilities for an easy shifting from the national classifications and nomenclatures to the similar ones used elsewhere in the world. In this field again there are no categorical solutions; several procedures must be combined, starting from that of adopting, as largely as possible in new classifications the schemes and patterns most intensely used in international classifications, diminishing the differences existing in the present-day classifications, working out systems of automatic transition from an older to a newer classification.