

# COMPARATIVE COMPUTATIONS OF YUGOSLAV NATIONAL INCOME ACCORDING TO MATERIAL AND COMPREHENSIVE CONCEPTS OF PRODUCTION

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*The author believes that the theoretical controversies relating to the two concepts of production have reached a dead end, and that the answer to these questions must be sought in the results of empirical research. It is to this end that he presents the results which he has arrived at in his computation of Yugoslav national income according to the Yugoslav methodology, which shares the material product concept, and the methodology of the United Nations, which is typical of the enlarged concept of production.*

*In comparing the results of the computations according to the two methodologies, the author concludes that in spite of conceptual differences the deviation of the Yugoslav estimates from the values calculated following the system of the UN is relatively modest (4.2%) if domestic product at factor cost is used. The difference relative to aggregates calculated at market price rises to 13.6%. The author explains these differences by the fact that all the Yugoslav aggregates are computed at market prices, and that services financed by budgetary contributions, which amount to 80% of all services, have found their place in the market prices of material production. He finds that the choice of prices used for calculation has a greater weight for the computation of production than conceptual differences in the methodology of the computations.*

1. Discussion of differences between the two ruling concepts of production—the material and the comprehensive—has been up to now mostly theoretical. The question of the productivity of personal and capital services, which according to the material concept of production—in contrast to the comprehensive one—are not considered as sources of new values, has been central to these discussions. That is the reason for the opinion of many scholars that the practical difference between national income computed according to the two methodologies consists only in the value of services. Various authors have estimated this difference at 15–40 per cent of the national income computed according to the comprehensive concept of production.<sup>1</sup>

Discussions of these concepts on the theoretical level have come to a dead end. This is due partly to the fact that research work in the field of national income has ceased to depend on individual scholars and has passed to the domain of the permanent statistical services of the state. And the latter has adjusted its basic concept to the ideological basis underlying its social philosophy.

1. Studenski, Paul, *The Income of Nations*, New York University Press, 1958, p. 353.

It seems to me that empirical research in this field can give an answer to many questions which the theoretical discussions have omitted. Through comparative computations of national income for various countries according to both methodologies we could arrive at data which would show that the practical differences between the two methodologies do not lie so much in the intrinsic content of the concepts of production, but rather in their extraneous components. In this paper my objective is to give such a comparative computation of the Yugoslav national income, and to point out some problems which, in my opinion, deserve further research.

2. In Yugoslavia, as in the other socialist countries, the material concept of production is used, with the corresponding methodology of computing national income. This involves the special treatment of personal and capital services as not contributing to the formation of production value. Therein lies the first source of differences relative to western countries, where rendering services is considered to produce new value.

However, in my opinion, these differences cannot be reduced solely to the treatment of services. The value of production can be expressed in terms of various aggregates, which differ in the national statistics of countries using the comprehensive concept of production, both in number and in content, from the Yugoslav statistics, as well as from statistics of other socialist countries.

In the frame of practical applications of the comprehensive concept, two kinds of production aggregates exist, one of which reflects the value of "national" and the other of "domestic" production. There is no such differentiation in the Yugoslav statistics. All the Yugoslav production aggregates correspond by their content to the concept of "domestic" production.

A further source of difference between the Yugoslav production aggregates and the aggregates of countries applying the comprehensive concept is the choice of computation prices. In the Yugoslav national income statistics all values are estimated at market prices. Factor cost prices, at which some aggregates are estimated in Western countries, are not taken into account.

Judging by these numerous differences in the formulation of production and its aggregates, one might conclude that it is very difficult to speak about any comparability of Yugoslav production estimates with those based on the comprehensive concept of production. However, this is true only if we insist on a very precise comparability. Otherwise, it seems to me that there exist large elements of comparability, if this question is considered from a purely statistical standpoint, i.e. on the basis of real estimates and leaving aside the theoretical explanation of the concept considered.

3. I believe that the best explanation of these topics is obtained by matching the Yugoslav methodology for these estimates with the relevant U.N. methodology as presented in the SNA.<sup>2</sup> In this respect it is permissible to look on the Yugoslav

2. *A System of National Accounts and Supporting Tables*, ed. by Statistical Office of the U.N., *Studies in Methods*, Series F, No. 2, Rev. 1, New York, 1960.

methodology as an application of the material product concept and the U.N. methodology as a typical application of the comprehensive concept of production, though in both cases it is necessary to take account of the fact that there are smaller and larger differences in the national statistics of countries applying both of these concepts.

In Yugoslavia, three aggregates of production are used: gross social product, social product, and national income. The gross social product represents the sum of selling values of all the products in the material sphere, making no difference between intermediate products and the products of final use. Long ago this aggregate was rejected as a measure of production volume in Yugoslav statistics because of the double counting of intermediate products, owing to the method of computation. It is still in use only in analytical tables necessary for identification of input-output relations.

The real volume of production is expressed by the Yugoslav statistical concept of social product. This aggregate reflects the market value of final production. In contrast to the gross social product, which is unknown as an aggregate of production in the Western countries, the social product is analogous in its basic contents to the gross domestic product of Western countries. However, unlike the latter, it is based on the value of material goods only.

The concept of national income is also analogous to the corresponding aggregate of the comprehensive concept of production, in so far as it reflects the value of domestic production net of depreciation. Besides this similarity in the concept of national income in the Yugoslav statistics and Western countries statistics, it is necessary to have in mind also the differences between them which relate not only to the treatment of services but also to the balance of payments items. Net factor income from the rest of the world is not included in the estimates of Yugoslav national income.

In order to follow this explanation further, it will be sufficient to recall to the reader the content of production aggregates according to the SNA methodology. First, as we know, provision is made for both national and domestic product; but besides this division, there is a division according to the computation prices so that some aggregates are computed at market prices, and others at factor prices.

Thus, gross domestic product at market prices, as an expression of final production of material goods and services, is less than the gross national product at market prices by the amount of net factor income from the rest of the world. Net domestic product at factor cost is less than the relevant gross domestic product at market prices by the amount of indirect taxes net of subsidies and the provision for domestic fixed capital consumption. As the national concept of production differs from the domestic concept in all the aggregates of production by the net factor income from the rest of the world, national income equals net domestic product at factor cost increased by net factor income from the rest of the world. Finally, national income equals net national product at factor cost, since the latter reflects the gross value of national product at factor cost minus provision for domestic fixed capital consumption.

To try to discover in this series of production aggregates used by the SNA

which corresponds best to the Yugoslav aggregates, we should first note the following facts:

(a) In principle, all of them differ because both the material product and services are treated equally by the SNA methodology as contributing to the value of production.

(b) As the Yugoslav production aggregates are computed only at market prices, and those of the SNA methodology at market and factor cost prices, the difference between the two computation principles compensates somewhat for the value of services which are omitted from the Yugoslav official computation. This means that in practice the UN production aggregates computed at factor costs might approximate the value of material production estimated at market prices.

(c) Since the Yugoslav production aggregates are based on the value of domestic production, we may immediately conclude that the UN aggregates based on the national concept of production are not comparable to the Yugoslav aggregates. This is especially true for the aggregates computed at market prices.

(d) National income by the UN methodology, though reflecting the national concept of production, contains certain elements comparable with the relevant Yugoslav aggregates, since it equals, as we have seen, the net domestic product at factor prices increased only by the value of net factor income from the rest of the world, which in Yugoslavia's case is negligible.

4. Below, I present a comparison of the computations of Yugoslav production for 1956, 1957 and 1958 made by the official Yugoslav and UN methodologies. These computations permit the practical verification of the above mentioned conclusions.<sup>3</sup>

YUGOSLAV PRODUCTION VALUES ACCORDING TO UNITED NATIONS AND YUGOSLAV  
SYSTEMS  
(IN BILLIONS OF DINAR—CURRENT PRICES)

	1956	1957	1958
<i>According to UN System:</i>			
1. Gross domestic product at factor cost	1632	2053	2073
2. Gross domestic product at market prices	1822	2231	2260
3. Gross national product at market prices	1820	2226	2255
4. National income	1445	1859	1866
<i>According to the Yugoslav System:</i>			
5. Social product	1612	1991	1989
6. National income	1444	1829	1834
<i>Ratios between UN and the Yugoslav Systems of accounts (in percentages)</i>			
7. G.D.P. at f.c. : Social product (1:5)	101.2	103.1	104.2
8. G.D.P. at m.p. : Social product (2:5)	113.0	112.1	113.6
9. G.N.P. at m.p. : Social product (3:5)	113.0	111.9	113.4
10. Nat. income UN : Nat. income Yug. (4:6)	100.1	101.6	101.7

3. Grdjić, G., Uopredni proračun našeg narodnog dohotka po jugoslovenskoj i metodologiji Ujedinjenih nacija (Comparative Computation of the Yugoslav National Income according to the Yugoslav and Methodology of the UN); Statistička revija, No. 1-2/1959, Beograd.

As it appears from the data presented, all the aggregates according to the UN system are higher than the corresponding magnitudes computed by the Yugoslav system. However, while the gross domestic product at factor cost is higher than the Yugoslav social product by only 1.2 per cent to 4.2 per cent, and national income by 0.1 to 1.7 per cent, both of the remaining UN aggregates, given at market prices, are higher by 12.1 to 13.6 per cent. These ratio differences should be interpreted in the sense of the above mentioned considerations.

Thus, first of all, the UN aggregates computed on the basis of selling prices of material product and of services, must be higher than the value of the material product only by the value of services. Conversely, the value of material production at market prices compared with the UN aggregates at factor cost compensates for the largest part of the value of services which are not included in the Yugoslav computations. This has its economic-financial logic. All the services in the field of culture and education, health and social protection, banking and government in Yugoslavia, accounting for about 80 per cent of all the services performed in the country, are financed through various budgetary and similar channels whose revenues are derived from the state and contributions stemming from the national economy, i.e. from the market values of the material production. This means that 80 per cent of the services performed in the country enter into the value of material product if this is computed at market prices.

A considerably smaller part of the difference between the UN production aggregates and the Yugoslav aggregates stems from the special items in the respective methodologies. One of them is the factor income from the rest of the world, which for the years 1957 and 1958 was only 5 billion dinars. A somewhat greater difference results from the fact that Yugoslav social product computations include only the depreciation of fixed assets in the economy thus excluding depreciation in the sectors of noneconomic activities. In the years 1957 and 1958, the value of this part of depreciation was of the order of 27 billion dinars. Here, we can find the explanation of the better agreement of the national income estimates than of the computation of Yugoslav social product with UN gross product.

The magnitude of the value of services, formally omitted in the Yugoslav computations, and the part which is really computed by applying market prices can be measured by comparing the difference between the UN gross domestic product at market prices and at factor prices with the value of services only. The corresponding values (in billion dinars) are:

	1957	1958
Difference between the UN domestic product at market prices and at factor costs	178	187
Value of services	208	239
Ratio of the difference to the value of services (in percent)	85.6	78.2

This confirms the thesis that the value of material product at market prices approaches the value of material product plus services at factor cost. In this way about 80 per cent of value of services is accounted for. It shows that the choice of accounting prices is more significant for the comparability of production data than the application of one or other concept of production.

As a conclusion, it should be ascertained that there is no absolute comparability between the Yugoslav aggregates of production and the UN ones. However, an approximately comparable Yugoslav social product might be found in the UN gross domestic product at factor cost, and an approximately comparable Yugoslav national income in the same UN aggregate, or better still, in the net domestic product at factor cost.

5. The conclusion at which I have arrived relates only to the global values of various aggregates of production. We have seen that the differences between some of the UN aggregates and corresponding values of the Yugoslav statistics are not so large as we expected them to be according to earlier studies. However, the structure of production value according to the two methodologies would show larger differences. This is caused by the fact that all activities rendering services are omitted in the Yugoslav computations, and only activities of material production are included. The Yugoslav system of national accounts makes it possible to adjust the corresponding computations and to arrive at comparable data on an international level.

6. I am sure that this attempt has not cleared up all issues connected with the questions under consideration. It would be very interesting to make a comparative computation of this kind for a Western country, where the system of financing production of services is quite different. I think that such an attempt would show that the financial system of each country influences the income computations much more than we assume. This is another problem where further research would pay handsome dividends.

*L'auteur estime que les controverses théoriques relatives aux deux conceptions de la production ont abouti à un point mort et que la réponse à quelques questions doit être cherchée dans les résultats des recherches empiriques. C'est dans ce but qu'il présente les résultats auxquels il est arrivé dans ses computations de revenu national yougoslave d'après la méthodologie yougoslave qui part de la conception matérielle et la méthodologie des Nations Unies qui est typique pour la conception élargie de la production.*

*En comparant les résultats de ses computations d'après les deux méthodologies, l'auteur constate qu'en dépit des différences conceptuelles la déviation des agrégats yougoslaves par rapport aux valeurs calculées suivant le système des NU est relativement modeste (4,2%) si l'on prend ces valeurs pour le produit "domestique" aux prix des facteurs. La différence par rapport aux agrégats*

*calculées aux prix du marché s'élève à 13,6%. L'auteur explique ces différences par le fait que tous les agregats yougoslaves sont computés aux prix de marché et que les services financées par les contributions budgétaires, dont la part atteint 80% de tous les services, ont trouvé leur place dans les prix de marché de la production materielles. Il trouve que le choix des prix computés a un poids superieur pour le calcul de la production que les differences conceptuelles dans la méthodologie de ces calculs.*