

# PROBLEMS OF INTERNATIONAL COMPARISONS OF NATIONAL ACCOUNTING AGGREGATES BETWEEN COUNTRIES WITH DIFFERENT ECONOMIC SYSTEMS

BY M. A. JANSEN\*

This paper discusses a number of problems arising in comparisons of levels of national accounting aggregates between countries with different economic systems, notably between countries with market economies and countries with centrally planned economies. It considers problems arising from differences in the national accounting concepts used and problems arising from institutional differences, both of which are viewed as relating to the concepts on which the comparison should be based and the adjustment of national data to these concepts. The final section considers index number problems.

## I. INTRODUCTION

1. The purpose of this paper is to discuss a number of problems arising in comparisons of levels of corresponding national accounting aggregates between countries with different economic systems, notably between countries with market economies and countries with centrally planned economies. The paper is concerned only with what may be referred to as the detailed types of comparison, which involve the re-pricing of the elements of each country's aggregates in terms of the other country's prices, i.e., which take account of the differences in the purchasing power differences of the currencies of the countries involved in the comparisons. It is based mainly on the experience gained in a number of comparisons of this type which have recently been carried out under the auspices of the Conference of European Statisticians and elsewhere.

2. Detailed comparisons of levels of national accounting aggregates had already been carried out in the fifties (the comparisons made by M. Gilbert and I. Kravis under the auspices of the OECD, then OEEC) and the early sixties (the comparisons undertaken under the auspices of the Council for Mutual Economic Assistance). These comparisons, however, were limited to the member countries of the organizations concerned, i.e., to countries with similar economic systems. While there had also been a long-standing interest in comparing levels of product and related aggregates between countries with different economic systems (and a number of broader comparisons were made by individual research workers or institutes in the decade following the second world war), such comparisons, of a detailed nature, were only undertaken at a much later stage. The first study of this sort was a comparison of levels of consumption in Austria and Poland, which was undertaken at the initiative of the Conference of European Statisticians, and was carried out jointly by the statistical offices of the two countries concerned. The results of this study were published in 1959.<sup>1</sup> It was followed by two comparisons

\*The author is a member of the Secretariat of the United Nations Economic Commission for Europe. The views expressed here are his own and not necessarily those of the Secretariat.

<sup>1</sup>Comparison of levels of consumption in Austria and Poland, Statistical Standards and Studies No. 16, United Nations, New York (ST/CES/16).

of levels of production and productivity in industry, between Austria and Hungary and Czechoslovakia and France respectively.<sup>2</sup> The International Product and Purchasing Power Comparison Project which is being carried out under the auspices of the United Nations, in co-operation with the University of Pennsylvania, also provides for a number of comparisons between countries with different economic systems. This project is the most ambitious one so far undertaken not only in respect of the countries participating in it (countries with different economic systems; countries at different levels of economic development), but also as regards the subjects covered (the whole of expenditure on gross domestic product).

3. From the point of view of methodology, there is in principle little difference between comparisons relating to countries with different economic systems and those which relate to countries with similar systems. In the case of countries with different economic systems, however, the application of the methods raises a number of particular problems, which are not or not to the same extent encountered when the countries compared have similar systems. It is with this kind of problem that the present paper is concerned.

#### *Problems Arising from Differences in the National Accounting Concepts Used*

4. In any comparison of levels of national accounting aggregates problems arise as regards the selection of aggregates to be compared and the adjustment of the national aggregates to the definitions adopted for the purpose of the comparison.

5. In comparisons between countries with similar economic systems the international systems of national accounts and balances provide an appropriate basis for the selection of the aggregates to which the comparison should apply, and the definition of these aggregates, i.e., the System of National Accounts (SNA) for market economy countries and the System of Balances of the National Economy (MPS) for countries with centrally planned economies. Though in many cases the concepts used in national statistics may differ from the concepts as they are defined in the international systems, the modifications and adaptations needed for the purpose of international comparisons are usually relatively small, and do not raise major problems.

6. Much greater problems are encountered when countries are compared which have different economic systems and different national accounting systems. A first question which arises is whether the comparison should be based, in principle, on SNA concepts, or MPS concepts, on both SNA and MPS concepts, or on some "neutral" concept or concepts. The importance of this question depends on the scope of the comparison. If the comparison relates, for instance,

<sup>2</sup>Reports on the results of these comparisons, prepared by the Statistical Offices of the countries concerned are contained in the following documents of the Conference of European Statisticians:

Comparison of industrial production and productivity between Austria and Hungary (Conf. Eur. Stats/WG.21/8).

Comparisons of levels of productivity in Czechoslovakia and France (Conf. Eur. Stats/WG.21/9).

Comparative study of factors of labour productivity in industry in Czechoslovakia and France (Conf. Eur. Stats/WG.21/17).

to production and productivity in industry, the choice of concepts does not give rise to major problems in this respect, since there are only minor differences between the SNA and MPS concepts in question (and the concepts used nationally). It is of much greater significance, however, in comparisons relating to the whole of domestic expenditure, and some of its components such as consumption.

7. The choice of concepts will depend a great deal on the purposes of the comparison and the resources available for the study. In general it would seem that there are advantages in comparing national aggregates both on SNA and MPS concepts. This provides, of course, a more refined analysis of the differences between the countries studied. Also, for each of the countries participating in a comparison, it will probably be of more interest to see the results in terms of its own concepts, than in terms of the concepts used by its partner. And finally, if a comparison is based on both types of concepts, it provides information on the quantitative importance of the differences between them, which is of general interest.

8. It should be recognized that the concepts of the existing systems of national accounts and balances are not necessarily the best concepts for inter-country comparisons. The concepts of both SNA and MPS are in certain respects affected by the institutional situation in the countries concerned. Thus, for example, the SNA concept of final consumption expenditure of households is affected by the extent to which, and the way in which, the government participates in the finance of health services accruing to the population. This is a factor which needs to be taken into account in any comparison, but it gets particular importance in comparisons between countries with different economic systems. In certain cases, the use of concepts which are not affected by institutional differences may be more suitable than the SNA and MPS concepts as such. An example of such a "third" concept, which has been used in the Austria-Poland comparison, and which is also being applied in several other comparisons at present being carried out, is that of total consumption of goods and services of the population. The problems arising from institutional differences between the countries participating in a comparison are considered in more detail in the next section of this paper.

9. In practice, the definitions used in national statistics may deviate on certain points from those adopted in SNA or MPS. In these cases countries participating in a comparison may find it more convenient to carry out the comparison on the basis of their national concepts, rather than to convert them first to those of the international systems. Also in cases where the national statistics follow closely the international systems, certain deviations from the SNA or MPS concepts may be necessary for the purpose of the comparison. Thus, for instance, the margins of catering trades, and certain non-material services, such as hotels, holiday centres, financial and insurance services, zoological gardens, legal services and lottery margins were omitted from the scope of the Austria-Poland comparison of consumption, since it was felt that the data available did not permit a sufficiently reliable conversion of each country's data into the other country's prices.

10. When the concepts on which the comparison should be based have been decided upon, the next step is to adjust the national data to these concepts. The

conceptual framework for inter-system comparisons of concepts, which has been developed under the auspices of the Statistical Commission of the United Nations and the Conference of European Statisticians provides, detailed guidance to countries for carrying out the adjustments required.<sup>3</sup> However, it does not yet solve all the problems involved.

11. There are many differences between SNA and MPS concepts. The document on the conceptual relationships between SNA and MPS provides a relatively complete description of these differences. In the conceptual framework for inter-system adjustment developed in the same paper, however, adjustments are provided only for those differences which are likely to be important in actual comparisons, notably the following:

- (i) differences in the scope of productive activities (material and non-material in SNA; material only in MPS);
- (ii) differences in the treatment of expenditure by enterprises and other units on cultural, sport and similar facilities for their employees and of travel expenses in connexion with business (treated as intermediate consumption in SNA; and, insofar as they relate to goods and material services, as final consumption in MPS);
- (iii) differences in the distinction between fixed capital formation and capital formation in stocks (work put in place on structures, roads, dams, etc., which is treated as fixed capital formation in SNA and as capital formation in stocks in MPS) and differences in the treatment of losses;
- (iv) differences in the treatment of rents as a component of consumption (rents paid plus imputed rents in SNA; depreciation plus material cost involved in the provision of housing services in MPS);
- (v) differences in the allocation of final consumption expenditure between households and government, particularly in the allocation of health services, allocated to household consumption expenditure, if the households are relatively free to select the unit which is to furnish the goods and services and the terms on which they are to be supplied in SNA and to the unit which actually pays for the goods and services in MPS);
- (vi) differences in the treatment of direct imports and exports by households (included in imports and exports in SNA and treated as redistribution in MPS);
- (vii) differences in the treatment of employers' contributions to social security and pension funds (actual and imputed payments included in compensation of employees in SNA and actual payments only treated as payments out of the primary income of enterprises in MPS);
- (viii) treatment of the net income of unincorporated enterprises (included in operating surplus in SNA and in primary incomes of the population in MPS).

<sup>3</sup>See Conceptual Relationships between the Revised SNA and MPS, Report by the Secretary-General (E/CN.3/397/Rev.1). The final version of this document will be published shortly.

In addition, the paper on the conceptual relationships between SNA and MPS recommends that in actual comparisons, insofar as possible, account should be taken of differences between the two systems in the treatment of military expenditure and transactions in monetary gold. The adjustments required for this purpose are, however, not included in the conceptual framework.

12. Differences between SNA and MPS which are disregarded in the conceptual framework are the following: (i) in the definition of resident households; (ii) in the treatment of waste material bought from households; (iii) in the treatment of tips; (iv) in the treatment of uniforms; (v) in the valuation of capital consumption; (vi) in the scope of capital consumption (notably as regards roads); (vii) in the borderline between direct and indirect taxes; (viii) in the treatment of transfer costs in respect of fixed assets; and (ix) in the treatment of purchases and sales abroad of goods which do not cross the border of the country concerned. The paper suggests that these differences are likely to be of little quantitative significance for inter-system comparisons. However, while this is probably correct in the case of comparisons of the developments of corresponding aggregates over time, it would seem that in detailed comparisons of levels of aggregates, in certain cases, some of the differences mentioned may be of sufficient importance to be taken into account. The extent to which they should be taken into account will need to be considered in the context of each comparison separately.

#### *Problems Arising from Institutional Differences*

13. As already pointed out in the previous section, the comparability of national data is affected by institutional differences as well as by differences in the concepts used. The problems arising as a result of differences in the institutional arrangements are considered in more detail in the present section.

14. The main difference of an institutional nature between countries with centrally planned economies and market economy countries is that similar economic and social activities or functions are carried out by different institutions, or that similar institutions are engaged in different activities or functions. In inter-country comparisons, the main interest is in comparing flows and aggregates relating to functions which are comparable between the countries concerned (though, of course, it is also of interest to study the share of different institutions in these flows and aggregates in each of the countries). The concepts to be used for the purpose of the comparison should therefore relate to comparable functions, and should not be affected by the institutional arrangements by which these functions are carried out. The concepts of SNA and MPS do not meet this requirement in all respects. Two examples of this will be given in the following paragraphs.

15. The first example relates to differences in the participation of the government in the economic activity of the countries compared. In countries with centrally planned economies, government organs often engage in such functions as research and development, marketing, financing, controlling, the results of which are made available free-of-charge to enterprises. In market economy countries, these functions are performed to a much greater extent by the enterprises themselves, or by independent institutions, which sell these services to

enterprises. When the comparison is made on the basis of SNA concepts, this difference will show up as a difference in the contribution of producers of government services and industries respectively to the gross domestic product. This should not be considered as a lack of comparability, since these differences reflect the actual differences in functions carried out by the different institutions. However, the institutional differences may affect not only the breakdown of the gross domestic product by components, but also the level of total gross domestic product, namely to the extent that research services etc. are made available free-of-charge in one country and paid for by the other. In the latter case, at a same level of activities in the field concerned, the SNA gross domestic product will be higher in the country in which the share of services provided free-of-charge is the greatest, i.e. normally the country which has a centrally planned economy.

16. The second example relates to differences in the participation of the government in the provision of social services, say health services. In countries with centrally planned economies, health services are generally provided free-of-charge; in countries with market economies, different situations may exist: they may be provided free-of-charge, they may be paid for by the consumer and his expenses may be reimbursed wholly or partly in one form or another, or they may be paid for by the consumer and financed entirely by himself. For the purpose of inter-country comparisons the main interest is presumably in the total level of health services accruing to the consumer irrespective of how they are financed. The SNA concept of final consumption expenditure of households is not suitable for this purpose. In the way in which it is defined, and if it were applied to a country with a centrally planned economy, the health component would be zero (or cover only a very minor part of the health services accruing to the population). But even if the purpose of the comparison were to compare the expenditure of the population on health services, the SNA concept would not be adequate, since it includes, in addition to amounts paid by the population, also the cost of health services provided by the government, insofar as the households are relatively free to select the unit which is to furnish the goods and services in question and the terms on which they are to be supplied.

17. As already pointed out in the preceding section of this paper, in order to overcome the problems arising from the differences in the arrangements for the provision of social services to the population, it is desirable to make international comparisons on the basis of the concept of total consumption of the population, instead of (or in addition to) those actually applied in SNA and MPS. The concept of total consumption of the population covers all goods and services (material as well as non-material services) accruing to the population, irrespective of whether they are financed by the population itself, the government or enterprises. This concept is therefore not affected by the institutional arrangements in the countries concerned.

18. In principle, it might be possible to solve the problems arising from the other types of institutional differences mentioned above, in the same way, i.e. to adopt concepts for the purpose of the comparison which are not affected by these differences. However, the lack of comparability is in this case likely to be of much less importance, and it may therefore normally be sufficient to compile

some additional detailed data in the context of the study which permit assessment of the extent to which there is an element of incomparability in the results.

19. There are various other factors of an institutional nature which affect the comparability of the results of a comparison carried out on the basis of the existing SNA and MPS concepts. It is not possible, in the context of the present paper, to list them all, but the following further examples may be given:

- (a) There is an important difference between countries with centrally planned economies and market economy countries as regards the role of banks. In market economy countries, banks are business establishments the activities of which are financed from the income received from the sale of services (to a small extent in the form of charges for the services; but mainly in the form of the excess of property income received over property income paid out). In countries with centrally planned economies banks partly carry out the same functions, but to a large extent they also operate as financial agents of the government. In several instances the interest rates which they pay out are higher than the interest rates received (in these cases, the low interest rates charged are a form in which the government contributes to the finance of, for instance, investments by the population in dwellings). This means that it is not meaningful to make comparisons between the activities of banks in the two groups of countries. It also affects the comparability of total gross domestic product, if compiled strictly according to SNA concepts in the two countries. The comparability in this respect might be improved, if in the compilation of gross domestic product for a country with a centrally planned economy, banks were treated as "other producers" rather than "industries" in the SNA sense).
- (b) Also the concept of wages and salaries may be affected by institutional differences, namely to the extent that, in countries with centrally planned economies, an employee who is ill receives payment from the social security system, whereas in market economy countries, the employer may continue to pay out wages to employees on sick leave.
- (c) Finally, there are some differences between the two groups of countries as regards the contents of "insurance". For instance, in countries with centrally planned economies, health insurance does not exist; in fact there is no need for health insurance since the health services are provided free-of-charge (in a way, it might be assumed that the cost of free health services provided include the equivalent of a health insurance margin). If in a comparison of total consumption between a country with a centrally planned economy and a country with a market economy, health insurance is included in the case of the latter, its total consumption may to some extent be over-estimated.

#### *Problems Arising from the Conversion of National Data into Common Units*

20. The two preceding sections were both concerned with problems relating to the concepts on which the comparison should be based, and the adjustment of national data to these concepts. A number of further problems of comparability

arise in the conversion of national data according to the concepts selected into common units (i.e., in the calculation of index numbers showing the relation between the levels of corresponding flows and aggregates in the two countries) which need to be considered now.

21. The methods adopted are in principle the same in the various comparisons which have been carried out, or which are being undertaken. They involve the revaluation of each country's national aggregates in terms of the other country's prices. This may be done indirectly, by means of price indices, or directly, i.e., by multiplying each country's quantity data by the prices of the other country. As both the price indices and the quantity indices can be computed only on a selective basis, and the dispersion of individual price indices is usually lower than that of the individual volume indices, the first method is generally preferred. However, in certain cases, e.g., in the field of services, in particular services which are rendered free-of-charge or at a reduced rate, it is often more practical to use the direct method of computation of volume indices (i.e. physical quanta indices).

21. The problems of obtaining reliable inter-country price indices are very much the same in comparisons between countries with different economic systems as in comparisons between countries with the same systems, and therefore do not need to be considered here. Two special problems should, however, be mentioned:

- (a) In general the dispersion of price indices is likely to be greater between countries with different systems than between countries with the same systems. Therefore, in order to obtain the same level of reliability, larger samples may be needed than when countries with the same system are compared.
- (b) In the Austria-Poland comparison it appeared that for some products prices were very high in one country as compared to the other, and the quantities consumed very low (e.g. oranges and sardines in Poland, salted herrings in Austria). If the method of conversion generally used in the comparison had also been applied to these products, these items would have had an undue influence on the overall results. It would seem that in such cases, which are also likely to arise in other comparisons between countries with different economic systems, the best solution is, as was done in the Austria-Poland comparison, to treat the products in question as unique products.

22. A special problem arises in the case of goods and services which are provided free, or at considerably reduced rates, in one of the countries, and at the full price in the other, e.g. health services, medicine. From a technical point of view it would be possible to calculate price and quantity indices on the basis of the actual data. While this would not impair the quality of the individual index numbers, it would have the result that the goods and services get an unduly low weight in the overall indices when they are compiled on the basis of the prices in the country where the goods and services are provided free-of-charge or at reduced rates. The alternative solution, which in practice is usually adopted, is to use imputed values, instead of actual expenditure, i.e., in general the cost of the



goods and services provided. The price indices are then computed on the basis of imputed prices (e.g. in the case of medicines) or derived indirectly, on the basis of some kind of quantity index (e.g. in the case of health services): This implies that the price indices obtained do not reflect the relationship between the actual prices in the countries concerned, but between the prices used for the purpose of the comparison.