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Patterns of Development of Economic and Social Statistics

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PATTERNS OF DEVELOPMENT OF ECONOMIC AND SOCIAL STATISTICS

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I should like first—if you will allow me—to thank Professor Mahalanobis and Dr. Rao and the officials of the Institute for inviting me here and for giving me the pleasure of speaking to you. This is the first opportunity I have had of seeing on the spot the work of the Institute. Like many others, I have followed from afar with admiration the growth of the activities of the Institute over the years and the contributions it has made to the development of statistical techniques. As an immediate past President of the International Statistical Institute until a few months ago, I can ascribe to the status and to the deep respect with which the Indian Statistical Institute is regarded throughout the world. Because of this, it gives me the more pleasure in being present at this Convocation which marks for many of you, who have taken courses here, an important stage in your careers.

The crest of your Institute bears the words “Unity in Diversity”—that the same corpus of statistical methods and techniques can be used in so many diverse fields. This does not mean that all the range of techniques are equally important in their application to different forms of enquiry. Taking a census of population raises some problems not faced in measuring variations in crop yields on an experimental farm and vice versa. The essential unity however of the corpus of statistical methods has been of immense benefit to the development of economic and social statistics about which I will later speak more fully and to the fact that those concerned with them benefit from the techniques which have already proved useful in genetics, agriculture and other fields.

But this unity is not something which will occur henceforward automatically and without conscious effort to ensure it. Now that the range of statistical applications is widening so fast in so many countries and in so many subject fields—in all there must be now thousands of persons engaged in statistical work—deliberate action to exchange statistical experience between different subject fields and between different countries needs to be encouraged. In this task your Institute plays an important role for India in the same way as the Royal Statistical Society does in London and the International Statistical Institute does collectively for statisticians throughout the world. It is against this background that I should like to speak about the development of economic and social statistics.

Some economic statistics have a long history in many countries since figures of population, industrial and agricultural output, employment, wholesale and retail prices, imports and exports, have become indispensable to those responsible for conducting the economic affairs of their countries. The United Nations, and particularly the Conference of Asian Statisticians, have attempted to build up such a consolidated list of basic economic statistics which developing countries ought to have and the United Nations and the Specialised Agencies have supplemented this by technical manuals on accepted methods of compiling these statistics.

But in many countries the pattern of development of their economic statistics has gone beyond such a basic list. It is true that in compiling the basic series there are difficult technical problems still to be tackled (the choice of fixed or moving weights and corrections for quality changes in price index numbers, use of sampling and computer techniques in compiling import and export statistics, use of spectral analysis in making seasonal adjustments to time series). Once, however, the most essential items in the list are started, then it becomes obvious that some series are more important in one country than another and that development of a statistical system of a country must be influenced by the nature of the domestic economy and also by the kind of economic policies the country is, or is intending to, follow. It is only to be expected that Malaysia has good statistics about rubber, Mauritius about sugar and Switzerland about hotels.

The kind of economic system being operated in a country might appear to exert a powerful influence on the statistics collected and the frequency they are obtained. In detail it does, but in the main, the differences in the range of statistics between countries are not so great as might be expected. Where the size of the public sector is large and more is controlled directly by the State, say in a Soviet type of system, the Government Statistical Services have to collect and analyse data in great detail. But in an opposite type of system, where the public sector is small, many of the same kind of detailed statistics are collected by firms in private industry themselves and summaries provided to the Governments. The net total of statistics collected between countries with different systems is not so divergent. The differences are in the organisational structure for collecting the statistics.

A significant change in the pattern of economic statistics came perhaps about 25 years ago with the recognition that this piecemeal development of different kinds of statistics was unsatisfactory and there was a need, irrespective of the size of the public and private sectors, for an integrated and interlocking system for the collection of economic statistics which would make them easier to fit together to show changes in the size of a country's national income and its components. This need was the counterparts of the thinking of economists and Governments that in considering the schemes or plans for economic and social development they should continually have before them analyses of how the economy of the country was progressing year by year and of measurements of the flow and use of resources. The traditional analyses

of economic statistics (output, prices and trade) needed to be re-examined to see how far they could be fitted together into an articulated system. The efforts to work out what such a system might be was reflected in writings in many countries in the 1940s and 1950s on "social accounting," "macro-economics," "material balances," all using the so-called national income approach. The first international model for a system of national accounts was issued, by the United Nations in 1954.

Although the concept of a national income approach is simple and is still simple, in practice the system of national accounts can be pulled out into quite elaborate models which are too sophisticated for all purposes in one country and too complex to be useful equally for advanced and for developing countries. On the whole the first international system of national accounts has stood up well in use but in retrospect it can now be seen to be influenced too much by the economic conditions prevailing the years following the second World War and the system has now to be extended in three major directions.

The first extension arose from the experience of users of the national income approach in considering plans for economic and social development of different countries. The use of the first national income and expenditure tables had been expository—to show the magnitudes of various factors affecting national income (capital formation, personal consumption, balance of payments) and to assess the current performance of the economy. The national income approach has now been used in simulating models for future economic development and this use in turn meant some recasting of individual tables into more useful designs.

The second extension arose from the need to make use of the work on input/output studies which had been developing separately and to incorporate them into the pattern of national income accounting.

Thirdly, most of the discussion about the form of national income tables took place in the 1940s when perhaps more emphasis was placed on the uses of physical material resources than on the financial flows needed to make these resources available. Work on the size and directions of these financial flows has gathered pace since then and there is now general agreement on standard forms both for flow of funds tables, as well as on input/output studies. During the last five years statisticians in Asia, Africa, America and Europe have been holding meetings to exchange ideas in how the three systems—national income and expenditure accounts, input/output studies and flow of funds tables—can be brought together into a single system and an international scheme to do this has now been prepared.

All these designs for a new framework for the development of economic statistics exert a powerful unifying influence in the pattern of the collection and analysis of economic statistics but let me give a warning. These designs rest on the assumption that the basic data are collected and are there to be fitted together. It is unfortunately

easier to produce apparently consistent estimates of national income and expenditure when there are still serious gaps in the basic statistics and the estimates prepared only paper over these deficiencies.

What the designs do however is to point out where the deficiencies are and to lead to a reappraisal of existing methods of collection and analyses—common base periods for index numbers, industrial and economic classifications, definition of units (establishment and farms). For example, indices of wholesale prices must be looked at to see whether the industrial sectors for which these are prepared are suitable for input/output studies. Is an industrial classification used in a census of population suitable also for a census of industry and for preparing analyses of profits and capital expenditure ? Information on each subject say industrial output to be obtained from short period returns from industry must be considered together and steps taken to ensure they are comparable in scope and definition.

So far I have spoken mainly of economic statistics rather than those for social statistics. A similar kind of framework as proposed for economic statistics is not easy to create for social statistics. Some key social statistics can be obtained from the working of social security schemes but in many countries there are few States schemes for social security and in any case the statistics derived from these schemes are particularly affected in scope and definition by the form of the social security schemes in operation.

The same initial kind of approach therefore has been suggested for social statistics as for economic statistics, namely to attempt to build up a basic list of social statistics which a country might seek to have. For items for inclusion in this list an examination has to be made of those indicators which might be regarded as being the more important in measuring the changes in the standard of living (mortality rates, literacy, education, health, food expenditure) and to seek to obtain data for compiling these indicators. Sample surveys have proved successful in collecting data on some of these characteristics from households and such surveys have the advantage of getting data which can immediately be related with each other, something which has not been possible hitherto with data obtained from institutional sources.

There is now a move in many countries to improve the scope of social statistics which are perhaps in the same stage of development as economic statistics were 20 or 30 years ago. Two promising directions to make progress have been urged. The first is to start more so-called "cohort studies" and "longitudinal studies" by which the social experience of the same groups of individuals are kept under review from year to year. (Essentially this is somewhat similar to the 'generation techniques' used in measuring improvements in mortality and morbidity experience of successive generations). It will be readily realised that difficult sampling and other technical problems are involved in undertaking these kind of studies. The second direction is

to try and remedy the weakness of data obtained from institutional sources such as social security schemes, by using computer techniques to transfer data for the same persons from different sources into one data bank whence comparable data for the same persons can be drawn for analyses. This again raises problems of confidentiality of records, choice and criteria for common numbering systems, and of techniques of automatic editing and computation.

These kinds of developments in social statistics as those I mentioned earlier for economic statistics cannot be achieved without there being organisations and trained staff to carry them through. They raise important considerations for statisticians themselves—

- (a) the first is perhaps obvious, namely that the character of statistical work is becoming more technical and it must be done by persons familiar with the latest technical techniques. The days in this field are over for the gifted amateur and are now passed to the gifted professional.
- (b) since by now many statistics are obtained, not as a by-product of administration over which the statistician had little control, but from statistical investigations planned as such from beginning to end, then the practical job of an economic or social statistician is not only to give mathematical advice say on sampling but to be able to conduct and supervise the statistical investigations from the start right up to the tabulation of final results. The statistician has become both an engineer and an architect.
- (c) the third and perhaps the most significant change arises from the fact that the kind of statistics now being dealt with are more sophisticated in content and the techniques employed are more elaborate. The statistician who supervises the collection of the data is the person most aware of the limitations to be placed on the results. He must be prepared therefore to do more than interpreting the results obtained and to counsel those who use his findings.

But there is one other change in the pattern of development which is taking place and may eventually affect profoundly the work of the statistician in economic and social statistics. The emphasis so far in many countries, as I have mentioned, has been in analysing how the economy is progressing and in assessing the range of possibilities of suggested changes in economic and social policies. When this stage has been reached, the emphasis is moving now to using statistical techniques in the managerial and executive functions in putting such policies into effect. Just as Professor Mahalanobis has spoken of statistics as the new technology, so ideas are put forward of statistics forming a new and powerful arm of the Government service. Their aim is to bring into the service of the Government—no less than in private industry

and trade—the full range of statistical techniques which have been developed—sampling, operational research, econometrics, computer techniques, cost effectiveness and systems analysis.

This is appropriately the point for me to end this address for it has brought me back to what I stressed in my opening remarks about the relationship between economic and social statistics and work in other branches of statistics. I hope the new and stimulating developments taking place in economic and social statistics will in their turn feed back methods and techniques which will be of value in other fields of statistical enquiry. In some countries the banyan tree, which is also on the crest of your Institute, does not grow so well as in India.