Main features on conduct of survey work

(Indian Experience)

Introduction

The need for developing a sound data base in respect of various socio-economic fields was keenly felt for country's planning and filling up the data gaps for compilation of GDP. It was recognized that for a huge country like India, large scale sample surveys could provide data on various sectors of the economy, which was observed by the National Income Committee chaired by Late Professor P.C. Mahalanobis. On the recommendations of the National Income Committee, the National Sample Survey or NSS was set up in 1950. The primary task of this agency was to conduct comprehensive multi-purpose sample surveys designed to fill gaps in data needed for the estimation of national income and for planning for social and economic development.

In March, 1970, the NSS was reorganised on the recommendation of three member committee and all aspects of its work were brought under a single government organisation, namely, the National Sample Survey Organisation (NSSO) under the overall technical direction of a Governing Council to impart objectivity and autonomy in the matter of collection, processing and publication of the NSS data. The Governing Council was empowered to take all technical decisions in respect of the survey work, from planning of survey to release of survey results. After the formation of National Statistical Commission in 2005, the Governing Council of NSSO has been dissolved from 30.08.2006.

All technical decisions in respect of the survey work, viz. subject coverage, period of survey, schedule of enquiry, concepts and definitions, schedule of instructions, tabulation plan, release ad publication of results etc. are being taken by a Governing Council. But after setting up of National Statistical Commission, the Governing Council was replaced by a Standing Technical Committee constituted by the Commission. The Technical Committee consists of officials as well as non-officials members.

Organisational Structure

The NSSO is headed by the Director General and Chief Executive Officer (DG&CEO) who is responsible for co-ordinating and supervising all activities of the organisation and is assisted by a small secretariat called Co-ordination and Publication Division (CPD). The NSSO has four divisions:-

(i) Survey Design and Research Division (SDRD),
(ii) Field Operations Division (FOD),
(iii) Data Processing Division (DPD) and
(iv) Coordination & Publication Division (CPD).

An officer in the rank of Additional Director General heads each division except CPD, which is headed by a Deputy Director General.

Role and functions of NSSO (FOD)

The Field Operations Division (FOD) is responsible for collection of data from the field on various surveys of the NSSO. The FOD with its Headquarters at New Delhi and Faridabad functions through a network of 6 Zonal Offices (ZO), 49 Regional Offices (RO) and 116 Sub-Regional Offices spread throughout the length and breadth of the country and has a staff of about 4000. The division is headed by Additional Director General (ADG), while each ZO is headed by Deputy Director General (DDG), 21 State Capital RO's are headed by DDG.

The subjects of the various surveys conducted by NSSO are listed below:

(i)   Household Socio-Economic Surveys in the form of Rounds covering topic like employment/unemployment, consumer expenditure, social consumption, housing condition of people, land holdings, livestock holdings debt and investment, etc.

(ii)   Annual Survey of Industries (ASI) under Collection of Statistics Act, 1953 and Collection of Statistics (Central) Rules 1959 covering registered manufacturing sector.

(iii)   Providing technical guidance to the State field personnel and exercising supervision over the primary fieldwork of area enumeration and crop cutting experiments through Improvement of Crop Statistics (ICS) scheme.

(iv)   Urban Frame Survey (UFS) with a view to prepare an aerial frame of compact areal units called urban frame survey blocks for use in selection of first stage units in socio-economic surveys in urban areas. In a period of 5 years all the urban areas are covered by updating the blocks or by creating new blocks in case of growth in the existing towns and declaration of new towns.

(v)   Collection of (a) retail price data for and on behalf of CSO for construction of Consumer Price Index for Urban Areas and (b) rural retail price data along with price data for the daily wage rates of 18 major agricultural and non-agricultural occupations for and on behalf of Labour Bureau for building up Consumer Price Index for Rural Laboureres CPI(RL) and Consumer Price Index for Agricultural Laboureres CPI(AL).

(vi)   Follow-up surveys of Economic Census to cover economic activities in unorganized sector including manufacturing, trade, transport, hotel and restaurants, medical, educational, personal services etc.

Besides, Methodological studies and Pilot surveys on important subjects are also conducted from time to time to develop suitable methodology for undertaking surveys covering new subjects. The FOD also undertakes adhoc surveys like Working Class Family Living Surveys for updation of weighting diagrams for CPI for Industrial Workers and Baseline Survey on Wellbeing of Children and Women in connection with the institutional requirements of UNICEF.

Socio-economic Surveys:

The growth of National Sample Survey Office (NSSO) is synonymous with the successful conduct of large scale sample surveys by it, on various socio economic issues, to provide a stable and reliable data base for the economic and social development planning in the country. The first round of NSS was conducted from October 1950 to March 1951 covering 1833 rural First Stage Sampling Units (FSUs) all over the country to collect data on land utilisation, prices of selected items, wage rates and consumer expenditure. A total of 8000 FSUs are being covered in both rural (4516) and urban (3484) areas in the ensuing 69th round for the central sample. Besides there are 9112 state samples, rural - 4912 and urban- 4200.

The Socio-economic surveys are conducted in the form of rounds, each round being normally of duration of one year, generally July to June synchronizing with the agriculture year in the Indian context. The entire period of one year is divided into 4 sub-rounds of 3 months each. This helps in building up progressive estimates of aggregate as also takes care of seasonality, if any, available in the character(s) under study. There were occasions a round was conducted for a period of six months. For example the NSS rounds 47, 49, 54, 58 and 60 were conducted for six months duration. Currently 69th Round is also of 6 months duration.

One of the specialties of these surveys is that each one is a multi-subject integrated survey. An integrated survey may be defined as one in which data on multiple subjects are collected from the same set of primary sampling units or secondary sampling units or ultimate sampling units. This enables study of relationships of items belonging to different subjects. For example, in NSSO surveys data on unemployment and consumer expenditure are collected sometimes from the same set of households or sometimes from a different set of households within the same sample village. Along with this, sometimes data are also collected from a set of enterprises belonging to the same set of sample villages. However integration is done considering the factors like nature of subjects, sampling frame, type of sampling units, sampling design etc.

The general sampling design is a stratified multi-stage design for NSS surveys. The first stage units are villages in the rural sector and urban blocks (UFS blocks) in the urban and ultimate stage units (USUs) are households/enterprises. While for the selection of FSUs aerial frame is available, for USUs there is no readymade frame available. All the households/enterprises are listed within the selected FSUs. The list serves as frame for the households/enterprises. In order to reduce the listing work in the larger FSUs, these FSUs are divided into smaller units more or less equal in respect of population content. These units within the selected FSU are called hamlet groups (hgs) in rural sector and sub-blocks (sbs) in urban sector. Hgs/ sbs are called intermediate stage units. Two or three such hgs/sbs are selected randomly and listing is done from these selected hgs/sbs.

Reference period refers to the period to which the data relates. Reference period should not be too long; otherwise the data collected will not be of requisite quality due to the recall lapse of the informant. On the other hand, if the reference period is too short, it may miss some of the relevant items/ situations from coverage. The duration of the reference period depends upon the items on which information is collected. In NSSO inquiries, a moving reference period of 365 days is used for collecting information on usual status of persons in Labour Force Surveys; consumption expenditure on durable goods, clothing and foot-wear in case of consumer expenditure survey; net addition to fixed assets, number of months operated and number of other economic activities undertaken in enterprise surveys. A moving reference period of 30 days is usually adopted for recording the data on consumer expenditure. Last month is used as the reference period to collect information for various receipts and expenses as well as employment, emoluments, rent, interest and value added in the enterprise surveys. For deciding the current status of persons in employment and unemployment survey, a period of 7 days prior to the date of survey is taken as a reference period and the labour

time disposition of the persons for all the 7 days is recorded. Adoption of a moving reference period ensures coverage of entire period and eliminates the seasonality effect when aggregated over entire period.

In Socio-economic surveys data are normally collected through interview method where interviewer interviews the respondent and collects the information as per requirements in the pre-designed schedule. The main types of bias in this method are:

(i) Response biases- Tendency of over stating education, occupation, expenses, age (for old) and understating age for (young, middle aged), income, production, preferences of numbers like multiple of 5 or 10.

(ii) Biases arising from non-response.

(iii) Interview biases-Answers given by suggestions from the interviewer may be influenced by the interviewer's beliefs and prejudices in interpreting some questions.

The NSS data on socio-economic surveys are regularly released through reports and quarterly publication **"Sarvekshana"** issued by the Coordination & Publication Division. The validated unpublished data, after deleting identification particulars to maintain confidentiality, is also supplied to data users in the form of hard copies or on magnetic media on payment basis.

Agricultural Statistics:

Collection of Agricultural statistics in India is primarily the responsibility of the States. The yield rates of principal crops are estimated through General Crop Estimation surveys (GCES) conducted by the State agencies. The area, yield and production statistics thus obtained from the different States are compiled and published at the National level by the Directorate of Economics & Statistics, Ministry of Agriculture. The FOD is entrusted with overall responsibility of assisting the States in developing suitable survey techniques for obtaining reliable and timely estimates of crop area and yield, providing technical guidance to the State field personnel and exercising supervision over the primary fieldwork of area enumeration and crop cutting experiments through Improvement of Crop Statistics (ICS) Scheme.

Initiated in 1973-74, the ICS scheme aims at locating, through the joint efforts of the Central and State Authorities, lacunae, if any, in the system of estimation of crop production and suggests remedial measures. The scheme is currently in operation in 20 States and two UTs. To achieve this objective, the scheme provides for exercising checks on work relating to crop production statistics on three aspects, namely area enumeration, area aggregation and conduct of crop cutting experiments (CCEs). The programme of sample checks envisaged under the scheme include (1) physical verification of crop enumeration in a sample of 10,000 villages, (2) checking the accuracy of area statistics submitted through crop abstracts in the very same 10,000 villages (3) providing technical guidance and supervision at the harvest stage in the conduct of a sample of about 30,000 CCEs distributed among States for principal crops. The sample checks on aggregation of area figures above the village level (Tehsil, and district) in a few selected districts is also done as a part of the programme of work.

The total sample size for check on area enumeration is distributed among the different States on a joint consideration of crop area and value of production. Within a State, villages are allotted to the districts in proportion to gross cropped area in the district. The sampling design adopted for selection

of villages is that of stratified random sampling, where a tehsil/anchal/sub-division/block/taluka or a group of them based on geographical contiguity and cropping pattern forms a stratum. While selecting the villages, it is prescribed that as far as possible, the CCEs to be inspected be located within the sample village selected for check on area. Shortfall, if any, in the requisite quota of a stratum is to be made up by selecting from the corresponding GCES list for the stratum.

Agricultural Statistics wing of FOD is responsible for sample design for collection of data, tabulation, analysis and publication of State wise and All India report under ICS Scheme. A report on "Consolidated Results of Crop Estimation Surveys on principal Crops" based on information from State Agricultural Statistics Authorities (SASA) is also brought out by them every year.

Industrial Statistics:

In the broad sense, the term statistics by Industry of origin refers to statistics relating to any one of the following activities Agriculture, Mining & Quarrying, Manufacturing, Electricity, Gas & Water Supply, Construction, Wholesale & Retail Trade, Banking & Finance, Transport & other services. However, the term "Industrial Statistics" refers to the statistics of manufacturing activity only.

As per the recommendations of United Nation's Statistical Office, Industrial enquiries are of three types viz. (1) infrequent enquiries (2) annual enquiries (3) more frequent than annual enquiries (MFTAE).

In India, the information in the field of Industrial Statistics is available on all these three enquiries. The Economic Census, carried out by the CSO, and the Census of the small scale sector industrial units, carried out by the Development Commission of Small Scale Industries (DCSISI), are examples of the infrequent enquiries. The main objective of such enquiries is to construct a frame of the industrial units and to provide benchmark estimates.

The Annual Survey of Industries (ASI) is the annual enquiry in the field of Industrial Statistics. It is conducted under the statutory provisions of the Collection of Statistics Act 1953, and the Rules framed there-under in 1959, except in the State of Jammu & Kashmir where it is conducted under the State Collection of Statistics Act, 1961 and the rules framed there-under in 1964. Deputy Director General of FOD is the Statistics Authority under the Act. The ASI is the most important source of information from the registered manufacturing sector. Geographically, the ASI extends to the entire country except the States of Arunachal Pradesh, Mizoram, and Sikkim and Union Territory of Lakshadweep. In terms of industrial Units, the ASI covers all the factories registered under section 2 m(i)& 2m(ii) of Indian Factory Act, 1948 and principal employers in Bidi & Cigar establishments registered under the Bidi & Cigar workers (condition of employment) Act,1966. Previously all the electricity Undertakings registered with the Central Electricity Authority and departmental units such as Railway workshops, Road Transport Corporation Workshops, Government Mint, Sanitary, Water Supply, Gas Storage, etc were also covered under ASI. These have now been excluded from 1998-99 onwards and required information is being collected directly by CSO. The number of factories surveyed in a year is now around 62,500. Data under the ASI are collected through a comprehensive schedule. The ASI schedule consists of two parts. Part I, relates to details on fixed assets(block-C), working capital and loans(block-D), employment and labour cost (block-E), consumption of fuel and lubricants, raw materials (block-H) and other expenses (block-F), imported items consumed (block –I), products and by-products manufactured ((block-J) and other output/ receipts (block-G). Part II relates to Mandays work of absenteeism, Labour Turnover etc. Tabulation and processing of the data are done by CSO (IS-Wing) in respect of Part I and Labour Bureau in respect of Part II of the returns.

The CSO publishes Annual survey of Industries results of the factory sector in two volumes reflecting important economic characteristics at 2/3 digit level of industrial classification by States/Union Territories and 4-digit level of industrial classification at all India level. The Volume-I presents data relating to capital, employment and emoluments and several economic parameters relevant to industrial sector which, among others, include (i) number of factories; (ii) fixed/working capital; (iii) total inputs; (iv) total output; (v) depreciation; (vi) net value added etc. The Volume-II of the publication provides details on material consumed and ex-factory value of products and by-products both at all India level as well as at the level of State/UTs. With effect from ASI 2004-05, the Vol-II publication, which used to be quite bulky, is published in e-media only. The index of Industrial production is released through a press-note. In addition the production data of selected industries at all India level are published in "Monthly Abstract of Statistics".

Price Statistics:

Changes in prices influence all economic activities. Constant watch on prices is thus necessary for monitoring and regulation of economic policies. Knowledge of price movement is required for planning and policy making. The changes in prices are measured by the statistical device of index number. For construction of price index numbers price collection is the most important thing.

NSSO has been collecting price data since its first Round (1950-51). Along with the socio-economic surveys, wholesale and retail prices were collected by the NSSO till the 13th round. These were collected from randomly selected centres located in the rural and urban areas.

A **Consumer Price Index (CPI)** is designed to measure the changes over time in the general level of retail prices of goods and services consumed by a reference population. At the national level, there are four Consumer Price Index (CPI) numbers. These are:
(i). CPI for Industrial Workers (IW),
(ii) CPI for Agricultural Labourers (AL),
(iii) CPI for Rural Labourers (RL) and
(iv) CPI for Urban Non-Manual Employees (UNME).

The term Quotation in price collection signifies the price/rate actually paid by the consumer for the specified item (commodity/service) to a selected outlet at a point of time. One set of price Quotations means a set containing one price Quotation for every item relevant to the centre.

A price quotation is characterised not only by the outlet and the specification of the item (in terms of its quality, size, grade, fineness etc.) but also the standard unit (in terms of weight or measure) and the time of price collection. The unit of purchase is important since the same item may be sold in different weights or measures/different proportionate prices. The time of price collection is also important in view of the likelihood of a regular pattern of variation in prices during the different weeks of a month.

Thus the essential characteristics of a price quotation are:

- The prices should confirm to the prescribed variety and specification of the commodity/service, during each period of reporting
- The order of visit to the shops followed should be the same in different months so as to ensure that the time interval between the two consecutive quotations of a shop is a month. Price should

be collected preferably during the same hours, particularly for perishable items like vegetables, fruits etc.,

- Preferably the same Investigator should collect the price data from the same shop month after month
- The prices should be those paid by the Consumers in actual transaction for the specified units of quantity and inclusive of sales tax or other local taxes charged from the consumer and net of deductions like discount, rebate etc. given
- In collecting the prices, there should be an intelligent appraisal of the general market behavior and purchasing habit of the respective segment of population.

Urban Frame Survey (UFS):

For the urban sector, earlier Census Enumeration Blocks (EBs) formed at the time of Population Census were used as the frame. However, due to certain problems in identification of EBs over the years, NSSO resorted to preparation of an independent frame in the urban areas. The very same connotation of urban area as adopted in the Population Census is taken. Under this programme, each urban town is divided into a number of compact aerial units called UFS blocks bounded by natural and permanent boundaries that can regarded as permanent entities like roads, streets, railway line, canals, rivers etc. The blocks are mutually exclusive and exhaustive so that the areas of blocks carved out in any given town add up to the total area of the town. Generally, the size of a block for UFS: 2007-2012 was 80-200 households. The block size was less than 80 households under special cases like business/ bazaar area or areas having scattered settlement (new colony, etc.) similarly, the block size can be more than 200 households under special cases like a single house with multi-storied flats occupied by 500 households as entire house will form one block and no artificial division of the house is to be reported for block formation. The total area of a town is sub-divided into clearly demarcated geographical area (much larger than a block), surrounded by prominent/ permanent boundaries. Each sub-divided area that would consist of about 20 to 50 blocks in general is described as IV Unit. For an outgrowth of a town in an urban agglomeration, it is necessary to prepare separate IV Unit and in such cases the size of IV Unit can be less than 20 blocks. IV Unit and UFS block boundaries will not change with change in ward boundaries from the phase 2007-2012 and would be frozen. Therefore, the foremost emphasis will be given to permanency of the boundaries will ensure easy identification over a period of time. In a good number of cases, inconsistencies were observed between the population of a block as reported in the UFS and the population of the block actually reported in the listing schedule during the fieldwork of any NSS round. Therefore, it was decided that during UFS phase 2007-2012 there would be no estimation of block population. Number of household in each block is to be obtained by complete enumeration.

The frame is updated after every five years in a phased manner.

Adhoc Surveys:

An ad-hoc survey is one, which is not covered in 10-year NSS cycle. Some of these including (a) Enterprise survey on Hotels & Restaurants, Transport, storage & Warehousing and service (1983-84)   (b) Directory Manufacturing Establishment (1984-85)   (c) Directory Trading Establishment Surveys (1985-86) and (d) Working Class Family Income & Expenditure Survey (1999-2000).

Methodological Studies:

Methodological studies are pilot enquiries which are undertaken to examine the feasibility of launching regular surveys, test new concepts and procedures before being used in the main survey,

compare different set of procedures etc. In the initial days, NSS undertook several pilot surveys to develop and improve survey techniques. Some of the important pilot surveys undertaken by NSSO are given below:

(a) Pilot surveys on integrated short schedule on consumer expenditure :

An integrated short schedule 16(P) on consumer expenditure and employment and unemployment was tried out along with the main survey on consumer expenditure (Schedule 1.0) and employment and unemployment (Schedule 10) during the 38th Round of NSS (January to December 1983). This experimental study, however, was conducted only in two States, namely, Tamilnadu and Punjab in one of the sub-samples of 2nd and 3rd sub-rounds sample villages and blocks of the main 38th round survey. While the first stage units were kept the same as in the main survey, 10 households from among the households not surveyed during the main survey were selected for canvassing the short schedule. In each State, 64 villages and 32 blocks were surveyed. The main object of canvassing this short schedule was to explore the feasibility of collecting reasonably reliable data from the households through a much shorter schedule than the usual long one. The study does not provide any positive evidence to suggest the equivalence of the two approaches at the State level, the limited nature of the study and its end results do not seem to be conclusive enough to take a decision that the short schedule 16 (P) is a suitable replacement for the long schedule 1.0.

(b) Pilot survey on income, consumption and savings:

With a view to explore the possibility of evolving an operationally feasible and technically sound methodology for collection of data on income through household approach a pilot survey on income, consumption and savings was carried out during September 1983 to December 1984. The survey was conducted in 100 villages and 80 blocks in the States of Tamilnadu, Maharashtra, Uttar Pradesh, Orissa and Haryana and cities of Delhi and Kolkata. The experience reveals that the realistic information on income survey is obtainable only from employee category class of people with more or less fixed service. It is difficult to obtain information from self-employed category especially from traders and small manufacturers due to recall lapse as well as fear of taxation etc. and as such the data collected may not be realistic one.

(c) Pilot survey on suitability of different reference periods for measuring household consumption:

Sample surveys on household consumption expenditure have been carried out in many rounds of the NSS ever since the inception of NSS in 1950. Apart from quinquennial surveys an annual series of smaller scale consumer expenditure surveys is continuing from the 42nd Round (1986-87) to fill the data gaps. Doubts were being expressed from time to time about the suitability of the 'last month' reference period. Accordingly, a pilot survey was conducted by NSSO in 1986-87 in rural and urban areas of 5 States to examine the quality of data collected by interview method with 'last month' or 'last week' as reference period. Unfortunately, due to processing problem, no result could be made available for this pilot study. In the meantime comparative studies of 'last week' and 'last month' reference period were carried out during NSS Rounds 51 to 54 (i.e. during July 1994 - June 1998). The major finding of these rounds was that the week-based estimates were about 30% higher than the month based estimates for items of food, pan tobacco and intoxicants.

At the instance of Governing Council of NSSO, another Pilot Survey was conducted by NSSO in 5 states of India including the 4 big cities, during January-June 2000 under the guidance of Expert Group set up by the Department of Statistics & Programme Implementation. The main object of this pilot survey was to collect data on household consumption with three different periods namely 'last

month', 'last week' and 'day (or yesterday)', for items of food, pan, tobacco and intoxicants with a view to ascertain the most suitable reference period for collecting data on these items. NSSO provided some containers and a diary to the sample households for more accurate reporting of the actual consumption on a daily basis. The results of the study were published in report entitled 'Results of a Plot survey on Suitability of Different Reference Periods for Measuring Household Consumption' (Report No. 475). According to the study, 'last month' reference period is appropriate for cereals and products, milk (liquid), milk products (other than liquid milk), sugar and salt. However, for item groups of "pulses and pulse products" and "other groups of food, pan tobacco and intoxicants (including fruits and vegetables)", reference period of 'last week' is more suitable than last month.

(d) Pilot survey on manufacturing and trading establishments in the informal sector:

The NSS has been conducting sample surveys since its inception covering unorganized sector enterprises relating to manufacturing, trade, transport, hotels and restaurants etc. The main aim of these surveys has been to estimate the total number of enterprises, number of workers, gross value added per worker and per enterprise, in addition to other related aspects of enterprises. There is a general feeling that the trade margins estimated from the past NSS surveys were under estimated. The NSS surveys of manufacturing enterprises seem to have yielded comparatively satisfactory estimates of gross value added, but further improvements are desirable. To improve the methodology of data collection from the unorganized sector trade enterprises two Pilot surveys were conducted during 1996. The results of these pilot surveys could not provide any evidence that their methodology was an improvement on the one that was already being used by the NSS.As another attempt, a Pilot survey on manufacturing and trading enterprises in the informal sector was conducted during March, 2000 to June 2000. The objective of the pilot survey was to improve the methodology of data collection of NSS surveys on manufacturing and trading enterprises through reduction of non-sampling errors. Together these two sector account for about 70% of all enterprises/workers in the informal non-agricultural sector of the Indian economy. Sectors like hotels and restaurants and various types of services were left out in the interest of having a sharper focus in this Pilot Survey. The survey covered 200 villages and blocks from 10 purposively selected NSRO's.