REPORT OF THE
COOMMITTEE ON REAL SECTOR STATISTICS

Constituted by National Statistical Commission, Govt. of India

15 JULY 2018

Forwarding Letter

New Delhi
15th July 2018

Dear Dr. Barman,

It gives me great pleasure in submitting this report of the Committee on Real Sector Statistics. I would also like to take this opportunity to thank you and the members of the National Statistical Commission (NSC) for giving us the opportunity to prepare this report, which seeks to address some of the most important challenges facing the strengthening of the data base of the Indian economy.

It was decided during the second meeting of the committee that, in view of the large size of the committee, it would be best to undertake the substantive work of the committee through a set of sub-committees:

i) The sub-committee on agriculture sector statistics, chaired by Shri Pratap Narain,
ii) The sub-committee on industrial sector statistics, chaired by Prof. Biswanath Goldar,
iii) The sub-committee on services sector statistics, chaired by Dr. A.C. Kulshrestha,
iv) The sub-committee on linking old and new GDP series, chaired by Prof. N.R. Bhanumurthy,
v) The sub-committee on IT enabled data system and Micro-Macro data linkages, chaired by Dr. Ashok Nag, and
vi) The sub-committee on coordination, chaired by myself

The main work of the committee has indeed been undertaken through these sub-committees. I would like to record my gratitude to these sub-committees, and especially the chairpersons, for preparing their reports and recommendations thoughtfully and in a very timely manner purely as a labour of love. Our committee report is largely based on these sub-committee reports and recommendations. I would also like to thank the secretariat of the committee in MOSPI, in particular Shri Pravin Srivastava and Shri S.V. Ramana Murthy, for facilitating the work of the committee. I am also very grateful to Shri Praveen Kumar of National Institute of Public Finance and Policy for assisting me in the production of this Report.

Finally, I would like to apologise in advance for the many infirmities of language or typographical errors that may have remained. The committee had been appointed by you and the NSC. Hence, we were keen to submit the report before the end of your term. Though the committee's own term has been extended to October of 2018, we decided to accelerate our work and submit the report to you today, prior to your final NSC meeting scheduled for 16-17 July, 2018. The report has just been finalised at the committee's meeting held on 13th July, 2018 following discussions and agreement on several suggested changes in the draft report. We have had only forty eight hours to incorporate all these suggested changes. There has been no time to have the report professionally edited. Should the NSC decide to have the report professionally edited at a later stage before publishing it, I would be happy to help during the term of our committee, which continues till October 2018.

Thanking you again on behalf of the Committee on Real Sector statistics and on my own behalf.

With best regards,

Sudipto Mundle
Chairman
Committee on Real Sector Statistics

Dr. R.B. Barman
Chairman
National Statistical Commission
New Delhi

LIST OF ABBREVIATIONS

API	Agricultural Prices in India
APMC	Agricultural Produce Marketing Board
ASI	Annual Survey of Industries
CC	Compilation Categories
CCE	Crop Cutting Experiments
CCS	Cost of Cultivation Studies
CEA	Central Electricity Authority
CGWB	Central Ground Water Board
CIN	Corporation Identity Number Or Company Identification Number
CSO	Central Statistics Office
CMFRI	Central Marine Fisheries Research Institute
CIFRI	Central Inland Fisheries Research Institute
CMIE	Centre for Monitoring Indian Economy
DAHD	Department of Animal Husbandry, Dairying & Fisheries
DE	Departmental Enterprises
DES	Directorate of Economics & Statistics
DESMOA	Directorate of Economics and Statistics, Ministry of Agriculture
EARAS	Establishment of an Agency for Reporting Agricultural Statistics
ESU	Employment and Unemployment survey
XBRL	Extensible Business Reporting Language
FAI	Fertilizer Association of India
FAO	Food and Agriculture Organization
FISIM	Financial Intermediary Services Indirectly Measured
FHP	Farm Harvest Prices
FSI	Forest Survey of India
GCES	General Crop Estimation Survey
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
GVA	Gross Value Added
GVAPW	Gross Value Added Per Worker
HSD	Horticulture Statistics Division
ICS	Improvement of Crop Statistics
IIP	Index of Industrial Production
ILC	Indian Livestock Census
INAS	Indian National Accounts Statistics
ISS	Integrated Sample Survey
KAU	Kind of Activity
KVIC	Khadi and Village Industries Commission
LIM	Labour Input Method
LUS	Land Use Statistics
MCA	Ministry of Corporate Affairs
MNCFC	Mahalanobis National Crop Forecasting Centre
MoA	Ministry of Agriculture
MOSPI	Ministry of Statistics and Programme Implementation
MOWR	Ministry of Water Resources
NAD	National Accounts Division
NABARD	National Bank for Agriculture and Rural Development
NAS	National Accounts Statistics
NDE	Non-Departmental Enterprises
NIC	National Industrial classification
NIPFP	National Institute of Public Finance and Policy

NHB	National Horticulture Board
NPISH	Non-profit Institutions Serving Households
NSS	National Sample Survey
NSSO	National Sample Survey Office
NSC	National Statistics Commission
NTFP	Non Timber Forest Products
NRMC	National Resource Centre for Meat
PCCF	Principal Chief Conservation of Forest
PLFS	Periodic Labour Force Survey
PFCE	Private Final Consumption Expenditure
PPI	Producer Price Index
RBI	Reserve Bank of India
SASA	Agricultural Statistics Authorities (SASAs)
SFD	State Forest Departments
SNA	System of National Accounts
SUT	Supply Use Table
TOF	Trees Outside Forests
TRS	Timely Reporting Scheme
WPI	Wholesale Price Index

Contents

CHAPTER I: INTRODUCTION

I.1 The National Statistical Commission (NSC) chaired by Dr. C. Rangarajan made comprehensive and detailed recommendations for reform and strengthening of the Indian statistical system (NSC 2001). These recommendations have been subsequently updated and supplemented by successive National Statistical Commissions and other committees constituted from time to time to deal with one or another aspect of the statistical system. The present National Statistical Commission chaired by Dr. Radha Binod Barman (Barman Commission) appointed a number of professional committees to take forward the reform initiative vide its order No. F.No. 8(64)/2010-NSC dated 5 October 2016. The Committee on Real Sector Statistics is one of these professional committees constituted by the Barman Commission.

I.2 The Committee on Real Sector Statistics was initially chaired by Prof. B.B. Bhattacharya. Unfortunately, Prof. Bhattacharya was unable to convene any meeting of the Committee because of his severally debilitating health condition. Following his sad demise, Dr. A.C. Kulshrestha and Shri Pratap Narain convened the first meeting of the Real Sector Statistics Committee on 10 March 2017 as co-chairs. Subsequently, Prof. Sudipto Mundle, Emeritus Professor, National Institute of Public Finance and Policy, New Delhi was appointed as the Chairman of the Real Sector Statistics Committee on 17 April 2017. The second meeting of the Real Sector Statistics Committee was convened on 22 May 2017 under his chairmanship. Given the large size of the Committee[1], it was decided at this meeting to undertake the substantive work of the Committee through a set of smaller and more focused sub-committees to be constituted in consultation with the Chairman of the National Statistical Commission[2]. These sub-committees[3] included the following:

i. Sub-Committee on Agriculture Sector chaired by Sh. Pratap Narain
ii. Sub-committee on Industrial Sector chaired by Prof. B.N. Goldar
iii. Sub-committee on Services Sector chaired by Dr. A.C. Kulshrestha
iv. Sub-committee on Linking Old and New GDP Series chaired by Dr. N.R. Bhanumurthy
v. Sub-committee on IT Enabled Data System and Micro-Macro Data Linkage chaired by Dr. Ashok Nag
vi. Sub-committee on Coordination chaired by Prof. Sudipto Mundle

I.3 These sub-committees proceeded with their tasks as per their terms of references and each sub-committee prepared an interim report. These interim reports were reviewed in the first meeting of the Coordination sub-committee held in Bangalore on 25 April 2018. The comments and suggestions on these interim reports were then incorporated in the draft final reports of the sub-committees which were again reviewed in the second meeting of the Coordination sub-committee held in New Delhi on 4 June 2018. This Report of the Committee on Real Sector Statistics is mainly based on the reports of the various sub-committees described above.

[1] The full list of Members of the Committee on Real Sector Statistics is given in Annexure I.1.
[2] See minutes of the second meeting of the Real Sector Statistics Committee held on 22 May 2017 in annexure I.2.
[3] See composition of sub-committees and their terms of references in Annexure I.3

I.4 The report consists of seven chapters, including this introductory chapter. Chapter II and its annexures deal with agricultural sector statistics. Chapter III and its annexures deal with industrial sector statistics. Chapter IV and its annexures deal with services sector statistics. Chapter V discusses alternative approaches for converting the old GDP series to the new base year 2011-12. It presents estimates of the old series of GDP and other macroeconomic aggregates converted to the new base year 2011-12 for the period 1993-94 to 2013-14 based on one of these approaches. Chapter VI discusses linking of macro-micro level data using IT enabled data system. Chapter VII presents a consolidated summary of the recommendations made in the preceding chapters.

Reference:

National Statistical Commission (2001), Report of the National Statistical Commission, Ministry of Statistics and Programme Implementation, Govt. of India, New Delhi, September 2001.

Annexure I.1

Committee on Real Sector Statistics

Composition*

1.	Dr. Sudipto Mundle Emeritus Professor National Institute of Public Finance and Policy 18/2 Satsang Vihar Marg New Delhi 110067	Chairman
2.	Dr. Pratap Narayan (formerly from NAD, CSO) B-286, Yojana Vihar Delhi 110092	Member
3.	Dr. A.C. Kulshreshtha Former Addl. DG, CSO (NAD) 208 E, MIG Flats Rajouri Garden New Delhi	Member
4.	Dr. Bimal K. Roy Indian Statistical Institute 203, B.T. Road Kolkata 700108	Non-Official Member
5.	Prof. Biswanath Goldar Institute of Economic Growth University of Delhi Delhi	Non-Official Member
6.	Dr. Rathin Roy Director National Institute of Public Finance and Policy 18/2 Satsang Vihar Marg New Delhi 11067	Non-Official Member
7.	Shri Ashok Kumar Vishandass Ex-Deputy Director General Central Statistical Office New Delhi	Non-Official Member
8.	Shri Alok Kar Visiting Scientist Indian Statistical Institute New Academic Bldg. 203, Barrackpore Trunk Road Kolkata 700108	Non-Official Member
9.	Dr. S. Chandrasekhar Associate Professor Indira Gandhi Institute of Development Research Gen. A.K. Vaidya Marg Goregaon East Mumbai 400065	Non-Official Member
10	Prof. Pami Dua Professor & Head Department of Economics Delhi School of Economics University of Delhi 110007	Non-Official Member

11.	Representative from Department of Industrial Policy and Promotion	Member
12.	Rep. from Ministry of Commerce & Industry	Member
13.	Rep. from Ministry of Corporate Affairs	Members
14.	Rep. from Ministry of Finance	Member
15.	Rep. from Department of Statistics & Information management (DSIM), RBI	Member
16.	Rep. from Department of Economic Analysis and Policy (DEAP) RBI	Member
17.	Rep. from Ministry of Agriculture	Member
18.	Rep. from Insurance Regulatory and Development Authority	Member
19.	Rep. from National Sample Survey Office	Member
20	Rep. from Ministry of Urban Development	Member
21	Rep. from Directorate General of Commercial Intelligence & Statistics	Member
22.	Rep. from Dept. of Science & Technology	Member
23	Director, DES, Gujarat	Member
24.	Director, DES, Uttar Pradesh	Member
25.	Director, DES, Puducherry	Member
26.	ADG (NAD), CSO	Member-Secretary

*Coopted members:
1. Dr. N.R. Bhanumurthi, Professor, National Institute of Public Finance and Policy, New Delhi
2. Dr. Ashok Nag, Director, Centre of Excellence in Analytics, NM University, Mumbai

Terms of Reference:

1. To review the status on implementation of recommendations of National Statistical Commission and subsequent committees of NSC to identify areas needing action for improving real sector statistics including Regional statistics consistent with SNA 2008.

2. To recommend suitable measures to strengthen systems and processes for collection, collation and dissemination of these statistics with possibility for improving timeliness.

3. To take stock of existing Information Technology deployment for collection of granular data from primary sources and recommends suitable measures to establish/revamp system for (1) processing and (2) period audit through deep drive of integrated system and recommend a nodal agency for data repository.

4. To examine present system for dissemination of data and recommend measures for improvement consistent with international standard namely SDDS.

Annexure I.2

Minutes of the Second Meeting of Committee on Real sector

The second meeting of the Committee on Real Sector Statistics was held at National Institute of Public Finances & Policy (NIPFP), Satsang Vihar, New Delhi on 22nd May, 2017 under the Chairmanship of Prof. Sudipto Mundle, emeritus professor at NIPFP. The list of participants is given at the Annexure.

A gist of deliberations and action points that emerged during the meeting are given in the following paragraphs:

The Chairman welcomed the participants and also expressed his happiness on the presence of Dr. R. B. Barman Chairman, National Statistical Commission (NSC) who has been taking keen interest in the functioning of the five committees constituted by NSC.

The NSC Chairman highlighted the concepts of macro-micro linkages in the context of three business committee set-up by NSC i.e. Real Sector, fiscal and financial committees. He emphasized on quality of data, audit trail of data, focus on administrative statistics through communication network, and the fact that information once captured gets into the institutional memory. Data collected at the district level should be easily aggregated to state and national level. The use of big data analytics in sectors such as agriculture was emphasized. He added certain data mining techniques can possibly be explored using information from the Data Lake, a well known Big Data terminology, including text, audio and video data.

The RBI made a presentation on micro-macro linkages based on their online reporting system. This was viewed as a case study on micro-macro linkages which needs to be adopted and emulated.

Further, Prof. Mundle expressed his concern about effective decision making in a committee with such a large number of members as in the real sector committee. He sought the members' opinion sectors on the constitution of sub-committees on various activities so as to make the work of the committee more productive and deliver some outputs within the time available. After deliberations, it was decided that much of the detailed work of the Real Sector Committee would be accomplished in a de-centralised manner through such sub-committees. It was agreed to constitute the following six sub-committees:

1. The Agricultural sector sub-committee,
2. The Industrial sector sub-committee, incorporating the corporate and the unincorporated institutional sectors
3. A sub-committee on the services sector, including non-government non-corporate institutions
4. The sub-committee on linking the old and new GDP series
5. A sub-committee on IT enabled data systems with micro-macro data linkages
6. A co-ordination subcommittee to coordinate and monitor the work of the other sub-committees

The Chairman, Real Sector Committee, will constitute these sub-committees in consultation with the Chairman, NSC, and its secretariat.

In view of the constitution of these sub-committees, and any other that may follow, Chairman, Prof Mundle desired that Prof Bhanumurthy, NIPFP and Dr Ashok Nag, Director, may be co-opted in the real sector committee.

One of the terms and reference of the Real sector committee was to review the status on implementation of recommendations of the National Statistical Commission on which a presentation was made highlighting the recommendation which were pending. It was suggested that the pending action should be referred to the relevant sub-committee now being established for further review and action.

The committee was also informed of the need for standardizing geographical location code. The government is coming up with a local government directory codes for easy data comparability, integration and inter-operability of data with state and sub-state level. The committee is requested to emphasis this as part of final recommendation.

The committee was also apprised of the recommendation of the committee on data management constituted by NSC under the Chairmanship of Dr. Suman Beri.

The meeting ended with a thanks to the Chair.

Annexure I.3

Sub-committees of the Committee on Real Sector Statistics

1. Sub-Committee on Agriculture Sector

Composition:

1.	Sh. Pratap Narain (formerly with NAD, CSO) B-286, Yojana Vihar Delhi 110092	Chairman (Non-Official)
2.	Sh. Ashok Kr. Bishandas Ex-DDG, CSO, MOSPI, Delhi	Member (Non-Official)
3.	Sh. Nand Lal, Adviser, Department of Agriculture, Cooperation and Farmers Welfare Ministry of Agriculture cooperation and Farmers Welfare	Member-Secretary

Terms of Reference: The sub-committee will deliberate with reference to the terms of reference of the main Committee in respect of agriculture Sector. Broadly, it will have the following terms of reference:

(i) Improving the access to data and its quality
(ii) Identifying data gaps
(iii) Addressing pending recommendations of NSC (Rangarajan Commission).

The Sub-Committee will engage itself in consultation process with Ministries/Depatts.at the Centre dealing with Agriculture Sector.

2. Sub-Committee on Industrial Sector

Composition:

1.	Dr. B.N. Goldar Institute of Economic Growth University of Delhi Enclave North Campus Delhi	Chairman (Non-Official)
2.	Sh. Aloke Kar Visiting Scientist ISI Kolkata	Member (Non-Official)
3.	Mrs. Geeta Singh Rathore DDG, Ministry of Corporate Affairs New Delhi	Member-Secretary

Terms of Reference: The sub-committee will deliberate with reference to the terms of reference of the main Committee in respect of agriculture Sector. Broadly, it will have the following terms of reference:

(i) Improving the access to data and its quality
(ii) Identifying data gaps
(iii) Addressing pending recommendations of NSC (Rangarajan Commission).

The Sub-Committee will also incorporate the corporate and unincorporated institutional sectors and engage itself in consultation process with Ministries/Deptts. At the Centre dealing with Industrial Sector.

3. Sub-Committee on Service Sector including non-government non-corporate institutions

Composition:

1.	Dr. A.C. Kulshreshtha Former ADG, CSO (NAD) 208E, MIG Flats, Rajouri Garden New Delhi	Chairman (Non-Official)

2.	Sh. Aloke Kar Visiting Scientist, ISI, Kolkata	Member (Non-Official)
3.	Sh. S.I.S. Naqvi Director, CSO (NAD)	Member Secretary

Terms of Reference: The sub-committee will deliberate with reference to the terms of reference of the main Committee in respect of agriculture Sector. Broadly, it will have the following terms of reference:

(i) Improving the access to data and its quality
(ii) Identifying data gaps
(iii) Addressing pending recommendations of NSC (Rangarajan Commission).

The Sub-committee will engage itself in consultation process with Ministries/Deptts at the Centre dealing with Service Sector.

4. Sub-Committee on Linking Old and New GDP Series
Composition:

1.	Dr. N.R. Bhanumurthy National Institute of Public Finance and Policy 18/2 Satsang Vihar Marg New Delhi 110067	Chairman (Non-Official)
2.	Shri S.V. Rama Murthy DDG, CSO (NAD)	Member-Secretary

Terms of Reference:

(i) To examine the old and new series for their linkages
(ii) To recommend suitable procedure for linking old and new series.

5. Sub-Committee on IT enabled data system and micro and macro data linkages
Composition:

1.	Dr. Ashok Nag Centre for Excellence in Analytics, NM University Mumbai	Chairman (Non-Official)
2.	Sh. Manoj K. Gupta Director, Computer Centre	Member-Secretary

Terms of Reference:

(i) To review the existing system of data storage and suggest measures for an integrated system of granular data.
(ii) To examine present system of dissemination of data and recommend measures for dissemination as per international standards.
(iii) To recommend suitable procedures for micro and macro data linkages.

6. Coordination Sub-Committee
Composition:

1.	Dr. Sudipto Mundle Emeriitus Professor National Institute of Public Finance and Policy 18/2 Satsang Vihar Marg New Delhi 110067	Chairman (Non-Official)
2.	Sh. Pratap Narain Formerly with NAD (CSO) Delhi	Member (Non-Official)
3.	Dr. B.N. Goldar Institute of Economic Growth Delhi	Member (Non-Official)

4.	Dr. A.C. Kulshreshtha Former ADG, CSO (NAD) Delhi	Member (Non-Official)
5.	Dr. N.R. BhanuMurthy National Institute of Public Finance and Policy New Delhi	Member
6.	Dr. Ashok Nag Director, Centre of Excellence in Analytics, NM University Mumbai	Member (Non-Official)
7.	ADG, CSO (NAD)	Member-Secretary

Terms of Reference:

(i) To coordinate and review the progress made by other Sub-Committees.
(ii) To suggest suitable improvements in their completed tasks.
(iii) To consolidate the reports of other Sub-Committees.

CHAPTER II: AGRICULTURE SECTOR STATISTICS

II.1. INTRODUCTION

II.1.1 Agriculture, as per the Industrial Classification includes crop husbandry, animal husbandry, fishery and forestry activities. In India agriculture is a way of life for rural population. It is the backbone of the economy because it provides food to the growing population of the Country. Its share in total GDP is about 17.9 per cent in 2016-17. It supports livelihood of more than half a billion people (52 per cent of the workforce). It is also an important source of raw material for agro-industries and an important consumer of many industrial products, particularly fertilizers, pesticides, agricultural implements and a variety of consumer goods.

II.2. PRESENT PRACTICE OF INDIAN NATIONAL ACCOUNTS STATISITICS (INAS) COMPILATION

II.2.1 Sectoring for compilation of INAS

II.2.1.1 The sector comprises crop husbandry, animal husbandry, operation of irrigation system, forestry and fishery. As per the current practice, agriculture sector estimates of GVA are being compiled separately for two broad groups of institutional sectors viz. Public (Departmental Enterprises) sector consisting of operation of irrigation system and Unorganized (Household) sector covering rest of the activities. The GVA for unorganized sector is being compiled using of “Production Approach” and “Income Approach” is adopted for irrigation activity.

II.2.1.2 In India the agricultural statistical system is very comprehensive and provides data on area and production under crops, land use, irrigation, land holdings, livestock, fishery, forestry, market intelligence including prices of agricultural commodities, etc. The system is decentralized and data are being compiled by mix of central and state governments. State Agricultural Statistics Authority (SASA) & State Forest and Fishery Departments located in each state, Horticulture Statistics Division (HSD), Central Marine Fishery Research Institute (CMFRI), Central Inland Fishery Research Institute (CIFRI), Forest Survey of India (FSI), specific commodities board play important role. Unfortunately comprehensive data on any segment is not available from any one source and there are duplications in the data supplied. Ministry of Agriculture and Farmers Welfare coordinate total data to provide the national level view. The value of output of each crop is obtained as the product of quantity & price. The estimates of area and production of principal crops are provided by the State Directorates of Agriculture / State Directorates of Economics and Statistics (DES), depending on whichever agency is declared as the State Agricultural Statistics Authority (SASA). In respect of horticultural crops, the information on area and production is taken from the State Directorates of Horticulture/SASAs/HSD, depending upon the data availability. In the case of sugarcane, output excluding the quantity converted into gur by the cane growers, is estimated and output from gur is evaluated separately.

II.2.2 Agriculture (Crop & Animal Husbandry)

II.2.2.1 The economic activities included in crop husbandry are:

a) growing of field crops, fruits, nuts, seeds and vegetables,
b) management of tea, coffee and rubber plantations,
c) agricultural and horticultural services on a fee or on contract basis such as harvesting, baling and thrashing, preparation of tobacco for marketing, pest control, spraying, pruning, picking and packing,
d) ancillary activities of cultivators such as gur making, transportation of own produce to primary markets, activities yielding rental income from farm buildings and farm machinery, and
e) Operation of irrigation system comprising supply of water through various Government channels to the agricultural producers

The estimates of GVA for the first four activities are compiled by the production approach while for the operation of government irrigation system the income method is followed.

II.2.2.2 Animal husbandry includes breeding and rearing of animals and poultry besides private veterinary services, production of milk, slaughtering, preparation and dressing of meat, production of raw hides and skins, eggs, dung, raw wool, honey and silk worm cocoons etc. At present the GVA of livestock is estimated separately.

II.2.2.3 Valuation of crop production is done by multiplying the quantities of production by the corresponding producer's prices (i.e. Farm Harvest Price). The source of data used in the preparation of the value of output is as under: (i) The estimates of outturn for principal crops are based on the results of the crop estimation surveys conducted annually by the State Government Agencies. These are compiled and published annually by the Directorate of Economics and Statistics, Ministry of Agriculture & FW. For evaluation purposes of these crops, the producers' prices correspond to average wholesale prices ruling in the primary markets during the peak marketing periods and are compiled by the State Directorates of Economics and Statistics (DESs). (ii) In respect of coffee, rubber and opium, the statistics of production and prices are available from the Coffee Board, Rubber Board and Central Bureau of Narcotics, respectively. In case of tea, the estimates of production available from Tea Board relate to production of processed tea, instead of raw tea leaves. The production of tea leaves has been estimated as 4.44 times the processed tea, the source of which is the Tea Board. (iii) In respect of unspecified and miscellaneous crop and crop groups viz. (a) other cereals, (b) other oil seeds, (c) other sugars, (d) other fibers, (e) dyes and tanning material, (f) other drugs and narcotics, (g) other condiments and spices, (h) other fruits and vegetables and (i) miscellaneous crops (fodder, grass, misc. food and non food crops), the out turn estimates are not directly available for all these crops. To the extent possible, data on related crops are utilized. The value of output in respect of these crops or crop groups is estimated by utilizing the area estimates under these categories or crop groups as available from the annual publication, 'Land Utilization Statistics (LUS)' of DESAg and DESs. By applying an appropriate value per hectare (VPH) to the total estimated area under each of these groups/crop groups, the estimates of value of output are obtained. (iv) For estimating the value of by-products, viz. straw and stalks of various crops, annual data on value per hectare as available from the cost of cultivation studies coordinated by the Ministry of

Agriculture & FW, are used. (v) In respect of fruits and vegetables crops and floriculture, a complete database, state-wise, is published HSD, Ministry of Agriculture & FW. (vi) For estimating the production of crops in foreyard/backyard of houses, information available in the report "Operational Land Holdings in India, 1991-92, Salient Features" March 1997 and Livestock Holdings, 1991-92, NSS (48th Round) has been used to estimate the total area under the kitchen garden. Using the results of this survey, it is estimated that the total area under kitchen garden works out to be 0.21 per cent of the total net sown area at all-India level.. For deriving the value of output of crops in foreyard/backyard, the VPH of fruits and vegetables crops is used.

II.2.2.4 The Livestock sector for the purpose of estimation of value of output has been divided into 7 broad groups. The groups are: (i) Milk, (ii) Meat, (iii) Eggs, (iv) Wool, (v) Dung, (vi) Silk Worm cocoons and Honey, and (vii) Increment in livestock. Valuation of Livestock production is done by multiplying the quantities of production by the corresponding producer's prices. The source of data used in the preparation of the value of output is as under: (i) The State Animal Husbandry Departments compile the estimates of milk, eggs and wool based on the results of Integrated Sample Surveys (ISS) and the 5-yearly livestock censuses. These production estimates are used for estimating value of output from these products. ii) Meat group comprises of Meat (Beef, mutton, pork including edible offal and glands and poultry meat), meat products (fats, heads, legs) and by-products comprising hides (cattle and buffalos hides), skins (goat & sheep skin) and other by-products (guts, blood, bones, horns, hoofs, tail stump, useless meat and esophagus). The State Animal Husbandry Departments and State's Directorate of Economics and Statistics (DES) maintain these data. iii) The estimates of other meat products and by-products are based on rates and ratios estimated by National Research Centre on Meat (NRCM) through a specific study. The estimates of poultry meat are prepared using the information on utilization of eggs and chicken survived. These data are collected through ISS. Poultry meat is estimated in terms of number of adult fowls & chickens killed. iv) The estimates of goat hair and pig bristles are prepared on the basis of information on yield per animal collected through the studies carried out by the CSO. v) The estimates of production of dung are prepared on the basis of information available through ISS. Dung is used as manure as well as fuel. The utilization rates of dung (a) used as manure and (b) used as fuel are based on past studies of the Ministry of Agriculture & FM/ ISS. (vi) The estimates of production of silkworm cocoons by types (viz. mulberry, tasar, ericot and muga) obtained from Central Silk Board and Khadi and Village Industries Commission (KVIC) respectively are the source. vii) The annual net increase in the population in each state is estimated respectively for each category of livestock on the basis of livestock population projections. The population is projected on the basis of inter census population growth of animals. viii)The prices of livestock products are collected by State DESs.

II.2.2.5 The following are the sources and procedures followed by States for estimating the value of inputs. The inputs of crop sector and livestock sector have been segregated separately by apportioning the common input such as (I) Feed of livestock, (II) Expenditure on current repairs, maintenance and operational cost, (III) Market charges and (IV) FISIM between crop sector and livestock sector. Details of selected items are given below:

II.2.2.6 Seed: In 2011-12 series, State-wise seed replacement rate (rate of replacement of ordinary seeds with hybrid seeds) has been used on the irrigated area to estimate the

irrigated area under a crop for which hybrid seeds are used. For this part of irrigated area, price of seed as derived from CCS has been used for estimating the value of seed. For the remaining irrigated area and the un-irrigated areas, quantity of seed used per hectare has been evaluated with farm harvest price, to estimate the value of seed. However, in the case of paddy, sugarcane and potato, price of seed as derived from CCS has been used for the crop cultivated in both the irrigated and un-irrigated areas. The seed rate (Kg / hectare) is taken as average rate estimated from the latest five year data of CCS (2007-08 to 2011-12).

II.2.2.7 Fertilizer/Manure: The estimates of consumption of chemical fertilisers in different States are published by the Fertilizer Association of India (FAI). The estimates of organic manure, is the same as the output of dung manure included under the livestock output.

II.2.2.8 Feed: Estimation of Livestock feed has been done using consumption approach rather than production approach. The procedure uses the following source data: (i) animal feed consumption rate (Dry Fodder, Green Fodder, and Concentrates) from a research study done on “India’s Livestock Feed Demand: Estimates and Projection”, jointly conducted by Centre of Economics and Social Research and National Centre for Agricultural Economics and Policy Research, published in the year 2010; (ii) livestock population as per ILC-2012; and (i) price of feed calculated from the Cost of Cultivation Studies (CCS), 2010-11.For distribution of feed of livestock between crop sector and livestock sector, it is assumed that feed of livestock used for crop production would be total feed consumed by Adult Buffalo (Male) and Adult Cattle (Male). From the total feed of the livestock, the value of feed consumed by the livestock used for crop production is subtracted to arrive at the value of the feed consumed by the livestock for the livestock sector.

II.2.2.9 Irrigation Charges: The information on receipts from water rates which include payments made by the agricultural producers to the government in lieu of water supplied to them from Government owned canals and other means of irrigation is compiled from the State Government budget documents. Similar information in respect of irrigation system from Government tube wells operated by District Panchayats and State Water Resources Development Corporation Ltd. is also used while estimating the value of irrigation charges.

II.2.2.10 Market charges: It comprises of both (i) Agriculture and (ii) Livestock. (i) The estimates of market charges paid by agricultural producers for various commodities are prepared by the CSO and are made available to states. These are estimated using the data available from the survey on market margins on major crops, which is conducted by the DESAg, at the time of revising the base year of national accounts series. The rate of market charges to total value of output is derived from these studies and is applied on the value of output at State and Central level, each year till the rate is revised again at the time of next base year. (ii) Market charges in respect of meat are estimated on the basis of MR on meat as prevailing in the base year.

II.2.2.11 Pesticides and insecticides: The Estimates of pesticides and insecticides are based on the data on quantity and prices of pesticides obtained from the Directorate of Plant Protection,

II.2.2.12 Electricity: Electricity supplied to agriculture sector is taken as input, information for which is available from the Annual Accounts of State Electricity Boards.

II.2.2.13 Diesel oil: The estimates of diesel oil are prepared by the States based on consumption of diesel oil per engine and per tractor as collected through the Cost of Cultivation Studies. The information on the state-wise number of tractors in operation was earlier available in the Livestock Census. This information is no longer available in the Indian Livestock Census. For 2011-12 series, the number of tractors has been revised using number of tractors sold in last 13 years (excluding exports) from the report of "Agricultural Research Data Book 2013" and per tractor value of diesel oil consumption, as per CCS, 2010-11. The number of tractors in operation has been estimated on the basis of number of tractor sold in last 13 years on the assumption that the service life of a tractor is 13 years. The data on number of diesel engines at State level, is available from the Indian Livestock Census (ILC)

II.2.2.14 Repairs and maintenance: The estimates of repairs and maintenance are prepared by CSO using the results of 'All India Debt & Investment Surveys'. Repairs, maintenance and operational cost consist of expenditure on repair and maintenance in Orchards & Plantation Resources, Wells & Irrigation, Agricultural Machinery & Implements and Transport Equipment, Barns & Animal Sheds, Other Costs and Operational Cost of livestock. Of these, expenditure on Barns & Animal Sheds, Other Cost and Operational Cost on livestock are allocated to livestock sector and rest to crop sector.

II.2.2.15 FISIM: The imputed bank charges or FISIM for the agriculture sector and Livestock sector are taken in proportion to the GVA of this sector.

II.2.3 Forestry and Logging

II.2.3.1 The economic activities under this head include (i) forestry (e.g., planting and conservation of forests, gathering of forest products, charcoal burning carried out in the forests), (ii) logging (e.g., felling and rough cutting of trees, hewing or rough shaping of poles, blocks etc.) and transportation of forest products to the sale depots/assembly centers and, (iii) farmyard wood (industrial wood and fuel wood collected by the primary producers from trees outside regular forests). The forest products are classified into two broad groups viz., (a) major products comprising industrial wood (timber, Round wood, match and pulpwood) & fuel wood (firewood and charcoal wood) and (b) minor products comprising a large number of heterogeneous items such as bamboo, fodder, lac, sandalwood, honey, resin, gum, tendu leaves etc.

II.2.3.2 Estimates of GVA are prepared following the production method. Gross value of output is estimated separately for (a) Industrial wood, (b) Fuel wood and (c) minor forest products. Estimates of industrial wood from recorded forests are based on data received from the office of the Principal Chief Conservator of Forest (PCCF) in the state. For estimating the value of output of industrial wood, prices as available from forest sale depots and supplied by PCCF are used. Since the value of unrecorded production (i.e. authorized (but unrecorded) removals of timber from reserved/protected forests) is not available, 10% of the value of recorded production is taken as the value of unrecorded production. The data on output of industrial wood from "trees outside forests" (i.e. private owned forests and nontraditional forest areas like village commons, field ridges, canal sides, road sides, fruit

trees no longer productive etc.) has been provided by Forest Survey of India (FSI). Prices for the same have been derived from industrial wood prices of SFDs.

II.2.3.3 The value of fuel wood is estimated from the consumption side using the results of NSSO consumption expenditure surveys. The estimates so derived are reduced by the actual value of agriculture by-product, namely, cotton sticks, arhar sticks, jute sticks, rapeseed& mustard stick, sunflower stick, sesame, castor and bagasse, which is taken into account in the agriculture sector (to avoid double counting) since these by-products are also consumed as fuel by the households. These estimates are then inflated by 7.6%per cent (estimated from input-output tables) to account for consumption of fuel wood by the industries and on funerals. Estimates of minor forest products are based on data directly available from the office of the PCCF. Fodder from Forest sources has been included in the National Accounts Compilation. This item has been included in consultation with Ministry of Environment and Forests as part of Non-Timber Forest Products. The estimates of fodder are based on the study done by Forest Survey of India (FSI). The input ratio has been estimated on the basis of average expenditure on the purchase of goods and services and on repairs and maintenance of fixed assets to the total value of output of this sector in the Government Forest Departments during 2011- 12, which is 16.20 percent

II.2.4 Fishery

II.2.4.1 The activities covered under fishery are (i) commercial fishing in (a) ocean, coastal and offshore waters and (b) inland waters, that include catching, tackling and gathering of fish from rivers, irrigation and other canals, lakes, tanks, fields inundated tracts etc., (ii) subsistence fishing in inland waters and artificial ponds, (iii) gathering of sea weeds, sea shells, pearls, sponges and other ocean and coastal water products and (iv) fish curing viz., salting and sun-drying of fish.

II.2.4.2 Estimates of GVA of this sector are prepared by following the production method. Gross value of output is estimated from output and prices of inland, marine fish (including deep sea fishing) and prawns/shrimps (sold in raw form), sun dried fish, salted fish, frozen and smoking fish as furnished by the State Commissionerate/Directorate of Fisheries. Estimates of subsistence fishing are also included in the GSDP of the state. The value of inputs and operational costs is taken as 22.5%, 10%, 22.5%, 1% and 1% of the value of output for the items, marine fish, inland fish, prawns, subsistence fish and salted fish respectively.

II.3 DATA GAPS AND QUALITY ISSUES

II.3.1 IDENTIFYING DATA GAPS

II.3.1.1 Agriculture is the life line of the Indian economy and it plays an important role in supporting the livelihood of the rural population as well as in feeding a growing population. In early era land revenue was an important source of Government's income and so it has a well developed administrative set-up of data on land records. Being an important occupation and means to feed countries population a system was also designed to watch impact of weather vagaries on crops. Efforts have been devoted to improve the System from time to time.

Traditional "*Anavari*" system was replaced by "General Crop Estimation Surveys" for estimation of crop production based on sound statistical research. These efforts are still continuing to improve the system by using statistically techniques and remote sensing technology. Being a large size database its quality and coverage has been reviewed by a number of committees' set-up by Government of India. Important recommendations of a few important committees recently set-up are summarized below:

II.3.2 NATIONAL STATISTICAL COMMISSION (NSC)

II.3.2.1 NSC has done an in-depth study of the sector and deliberated on the data gap as well as it's quality for formulation of economic policy and plans. The NSC in its review noted serious gaps of crucial data for making policies and economic developmental plans for agriculture sector and made suggestions for use of data collected in Improvement of Crop Statistics (ICS) for enhancing quality of data, extensive use of data collected in Timely Reporting Scheme (TRS) in release of estimates, use of Remote Sensing Technique, strengthening of Mahalanobis National Crop Forecast Center (MNCFC), development of sampling design for estimating production of horticulture crops, imparting training of staff in collection of data on market intelligence, use of small area techniques, etc. NSC has made 73 recommendations for improvement of agriculture statistics. As per information available, so far 51 recommendations have been implemented and 18 are still pending. Another four recommendations relating combining two sets of data on crop production estimates conducted under General Crop Estimation Surveys and Crop Insurance Scheme and merging of agriculture & livestock census have been dropped. Details of these recommendations are given in Annexure II.1.

II.3.2.2 Taking into account NSC recommendations two Committees were constituted. The NSC constituted a "Committee on Agriculture and Allied Sector under the Chairmanship of Prof. Y K Alagh and Ministry of Agriculture, Cooperation and Farmer's Welfare constituted another committee "Committee on Improvement of Agricultural Statistics" under the Chairmanship of Professor A Vaidyanathan in August 2009. The Vidyanathan Committee submitted its Report in February 2011. All important recommendations of NSC relating to agriculture have been examined in detail by the two committees.

II.3.2.3 The Committee under the Chairmanship of Professor Y K Alagh has recognized deficiencies and limitations of existing agriculture statistics system and recommended generation of reliable estimates using Timely Reporting Scheme (TRS) and Improvement of Crop Statistics (ICS), increase in coverage of more crops, improving price statistics as well as ancillary data on markets, storage facility, etc. The Alagh Committee has also recommended setting up an Agro Climatic Information System as well as water and land related statistical system. A need has been recognized to bring together data collected by a number of public and private agencies on water and land. The multiplicity of agencies also creates conditions for the emergence of some conceptual confusions and statistical discrepancies. To avoid these problems and promote certain amount of standardization in data, the Committee has recommended creating an expert agency as a repository for all water and land related data which could establish a conceptual and methodological frame work. The Committee has also expressed a need to prioritize data in the sense that a core set of data on some of the key variables are assembled on a priority basis to help the

development of certain indicators that can show the overall physical, financial, economic, ecological and institutional health of the water sector.

II.3.2.4 The Alagh Committee has informed that the Ministry of Water Resources (MOWR) has recently released a Report containing a draft for “A National Framework Law for the Water Sector”. This Report provides for the development of “A Water Resources Information System” (WARIS). The Committee has recommends that the NSC may coordinate with the MOWR for the development of this system, but apparently no progress has been made in this direction. The Committee has also recommended use of small area estimation technique and collection of supplementary data for improving the system.

II.3.2.5 The Committee on improvement of agricultural statistics under the Chairmanship of Professor A. Vaidyanathan was set up by the Ministry of Agriculture to:

a. Review current methodology used in TRS/ EARAS/ ICS and GCES for estimating land use, crop area, yield and production estimates and suggest institutional framework for improvement of agricultural statistics; and
b. Review experience of RS technology for estimating area and yield of various crops, assess its potential for generating reliable and timely data and suggest measures to effectively exploit this potential.

II.3.2.6 The Vaidyanathan Committee recognized that the deficiencies in the current system of both area and yield estimation are not due to deficiencies in its design, selection of sample villages for collecting data on land use and crop area. These are based on rigorous and statistically sound principles. The Committee has recognized that the present system of recording these data must continue but steps must be taken to bring the responsibility for collection and supervision under State statistical agencies empowered to function as autonomous professionally managed organizations independent of administrative departments. The central government should support and encourage states to undertake these reforms. A radical restructuring of the system is necessary to ensure objective, reliable and timely estimates of crop wise area and yields. For this purpose the Committee has recommend setting up of a National Crop Statistics Centre (NCSC) as an autonomous, professional organization in the Ministry of Agriculture of the Government of India.

II.3.2.7 On Remote Sensing (RS) the Committee has recognized that the present RS program should be expanded and reorganized need of providing reliable and validated in-season forecasts and end-season estimates of area for a wider range of crops at the state and national levels; as well as comprehensive and detailed plot level data of land use and crops at the village level. It must be complementary to, rather than a substitute for, improving conventional methods of collecting these data. The availability of independent estimates of these aspects from the two approaches for common spatial units validated by independent actual conditions on the ground will help assess their reliability with greater confidence. As the capacity of RS to generate reliable and spatially disaggregated data is established, we could consider using it to reduce dependence on the human agency for collecting primary village level data.

II.3.3 MAHENDRA DEV SUB-COMMITTEE

II.3.3.1 Ministry of Statistics and Programme Implementation constituted a committee to review the issues relating to compilation of Gross Domestic Product and other key Macro-Economic Indicators. Under this Committee one "Sub-Committee on Agriculture and Allied Sectors" was constituted under the Chairmanship of Prof S. Mahendra Dev, Director, IGIDR, Mumbai. The Sub – Committee made an in-depth study of available data from various sources as well as the recommendations made by the two Committees and submitted its report in July 2014. The Mahendra Dev Sub – Committee reviewed all data gaps including review of all ratios, proportions and proxies used in compilation of national accounts aggregates and made 50 recommendations relating to data gaps and suggested some studies. While recognizing issues of getting reliable and timely data on area, production, prices and cost of cultivation, the Mahendra Dev sub-committee endorsed the views and the recommendations of the Vaidyanathan Committee for adopting a professional approach for data collection and processing of Agricultural Statistics. Recommendations of the Mahendra Dev Sub – Committee are given in Annexure II.2.

II.3.3.2 Out of total 50 recommendations made by the Sub – Committee 23 recommendations are such that the Sub-Committee felt that for the time being no action is required but attention needs to be given as and when resources are available. This includes cases where their contribution is insignificant (like other pulses, other fruits, other vegetables, etc.) and therefore existing practice of estimating productivity and prices may continue. In the remaining recommendations a need has been expressed to strengthen existing system. National Accounts Division has made efforts to examine fresh data from on other pulses, other fruits and vegetables and separated some crops for which data was available. Data from NSSO 68th round on toddy consumption has been utilized. National Accounts Division has also examined the Cost of Cultivation data available from State Governments[4] and noted that as the data are available only at one point of time it is not possible to use it in national accounts compilation.

II.3.3.3 The recommendations made by the Mahendra Dev Sub – Committee can broadly be grouped in five classes: (a) reliable crop statistics are available for only 41 crops and the coverage may be enlarged, (b) efforts should be made to collect data on all 244 horticulture crops using scientific methods, (c) Cost of cultivation studies may be strengthened to cover more crops, (d) ancillary data on agriculture activity may be collected, and (e) strengthening collection of data on forestry and fishery activities.

[4] At present, for compilation of gross value added from Crop Sector, following information is derived from unit level data collected under Cost of Cultivation Studies (CCS):

(i) Seed rate (kg/Hec.)/ value of seed used per hectare (Rs./Hec),
(ii) Value of output of by product per hectare (Value/Hec.)
(iii) Cost of human labour for factor shares (Compensation of employee)
(iv) Rent, Interest and Taxes (Mixed income / Operating Surplus)
(v) Price of green fodder and Dry fodder
(vi) Estimation of Diesel consumed Per tractor / Diesel Engine

The CCS results conducted by State Government under 13th Finance Commission were examined by the NAD and it was noted that the unit level data were not available and the data were collected only at one point of time and, therefore, it is not feasible to use this dataset.

II.3.4 DATA GAPS AND QUALITY CONCERNS

II.3.4.1 Agriculture is basically a state subject while statistics is on the concurrent list. Reliability, timeliness as well as coverage of data depend on action taken at the state government level. Role of national level agency is only to provide sound methodology and concepts for collection of comparable data and compile the data to get an all India picture.

II.3.4.2 Existing data gaps in compiling macro-economic aggregates have been reviewed in details by Mahendra Dev Sub – Committee and in-depth evaluation of existing system and recommendations for improving the same have been made by the Alagh and Vaidyanathan Committees. At this cross road it is necessary to examine ***what are the important issues that need to be addressed on priority basis to improve the coverage and quality of the system***. Important issues needing urgent attention can broadly be grouped in five groups:

(a) Improvement in coverage and timeliness of crop statistics including horticulture crops,
(b) Cost of cultivation studies to cover more crops,
(c) Improvement of animal husbandry statistics,
(d) Ancillary data on agriculture activity, and
(e) Strengthening collection of data on forestry and fishery activities.

(a) Improvement in coverage and timeliness of crop statistics

II.3.4.3 Utility of statistics of net/gross area sown and yield rate of crops, their timeliness and reliability for economic planning and policy making for the country as well as for welfare of farming community need no explanation. Although agriculture statistics system evolved over the years is working very well in states almost covering two-third of the crop area, serious lapses have been noticed in near past. In a sharp contrast with crop production data on food grains, fibers, and some other commercial crops, India had little success in developing a reporting system for production horticulture crops. Many states do not attach importance to provide timely data to the Ministry of Agriculture. It has also been noticed that State Governments are not devoting enough resources for the improvement of crop statistics. Despite coming-up of new crops, list of crop covered under land records rarely changes. Feedback from the Ministry of Agriculture, Cooperation and Farmer's Welfare indicates that recommendations of Alagh Committee for creating an Agro-climatic Information System Bank and setting up of National Crop Statistics Centre (NCSC) recommended by Vaidyanathan Committee have not taken shape. To improve the current situation the Sub-Committee recommends that:

1) To revive the importance of crop statistics, funds released for flood/ drought relief, crop insurance, subsidies, etc., should be based on data supplied to the Ministry.
2) It is necessary to make an ABC analysis to determine importance within state and relative importance at "All India" level to arrive at a minimum "crop x state" list to reach at pre-determined level of coverage in terms of availability of direct data (e.g. 80 per cent of production at state level and 70 per cent at all India level

are based on direct data). Such a list will trim list of crops/ state for collection of data and will save resources.

3) ABC analysis is also required to short list 244 horticulture crops. Although area under all horticulture crops must be estimated while undertaking agriculture census, state specific important crops may be included in land records. For these crops statistically sound approach may be developed to estimate production and input cost.

4) The estimates of crop production of principle crops are derived using the area and yield estimates which are derived at number of time point depending upon time and quantum data becomes available (e.g. first estimate is prepared on the basis of intention of crop proposed to be sown, previous year yield adjusted with weather factor). For estimating level of food production, import and export policy formulation, fixing of support prices, etc. these estimates are required by the Government. Ministries of Agriculture (DESAg) and Statistics (NAD, CSO) may come together to select estimates that should be used for timely compiling of macro-aggregates,

5) All data collected should be used. Two series of experiments conducted under the National Agricultural Insurance Scheme (NAIS) and the General Crop Estimation Survey (GCES) should be combined by making necessary changes in the design to improve the efficiency of forecast.

6) For improving reliability and timeliness of the data the present system will need increasing use of upcoming techniques such as remote sensing, multiple frame survey techniques, small area estimation technique, etc. A more efficient survey design based on agro-climatic zones. Sufficient resources may be provided.

7) A number of agencies are involved in collection of agricultural statistics. It is necessary to create a nodal agency in the Ministry of Agriculture to coordinate and consolidate data.

8) Data set on agricultural activity has a wide base spread over space and time. These data are required at various level of aggregation. To manage it in an efficient manner it is necessary to develop a state of art system in which data flowing from state government can be imported after quality check. The Food and Agriculture of the UN has created FAOSTAT keeping in mind similar approach

9) Existing nine fold classification need revision. The present classification under estimates agriculture production. The present classification was framed long ago to support revenue collection. The present classification is biased towards agriculture activity (crop husbandry, forestry and fishing activities) and does not take into account multiple use of land. This classification neither provides estimates of land used by all economic activities nor is it suitable for compiling land-labour ratio or environmental indicators. This data is also not suitable for land use planning. A suggested classification[5] is given in Annexure II.3.

10) Creation of dataset on Agro-climatic Zones provides useful cost-effective basis for collection of basic data for developmental planning. It is necessary to strengthen this field.

[5] Narain, P (2010): LAND USE CLASSIFICATION: CONCEPTS & METHODS-Towards an improved information basis, Paper submitted to Session 4.2 - Environment statistics including land and water use Core indicators, cross-sectoral indicators, etc., ICAS V.

(b) Cost of cultivation studies to cover more crops

II.3.4.4 One of the major data set is set of input going in production. Cost of production is required for estimation of value added, fixation of remunerative procurement / support prices. At present only limited data on quantity and value are being collected for selected crop. It is necessary to improve its coverage. A simpler approach would be use of data collected for conducting crop estimation surveys. For conducting a proper crop cutting experiment in a most objective manner a large amount of preparation is required which involves at least two visits to the selected plots. In these two visits a large amount of data, which are generally used to cross check the reliability of estimated yield, are collected. These data include area of the field, date of sowing of the crop, likely & actual date of harvesting, variety of seed sown, the name and time of the crop which was sown earlier on this plot, soil type of the field, source & number (frequency) of irrigation, seed rate, amount of fertiliser given in basel dressing & at subsequent stages, use of pesticides & insecticides, yield, plan for next crop on the same field, cultivator's remarks on factors effecting crop productivity, etc. Such data collected in the crop estimation survey schedule can be used for estimation of intermediate consumption for crops/ areas for compilation of national accounts where such data are not available from any other reliable sources like cost of cultivation studies. With the marginal increase in resources scope of this survey could be increased to cover additional information on farm harvest prices, etc. It is recommended that to make these data useful concepts and definitions may be formulated by Ministry of Agriculture and uniform procedure may be enforced in all states and union territory.

II.3.4.5 Concept of time use may be introduced in Cost of Production Surveys to standardised paid and unpaid family labour component for compiling estimates of factor share. This can also provide estimate of women's contribution in crop and animal husbandry activities.

(c) Improvement of animal husbandry statistics,

II.3.4.6 Animal husbandry is an integral part of agriculture in India. Apart from providing protein for human consumption, it also provides draught power for agriculture and other activities. It is also a supplementary source of income for farming community. Statistics on livestock sector comprises data on livestock numbers, feed and fodder, livestock health management, production of animal husbandry products, prices and cost of production of livestock products, etc. A major share of these data sets are collected in the "Integrated Sample Survey" conducted in the states/ union territories throughout the year under a Centrally Sponsored Scheme. It is recommended that the scope and coverage of the Integrated Sample Surveys may be expanded in a manner that reliable estimates of production are available at district level. The coverage may also be expended to include additional items like camel and sheep related products/ by-products. Animal husbandry activity in the unorganized sector is also quite substantial. It is recommended that periodical surveys may be undertaken to improve the coverage of the sector.

(d) Ancillary data on agriculture activity

II.3.4.7 More than two-third of the Indian population lives in rural area and their main livelihood is dependent on agriculture activity. One of the important policy objectives of the Government is to increase the welfare of the farming community and double their income. To

meet this goal it is necessary to carry out agricultural activity which is sustainable in the long run and can keep the natural resources intact.

II.3.4.8 A system that would meet these requirements efficiently needs data to carry out development, measure impacts of various policies and prepare plans for efficient use of scared resources by taking into account the social, economic and environmental factors. These three components include:

A. Development

- *Input needs of the sector*: ensure availability of agricultural inputs needed by the sector to guarantee plant nutrition and maintain soil fertility.
- *Technological developments*: encourage adoption of improved production technologies with respect to the utilization of labor, capital and natural resources (land and water).
- *Resource monitoring*: improved availability of credit.
- *Human resource development*: strengthen human resources (education, training and extension services) and institutional capacity.
- *Social welfare*: improve nutritional and health status and food quality.
- *General economic growth*: monitor needs for overall infrastructural development (roads, storage facilities, infrastructure for agro-industries, etc.) to induce rural development.

B. Impacts of various policy measures

- *Agricultural policy analysis*: living standards of the population dependent on agriculture, terms of trade between agricultural and non-agricultural households, price behavior of agricultural products and subsidies, grants and taxes related to the agricultural sector, generation of employment opportunities, development of agro-industries.
- *Linkages between agricultural activities and the ecosystem*: contribute to the development of irrigation systems that induce changes in the cropping system and improve the general environment.

C. Allocation of increasingly scarce natural resources

- *Land and soil*: initiate programmes for land conservation and rehabilitation.
- *Biological diversity*: provide resources for conservation and improvement of plant and animal genetic resources.

II.3.4.9 These issues do change from point to point at local level with the changes at local level e.g district, blocks, etc. Different types of efforts are required to review the basic needs of the place and make plans and policies. For a more acceptable proposal it is necessary to build a data base that could reveal **cause and effect relation** at grass root level. This calls for a bottom-up approach. Therefore, a system is required which provides ancillary and main data at local level with a link to macro-economic situation in the country.

II.3.4.10 Ancillary data set, therefore, start from bottom most unit of planning and finally linked to national level macro aggregates/ accounts. Such data set would include information for formulation and successful implementation of economic plans and polices relating to agricultural production and distribution and would comprise data on - (a) economics of

agricultural production units, (b) pattern of land use, (c) economic activity of the people living in the area, (d) status of infrastructure in the area, and (e) status of agricultural resources (land, irrigation system, etc.,). Study of the later type needs geo-referenced database on agricultural resources for direct linking policies and program to the place of action.

II.3.4.11 It is recommended that a system is created as a three tier set with accounts (recommended by SNA) and supporting statements. While the socio-economic data are common, data on natural resources (climate, soil and water) differs from one unit to other depending on the agro-climatic zone to which the unit belongs to. This system enables statistician to economize on resources needed for collection of data on natural resources that may also sometime need special high-tech scientific methodology and instruments. This system provides basis for "cause and effect analysis" suitable for the area. An over view of the system is given in Annexure II.4. The system assumes existence of three tier government having a regional and local level. This, however, depends on size of country. Integrated system is described below:

II.3.4.12 For creating internationally comparable consistent database the system is based on basic concepts given by UN SNA. Concepts and definitions given by the UNSNA need to be supplemented with the concepts given in the SEEA as well as the concepts and classifications of natural resources (land and soil degradation, agro-climatic zone concepts, etc. that are used by agriculture scientists).

II.3.4.13 The system uses concepts of regional accounts and satellite analysis to inter-link various databases. Keeping in view complexity of creating integrated accounts that includes environmental aspects and status of infrastructural support, satellite analysis has been included which link economic statistics to the physical data-base. The approach has added advantage of providing direct information on issues requiring attention.

II.3.4.14 The system propagates use of indicators originating from economic and environmental accounts as well as suggested by other studies. The set of indicators includes general purpose indicators on growth, share, etc.; agri-environmental issues; nutritional status; productivity; levels of living of agri-households; gender main-streaming; terms of trade; infrastructural development at national, regional and local level required for decision making. The system would be having micro-meso-macro level linkage for deciding inter-se priorities. The approach has in-built advantage of optimum use of partial data, even if sufficient/reliable data on all aspects of the economy are not available to compile a full sequence of accounts.

II.3.4.15 At national level the system is initiated with Supply and Use Table that has been linked to Accounts for Institutional (Corporate, NPI, households) Units, Agricultural Establishments related to agriculture activity, Satellite Accounts for Food Balances. In addition to this, data on work force, land use and current status of infrastructural development supplement the module. At the second (Regional/State) level data are compiled on agricultural institutions and establishments. Types of institutional units to be considered in the context of regional accounts are given in SNA 2008 (paragraph 18.47). Data base are built at the third (local/District) level which is the basic unit for decision making. Data on natural resources are collected based on agro-climatic zone in which the unit is located.

(e) Strengthening collection of data on forestry and fishery activities

II.3.4.16 Unlike agriculture (crop & animal husbandry) activity, data collection for forestry and fishery activity is not well organized. Main reason for this deficiency is that these activities are not divided to match with any sub-national level administrative boundaries. Forest is associated with range of forest which can cross not only district but also states. State of fishery activity is also somewhat similar.

II.3.4.17 Important data on forestry activity includes sawn wood, timber, poles, fuel wood, pulp & matchwood, raw material for paper and plywood industry, sal seeds, tendu leaves, gum & resins, cane & rattan, bamboo, grass & fodder, drugs, spices & condiments, herbs, cosmetics, tannins, etc. Apart from output from compact forest, produce from trees outside forest (like road side plantations) are also included. For compilation of macro aggregates data on prices of forest products, inputs and capital expenditure are also required Non-marketed output collected for own consumption by tribal and rural population also form a significant share. These data sets are collected through State Forest Departments, Forest Survey of India (FSI), Government Budget documents and ancillary data collected in sample surveys. With multiple agencies involved in collection of data and fragile boundary of forests (which are not convergent with state administrative boundary) there is a high risk of over/ under estimation of forestry activity. It is, therefore, recommended that a strong coordination unit may be established to consolidate total data and provide national level view with state wise details.

II.3.4.18 The Fishery and Aquaculture activity is important and growing industry. This industry covers capture and culture fish production, inland and sea fishing, aquaculture, gears, navigation, oceanography, aquarium management, breeding, seafood, special products and by-products, research and related activities. Fishery, like agriculture, is a state subject and data on fish production are collected by the State Government with the support of Central Marine Fisheries Research Institute (CMFRI) and Central Inland Fisheries Research Institute (CIFRI). As regards marine fisheries statistics is concerned sampling methodology in use is considered to be satisfactory, but in case of inland fishery the present system need to be reconsidered to develop a cost effective sampling plan. It is recommended that a special effort may be made for coordinating fishery statistics and develop technology for collection of data at reasonable cost and reliability.

II.4. INVENTORY OF ADMINISTRATIVE DATA OF VARIOUS CENTRAL / STATE GOVERNMENT DEPARTMENTS / AGENCIES

II.4.1. At present National Accounts Division, Central Statistics Office, Ministry of Statistics and Program Implementation compiles annual estimates of national accounts aggregates. Estimate of gross value added from Agriculture & Allied Sectors, which is part of this exercise, depends on the data being collected from other Central Ministries and State Departments. These data sets are either stand alone or are part of other data sets which are maintained by respective ministries. These data sets follow different software and are sometime in the form of hard documents. In the national accounts division data sets are maintained in the form of disaggregated worksheets and do not follow any organized pattern. List of datasets obtained from other ministries and as intra-unit exchange are given below. In the absence of any set pattern it is not possible to give any further details.

Sources of Data	Ministry	Concerned Department/ Office	Remarks
Agriculture Production Data	Union Ministry of Agriculture & Farmers Welfare	Directorates of Economics & Statistics	
		Horticulture Statistics Division	
		Directorate of Cashew-nut & Cocoa Development	
		Coconut Development Board (Statutory body)	
		Directorate of Areca-nut and Spices Development	
	Union Ministry of Commerce & Industry	Tea Board (Statutory body)	
		Coffee Board	
		Rubber Board	
	Union Ministry of MSME	KVIC	
	Union Ministry of Finance	Central Bureau of Narcotics	
	Union Ministry of Consumer Affairs, Food & Public Distribution	Directorate of Sugar &Vanaspati	
	Union Ministry of Textiles	Central Silk Board	
	Ministry of Forest and Environment	Forest Survey of India	
	Union Ministry of Statistics & PI	NSSO	Toddy, Grass Yield Rate, Firewood
	State Department of Planning	State Directorate of Economics & Statistics	Prices, Production, Area
Agriculture Input Data	Union Ministry of Agriculture & Farmers Welfare	Department of Animal Husbandry, Dairying and Fisheries	
		Directorate of Quarantine & Plant Protection	
		ICAR	
		Seed Association of India / National Seeds Corporation	
	Union Ministry of Chemicals and Fertilizers	Fertilizers Association of India	
	Union Ministry of Power	Central Electricity Authority	
	Union Ministry of Statistics & PI	Specialized Surveys by NSSO	

II.4.2 List of intra-unit datasets exchange between units of National Accounts Division for compilation GVA of Agriculture & Allied sector:

- Consumption of Fixed Capital (crop, livestock, forestry, fishing, irrigation – Departmental Enterprises (DE), non-departmental enterprises (NDCU), private corporate sector – plantation companies and household)
- Net Value Added of government irrigation (DE)
- Irrigation Charge
- Factor shares including Compensation of employees (DE – Irrigation, NDCU & Private Corporate Sector companies)
- Production taxes and production subsidy (crop, livestock, forestry, fishing)
- Financial Intermediary Services Indirectly Measured (FISIM) (crop, livestock, forestry, fishing)
- Repair and Maintenance

II.5. MAIN RECOMMENDATIONS

II.5.1 The Committee acknowledges and notes positively the detailed work done and recommendations made by the NSC, Vaidynathan Committee, Alagh Committee and Mahendra Dev Sub-Committee. To further improve the system the Real Sector Statistics Committee makes the following recommendations for taking action on a priority basis:

A. Agriculture (Crop husbandry)

1) To revive the importance of crop statistics, funds released for flood/ drought relief, crop insurance, subsidies, etc., should be based on data supplied to the Ministry.
2) It is necessary to make an ABC analysis to determine importance within state and relative importance at “All India” level to arrive at a minimum “crop x state” list to reach at pre-determined level of coverage in terms of availability of direct data (e.g. 80 per cent of production at state level and 70 per cent at all India level are based on direct data). Such a list will trim list of crops/ state for collection of data and will save resources.
3) ABC analysis is also required to short list 244 horticulture crops. Although area under all horticulture crops must be estimated while undertaking agriculture census, state specific important crops may be included in land records. For these crops statistically sound approach may be developed to estimate production and input cost.
4) The estimates of crop production of principle crops are derived using the area and yield estimates which are derived at number of time point depending upon time and quantum data becomes available (e.g. first estimate is prepared on the basis of intention of crop proposed to be sown, previous year yield adjusted with weather factor). For estimating level of food production, import and export policy formulation, fixing of support prices, etc. these estimates are required by the Government. Ministries of Agriculture (DESAg) and Statistics (NAD, CSO) may come together to select estimates that should be used for timely compiling of macro-aggregates,

5) All data collected should be used. Two series of experiments conducted under the National Agricultural Insurance Scheme (NAIS) and the General Crop Estimation Survey (GCES) should be combined by making necessary changes in the design to improve the efficiency of forecast.

6) For improving reliability and timeliness of the data the present system will need increasing use of upcoming techniques such as remote sensing, multiple frame survey techniques, small area estimation technique, etc. A more efficient survey design based on agro-climatic zones. Sufficient resources may be provided.

7) A number of agencies are involved in collection of agricultural statistics. It is necessary to create a nodal agency in the Ministry of Agriculture to coordinate and consolidate data.

8) Data set on agricultural activity has a wide base spread over space and time. These data are required at various level of aggregation. To manage it in an efficient manner it is necessary to develop a state of art system in which data flowing from state government can be imported after quality check. The Food and Agriculture of the UN has created FAOSTAT keeping in mind similar approach

9) Existing nine fold classification need revision. The present classification under estimates agriculture production. The present classification was framed long ago to support revenue collection. The present classification is biased towards agriculture activity (crop husbandry, forestry and fishing activities) and does not take into account multiple use of land. This classification neither provides estimates of land used by all economic activities nor is it suitable for compiling land-labour ratio or environmental indicators. This data is also not suitable for land use planning. A suggested classification[6] is given in Annexure II.3.

10) Creation of dataset on Agro-climatic Zones provides useful cost-effective basis for collection of basic data for developmental planning. It is necessary to strengthen this field.

B Cost of Cultivation

11) Data collected in the crop estimation survey schedule may be used for estimation of intermediate consumption for crops/ areas for compilation of national accounts where such data are not available from any other reliable sources. With the marginal increase in resources scope of this survey could be increased to cover additional information on farm harvest prices, etc. It is recommended that to make these data useful concepts and definitions may be formulated by Ministry of Agriculture and uniform procedure may be enforced in all states and union territory.

12) Concept of time use may be introduced in Cost of Production Surveys to standardised paid and unpaid family labour component for compiling estimates of factor share. This can also provide estimate of women's contribution in crop and animal husbandry activities.

C Animal Husbandry

[6] Narain, P (2010): LAND USE CLASSIFICATION: CONCEPTS & METHODS-Towards an improved information basis, Paper submitted to Session 4.2 - Environment statistics including land and water use Core indicators, cross-sectoral indicators, etc., ICAS V.

13) It is recommended that the scope and coverage of the Integrated Sample Surveys may be expanded in a manner that reliable estimates of production are available at district level. The coverage may also be expended to include additional items like camel and sheep related products/ by-products.

14) Animal husbandry activity in the unorganized sector is also quite substantial. It is recommended that periodical surveys may be undertaken to improve the coverage of the sector.

D. Ancillary Data on Agriculture Activity

15) It is recommended that a three tier system is created with set of accounts recommended by SNA and supporting statements presenting the socio-economic data, data on natural resources (climate, soil and water), etc. This system will provides basis for “cause and effect analysis” suitable for each local level unit.

E. Forestry and Fishery Activity

16) With multiple agencies involved in collection of Forestry data and fragile boundary of forests (which are not convergent with state administrative boundary) there is a high risk of over/ under estimation of forestry activity. It is, therefore, recommended that a strong coordination unit may be established to consolidate total data and provide national level view with state wise details.

17) As regards marine fisheries statistics is concerned sampling methodology in use is considered to be satisfactory, but in case of inland fishery the present system need to be reconsidered to develop a cost effective sampling plan. It is recommended that a special effort may be made for coordinating fishery statistics and develop technology for collection of data at reasonable cost and reliability.

Annexure II.1

Current status of recommendations made by National Statistical Commission

A. List of The 18 Pending Recommendation of The Rangarajan Commission

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
1	8	A statistical study should be carried out to explore the feasibility of using the Improvement of Crop Statistics (ICS) data for working out a correction or adjustment factor to be applied to official statistics of crop area to generate alternative estimates of the same. Given the past experience of the Land Utilisation Surveys of the NSS and the controversies they created, the **Commission is of the view that the objective of redesigning of the ICS, at present, should be restricted to working out a correction factor**	The FOD, NSSO will explore the possibility of evolving a correction factor. Thereafter, the Ministry of Agriculture will consider its utility in firming up the estimates of area/production.	NSSO, FOD and Dept. of Agriculture & Cooperation
2	15	The methodology adopted in the pilot scheme of "Crop Estimation Survey on Fruits and Vegetables" should be reviewed and an alternative methodology for estimating the production of horticultural crops should be developed taking into account information flowing from all sources including market arrivals, exports and growers associations. Special studies required to establish the feasibility of such a methodology should be taken up by a team comprising representatives from Indian Agricultural Statistics	A pilot study was entrusted to IASRI for this purpose. The pilot study was undertaken in Maharashtra and Himachal Pradesh and major fruits and vegetables crops were covered for developing the alternative cost affecting methodology. The IASRI submitted a proposal of Rs. 6.50 crore to CSO for testing the methodology. CSO, in January 2013 expressed its inability to fund the project as it can support project only up to Rs.15 lakh. On the	Dept. of Agriculture & Cooperation and NSSO

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
		Research Institute (IASRI), Directorate of Economics and Statistics, Ministry of Agriculture, Field Operations Division of National Sample Survey Organization (NSSO, FOD) and from one or two major States growing horticultural crops. The alternative methodology should be tried out on a pilot basis before actually implementing it on a large scale.	suggestion of Horticulture Division of DAC, IASRI has been requested to recast the project by submitting separate proposals for one/more States within Rs.15 lakh so that CSO can be approached for financial support.	
3	16	A suitable methodology for estimating the production of crops such as mushroom, herbs and floriculture needs to be developed and this should be entrusted to the expert team comprising representatives from Indian Agricultural Statistics Research Institute (IASRI), Directorate of Economics & Statistics, Ministry of Agriculture (DESMOA), Field Operations Division of National Sample Survey Organization (NSSO (FOD)) and from one or two major States growing these crops.	A pilot study for developing a suitable methodology for estimating the area and production of floriculture had been completed by IASRI with financial support from Ministry of Statistics & Programme Implementation. The study was to be replicated in some other States but no further action could be taken so far.	Dept. of Agriculture & Cooperation and NSSO
4	21	Statistical monitoring and evaluation cells with trained statistical personnel should be created in the field offices of the Central Water Commission (CWC) in order to generate a variety of statistics relating to water use.	**CWC:** The State Monitoring and Evaluation Cells would be more appropriately functioning in the Nodal Agency of the State Governments concerned because the desired output of these proposed Cells is to generate statistics relating to water use. It may be relevant to state that water	Ministry of Water Resources

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
			use is a State activity. As per provision of Constitution of India, 'Water' is a state subject and all water resources development projects are formulated and executed by State Government/ Departments. Accordingly, data related to water use is to be provided by the respective State Governments. It would, thus, be more appropriate if the Nodal Agencies of respective States are strengthened to provide data of water use to the Central Agency. Besides this a large number of vacancies in the hierarchy of posts to be manned by Officers of Indian Statistical Services in the Ministry of Water Resources and CWC (HQ) are lying vacant for want of nomination from Ministry of Statistics and Programme Implementation.	
5	30	The agricultural price collectors should be given thorough training in the concepts, definitions and the methods of data collection, and the training courses should be repeated periodically.	Agriculture price collectors are under the control of State Governments and there is no budgetary provision available with the Directorate of Economics & Statistics to train the State Government functionaries. However, the State Governments are requested from time to time for conducting	Dept. of Agriculture & Cooperation
6	31	Workshops and training courses should be made an integral part of quality improvement. The quality of data should be determined on the basis of systematic		

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
		analysis of the price data of agricultural commodities both by the Centre and the States.	training/refresher courses for agricultural price collectors.	
7	32	Latest tools of communication technology like e-mail should be availed of to ensure timely data flow of agricultural prices.	Directorate of Economics & Statistics is already using e-mail etc. for rapid flow of data/information.	
8	33	A system should be developed to secure a simultaneous data flow of agricultural prices from lower levels to the State as well as the Centre.	Customized software is being developed by the National Informatics Centre (NIC). After the development of the software, the price reporters would be properly trained to send the data directly to the DES in proper format in the website of the Ministry of Agriculture. Though the software would be provided by the Central Government, the hardware would have to be provided by the State Governments. All price collecting agencies are not computerized. The State Governments have been requested to provide computer at various levels so that the above software being developed can be used to feed the price data from different levels.	
9	37.	The functions, activities and the staff requirements of the Agricultural Market Intelligence Units should be re-evaluated and appropriate measures taken to streamline the units.	The proposal for strengthening MI units was prepared/processed but could not materialize. However, infrastructure facilities i.e. PCs and internet facilities have been provided to the Market Intelligence Units.	Dept. of Agriculture & Cooperation and States
1	48	The periodical National Sample Survey Organization's survey on land and livestock holdings	Land holding and livestock holding are dealt by Department of Agriculture	D/o Animal Husbandr

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
		be synchronized with Agricultural and Livestock Censuses in order to supplement as well as help in the crosscheck of information from the two sources	and Cooperation and Department of Animal Husbandry, Dairying & Fisheries respectively. Synchronization of agricultural census and livestock census results with respect to its reference period is not feasible and the Expert Committee of DADF also opined that integration of Livestock Census and Agriculture Census is not feasible.	y & Dairying, NSSO and Ministry of Agricultur e.
1	56	The State Forest Departments should be adequately supported by the establishment of appropriate statistical units to oversee the collection and compilation of forestry statistics from diverse sources on forest products including timber and non-timber forest products	**MoEF: Does not pertain to this Ministry.**	Ministry of Environm ent and Forest **Rec no. 56,57,58 and 59 could not be discusse d due to non-availabili ty of officers from concerne d office. They are kept pending in want of the latest updation from MoEF**
1	57	Arrangements should be made for storage and speedy transmission of forestry data through Information Technology devices	**MoEF:** FSI has created NAS and number of databases.	
1	58	In view of the unavoidable nature of the divergence between statistics from the two sources – land records and State Forest Departments – because of different coverage and concepts, the two series should continue to exist; but the reasons for divergence should be clearly indicated to help data users in interpreting the forestry statistics	**MoEF:** The concepts and coverage of different terms being used by FSI are well defined and given in India State Of Forest Reports.	
1	59	A Statistics Division in the Ministry of Environment and	Statistical division in the Ministry of Environment	

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
		Forests with adequate statistical manpower should be created for rationalisation and development of proper database on forestry statistics	and forests is operational since 2006.However, at present only one post of DDG is sanctioned in the MoEF and supporting statistical professionals are required.	
1	61	The agencies designated for the collection of information on marketable surplus and post-harvest losses of food grains should be provided additional manpower, wherever necessary, for the conduct of these surveys	The additional manpower requirement of agencies designated for collection of information on marketable surplus and post-harvest losses of commodities undertaken for survey will be provided in consultation with technical committee and approval of the competent authority. The additional manpower requirement has not been brought to the notice of Department by the implementing agencies.	Dept. of Agriculture and Cooperation
1	62.	The Directorate of Marketing and Inspection (DMI) should establish a Statistical Cell either independently or within Market Research and Planning Cell (MRPC) with sufficiently trained statistical personnel to undertake comprehensive analysis of survey data and aid the decision-making process.	With the implementation of recommendations of Expenditure Reform Commission, the work of marketing research under Market Research and Planning Cell (MRPC) scheme has been diverted to the Agricultural Universities/ Institutions. The Branch Head Office (BHO), Nagpur is presently confined to undertake the work of preparation of commodity profiles under the scheme 'Market Research and Information Network (MRIN) which is being monitored from Head	Dept. of Agriculture and Cooperation

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
			Office, Faridabad. The BHO Nagpur is thus left with little work to be attended by Statistical Cell. On the other hand, the major works of Statistical cells (on account of transfer of Quality Control work from BHO, Nagpur to Head Office, Faridabad) are to be attended by Statistical Section of Head Office, Faridabad. Hence, it is necessary that the Statistical Section should be strengthened at Head Office instead of Branch Head Office; with an ISS rank officer and other supporting officials as recommended.	
1	63	The Statistical Cell of Directorate of Marketing and Inspection (DMI) should identify the problems and deficiencies in the market research surveys carried out by different institutions and develop a standard methodology for uniform adoption.	As explained above, the research study on marketing of agricultural and allied commodities are, henceforth, to be undertaken by Universities/Institutions on account of recommendations of Expenditure Reform Commission. The methodology adopted by DMI so far in preparing research reports can be adopted by these institutions. It will be difficult for the Directorate to coordinate with different institutions for developing a standard uniform methodology.	
1	73.	Information collected through General Crop Estimation Survey (GCES) and the scheme for Improvement of Crop Statistics (ICS) should be	Work is in progress.	NSSO

SL No.	Rec. No.	Recommendation	Status/ Action Taken	Implementing Agency(s)
1	2	3	4	5
		compiled to generate estimates on various inputs such as fertilizers, pesticides, multiple cropping, etc.		

B. List of 51 Implemented Recommendations of Rangarajan Commission

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
1	1.	As the data from a 20 per cent sample is large enough to estimate crop area with a sufficient degree of precision at the all-India, State and district levels, crop area forecasts and final area estimates issued by the Ministry of Agriculture should be based on the results of the 20 per cent Timely Reporting Scheme (TRS) villages in the temporarily settled States and Establishment of an Agency for Reporting Agricultural Statistics (EARAS) scheme villages in the permanently settled States. In the case of the North-Eastern States, Remote Sensing methodology should be used for this purpose after testing its viability.	The recommendation stands implemented as regards crop area forecasts and final area estimates based on 20% sample villages. In respect of Remote Sensing Methodology in the North-Eastern States, under the "**FASAL**" project, on pilot basis, Assam has already been covered for forecasting, state and district level estimates of selected crops based on Remote Sensing (RS) technology. Further, a pilot project on use of Remote Sensing technology for crop estimation has been approved for Meghalaya, Tripura, Arunachal Pradesh and Mizoram. In any case, the EARAS scheme is being implemented in States of Arunachal Pradesh, Nagaland, Sikkim and Tripura in NE region.
2	2.	The *patwari* and the supervisors above him should be mandated to accord the highest priority to the work of the *girdawari* and the *patwari* be spared, if necessary, from other duties during the period of *girdawari*.	State Governments have been advised on this matter by the Ministry of Agriculture & Cooperation.
3	3.	The *patwari* and the primary staff employed in Establishment of an Agency for Reporting Agricultural Statistics (EARAS) should be imparted systematic and periodic training and the fieldwork should be subjected to intensive supervision by the higher-level revenue officials as well as by the technical staff.	Required training is being imparted to all concerned at the beginning of each agricultural year.
4	4.	For proper and timely conduct of the *girdawari*, the concerned supervisory staff should be made accountable.	States have been advised on this matter by the Ministry of Agriculture & Cooperation.
5	5.	Timely Reporting Scheme (TRS) and Establishment of an Agency for Reporting Agricultural Statistics (EARAS) scheme should be regarded as programmes of national importance and the Government of India at the highest level should prevail upon the State Governments to give due priority to them, deploy adequate resources for the purpose and ensure proper conduct of field operations in time.	Rangarajan Commission has recommended relevant statistics under the Core Statistics which is already being pursued/prepared.

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
6	6.	In view of the importance of reliable estimates of crop production, the States should take all necessary measures to ensure that the crop cutting surveys under the General Crop Estimation Survey (GCES) are carried out strictly according to the prescribed programme.	State Governments have been advised on this line and necessary follow up action is regularly taken.
7	7.	Efforts should be made to reduce the diversity of agencies involved in the fieldwork of crop cutting experiments and use as far as possible agricultural and statistical personnel for better control of field operations.	The States have their own system for collection of area statistics and crop cutting experiments (CCE). In most of the States, the CCEs are conducted by agriculture /revenue staff. A system of regular training for the staff involved in CCEs is already in place.
8	10	Crop estimates below the level of district are required to meet several needs including those of the National Agricultural Insurance Scheme (NAIS). Special studies should be taken up by the National Statistical Office to develop appropriate "small area estimation" techniques for this purpose	**IASRI** has completed the following Studies: 1. Small Area Crop Estimation Methodology for Crop Yield Estimation at Gram Panchayat Level. 2. Crop yield estimation at block level using farmers' estimates. 3. Crop yield estimation at smaller area level using farmers estimates.
9	11.	The Ministry of Agriculture and the National Crop Forecasting Centre (NCFC) should soon put in place an objective method of forecasting the production of crops.	The FASAL scheme envisaged creation of a Crop Forecast Centre in the Department itself. Accordingly, a new Centre namely "Mahalanobis National Crop Forecast Centre (MNCFC)" has been set up as an attached office of the Department which is located at IARI, Pusa Campus, New Delhi. The new Centre is engaged in preparing multiple-in-season production forecasts of selected crops and assessment of drought situation in the country using state of the art techniques and methodologies. The Centre is using Remote Sensing (RS) methodology developed by Space Application Centre, Ahmedabad for forecast of selected crops and drought assessment methodology developed by National Remote Sensing Centre, Hyderabad under the National Agricultural Drought Assessment and Monitoring System (NADAMS) project.
10	12.	The National Crop Forecasting Centre (NCFC) should be adequately	12 posts on regular basis and 12 posts on contract basis have been

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
		strengthened with professional statisticians and experts in other related fields.	sanctioned in MNCFC. In addition, 5 posts of supporting staff have been transferred from DAC to MNCFC. However, the Crop Forecast Co-ordination Centre (CFCC) in the DES is being managed through the staff redeployed from different divisions of the Directorate.
11	13.	The programme of Forecasting Agricultural output using Space, Agro-Meteorology and Land based observations (FASAL), which is experimenting the approach of Remote Sensing to estimate the area under principal crops should be actively pursued.	The mandate of FASAL scheme is to provide forecast of eleven crops viz. rice, jowar, maize, bajra, jute, ragi, cotton, groundnut, sugarcane, rapeseed & mustard and wheat. Out of these, the forecast for some of the crops is prepared by MNCFC, IEE and IMD, the partner organization of FASAL. Follow up action is being taken to start generating forecast by the above organizations for remaining crops.
12	14.	The States should be assisted by the Centre in adopting the objective techniques to be developed by the National Crop Forecasting Centre (NCFC).	The MNCFC implements the methodology for crop forecast developed by Space Application Centre (SAC). Some States are using their Remote Sensing Centres for crop estimation on the basis of the methodology developed by SAC, Ahmedabad.
13	17.	The nine-fold classification of land use should be slightly enlarged to cover two or three more categories such as social forestry, marshy and water logged land, and land under still waters, which are of common interest to the Centre and States and which can easily be identified by the *patwari* through visual observation.	The definitions of the three new land use categories have been finalized by an Inter-Ministerial Committee in consultation with States. The States have already been requested to send the data including these three categories.
14	18	State Governments should ensure that computerization of land records is completed expeditiously	States are computerizing their land records.
15	19	In view of wide variation between the irrigated area generated by the Ministry of Agriculture and the Ministry of Water Resources, the State Governments should make an attempt to explain and reduce the divergence, to the extent possible, through mutual consultation between the two agencies engaged in the data collection at the local level.	The issue of wide variation between the irrigated area generated by the Ministry of Agriculture and the Ministry of Water Resources, has been resolved as per the decision taken in the 2nd meeting of the Steering Committee for finalizing the 4th Minor Irrigation census data, held on 18th February, 2011 in Ministry of Water Resources, Govt of India. It has been decided that the figures relating to geographical area, cultivable area, net sown area and

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			net irrigated area may not be published by Ministry of Water Resources as the same are published already by Ministry Agriculture. Irrigation statistics in DES are collected as part of "Agricultural Statistics" for which State Agriculture Statistics Authorities (SASA's) are designated nodal agencies at state level. Most suitable state level agency for agricultural statistics, has been designated as SASA, the list includes; DES's, O/o Land Records, Agriculture Department, Revenue Department, Planning Department, etc.
16	20.	The State Directorates of Economics and Statistics (DESs) should be made the nodal agencies in respect of irrigation statistics and they should establish direct links with the State and Central agencies concerned to secure speedy data flow.	**DAC:** Irrigation statistics in DES are collected as part of "Agricultural Statistics" for which State Agriculture Statistics Authorities (SASA's) are designated nodal agencies at state level. Most suitable state level agency for agricultural statistics, has been designated as SASA, the list includes; DES's, O/o Land Records, Agriculture Department, Revenue Department, Planning Department, etc. **CWC:** In respect of Irrigation Statistics, Nodal Agencies in the State Government have already been formed and all communication relating to Water and related Statistics is made with the nodal officer in the State Government for supply of consistent data on irrigation & related statistics and its speedy flow from State Govt. to Central Government.
17	22	The Central Statistical Organisation (CSO) should designate a senior level officer to interact with the Central and State irrigation authorities in order to promote an efficient system of water resources statistics and oversee its activities.	An ISS officer of the level of Additional Director General has been posted in the Ministry of Water Resources. He may interact with the concerned irrigation authorities to promote proper system of water resources statistics.

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			The Agriculture Census in India is conducted on Census-cum-sample survey basis. In this approach, the primary data relating to number and area of operational holdings are collected on complete enumeration basis in all the villages by re-tabulation of information available in the revenue records. Since the approach on this aspect is on complete count basis by enumerating each and every operational holding I the villages, the data is reliable and hence, there is no need to adopt a household enquiry method. In so far as collection of detailed information relating to various characteristics of operational holdings, viz., tenancy, terms of leasing, land utilization, irrigation statistics, different crops grown in irrigated and un-irrigated areas and dispersal of operational holdings, a sample survey approach is adopted by selecting 20 per cent TRS villages and subsequently enumerating all the operational holdings in the selected villages for data collection. In this sample survey approach, the data is re-tabulated on the basis of information already existed in the revenue records for which the revenue officials carry out Girdawari (crop inspection) in all the selected villages. Except for few lacunae in the system, it is working well. In the case of non-land record States, there is already household enquiry approach for collecting information on all the above mentioned parameters. In the case of household enquiry approach in temporarily settled States (land record States), there is a possibility of under enumeration/ over-enumeration of area figures relating to different aspects. It had practically been found that in the household enquiry approach, the chances of under-

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			enumeration of area figures were more. The present approach is cost effective also. Hence, no further action is required on this issue.
18 & 19	23 & 24	23. The Agricultural Census should henceforth be on a sample basis and the same should be conducted in a 20 per cent sample of villages. 24 There should be an element of household enquiry (besides re-tabulation) in the Agricultural Census in the temporarily settled States.	The Agriculture Census in India is conducted on Census-cum-sample survey basis. In this approach, the primary data relating to number and area of operational holdings are collected on complete enumeration basis in all the villages by re-tabulation of information available in the revenue records. Since the approach on this aspect is on complete count basis by enumerating each and every operational holding I the villages, the data is reliable and hence, there is no need to adopt a household enquiry method. In so far as collection of detailed information relating to various characteristics of operational holdings, viz., tenancy, terms of leasing, land utilization, irrigation statistics, different crops grown in irrigated and un-irrigated areas and dispersal of operational holdings, a sample survey approach is adopted by selecting 20 per cent TRS villages and subsequently enumerating all the operational holdings in the selected villages for data collection. In this sample survey approach, the data is re-tabulated on the basis of information already existed in the revenue records for which the revenue officials carry out Girdawari (crop inspection) in all the selected villages. Except for few lacunae in the system, it is working well. In the case of non-land record States, there is already household enquiry approach for collecting information on all the above mentioned parameters.

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			In the case of household enquiry approach in temporarily settled States (land record States), there is a possibility of under enumeration/ over-enumeration of area figures relating to different aspects. It had practically been found that in the household enquiry approach, the chances of under-enumeration of area figures were more. The present approach is cost effective also. Hence, no further action is required on this issue.
20	25	Computerisation of land records should be expedited to facilitate the Agricultural Census operations	The recommendation does not pertain to Department of Agriculture & Co-operation. Ministry of Rural Development is implementing a central sector plan scheme namely, National Land Records Modernisation Programme (NLRMP) with the objective to develop a modern, comprehensive and transparent land records management system in the country. Once computerized data base of Land Records becomes available, the feasibility of its utilization for the purpose of agriculture census would be explored. The utilization of this computerized Land Record database for purpose of Agriculture Census was experimented in the States of Gujarat and Maharashtra for Phase-I of Agriculture Census 2010-11. However, it has been found that the Database has information only on few characteristics like name of the owner and the area owned. It does not have data on other characteristics like gender, social category types of holding (Individual/Joint) and size class, etc., which are required for the purpose of the Agriculture Census (Phase-I). This additional data was collected from the field and later merged with the existing computerized database to meet *the* requirements of Agriculture Census.
21	26	There should be adequate provision for	Adequate provision has been

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
		effective administrative supervision over the fieldwork of Agricultural Census and also a technical check on the quality of data with the help of the State statistical agency.	made keeping in view the design of Agricultural Census. As regards quality of data, sufficient care has been taken to validate the data with the help of various validation programmes developed by NIC and hence the quality of data is fully assured in Agriculture Census. Hence, no further action is required on this issue.
22	27	The post of the Agricultural Census Commissioner of India at the Centre should be restored and should be of the level of Additional Secretary to be able to interact effectively with the State Governments. Further, this post should be earmarked for a senior statistician.	The acceptance of this recommendation by Ministry of Agriculture had been communicated to Ministry of S&PI vide D.O. letter No. 8-56/99-200-AS(E)-ES dated 5th November, 2001. Creation of this post has now been included in the Cadre Review proposal of ISS.
23	28	The Census Monitoring Board should be revived to oversee the Agricultural Census operations.	No further action required. Already a Steering Committee is performing this job.
24	29	The Ministry of Agriculture should prepare a well-documented manual of instructions on collection of wholesale prices of agricultural commodities.	A well-documented manual of instructions on collection of wholesale prices of agricultural commodities was re-circulated to States as a reminder to adhere to prevailing guidelines.
25	34	The State agencies at the district level and below should follow up cases of chronic non-response relating to collection of data on agricultural prices.	With regard to improving the responses from the district levels and below, the State Governments are regularly requested to improve the quality and flow of data to minimize non-response.
26	35	The number of essential commodities for which agricultural prices are collected should be reduced to an absolute minimum, especially the non-food crops, in consultation with Ministry of Consumer Affairs and Cabinet Committee on Prices.	The numbers of commodities for which prices are to be collected depend on the needs of various agencies/Ministries of the Government which are undergoing change due to dynamics of development. Commodities for Wholesale Price Index (WPI) calculation is decided by a designated Committee. Other needs of the Agriculture Ministry are taken in to account while collecting the data on prices due to dynamic needs of agriculture and economic development.
27	36	The centres of agricultural price collection should, as far as possible, be the same for the essential commodities as those for wholesale prices.	
28	38	In view of the importance of the Cost of Cultivation Studies in the price	Being continued. No further action required.

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
		administration of agricultural commodities and several studies relating to farm economy, the present programme should continue.	
29	39	Focused attention should be paid to the proper organisation and management of the Cost of Cultivation Studies.	In pursuance of the decision of the Expenditure Finance Committee, Department of Agriculture and Cooperation had constituted an Inter Ministerial Committee (IMC) to restructure the Comprehensive Scheme on Studying the Cost of Cultivation of Principal Crops in India. The IMC has since submitted its report which is under implementation.
30	40.	A review of the number of centres, methodology, sample size, the existing schedule and questionnaire, etc. of the Cost of Cultivation Studies should be undertaken.	An expert Committee under the chairmanship of Prof. Y.K. Alagh constituted to look into the Methodology in the Fixation of Minimum Support Prices had submitted its report. This report has been accepted. This recommendation of the Committee is under implementation.
31	41	The Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA) should minimize the delay in bringing out the results of the Cost of Cultivation Studies.	Earlier, there used to be some delays in generating estimates of cost of cultivation. Of late, delays have been substantially reduced by persuading implementing agencies to adhere to time schedule. The due date of submission of cost of cultivation data for the preceding year by the implementing agencies has been set at September 30. On receipt of data from implementing agencies, high priority is accorded by DES to the work relating to thorough scrutiny, processing etc. Whenever any clarification etc. is required from the implementing agencies, it is done on priority basis. After processing/ cleaning of data, the estimates of cost of cultivation/ production of rabi crops are transmitted to CACP for their inclusion in Price Report – Rabi Season. Subsequently, the cost of cultivation/ production of kharif crops are also transmitted to CACP for their inclusion in Price Report – Kharif Season. With reference to the Price Report of Rabi and Kharif seasons, there is one year and two years time lag for the Rabi and Kharif crops

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			respectively which are minimum time lag and therefore at present there is no delay as such.
32	43.	The Livestock Census should include some minimum information about the household (size, occupation, etc.) in addition to the head count for meaningful analysis of the census data.	Limited socio economic characteristics as per requirement of the DADF are collected in the livestock census.
33	44	There should be a concerted effort towards better Organisation and management of the Livestock Census operation through comprehensive training of the field staff and regular supervision over their work by both administrative and technical personnel.	All efforts were made on the recommendation made by the NSC. Rs.682.00 lakhs was provided on training to the enumerators/Supervisors and master trainers training for 18th Livestock Census.
34	45.	IT should be used at various stages of Livestock Census.	Information technology tools are being used in various livestock census for rapid processing of the data.
35	49	The Integrated Sample Surveys should be continued and efforts should be made to fill up the existing data gaps.	The Integrated Sample Surveys are conducted annually. The estimates prepared by the State Governments are finalized by the Technical Committee of Direction (TCD) for Improving AG & Dairying Statistics. The Chairman of TCD is DG, CSO.
36	50	The Indian Agricultural Statistics Research Institute (IASRI) should be entrusted with the task of developing appropriate methodologies for filling up the remaining data gaps relating to estimates of mutton, pork, poultry meat, and meat by-products.	A Committee was constituted under the Chairmanship of Animal Husbandry Commissioner to review the methodology and schedules for data collection of Integrated Sample Survey in January, 2009. As per the recommendation of the Committee in its first meeting, a Specialized group on "Revision of methodology of data collection on meat, hide and skin" under the Chairmanship of Dr. U.C. Sud, Head Sample Survey, IASRI has been constituted. On the recommendation of the Specialized Group, a Sub-group has been constituted under the Chairmanship of Dr. U.C. Sud, Head Sample Survey, IASRI for examining the existing sampling design of Integrated Sample Survey. The Committee submitted its report in 2011. **The department has adopted revised methodology and schedules for data collection of Integrated Sample Survey from**

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			2012.
37	51	The survey design for estimating production of marine fisheries should be modified taking into account the current distribution of landing sites and the volume of catch at different sites. The field staff engaged in collection of data should be imparted regular training and their work should be adequately supervised.	The Survey design for estimating production of marine fisheries was developed by Central Marine Fisheries Institute (CMFRI) during 10th Five Year Plan. The methodology is stratified multi-stage random sampling with stratification over space and time. All the maritime States have adopted this methodology for collection of data on marine fish landings. Fishery Survey of India, Mumbai is the interface between CMFRI and the maritime States. It organizes trainings of the State officials and data enumerators and the experts from CMFRI impart training to them.
38	52	The survey methodology for estimating production of inland fisheries especially with regard to running water sources (rivers and canals) should receive urgent attention and the Indian Agricultural Statistics Research Institute (IASRI) along with the Central Inland Fisheries Research Institute (CIFRI) should be provided with adequate support to develop this programme on a priority basis.	The survey design for estimating production of inland fisheries from different types of waterbodies, including running water sources (rivers and canals) has been developed by Central Inland Fisheries Research Institute, Barrackpore. Stratified three stage sampling technique is used for estimation of fish catch. The inland waterbodies are classified into three groups: Group I (up to 10 ha area); Group II (more than 10 ha area); and Group III (rivers, streams, canals, estuaries etc.). For Group I waterbodies districts, clusters of pond bearing villages and ponds are first, seconds and third stage units of selection, respectively. In case of Group II waterbodies fishing villages is the first stage, sample days as second stage and units observed as third stage of selection (fishing villages approach) or waterbodies, landing centres and sample days are first, second and third stage units (landing centre approach). For Group III water bodies, district, villages, days of sampling form the first, second and the third stage of sampling respectively.
39	53	The States should improve the recording of area under still water by appropriate modification of land use statistics	The definitions of the three new land use categories have been finalized by an Inter-Ministerial Committee in consultation with States. The States have already

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
			been requested to send the data including these three categories.
40	54	The discrepancies between the two sources of data namely, Livestock Census and State reports with regard to data on fishermen, fishing craft and gear should be reconciled by adoption of uniform concepts and definitions and review of these statistics at the district and State levels.	Data under Livestock Census on various parameters, including fishermen population and crafts and gears involved in the fisheries sector, are collected through State Fisheries Department. So there is no issue of reconciliation. However, for Marine Fisheries, a separate census is conducted once in every five years, in which the detailed information on data on fishermen, fishing craft and gear are collected. Last census was conducted in 2005. Current Marine Fisheries Census is being conducted.
41	55	Remote Sensing techniques should be extensively used to improve and develop forestry statistics.	FSI is using remote sensing data for forest cover assessment since 1987. Besides, the remote sensing data is also being used for TOF inventory and various other projects including some projects given by Central Empowered Committee of the Supreme Court.
42	60	The existing methodology in conducting the surveys on marketable surplus and post-harvest losses of food grains should continue in future surveys of this type.	No further action required.
43	64	A review of the item basket for the construction of Index Numbers of Area, Production and Yield should be undertaken immediately.	It is being done
44	65	The item basket for the construction of Index Numbers of Area, Production and Yield should be different for different States.	It is being done
45	66	The present arrangements for the construction and release of Index of Terms of Trade should continue.	No further action required
46	67.	The rates used to apportion the areas of constituent crops of major crop mixtures should be fixed for the recognised mixtures at sub-district and district levels and updated periodically.	The State Governments have been advised to take action in this regard.
47	68.	Data available from surveys conducted under schemes like Improvement of Crop Statistics (ICS) over the years should be used for deciding the crop mixtures and their ratios.	The State Governments have been advised to take action in this regard.

S. No.	Rec. No.	Recommendation	Status/Action Taken
1	2	3	4
48	69.	The Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA) should collect, compile and maintain a complete database on State-wise production, sale of tractors, power tillers, harvesters and other agricultural implements, density of such implements per hectare, investment made, level of mechanisation, adoption of water saving devices, etc.	Such a database is being maintained by Dept. of Animal Husbandry & Dairying based on results of their livestock census.
49	70	A Farm Management Survey on an all-India basis should be conducted on a regular basis preferably at an interval of five years	Farm Management Surveys were conducted before institution of Cost of Cultivation Scheme. As the above Scheme being implemented in 19 major States to generate annual data on many more parameters, the Farm Management Surveys have been done away with.
50	71	The Directorate of Plant Protection Quarantine and Storage (PPQ&S) being the apex body for plant protection should act as a depository of information on plant protection. Efforts should be made to design, develop and maintain a comprehensive database on plant protection for effective long-term uses.	The Directorate of Plant Protection Quarantine and Storage (PPQ&S) has now provided statistics, publication report, human resource development etc. on its website dacnet.nic.in/ppin and it is maintaining a comprehensive database on Plant Protection for effective long term uses.
51	72.	The Statistics and Computer Unit of the Directorate of Plant Protection, Quarantine and Storage (PPQ&S) should be strengthened both in terms of statistical and computer personnel as well as computer equipment.	At present there are posts of one Deputy Director (Statistics), one Assistant Plant Protection Officer, one Data Processing Assistant in computer and statistics unit. For proper functioning of this unit, in addition to the above posts, a provision has also been made for one systems analyst-cum-programmer, one Sr. Statistical Assistant and two data entry operators for the 11th Five Year Plan. Provision for six PCs with Printer, UPS, Scanner and CD Writer etc. has also been made.

C LIST OF THE 04 REJECTED / DROPPED RECOMMENDATION OF THE RANGARAJAN COMMISSION

S. No.	Rec. No.	Recommendation	Reason	Implementing Agency(s)
1	2	3	4	5
1	9	The two series of experiments conducted under the National Agricultural Insurance Scheme (NAIS) and the General Crop Estimation Survey (GCES) should not be combined for deriving estimates of production as the objectives of the two series are different and their merger will affect the quality of general crop estimates.	In view of legal and administrative implications, this is not feasible to maintain two different series of yield rates for National Agricultural Insurance Scheme and estimation of production under GCES.	Dept. of Agriculture & Cooperation and States
2	42	The quinquennial livestock census should henceforth be taken in a 20% sample villages instead of cent per cent coverage.	This recommendation is not acceptable to DADF (D/o Animal Husbandry, Dairying and Fisheries) as already conveyed. Expert opinion of IASRI was also obtained which opined that the information on auxiliary character from the census can be used for improving the estimates for the breed survey/Integrated Sample Survey. The expert group under the Chairmanship of Secretary (ADF) on the subject has also opined that the livestock census will continue as per the existing guidelines in every five year .More specifically, the following reasons are furnished for not adopting the concept of 20% sampling instead of Census: 1) The livestock numbers of various species obtained through Livestock Census are used as auxiliary variables in Integrated Sample Survey for estimation of ratios for production estimates of milk, egg, meat and wool.	D/o Animal Husbandry & Dairying

S. No.	Rec. No.	Recommendation	Reason	Implementing Agency(s)
1	2	3	4	5
			2) Livestock Census data is also used as auxiliary variables in Breed Survey for estimating livestock no. of 218 breeds of various species i.e. cattle, buffalo, goat, yak and *mithun* etc. 3) Livestock Census's results are used for taking policy decisions in the implementation of various schemes of DADF for **improving livestock production, genetic up-gradation of livestock, control of livestock diseases & health** and all other related issues of livestock sector. 4) Resorting to sample survey would require regular specially trained technical staff throughout the year resulting in **addition to existing human and financial resources.** 5) The main issue of time lag in bringing out results of Livestock Census has been reduced by digitization of village level data. It is expected that the livestock data may be made available within one year from the date of completion of the census. Therefore, the recommendations may kindly be reviewed and dropped.	
3	46	The Livestock and Agricultural Censuses should be integrated and taken together in a 20 per cent sample of villages.	The recommendation of NSC was examined and found not feasible by the Department of Agriculture and Cooperation.	D/o Animal Husbandry & Dairying
4	47	Before effecting the integration of Livestock and	Doesn't arise.	D/o Animal

S. No.	Rec. No.	Recommendation	Reason	Implementing Agency(s)
1	2	3	4	5
		Agricultural Censuses a limited pilot investigation be undertaken to firm up the procedures of integration.		Husbandry & Dairying

Annexure II.2

Recommendations made by the Prof. S. Mahendra Dev, Sub-Committee on Agriculture and Allied Sectors

(A) No action required

1. Since the percentage share of small millets and other cereals within cereal group and farm sector is insignificant, the existing methodology of estimation of GVO would be continued.

2. Unless special surveys are conducted, price data will not be available for each of the pulses crop grouped under other pulses. Data on production is available. Value of Output of Other Pulses is estimated by production multiplied by 85 percent of weighted average price of arhar, urad, moong, masoor, and horsegram. The existing methodology would be continued for estimating the GVO of other pulses. Therefore, the Committee is recommending to conduct special Surveys for these pulse crops to estimate the average weighted price for each growing State at least once in two years.

3. Unless special surveys are conducted, price data will not be available for each of these Oil Seeds grouped into others. Data on production is available. The existing methodology can be continued for estimating the GVO of other Oil seeds. Therefore, the Committee is recommending to conduct special Surveys for these oil seed crops to estimate the average weighted price for each growing State at least once in two years.

4. The contribution of Other Sugar and other fibre crop groups are too insignificant and hence the existing methodology may be continued.

5. The value of Toddy production is estimated by multiplying the value of Toddy consumption in rural and urban area in a State by respective rural and urban Population. Value of Output of Toddy is estimated at constant price multiplied by WPI growth of Non-Food items. Till new NSSO survey results are made available, the present methodology may be continued.

6. The contribution of other Condiments & Spices crop in the Farm sector is insignificant and hence the existing methodology may be continued.

7. The yield rate of Fodder per hectare for both irrigated and un-irrigated may be continued until a new study results are made available.

8. The existing methodology for the estimation of GVO from Grass would be continued till new NSS survey results are made available. In case new results from NSS 70th round is made available the same may be used.

9. Value of output of Other-Vegetables is estimated by multiplying Production with weighted average prices of all vegetable crops for which separate data is available for estimating the GVO of Other Vegetables(Beans, Bitter gourd, Bottle guard, Capsicum, Carrot, Cucumber, Muskmelon, Radish, Parwal, Pumpkin and Watermelon). There should be nation-wide survey to estimate average price of these vegetable crops at state level. Till then, the existing methodology may be continued.

10. Value of output for Other Fruits (Amla, Ber, Custard Apple, Kiwi, Passion Fruit, Peach, Plum, Pomegranate, Strawberry, etc.) is estimated by multiplying Production with weighted average prices of all fruits for which separate data is available. There should be nation-wide survey to estimate average price of these fruit crops at state level. Till then, the existing methodology may be continued.

11. The estimates of consumption of chemical fertilizers are based on the material wise consumption of chemical fertilizers, as per 'Fertilizer Statistics', a publication of Fertilizer Association of India. The same may be continued.

12. For estimation of value of input as dung manure, the present method based on evacuation rate and utilization rates of Dung for manure may continue until alternative rate are made available through special surveys.

13. The existing method for Animal feed of roughages consisting of fodder, cane trash and grass and 95 per cent of production of by products (stalks and straws) in the agriculture sector considered to be consumed by livestock population would be continued taking into account the adjustments for the consumption of animals not used in agriculture sector(viz., bullocks, horses, camels etc., mainly used for non- agricultural purpose such as transportation etc..) and fodder from forest and some percentage of fodder from Non Forest.

14. The rate of concentrates for different animals are Cattle/ Buffalo is Rs. 685.26, Sheep/ Goat/ Pigs is Rs.164.82, and Poultry is Rs. 121.38 based on the Cost of Cultivation Studies and corroborated by special studies by State DES's would be continued.

15. Annual data on irrigation charges payable to the government from the States, consolidated from the respective irrigation departments based on the budget analyses would be continued.

16. Market charges based on the Special studies conducted by the Ministry of Agriculture may be continued to use till new results are made available.

17. Data on electricity consumed for agricultural purposes and its corresponding price per unit supplied by the Central Electricity Authority (CEA) on an annual basis at state level would be continued to be used.

18. Estimates of consumption of pesticides and insecticides both in terms of quantity and value supplied by the Directorate of Plant Protection and Quarantine, Ministry of Agriculture, would be continued to be used.

19. The existing method of consumption of diesel oil based on the number of tractors and diesel engines estimated through the Indian Livestock Census (ILC) in use and per unit consumption of diesel oil based on CCS would be continued. Whenever the new results are made available by the Livestock Census and CCS, the same would be substituted.

20. The existing method of estimation of expenditure on current repairs and maintenance based on All India Debt and Investment Survey (AIDIS) would be continued.

21. The state wise ratio given by FSI for estimating the proportion of fodder from forest may be continued.

22. The current methodology for the estimation of TOF based on the product of production figure available for 2010-11 based on all India biennial Survey conducted by FSI and the average annual growth rate of growing stock may be continued.

23. The existing methodology of estimation of fuel wood consumption and deriving of GVO based on the Quinquennial Surveys of Consumer Expenditure, conducted in the NSSO may be continued.

24. In the absence of fresh data and alternative methodology the same input ratio of 15.6% may be continued. However, if fresh rate is made available based on the nation-wide survey by FSI; the same could be used for deriving GVA from GVO in the Forestry Sector.

(B) Crop Husbandry

25. The crop statistics are available only for 41 crops. Efforts should be taken to cover all agricultural crops for bringing out area, yield rate, production, farm-harvest price and input costs so that GVO and GVA are estimated. If some of the crops are not covered annually, the same could be covered periodically say once in three years so that the GVO estimates are robust, reliable and directly computed.

26. The contribution of miscellaneous food crops and non-food crops to Farm Sector are insignificant and hence the existing methodology for the estimation of GVO may be continued. Value of Output of Kitchen Garden is 0.21% of Net area sown multiplied by weighted average value per hectare of all fruits and Vegetables. The existing rate may be changed based on the results of 70th round NSS survey results or latest Agriculture Census results.

27. Of late, State governments supply production data which are quite differing from the final estimates of the Ministry of Agriculture. The reason being stated is that the State Governments revises the data even after final estimates were released by the Ministry of Agriculture, GOI. Ministry of Agriculture should be apprised of the importance of freezing of the estimates once finalized by it. No further changes should be considered.

28. IASRI should be requested to conduct special study/surveys on Horticulture Statistics to estimate production, Prices and input costs for the important Horticultural crops. Since the percentage share from the Horticulture is increasing, urgent action is required to estimate the state-wise production, price and input cost for the major horticulture crops. This gains importance due to the discontinuance of the Central Sector schemes on Fruits and Vegetables with effect from this financial year (2014-15).

29. There should be systematic and scientific efforts to collect horticulture data fully on 244 horticultural crops including production, yield rate, area, input costs and related details.

30. Due to rising share in GVO of Horticulture Sector, Horticulture activities may be considered as significant segment of agrarian activities and hence should be brought part of Agriculture Census and Surveys

31. Apart from area, and production data, there is need to collect reliable data on Inputs, Prices, Imports, Storage facilities, Market facilities, exports, etc.,

32. Multiple agencies involved with wide differences in their estimates and no cross validation mechanism existing. There should be nodal agency in the Ministry of Agriculture to consolidate the data on production, area, yield rate, input costs, etc. both at state level and at National level.

33. Seed rates (quantity per hectare) are available from the Cost of Cultivation Studies (CCS) and the State Agricultural Departments only for the principal crops and some minor crops. Special studies required to be conducted to supplement CCS to cover other crops as well so that the overall input costs on seed usage is captured.

34. Though some of the items of inputs are estimated with the results of cost of Cultivation studies, efforts should be taken to cover more items and make use of the analysed results for compilation and cross validation. This is more so when the plot level data are made available for about than 10 years. Time series analyses can also be on various inputs so analysed from the plot level data of the CCS.

(C) Animal Husbandry

35. The Integrated Sample Survey (ISS) conducted by the Department of Animal Husbandry need to expand it coverage to include Camel and Sheep Milk, Duck Egg for all the states, Goat Hair, Camel Hair and Pig Bristles.

36. There is also need to cover the Unregistered Sector for meat and animals slaughters, Meat Product (Heads and Legs, Fats from Slaughter and Fallen Animals) and Meat By-product (Hides and Skins).

37. Special surveys need to be conducted to estimate inputs of livestock sector i.e. Feed of Livestock, Market Charges and Operational Cost, etc. at state level. This is important to derive GVA for the Livestock sector.

38. The Rates and Ratios obtained by CSO through National Meat Research Centre may be considered in place of the existing Rates and Ratios.

(D) Price Statistics

39. The Committee is of the view that the Farm-Harvest prices of all commodities should be collected at least on regular intervals if not annually. Also they should be made available without considerable time lag.

40. Growth Rates between all India annual Average price and Wholesale price of all most all the crops, Livestock products, Fishery products and forestry products are not consistent. Even the direction is not the same and magnitudes are too alarming in some cases. This need special attention and priority to effect corrective measures.

41. The significant difference noticed between the price data from the DES of State Governments and the Farm-harvest prices should be examined and stages or error should be plucked. All possible effort by the Ministry of Agriculture through its DMI to eliminate the price differences between DMI and DES price data should be undertaken immediately.

42. In view of the large scale differences and delay in receipt of the price data, The Committee is of the view that the price data should be compared with the GR of WPI and abnormal differences noticed if any in the price data then, the GR of WPI should be used. Also in the absence of receipt of price data from any state, the Committee is recommending for the use of GR of WPI over the previous year price of the agriculture commodities.

(E) Fishery

43. NAD would make efforts to conduct Special Surveys on estimating input rates for the Fishery Sector with the involvement of CMFRI and CIFRI for both Marine and Inland Fisheries including that of Cultured Fishery Sector and High valued Fishery sector.

44. Special study may be conducted to estimate state-wise the production, price and input costs of high valued Fishes and Cultured Fishes

45. Based on the availability of data from the special study commissioned, the production, GVO and other parameters may be shown separately for cultured fish (marine), Cultured Fish (Inland), High valued fish and Ornamental fish.

46. Based on the results of Special surveys being conducted by CMFRI, the input rate may be revised for deriving GVA from GVO in the Marine sector.

47. Based on the results of Special surveys being conducted by CIFRI, the input rate may be revised for deriving GVA from GVO in the Marine sector.

(F) Forestry

48. Necessary steps by CSO may be taken to ensure timely supply of the data on production and prices of industrial wood from forest by the State Forest Departments.

49. Special study may be awarded to collect state-wise price of TOF and inputs costs for TOF

(G) General

50. The Sub-Committee is fully endorsing the views and the recommendations of the Prof. A. Vaidyanathan Committee for imbibing professional approach for data collection and processing of Agricultural Statistics through qualified team of professionals so that errors in area enumeration and crop cutting experiments are reduced to the extent possible and the requisite data are made available within a timeframe.

Annexure II.3

Comprehensive Land Use Classification - Extract

1. Total Area (Total area of the country including area under water, etc.)

1.1 Area not in use (excluding areas that were in use once, but are no longer in use due to degradation, etc.)

1.1.1 Land area

- Land under glaciers and perpetual snow and other land (not elsewhere classified)
- Land under vegetation (closed forest areas)
- Land under desert

1.1.2 Land under water (Area under tidal water)

1.2 Area in use for undertaking economic activities

1.2.1 Land area

- Land under single use (details as per concepts given by ISIC)
- Land under multiple use[7]
  - Net land area under use
  - Gross land area under use (Details as per concepts given by ISIC)
  - Intensity of use [(b)/(a)]
- Land not in use due to degradation
- Other land area (not elsewhere classified)

1.2.2 Land under water (Area under water)

- Land under water in single use (details as per concepts given by ISIC)
- Land under water in multiple use[1]
  - Net land area under water in economic use
  - Gross land area under water in economic use (Details as per concepts given by ISIC)
  - Intensity of use [(b)/(a)]
- Land under water not in use due to degradation
- Other land under water (not elsewhere classified)

In building these associations, one can easily use principles laid down in ISIC for classifying activities into principal, secondary and ancillary activities and their association to the owner of the unit. To meet the needs of multiple users, one may consider taking ISIC classes and superimposing other details at the second level. For example, in the case of crop husbandry, detailed data may also be required on area under different crops or characteristics of soil for considering specific issues[8] like soil degradation/erosion due to wind, water and sedimentation, water logging, salinization, shifting cultivations.

The classification based on such a framework would be:

[7] In the final operational classification, it would be useful to classify areas under two activities (activity relates to ISIC concepts) and more than two activities.

[8] Over the last two decades the Land and Water Development Division (AGL) FAO has been at the forefront of the development and application of computer-based systems to analyze data and generate information to support decisions on various land and water issues. Separate soil and land and water systems (such as: AEZ - Agro-Ecological Zoning System, SDBm - Multi-Lingual Soil Database, SOTER - Soil And Terrain Database, DSMW - Digitized Soil Map Of The World, FAO/ITC Land Use Database, ECOCROP 1 - Crop Environmental Requirements Database, ECOCROP 2 - Crop Environmental Response Database, WOCAT - World Overview of Conservation Approaches and Technologies, DTIPNS - Database Tool for Integrated Plant Nutrition Systems, MCDA - Multi-Criteria Decision Analysis techniques, CLIMWAT - Climatic Database, CROPWAT - a computer program for irrigation planning and management, SIMIS - Scheme Irrigation Management Information System) have been developed. The soil and land systems focus on methodologies and tools for the assessment of land resources potentials at global, regional and national and sub-national levels. The water systems concern irrigation water use and management at field level and water resources assessment at regional and national levels. For summary please refer to "Information technology and decision-support systems in AGL – Background Paper" prepared by J. Antonie, Soil Resources, Management and Conservation Service, Land and Water Development Division, FAO, Rome, Italy **In:** Proceedings; World Soil Resources Reports (FAO) , no. 89*; Sub-regional Workshop on Land Resources Information Systems for Food Security in SADC Countries*, Harare (Zimbabwe), 3-5 Nov 1999, p. 9-14.

- Fully compatible with ISIC. As many users are familiar with ISIC, the system would be simple to understand and flexible to incorporate needs of different stake-holders.
- Fully compatible with FAO's land cover classification and could be used for projecting changes in land cover vis-à-vis land use.
- Independent of legend required by different stake-holders. It would be possible to aggregate data on different scales and mapping units.
- Able to facilitate analysis of impact of different economic activities as well as impact of nature's vagaries on areas under land and water.
- It would be feasible to super-impose further details according to user's need to support better land use planning.

This framework would also provide a correspondence between land and labor and capital employed, as well as with the goods & services produced. However, in order to attempt such a classification, it would be necessary to undertake further inter-disciplinary work to define appropriate classes and guidelines for deciding boundary line issues.

Annexure II.4

Overview of the Integrated System

Database		
Census & Surveys	**Remote Sensing & Other Scientific data**	**Administrative data**

Concepts and Definition
UNSNA, SEEA & Time Use Surveys supplemented with land use classification & other sources related to natural resources

Data Collection Tools
Multiple frame survey, Small area estimation techniques

AT NATIONAL LEVEL

Satellite Accounts For Food Balances	**SUPPLY AND USE TABLE**	**Aggregate Picture Of Infrastructure**
Accounts For Institutional Units		**Aggregate Picture Of Agricultural Resources**
Accounts For Agricultural Establishments		

AT REGIONAL LEVEL

Accounts For Regionally Owned Corporate Units	**Accounts For Agricultural Households**
Aggregate Picture Of Infrastructure	**Aggregate Picture Of Agricultural Resources**

AT LOCAL LEVEL

Production & Generation of income account for agricultural households and parcel of agricultural land	**Database on agriculture production, land quality, resources and infrastructure status**

INDICATOR SYSTEM
General purpose indicators on growth, share, etc.; agri-environmental issues; nutritional status; productivity; levels of living of agri-households; gender main-streaming; terms of trade; infrastructural development

CHAPTER III: INDUSTRIAL SECTOR STATISTICS

III.1 INTRODUCTION

III.1.1 This chapter deals with statistics for the industrial sector. The discussion is principally guided by the requirements of statistics for the estimation of GDP/ GVA for the industrial sector as per SNA 2008. The current available data sources are described, the data gaps and quality issues are discussed and a set of recommendations are made for improvement. Some of the important questions or issues that have been kept in mind in preparing the chapter are: (i) issues relating to data governance for quality, timeliness and credibility of collected data and derived estimates, (ii) data integrity and audit trials of a National Statistical System and (iii) how to advance towards the state-of-the-art system for management of data taking full advantage of Information Technology, distributed network and cloud.

III.1.2 The chapter has six sections, including the present one. In order to place the discussion on data sources, data gaps and data quality issues in a proper perspective, the salient features of the present practice of compilation of Indian National Accounts Statistics (INAS) are briefly described in Section 2, which contains discussions on the methods of compilation of institutional sector accounts and the main sources of data used for the industrial sector.

III.1.3 Section 3 contains discussions on data gaps and data quality issues along with the recommendations made for improvement. It should be pointed out that the data currently available for the industrial sector may be regarded as fairly effective for INAS compilation, but there is no doubt some scope for improvement always. This point needs to be kept in mind while evaluating the current situation regarding data availability on the basis of the discussions on the data gaps and data quality issues and the associated recommendations made in Section 3.

III.1.4 Section 3 deals also with issues connected with improving access to data and timeliness of production and dissemination of data. Some new data sources which are likely to become available soon and which have the potential for use in INAS compilation are briefly discussed in this section. For one of these new sources, namely PLFS, some details are provided in an annex.

III.1.5 Section 4 is devoted to the current practices being followed for computation of GVA of Mining and Electricity sectors, and the issues that are being faced in the compilation. It should be pointed out that while Mining and Generation and distribution of electricity are a part of the industrial sector, the discussion of data issues in Sections 2 and 3 of the chapter primarily focuses on manufacturing. Hence, a separate section in the chapter (Section 4) is devoted to Mining and Electricity sectors.[9]

[9] Often, construction sector is taken as a part of non-manufacturing industry. The data sources and data gaps and quality issues for the construction sector are not discussed the chapter.

III.1.6 Section 5 contains a brief discussion on a few other data related issues which are closely related to compilation of INAS, but do not get covered in Section 3.

III.1.7 The chapter ends in Section 6 with a consolidated presentation of all recommendations made at various places in the previous sections of the chapter. This is followed by two annexes of relevance, one dealing with MCA database and the other dealing with the PLFS.

III.2 PRESENT PRACTICE OF INAS COMPILATION

III.2.1 SNA Sectoring of Institutional units

IIII.2.1.1 The 2008 SNA divides the economy in the following five sectors:

a. General Government
b. Financial Corporations, including quasi corporates
c. Non-Financial Corporations, including quasi corporates
d. Non-Profit Institutions Serving Households (NPISHs)
e. Households

All terms, except quasi-corporates, mentioned above are clearly defined in the SNA and do not vary much in their composition across the countries.

III.2.1.2 The composition of quasi-corporates, on the other hand, in spite of clear guidance provided in the SNA, tends to differ from country to country. For the current series of the INAS, all unincorporated partnership enterprises and those proprietary enterprises maintaining books of accounts are treated as quasi-corporate bodies, and are included in financial or non-financial corporate sector, depending upon the activity they are engaged in. The INAS provides separate sectoral accounts for all the five institutional sectors.

III.2.1.3 The INAS, however, does not provide separate estimates for the NPISHs at present. These are included in the household sector. Further, the NPISHs being practically absent in the manufacturing sector, the issues relating to NPISHs are therefore not dealt with separately in the chapter.

III.2.2 Sectoring for compilation of INAS

III.2.2.1 As per the current practice, industrial sector estimates of gross value added (GVA) are being compiled separately for three broad groups of institutional sectors, viz.,

i. Public (General Government, Departmental Enterprises and Non-Departmental Enterprises) sector,
ii. Private Corporate (including Quasi-corporate) sector, and
iii. Unorganized (Household i.e., unincorporated enterprises excluding Quasi-corporate, and NPISHs) sector.

The main issue is to get reliable data sets for all three groups of institutional sectors and suitable indicators to prepare constant price estimates of GVA.

III.2.2.2 For compilation of the INAS, the economy is divided as follows:

A. Organized Sector

a. General Government
   1. Central Ministries & State Departments
   2. NPIs serving the government – autonomous bodies running on grants from the Central and State governments.

b. Public Financial/Non-Financial Corporations
   1. Departmental Enterprises (DE)
   2. Non-Departmental Enterprises (NDE)
   (DCUs and NDCUs have been reclassified as DEs and NDEs)

c. Private Financial/Non-Financial Corporations
   1. Private Incorporated Enterprises
   2. Quasi-corporations – these include
      i. Co-operatives
      ii. Unincorporated enterprises

In the 2011-12 series of the INAS, the quasi-corporates are included in the private financial / non-financial corporate sector of the organized sector. Earlier, the part of this sub-sector consisting of units registered under the Factories Act was included in the "organized" sector, while the rest were included in the "unorganized sector". For the current series, data for those registered under Factories Act are collected in the ASI and the data for the other quasi-corporates are even at present collected in the same way as for the other segments of unorganized sector.

B. Households or unorganized sector

Enterprises not covered in the organized sector, i.e., all non-Government Unincorporated Enterprises that are not treated as quasi-corporations and the Non-Profit Institutions Serving Households (NPISHs) constitute this sector.

III.2.2.3 In terms of gross value added (GVA) at current prices, manufacturing constitutes about 17% of the aggregate GVA of the Indian economy. This share has remained almost at the same level during 2011-12 to 2015-16. The shares of mining and electricity sectors in aggregate GVA are much smaller. The combined share of mining and electricity in aggregate GVA is about five percent.

III.2.2.4 In terms of GVA, manufacturing is dominated by the organized sector. The unorganised or household manufacturing forms only a small part of total manufacturing GVA, though from the perspective of employment generation, unorganized manufacturing has an edge over organized manufacturing. As is evident from Table-III.1, the unorganised manufacturing sector units (household units and NPISHs) have a share of about 13% in total manufacturing GVA and about 2% share in the GDP.

Table III.1: Percentage share of households and NPISHs in GVA of manufacturing and GDP

Share (%) of households and NPISHs in	2011-12	2012-13	2013-14	2014-15	2015-16
GVA of manufacturing	12.7	13.4	13.9	13.3	12.6
GDP	2.1	2.1	2.1	2.0	1.9

III.2.2.5 The practice of dividing the corporate sectors in the aforementioned manner for compilation of INAS has been followed since the early years of national accounting in India. In fact, this has been so because of the sources used for compilation of INAS. The data for the DEs are mostly available from government budgets, while those for the NDEs and Private Financial/Non-Financial Corporations are obtained from their annual reports. Further, while coverage of NDEs in INAS compilation has always been quite comprehensive, that for the private corporate sub-sectors has been rather poor till recently. Also, the coverage of NPIs serving the central government is fairly good in the INAS, while that for the NPIs serving the State governments and local bodies are rather poor.

III.2.2.6 As regards the level of disaggregation within manufacturing, for dissemination of data on GVA, manufacturing is divided into five broad divisions: (a) Food Products, Beverages and Tobacco, (b) Textiles, Apparel and Leather Products, (c) Basic Metals and Metal Products, (d) Machinery and Equipment, and (e) Other manufactured products. Each of these divisions is further disaggregated, and the manufacturing sector thus gets divided into 30 industries or industrial groups for the purpose of dissemination of data on GVA. The Supply-Use Tables (SUTs), which are now an intrinsic part of the National Accounts compilation, provide detailed data on production, consumption, exports, imports, GVA, etc. for manufacturing industries. In this case, the manufacturing sector gets disaggregated into 72 groups of manufactured products and 30 industries.

III.2.2.7 INAS provides estimates of GVA (and gross output) for aggregate manufacturing with disaggregation by institutional categories and industries. Earlier, the 'publication categories' and the 'compilation categories'[10] were different. In the current series of INAS, estimates of all the 30 'compilation-categories' are presented in the disaggregate statements. In addition, estimates of capital formation and distribution of value added into factor incomes are provided at the aggregate level.

III.2.2.8 The published SUTs are 140 products x 66 industry matrices. Of these, the manufacturing sector constitutes a 72 products x 30 industry matrix. The estimates of inputs and outputs of 72 **product categories** (commodity) are obtained from ASI and 62nd Round[11]

[10] Compilation categories are groupings of NIC 5/4/3-digited codes, which collectively cover all the economic activities considered for INAS.

[11] According to the Note on Methodology regarding SUTs for the Indian economy for 2011-12 and 2012-13, published September 2016, for the unorganised segment of manufacturing, the estimates of outputs and their decomposition are based entirely on the NSS 62nd round, extrapolated by IIP and WPI. As for the estimates of inputs, the industry-wise (in fact, compilation-category-wise) values are based on the 67th round estimates, while the structure is borrowed from the 62nd round estimates.

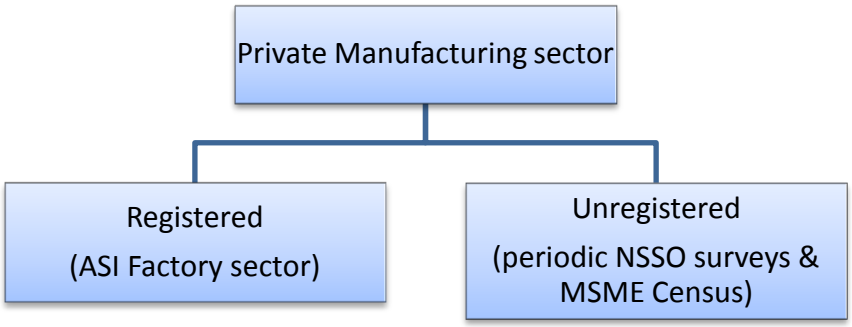
NSS in respect of units of the 30 compilation categories. The SUTs provide use of intermediate input including manufactured products in various manufacturing industries. The SUTs help in reconciling the estimates of production of 72 manufactured products into their intermediate and final use including private and government consumption of the products, and exports and imports.[12]

III.2.2.9 In addition to the annual estimates of GVA in manufacturing, there are estimates of quarterly GVA in manufacturing which play an important role in policy making. These estimates make use of data that become available with higher frequency such as Index of industrial production (IIP) and the RBI (Reserve Bank of India) publication on the 'Performance of Private Corporate Business Sector' which provides data based on quarterly results of companies.

III.2.3 Compilation of Institutional Sector Accounts – An Overview of Methodology

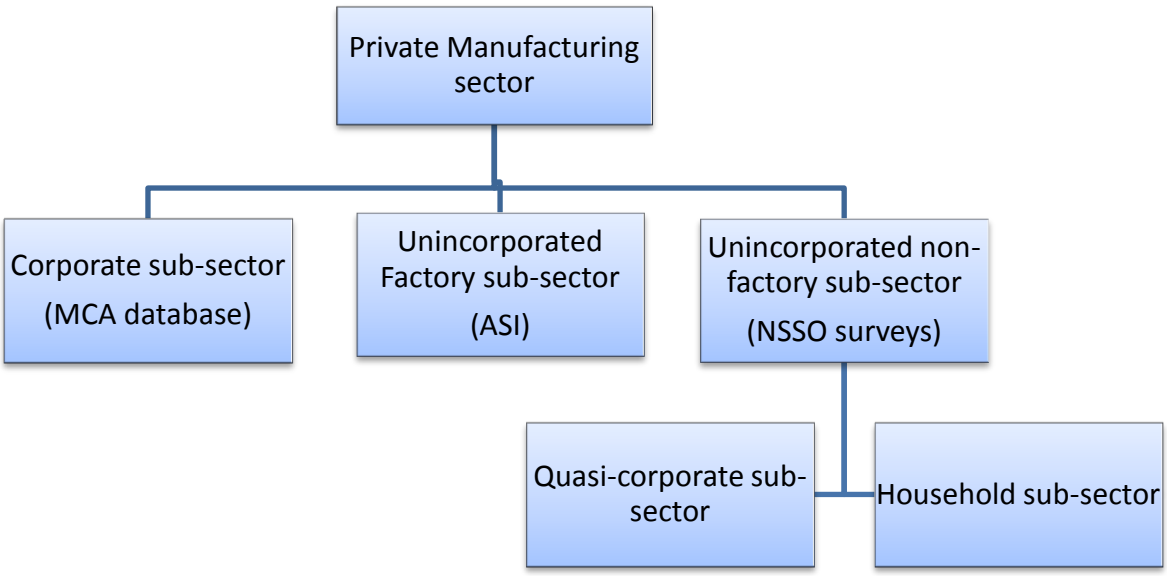
III.2.3.1 *Current-price GVA* estimates – **organised sector**: For compilation of GDP, the activity-wise GVAs are first worked out separately for each institutional sector. The data for compiling current-price estimates of GVA of manufacturing are annually available for the organised sector. The GVA estimates of DEs are compiled using data available from Government budgets of Central and States Governments and accounts of autonomous bodies. The GVA estimates of NDEs are compiled using data available from Profit and Loss accounts and Balance Sheets. For the Private Corporate sector, MCA database available from the Ministry of Corporate Affairs is now used for working out their GVAs.

III.2.3.2 The most important improvement made in the 2011-12 revision of the INAS is the use of the MCA database for compilation of private corporate sector. Broadly speaking, earlier, a comprehensive coverage of the private manufacturing sector was accomplished using data from statistical exercises using two mutually exclusive frames, viz. (i) list of factories for the ASI (*Annual Survey of Industries*) and (ii) area frame for periodic unorganised (manufacturing) enterprise surveys of the NSSO, making a list of only the non-factories at the listing stage. Thus, for estimation of GVA as well as for data collection, the manufacturing sector was simply classified as:



[12] Attention may be drawn here to the fact that ASI data are for manufacturing establishments, and the use of such data for the construction of SUT in which the industries are defined on the basis of the enterprise approach, not the establishment approach, involves some inconsistency.

III.2.3.3 With improvement in data sourcing made in the 2011-12 revision of the INAS, the sub-sectoring of the manufacturing sector too has undergone a substantial change. While the two surveys continue to have the same coverage, the compilation of the SNA aggregates is based on an altogether different classification, as shown in the figure below.



It should be noted that the Corporate sub-sector based on MCA, the Unincorporated Factory sub-sector and the Quasi-corporate sub-sector in the figure above, when taken together, form the Private Corporate sector in the INAS, and the Household sub-sector is called 'Household sector'. The private corporate sector and the public sector together constitute the Corporate sector.

III.2.3.4 The use of MCA database has brought about a fundamental change in the compilation of GVA in the new national accounts series with base 2011-12 and there has been a shift from establishment approach to enterprise approach.[13] This has important implications on economic activities being covered under manufacturing. For instance, trade carried out by manufacturing companies, which has now become part of 'manufacturing' was earlier covered in 'trade' because of establishment approach.[14] Thus, a small part of 'manufacturing' GVA in the new system is actually the value addition done by manufacturing companies in the trade activities carried out by them. However, it should be noted that trading and sales are segregated, in principle, in the SUT by allocation to trade & transport margins (TTM). The 2008 SNA recommends SUT-based compilation of national accounts. Thus, the problem of separating manufacturing-trading mix is, at the least notionally, taken care of in the SUT-based compilation of national accounts. The more serious problem posed

[13] For a discussion on the changes made in the new national accounts series, particularly the use of MCA data for estimation of GVA in the manufacturing sector, see Goldar (2015, 2016), Nagaraj and Srinivasan (2017), Rajkumar (2015), and Sapre and Sinha (2016), among others.

[14] CSO Press Note of January 2015.

by use of enterprise-level data stems from other kinds of product-mix, such as mix of textiles and telecommunications, metal products and machinery, mix of cigarettes, food products and perfumes, etc. For compilation of SUT, in such cases, data on outputs produced and inputs used and changes in inventories are required separately for each of the products of an enterprise. But, the MCA database does not even provide exact specification of the main activity pursued in some cases, let alone product-wise data on outputs and inputs. To continue with this issue of mixed production basket of manufacturing companies a little further, it may be said that an industry-group ought to include only those of other activities which are of incidental nature. A question that arises here is: if with some efforts one could precisely identify and assess the contribution of non-manufacturing activity to GVA of a manufacturing company, will it be correct to deduct such value from the GVA of the companies to get a 'true' measure of manufacturing GVA, closer to the concept used earlier. This does not seem to be the right procedure to apply because the new INAS series has shifted from the establishment approach to the enterprise approach and hence removing GVA of the non-manufacturing activities in manufacturing companies from their total GVA would not the correct conceptually.

III.2.3.5 For compilation of institutional sector accounts of the manufacturing sector, the estimates for the unincorporated factory sub-sector and the quasi-corporate non-factories are pooled together to form the estimates of quasi-corporates, which in turn is clubbed with the corporate sub-sector estimates to obtain the estimates for manufacturing activities of the institutional sector called 'corporate sector'. The rest constitutes the household sector, which covers unincorporated enterprises - excluding partnership enterprises and those maintaining books of accounts that are considered as quasi-corporate since the revision of INAS with base 2011-12. The only source of value added estimates of manufacturing activities in this sector is the NSS Enterprise surveys. The results of NSS Employment & Unemployment surveys are also used for estimating GVA of this sector, using Effective *Labour Input Method* (LIM).

III.2.3.6 *Constant-price GVA* estimates – **organised sector**: The constant-price estimates of GVA for organized sector of manufacturing is obtained by deflating the current-price GVA estimates by relevant WPI.

III.2.3.7 *Base-year* estimates of **unorganised/household sectors**: In the case of Household sector and non-factory quasi-corporate sector, the base-year estimates are derived from the results of NSSO's Enterprise Survey (NSS 67th Round) and Employment and Unemployment Survey-EUS (NSS 68th Round) (see Table 2 below). The GVA is estimated as GVAPEW (Gross Value Added per Effective Worker)*Effective Labour input (LI) for the base year 2011-12. GVAPW has been taken from the NSS 67th round and the EUS (NSS 68th round) has been used for estimating the LI in each of the compilation categories (CC). Thereafter, multiplying GVAPW 67th round and estimated number of workers from 68th round gives an estimate of GVA of the compilation category for the base year 2011-12.

III.2.3.8 *Current-price and Constant-price GVA* estimates – **unorganised/household sector**: The current price GVA estimates for the household and quasi-corporate non-factory subsectors are obtained by moving the base year estimate with the help of ASI data (Table 2). The combined growth of proprietary, partnership and HUF from ASI is used to move forward the benchmark estimates. The unorganised sectors' GVA estimates at *constant-*

price are derived by deflating *current-price* GVA with the help of WPI. When ASI data are not available, IIP is used to move the bench mark estimates and adjusted for prices.

Table III.2: Methods used for Estimation of current-price GVA in Unincorporated Enterprises Segment of Manufacturing

Segment	**Base-year estimate (for 2011-12)**	**Data used for making estimate for subsequent years**
Unincorporated Factory Sub-sector	ASI	ASI
Unincorporated non-Factory Sub-sector, split into:		
Quasi-corporate sub-sector	NSS enterprise survey (NSS 67th round and NSS EUS (NSS 68th round)	Indicator used for moving base year estimate: obtained from ASI data
Household sub-sector	NSS enterprise survey (NSS 67th round and NSS EUS (NSS 68th round)	Indicator used for moving base year estimate: obtained from ASI data

III.2.3.9 It is important to draw attention to the fact that the data sources underlying the manufacturing GVA estimate for years subsequent to the base year differ, depending on whether the GVA estimate is an advanced estimate, provisional estimate or a revised estimate. The methodology described above applies to manufacturing GVA estimates that are provided at the stage of second revised estimates of GDP. At the stage of compiling the advanced estimates or the provisional estimates, the ASI data are not available for the relevant year and therefore some alternate sources of data are used. This also applies to the quarterly estimates of manufacturing GVA as a part of the quarterly GDP estimates. The basic sources of data used for these estimates, for example for the provisional annual estimates or the quarterly estimates of manufacturing GVA, are the RBI (Reserve Bank of India) corporate sector data , quarterly filings of listed companies which is used for the corporate sector and the IIP which is used for making estimates for the unorganized sector. The current price estimates of GVA for organized sector of manufacturing is moved with the help of quarterly filings, which is then deflated with a suitable price index taken from WPI to derive the constant price estimates. As regards unorganized manufacturing, IIP data are used for moving the constant-price GVA estimates, and then the current price GVA estimate is obtained with the help of WPI.

III.2.4 Data Sources – for INAS compilation

III.2.4.1 **Public sector**: Data for compiling Public sector estimates of aggregates relating to (i) production, (ii) income generation, (iii) distribution of income, (iv) final consumption and (v) capital formation at current prices are regularly available through Central & State budgets and Local body accounts, and Departmental and Non-Departmental Enterprises' and Government companies' annual accounts. The constant price estimates are compiled by deflation using suitable price indices or by using relevant volume indices.

III.2.4.2 **Private corporate sector**: For the Private corporate sector, regular data is available from the Ministry of Corporate Affairs (MCA). These data form the basis of

estimating the aggregates relating to (i) production, (ii) income generation, (iii) distribution of income and (iv) capital formation.

III.2.4.3 **Unincorporated Factory Sub-sector**: Data for this sub-sector is taken from the Annual Survey of Industries (ASI). This source provides data on (i) production, (ii) income generation, (iii) distribution of income, and (iv) capital formation. However, the data on capital formation obtained from the ASI are not used for the capital formation estimate for manufacturing in the corporate sector.

III.2.4.4 **Industry-wise distribution**: For the estimate of GVA (and gross output) for unincorporated factory sub-sector, the industry-wise distribution is readily available from ASI data. This is, however, not straight-forward in the case of private corporate sub-sector. To explain this further in respect of MCA data, the large companies have several establishments (factories) in diverse lines of production including provision of services, and classifying them into NIC two-digit level or into compilation categories poses a problem. This is particularly serious in respect of highly diversified large companies. Thus, for private corporate sub-sector based on MCA database and public sector manufacturing enterprises, the ASI structure is being used to distribute the aggregate GVA (or gross output) of these sub-sectors into the compilation categories. Product-wise data used for the purpose of constructing SUTs is also drawn from the ASI.

III.2.4.5 **Gross State Domestic Product (GSDP) of Private corporate sector and Public sector**: The state-wise estimates of manufacturing GVA are important for making estimates of state GDP. From MCA data, it is difficult to get the state-wise distribution of aggregate manufacturing GVA of the private corporate sub-sector. The state-wise distribution is done with the help of ASI data, i.e. by applying the ASI structure. It should be pointed out that compilation category-wise allocation is being made on the basis of ASI.

III.2.4.6 As regards the public sector unit, the state-wise distribution of estimated GVA does not pose a problem in most cases. In the case of central government enterprises, state-wise allocation is being done on the basis of certain indicators such as compensation of employees which is allocated on the basis of state wise employees and operating surplus which is allocated according to gross block.

III.2.4.7 The only source of data available for compiling the estimates of unorganised segment of manufacturing is the NSS Enterprise Surveys, and these are conducted only once in every 5 years. These surveys provide data for making estimates relating to (i) production, (ii) income generation, and (iii) distribution of income. Estimates of capital formation of the unorganised segment of manufacturing are derived from the results of All India Debt & Investment Surveys conducted by the NSS once in ten years.[15]

III.2.4.8 Consequently, at the time of base year revision of National Accounts, only benchmark estimates for unorganized manufacturing are available from these surveys. To compile subsequent years' estimates, ASI data are used to compile the estimates at current series which are then deflated to derive the estimates at constant prices.

III.2.4.9 For estimating final consumption of the households and NPISHs taken together, called Private Final Consumption Expenditure (PFCE), the present practice involves adoption of a commodity-flow approach for most of the components. A large

[15] The next AIDIS is, however, scheduled to be undertaken in the 77th Round (2019) of the NSSO, which will be after six years of the last AIDIS conducted in the 70th Round (2013).

number of rates and ratios are used for obtaining PFCE from the supply-side estimates. Only for a few components of PFCE, NSS consumption expenditure survey data are used and this is usually conducted once in five years. The base-year estimates of these components are extrapolated using population growth rate and appropriate consumer price indices.

III.2.4.10 Thus, to sum up the above discussion, the data sources currently used for compilation of aggregates relating to (i) production, (ii) income generation, (iii) distribution of income, (iv) final consumption and (v) capital formation can be grouped into the following three broad types:

I. Administrative
   - Government budgets & accounts – for
     - General Government
       - Central ministries
       - State departments – local bodies
       - NPIs serving Government
     - Corporate sector – DCUs, NDCUs and Quasi-corporate
   - MCA21 – for the corporate sector.
   - Others

II. Statistical Surveys – for mainly households and NPISHs
   - Annual Survey of Industries
   - Unorganised sector surveys
   - AIDIS
   - NSS Consumption Expenditure Surveys

III. Compiled indices and indicators – price indices.

III.3 DATA GAPS, DATA QUALITY, DATA ACCESS AND NEW DATA SOURCES

III.3.1 Identifying data gaps

III.3.1.1 Data gaps of severest concern exist in respect of unorganised sector of manufacturing. The only source of data available for compiling of the estimates of unorganised segment of manufacturing is the NSS Enterprise Surveys and these are conducted only once in every 5 years. Besides the unorganised household segment, the estimates of the quasi-corporates are also based on NSS enterprise surveys.

III.3.1.2 Consequently, at the time of base year revision in National Accounts, only benchmark estimates are available from these surveys. To compile subsequent years' estimates, currently some indicators are being used to compile current-price or constant-price estimates.

III.3.1.3 At the stage of making Second Revised Estimates of GDP, the ASI data for the relevant year is available, and therefore, ASI data are being used to obtained current-price estimate of GVA which is then deflated. For the provisional estimate of GDP and for the quarterly estimates of GDP, ASI data not being available for the relevant year, the IIP is being used as an indicator for **the household sector and the quasi-corporate sector**. This method yields the constant-price estimate. The current-price estimates are then compiled using relevant price indices.

III.3.1.4 It needs to be underscored that in the provisional estimates of GDP and in the quarterly estimates of GDP, the IIP is being used as an indicator not only for **the household sector and the quasi-corporate sector** but also for the **unincorporated factory sector** of manufacturing. This may lead to some deficiencies in the estimates obtained.

III.3.1.5 The use of IIP is an indicator for making GVA estimates has two problems. First, it understates the growth in real GVA taking place in the organized manufacturing sector and second, growth in IIP (being based on production data for organized sector units) may not correctly show the growth that is taking place in the informal segment of manufacturing. Further, change in IIP measures growth/decline in output and not the change in GVA and one cannot rule out the possibility that the ratio of value added to output changes over time with the consequence that the growth rates of output and GVA differ. The absence of a high frequency estimate of employment or production in informal manufacturing enterprises is therefore one of the limitations of the advance or provisional estimates of manufacturing GDP.

Table III. 3: Growth rates in IIP- manufacturing and Real GVA and GVO of Corporate Sector Manufacturing (% per annum)

Indicator	2012-13	2013-14	2014-15	2015-16
IIP-manufacturing	4.8	3.6	3.8	2.8
GVA - manufacturing, corporate sector, at constant prices	4.8	4.4	9.3	11.7
GVO - manufacturing, corporate sector, at constant prices	3.5	6.5	6.9	5.9

Table III.3 reveals that the growth rate in IIP-manufacturing has been significantly lower than the growth rate in real value added in corporate manufacturing in 2014-15 and 2015-16. In these two years, the growth rate in IIP-manufacturing was closer to the growth rate in real output than the growth rate in GVA. This issue is taken up for further discussion in Section 5.

III.3.1.6 In the revised estimates of GDP, the ASI data are used to move the GVA estimate of household sector and quasi corporate sector of manufacturing. Moving base year estimates with the growth rates in GVA of quasi-corporates as per ASI is another major limitation since there is a mismatch between the growth rate of GVA in unorganized manufacturing vis-à-vis growth rate of quasi-corporates as per ASI.[16]

[16] This issue has been examined by Manna (2017) who finds that there is a mismatch between the growth rate of GVA in unorganized manufacturing and the growth rate of GVA in the quasi-corporate segment of manufacturing as per ASI data.

III.3.1.7 *Recommendations*: a) Comparison of growth rates in unorganized manufacturing between 67th and 73rd Round and that reflected by IIP and ASI (Quasi) may be carried out to assess the appropriateness of the present method. b) Labour Input approach (through PLFS estimates) for moving the estimates of unorganized manufacturing may be considered as an alternative to ASI(Quasi)/IIP Growth rates, being applied presently.

III.3.1.8 While the use PLFS data (discussed later in the report; see Annex III.2) for applying the LI approach may lead to some improvement in the estimates, a much better solution will be provided by having annual surveys on unorganised sector manufacturing. Use of indirect methods such as LIM for compilation of annual INAS is essential mainly because, leaving aside the issue of under-coverage, there is no provision of collecting annual data on this sub-sector (unincorporated manufacturing units not registered under Factories Act) in the data-collection framework currently followed. With the MCA data becoming available annually, much of the resources can possibly be saved and diverted towards collection of annual data of this sub-sector. Such surveys will provide direct estimates and thus no extrapolation would be required for compilation of INAS for the sub-sector.

III.3.1.9 There are serious data gaps in respect of compilation of national accounts for the organised sector as well. The data on private corporate sector available from the Ministry of Company Affairs do not provide accurate information on economic activity (NIC code) and that required for distributing national level estimates over the States. Data gaps and issues relating to quality of available data are discussed sub-sector by sub-sector in the following sub-sections. But, this is preceded by a discussion on ASI which provides data for more than one sub-sector.

III.3.2 Annual Survey of Industries

III.3.2.1 One problem being faced by ASI is that the coverage is incomplete. There are factories with more than 10 workers (with power) which are not registered under the Factories Act and hence not getting covered under ASI.[17] Currently, some attempts are being made to extend the coverage of ASI beyond the list provided by the Chief Inspector of Factories. For this purpose, the Business Registers are being used. The aim initially is to include units with 100 or more workers not registered under the Factories Act but registered under the Companies Act. Yet, it cannot be denied that coverage of ASI needs to be enhanced to provide a better coverage of the entire organized manufacturing sector. Till this is done, this remains a limitation of ASI data. This is an issue for INAS because the GVA estimate of unincorporated factory sector is based on ASI. It has been noted above that industry and state-wise allocation of MCA based estimate of GVA and GO is being done on the basis of ASI. Inasmuch as there is a problem of under-coverage in ASI, it affects the estimates obtained by allocating MCA based GVA/GO estimates.

III.3.2.2 Unlike ASI (Annual Survey of Industries) data, GVA estimate for private corporate manufacturing based on MCA cannot be readily distributed among states. Allocation is being done on the basis of ASI state-wise structure. Indeed, the entire private

[17] "As many as 70,000 manufacturing companies registered under the Companies Act have not been captured in the ASI, because these establishments aren't registered under the Factories Act. This accounted for close to 15% of the manufacturing sector GDP for 2011-12." *Economic Times*, May 13, 2015.

corporate sector GVA is distributed using ASI structure. However, it is known that state-wise ASI estimates have high volatility.[18] This may be affecting the year to year estimates of manufacturing GDP for different states. This probably poses a problem in making state GDP estimates.

II.3.2.3 *Recommendations:* a) Explore the possibility of getting state-wise distribution of GVA of the private corporate sub-sector from MCA data. b) Strengthen the quality of data collected by states in the state sample allocated to them for conducting ASI, which may be then be pooled with the central sample for deriving the state-wise distribution of the GVA in manufacturing within ASI coverage.

III.3.2.4 The ASI at present covers the entire factory sub-sector. For compilation of INAS, at present only the part consisting of incorporated units are utilised. This naturally leads to the question: should the ASI be continued with its present coverage or should it be restricted to only the unincorporated factories? Nearly half of the ASI units are in private corporate sector (ASI 2010-11). As these are expected to be covered in the MCA database, collecting data from such units amounts to an enormous duplication of efforts. In fact, the estimates on incorporated ASI units are no longer utilised for INAS compilation. However, there are grounds to argue that the ASI should continue with its present coverage for three distinct reasons. First, since the data for factories of corporate bodies pursuing more than one activity in multiple locations are expected to give "purer" estimates of manufacturing activities, use of ASI data for such units seems to be a better approach for INAS compilation, rather than apportioning the data available from the MCA database. Second, so long the data from the two sources on manufacturing units of corporate bodies with only one production unit (whether or not the head office is located in the same premises) are not cross-validated and found to be have fairly good match at the State-level, the ASI should continue in its present form. Such units are understood to constitute a very large majority among ASI units in the private corporate sector. Third, the ASI is a better source of data required for SUT compilation.

III.3.2.5 Recommendations: (a) Cross-validation study on data on corporate bodies with single manufacturing unit available from the two sources.[19] (b) Reviewing the coverage of the ASI after a few years, once the recommended studies are completed.

III.3.2.6 Business Register: As mentioned above, Business Registers are being used to expand the coverage of ASI beyond the Factories Act with a view to providing a better estimate of GVA in organized manufacturing. At present, about 68 lakh units are registered. This information relates to 23 states. For the remaining states, the work is in progress at various stages of completion/ finalization.

III.3.2.7 *Recommendation*: The work on Business Register should be completed quickly for all states and UTs, so that ASI coverage can be expanded for all states/UTs by including large manufacturing units which are present in the Business Registers but not registered under the Factories Act.

[18] The issue of fluctuations in state-wise ASI data has been examined by Manna and Chakraborty (2012).

[19] Currently, in ASI data collection, information on CIN is also being collected in respect of factories belonging to corporate bodies. This will help in matching ASI data with MCA data and facilitate the suggested study.

III.3.2.8 At present, ASI data are directly used for GVA compilation in respect of enterprises belonging to Unincorporated Factory sub-sector. There is a possibility that eligible units are not being covered under the ASI frame leading to some degree of under-estimation of GVA for this sector.[20] Whether this is a serious issue needs to be investigated with the help of Business Register, and if found true on the basis of a study undertaken, remedial measures would be needed.

III.3.2.9 Coverage of ASI and unorganised sector surveys: The ASI frame and the frames of ultimate sampling units (USUs) in the unorganised sector surveys should necessarily be mutually exclusive. But, with inclusion of some large units that are not registered under the Factories Act in the ASI frame, the basic framework for industrial data collection is disturbed. To ensure that the mutual exclusiveness of the two frames is retained, developing a revised criterion for creation of frame of the USUs in the unorganised sector surveys becomes imperative, till a sounder procedure of bringing all manufacturing units with more than 10 workers (with power) under the Factories Act is made operative.

III.3.2.10 *Recommendations*: The criterion for inclusion of units in the USU frames has to be revised for the unorganised sector surveys. For the time being, perhaps, a list of large units not registered under the Factories Act but included in the ASI frame may be provided to field workers for excluding them from the USU frames. For the long run, a procedural protocol, involving the Inspectors of Factories, may be laid down for developing frames of ASI.

III.3.3 Corporate Sector

II.3.3.1 Corporate sector consists of Government enterprises, private corporate sector, cooperatives and the quasi-corporate bodies. Data on these are available from different sources.

III.3.3.2 *Government Enterprises*: Government Enterprises include DEs and NDEs. The NDEs can be companies as well as public enterprises that were created by the Government. For the DEs there is no data gap, as the information becomes available from the budget documents. Reports giving audited accounts for most of NDEs of the Central Government are available. But for some of NDEs there is a time lag in getting the reports. At the stage of first revision, the coverage of the available annual reports is just about 67% of the GVA of the NDEs. It improves considerably to 93% at the stage of second revision – still not complete. The shortfall in coverage is made up by repeating the information from the latest available reports of the units for which reports are not available.

III.3.3.3 There are also Non-Departmental Enterprises, mostly of the State Governments, for which required data are not available to the system. There are about 150 such units at present. It is apprehended that most of the non-reporting units are the loss making ones. As of now, no adjustment is made in the estimates for these units.

III.3.3.4 *Non-financial Corporate*: The MCA is the main data source for non-financial corporate sector (details provided in Annex III.1). The data are extracted from the annual reports – submitted in XBRL and AOC-4 formats – of the companies and made available to the NAD in a dataset called MCA-21. This is the most comprehensive dataset on the

[20] This is indicated by a study undertaken by Chatterjee and Kanbur (2015).

corporate sector available in the system. Yet, the coverage of MCA-21 accounts for about 85%, in terms of PUC, of the total PUC of the non-financial corporate sector. In the INAS, the shortfall in the coverage of the sector is made up by using the information of PUC.

III.3.3.5 For the manufacturing sector, a high proportion of companies (over 70%) are covered in the computation of GVA. For the companies for which information is not available, a blow-up factor based on PUC is being used. A detailed analysis of the data has revealed that under-coverage is much higher among relatively smaller firms, and for such firms the ratio of GVA to PUC is relatively much higher. This raises the question, whether use of a blow-up factor based simply on PUC is good enough for the estimation of GVA.[21] It has been recommended that adjustment should be separately done for private limited and non PLC, and this is being done.

III.3.3.6 Assumption of uniform spread of non-reporting active companies across all compilation categories does not hold. Hence Compilation Category Level Estimates are not robust (only one All India blow up figure is used across all categories).

III.3.3.7 The most important gap in MCA-21data relates to the information at the regional (State) level. For the companies operating in more than one State, there is no way of ascertaining the distribution of GVA of such a company over its States of operation. In absence of details of a company's state-wise activities, the national-level GVA estimates are allocated to States in proportion to State-level GVA estimates obtained from ASI for manufacturing activities. This has been discussed above.

III.3.3.8 The other data gaps in MCA-21 in the context of compilation of national accounts aggregates of non-financial service sector are (i) absence of Financial details (like loans, bonds, shares, debentures etc.) in AOC-4 returns, which are required to be submitted by relatively small companies; (ii) 'Royalties' (especially for mining) payment not available either in AOC-4 or XBRL returns.

III.3.3.9 Moreover, the MCA-21dataset has serious quality issues. The economic activity or activities (NIC codes) perused by a company is extracted out of the CIN (Corporate Identification Number), assigned to the company at the time of registration. The NIC code reported at time of registration is likely to undergo change in due course of time. The MCA-21 dataset is not designed to include all the economic activities pursued by a company. However, it may be possible to tackle this difficulty by using the MGT-7 forms which contain information regarding activity-mix of the companies.

III.3.3.10 MCA based estimates of GVA for manufacturing companies includes GVA originating from provision of services by manufacturing companies (e.g. trading, sales, repair services). In certain ways, these services GVA is also getting allocated according to ASI which does not cover services. This might introduce a slight error into the allocation of MCA based manufacturing GVA into compilation categories. MCA is trying to collect for the companies the contribution of various products through a different form, details of which may be available in due course (MG7 and 9 as also industry codes). This might help in checking if the application of the ASI structure is introducing some slight error in the estimates.

III.3.3.11 *Cooperatives*: The NABARD is the main source of data on cooperatives. NSSO does not cover Cooperatives in their surveys. It is felt that as the NABARD is the

[21] The limitations of the use of the blow factor has been noted in several studies including Nagaraj and Srinivasan (2017), Sapre and Sinha (2016) and Rajkumar (2015).

nodal regulatory authority, information for this type of enterprises may be collected from NABARD. However, no information is available for the non-financial cooperatives. It is suggested therefore that the CSO should take up the matter with the NABARD.

III.3.3.11 Recommendations: Based on the detailed consideration of the gaps and shortcomings of the data available for the real sector from the MCA, the following recommends are made:

1. To capture the contribution of companies in various sectors including manufacturing, besides classifying companies as per NIC codes from CIN, information from MGT 7 and MGT 9 Forms may be used. MCA may try to ensure that all companies file information on description of main business activities in MGT 7.

2. To begin with, corrected NIC classifications for top 500 companies (in terms of turnover) and top 10-15 companies in each compilation category used by NAD may be provided to MCA. So that the verification and corrections for them are done on a priority basis in MCA database also.

3. To accurately account for contribution due to any activity in a multi-activity company, the usability of information available from MGT 7 may be explored.

4. NAD may identify additional variables which are to be extracted from MCA21 and provided for GDP calculations.

5. NAD may also share list of additional information that is required from MCA as per SNA.

6. To enable accurate State-wise distribution of GVA, MCA may explore the availability of information on number of establishments along with location, industrial activity and some other variables like fixed assets /No. of workers / wage bill etc. for each company. Since the CDM project would be extracting all information that the companies provide, such information may be extracted from Forms/attachments on priority basis.

7. MCA may make data on companies more accessible to public by devising query based system.

8. The cases of non-reporting but active companies need to be identified to ensure that their information is not used for scaling up when they were not involved in production process e.g. when they were in the process of winding up etc.[22]

[22] This may require a detailed study combining both ASI and MCA data as noted later in the chapter.

9. Besides the PUC being currently used for blowing up the estimates, use of alternative indicators like fixed assets etc., may be explored for future. Further refinements in terms of compilation category-wise scaling up factors or size class-wise scaling up factors within compilation categories may be explored.

10. At present the PUC based blow-up factor is determined on the basis of the data of firms that have submitted their data in the required forms by a specific date. Some of the non-reporting firms submit their data later. The ratio GVA to PUC should be compared between the firms that submit their returns within the specified date and those that submit later. Such research may provide an answer to the question whether the ratio of GVA to PUC is lower for later filers or non-filers as compared to the firms that file their returns in time.

III.3.4 Quasi-corporate

III.3.4.1 The data for quasi-corporates come from the ASI and NSS enterprise survey. Issues relating to ASI data are already discussed in sub-section III.3.2 above. The data for the non-factory quasi-corporate is extracted from NSS survey with the help of a piece of information from NSS survey schedule come from NSS survey. The piece of information is "whether the enterprise maintains accounts". If the enterprise maintains accounts than it is treated as quasi-corporate, otherwise the enterprise is treated to be the household sector. The estimation issues in unorganised sector are discussed below.

III.3.5 Household Sector

III.3.5.1 The household sector covers unincorporated enterprises, including partnerships enterprises and those maintaining books of accounts that are considered as quasi-corporate in since the revision of INAS in 2011-12. The only source of value added estimates of manufacturing activities in this sector is the NSS Enterprise surveys. The results of NSS Employment & Unemployment surveys are also used for estimating GVA of this sector. Both these surveys are usually conducted quinquennially. The results of such a survey conducted with a reference period closest to the base-year of an INAS series are used for preparing base-year estimates. The base-year estimate is extrapolated for subsequent years. The enterprise and employment and unemployment data are annually required for preparing estimates of unorganised sector.

III.3.5.2 State-level estimates for compiling GSDP: For compilation of GSDP too, the economy is divided into 31 CCs. The State-level estimates of GVA of different CCs are arrived at using the same sources and methods as that for national-level estimates. But the estimates of GVAPW and LI for many of the CCs are far from reliable for most of the States. For these CCs, the sample size of NSS surveys is such that only national estimates are found reliable. The present sample size is not sufficient for preparing industry-wise estimates at state level. The NSS 67th round state x industry enterprise data shows that in many cases

the number of sampled enterprises is zero or less than 35. This provides a very thin sample at state x industry level.

III.3.5.3 Recommendations: PLFS may be used for estimation of GVA of the household sector, and Statewise estimates should be moved over time using PLFS estimates and compilation categories may be merged into 5-6 categories instead of 31 categories being compiled.

III.3.6 Estimates of Capital Formation

III.3.6.1 The Gross capital formation estimates are prepared for each industry group by aggregating the GFCF and CIS estimates, which are prepared separately. Broadly, for each industry, institution-wise estimates of GFCF are prepared wherever possible and aggregated to arrive at the industry level estimate. The estimates of GFCF are separately compiled for each of the three institutional sectors, namely, public sector, private corporate sector and household sector. While the estimates for the public sector are from the budget documents, those of private corporate sector are on the basis of MCA21 data provided by the MCA. However, for the household sector for some specified items, bench mark results obtained from various NSSO surveys (especially the capital output ratios) and growth rates in GVO, GVA etc. are used to obtain the GFCF estimates (by extrapolating the benchmark capital stock data with the growth observed in GVO/GVA and taking the difference between two years' capital stock data).

III.3.6.2 The current practice of extrapolation of capital stock in unorganized manufacturing by applying the growth rates in GVA/GVO implicitly assumes a constant capital-output ratio, not changing from year to year. An alternate approach that may be taken for estimating capital formation in the household sector manufacturing enterprises is to make use of capital formation estimates provided by ASI data. It has been noted earlier that the base year estimate of household sector's GVA/GVO is being moved over time with the help of ASI data (the combined growth of proprietary, partnership and HUF from ASI is used to move forward the bench mark estimates). For this segment of ASI, i.e. proprietary, partnership and HUF, the ratio of capital formation to GVA (or GVO) may be computed for each year from ASI data, and then this ratio may be applied to the estimate of GVA (or GVO) to derive an estimate of capital formation.

III.3.6.3 Recommendation: The possibility of using ASI data for making estimate of capital formation in household sector manufacturing enterprises should be explored**.**

III.3.7 Price indices and Deflation

III.3.7.1 DIPP is compiling experimental business service price indices for i) Banking, ii) Trade, iii) Business Service, iv) Postal, v) telecom (Cellular), vi) Air Transport, vii) Port Services, viii) Insurance, ix) Railway Transport and x) Road Transport (freight). But there are some issues like all price indices are not following the exact composition as followed in National Accounts, base years are different, and there is irregularity in data flow. The indices from DIPP are based on data from organized sectors only. Major problem is being faced while getting data from unorganised sector.

III.3.7.2 An experimental Producer Price Index (PPI) series has been brought out by the DIPP. It makes use of experimental business service prices indices while computing the input-side indices for manufacturing. This series has base 2011-12. It provides price index of output produced by various sectors of the economy as well as prices paid for intermediate inputs.

III.3.7.3 Converting current price estimate of GVA to constant price using WPI is a major issue in the GDP estimation for manufacturing sector. Ideally, double deflation approach needs to be followed and it is necessary to address the data requirements for compiling input and output price indices on a quarterly/annual basis so as to adopt the double deflation approach. The PPI series may be of some help in constructing the double deflated GVA series for the manufacturing sector.

III.3.7.4 *Recommendations*: As per current practice, WPI is being used for calculating most of the estimates. It is recommended that PPI may be used to arrive at the estimates. The current available PPI series is experimental in nature, and a shift from WPI to PPI may not be advisable. As further work in done for developing the PPI series, and a regular PPI series is brought out by the DIPP, the shift from WPI to PPI for making GVA estimates may be done. At present, PPI is not being compiled for most of the Services and it is advised that efforts may be made to compile PPI for more sectors of services.

III.3.8 Data Sources yet to be used for INAS

III.3.8.1 GST (Goods and Services Tax) is one indirect tax for the whole nation. It is the resultant tax after subsuming major Central and State indirect taxes. GST is a destination based tax levied on the consumption of goods and services across the nation, thus rendering the country one unified common market. GST will provide data from the point of production to the point of sale. This will eventually give complete description of economic activities. It will result in availability of product and services tax data that can be used for compiling GDP.

III.3.8.2 The utility of excise revenue data for cross-validation of IIP has been recognized in the last Working Group Report on IIP (Report of the Working Group for Development of Methodology for Compilation of the all-India Index of Industrial production with base year 2009-10/ 2011-12, Government of India, 2014). Working Group recommended that “in order to make the comparison of trend of IIP with that of Excise revenue on a continuous basis, a mechanism must be developed for arranging data to be sourced from the Department of Revenue on the ‘Assessable value’ of production of excisable commodities.” (p.69) In the same vain, it is noted in the report : “It may also be worthwhile obtaining production information on ‘Assessable Value’ for excisable commodities on a regular basis from Central Board of Excise and Customs to regularly monitor the growth divergences between that of IIP and excise revenue.” (p.65) With the availability of detailed GST data, it should be possible to cross-validate the IIP.

III.3.8.3 The availability of GST data opens up the possibility of developing an alternate indicator (quarterly and annual, based on assessable value of manufactured goods) for moving the bench mark estimate of GVA of household sector and the quasi-corporate sector for the purpose of making advanced and provisional estimates of GDP (could also be applied for the purpose of making quarterly estimates of GDP). At present IIP

is being used to moves the GVA estimate of the household sector and the quasi-corporate sector till the time ASI data become available. Once ASI data become available, it is the ASI data which are being used to move the benchmark estimate. If the growth rate in GST based indicator suggested above is found to be higher than the growth in IIP and also found to be closer to the growth in real value added in ASI in respect of proprietary, partnership and HUF, then it may be more appropriate to use the GT based indicator than the IIP.

III.3.8.4 While GST holds a good potential for use in GVA estimation, it has not yet become available in sufficient detail. As and when GST data become available in sufficient detail, the possibility of using such data for GVA estimation should be explored.

III.3.8.5 The use of PLFS has been recommended above for the estimation of GVA for the household sector of manufacturing. The use of an indicator based on GST is therefore an alternate possibility. Estimates based on the two alternate approaches may be made and compared to make a choice between the two.

III.3.8.6 *Recommendations*: (a) Using GST data in the process of estimation of manufacturing sector GVA should be explored. (b) Other possible uses to which detailed GST data should be utilized include (i) explore the possibility of developing an indicator based on assessable value of manufacturing goods for the purpose of moving the GVA estimate of the household sector and the quasi-corporate sector. NAD may use this indicator till the time ASI data for the relevant year become available and (ii) cross-validate the IIP series for manufacturing using GST data.

III.3.9 Data expected to be available in near future

III.3.9.1 The Expenditure Finance Committee (EFC) is to support a capacity development scheme during 2018-2021. Under the scheme, the unincorporated surveys, annual surveys of services sector and PLFS are proposed to be conducted annually.

III.3.9.2 PLFS (Periodic Labour Force Survey) would help to get workforce estimates for urban areas at quarterly basis and rural and urban areas on annual basis. These workforce estimates may help in compilation of state level estimates as well. The details of PLFS are provided in Annex-III.2 of the Chapter.

III.3.9.3 Need for Periodic data on Labour Market: The labour market plays a significant role in functioning of the nation's economy. Availability of periodic, adequate and reliable data on various aspects of labour market of the country is critical input to the planners and policymakers both within the government and outside. Within government, data on domestic labour market are used by National Accounts Division (NAD) of Central Statistical Office (CSO) as labour input for compilation of National Accounts, and Ministry of Labour and Employment (MOLE) for making various policy formulation and regulatory functions. In the contemporary economic environment, sometimes structural changes are observed in the domestic labour market in a short span of time due to sudden impact of some major event in the global economic scenario. For effective monitoring of the economy,

there is a need to have a system in place for supply of data measuring quick changes in the labour market at regular intervals. This may require observing behavior of the entities in the labour market over a longer duration of time, instead of one time measurement. At present, labour market data are not available for shorter periods like quarterly, half yearly etc. Hence, there is an urgent need to conduct periodic labour force surveys to generate indicators of labour market for shorter span of time. To fulfil this requirement, the Ministry of Statistics and Programme Implementation (MOSP&I) started data collection for PLFS from 1 April 2017 using Computer Assisted Personal Interviewing (CAPI) solutions.

III.3.9.4 ***Recommendations****:* Related to the PLFS, the following recommendations are made:

(i) Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

(ii) The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys in mind.

III.3.10 Improving Access to Data

III.3.10.1 **Auxiliary Information from MCA data for Regional Accounts:** NAD is facing some classification issues in case of frame of Companies' data received from the Ministry of Company Affairs (MCA). Often the activity description in Company data differs from that indicated by the NIC code embedded in the CIN. In MCA database CIN is based on NIC 2004, is supposed to provide the original intention for which a company was established. At present, the Companies are providing the activities which contribute to their overall turnover in a year, using NIC 2008 classification, through the filing of MGT-7 and MGT-9 forms. The CSO may explore the possibilities of distributing the GVA of a Company across the activities provided in MGT-7. The MCA was also advised to upload NIC 2008 in their website and sensitize the Companies about its use in MGT-7 and MGT-9.

III.3.10.2 **Issue of timeliness of data**: MCA is currently sharing the data with CSO/RBI twice in a year i.e.

1. In the month of December:
    a. Data is shared as on 30th of November for the previous financial year filing e.g., in Dec 2017 the data is shared as on 30/11/2017 on filings of FY 2016-17.
2. In the month of August:
    a. Share date as on 31st of July for the previous financial year filing and final data in respect of incremental data of previous to previous year such as in Aug 2018 data is shared as on 31/07/2018 on filings of FY 2016-17(incremental) final date of FY 2015-16.

Recommendation: It was recommended that that MCA may share data on quarterly basis so that data available with CSO is more recent compared to current lag of six months.

III.4 MINING AND ELECTRICITY

III.4.1 Relative Share in GDP

III.4.1.1 Share of mining in aggregate GDP is about 2 percent, and the same holds true for electricity (Tables III.4 and III. 5).

Table-III.4: Percentage share of household and NPISHs in GVA of Mining and GDP

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
GVA of Mining (in crores) at current prices	261035	285842	295794	308476	301230	332947
GDP (in Rs crores) at current prices	8736329	9944013	11233522	12467959	13764037	15253714
Share of GVA of Mining in GDP (in %) at current prices	2.99	2.87	2.63	2.47	2.19	2.18
HH GVA (in crores) at current prices	59117	65278	61933	65931	68112	79097
Share of HH in mining (in %) at current prices	22.65	22.84	20.94	21.37	22.61	23.76
Share of HH in GDP (in %) at current prices	0.68	0.66	0.55	0.53	0.49	0.52

Table-III.5: Percentage share of household and NPISHs in GVA of Electricity Sector and GDP

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
GVA of Electricity (in Rs crores) at current prices	145194	168197	204852	220178	269997	276988
GDP (in Rs Crores) at current prices	8736329	9944013	11233522	12467959	13764037	15253714
Share of GVA of Electricity in GDP (in %) at current prices	1.66	1.69	1.82	1.77	1.96	1.82
HH GVA (Rs Crores) at current prices	0	0	0	0	0	0
Share of HH in EGWR (in %) at current prices	0.00	0.00	0.00	0.00	0.00	0.00
Share of HH in GDP (in %) at current prices	0.00	0.00	0.00	0.00	0.00	0.00

III.4.2 Methodology for compiling National level estimates and States/UTs level - Mining

III.4.2.1 Estimates for Mining:-

The Mining sector is divided into two sub sectors

(i) Major Minerals and
(ii) Minor Minerals.

Major minerals cover fuel minerals consisting of coal, petroleum & natural gas and other major minerals i.e. metallic minerals and non-metallic minerals.
Minor minerals consist of materials such as marble, slate, shale etc.

Gross Value Added of Major Minerals in new series are compiled as sum of estimates of Non-Departmental Enterprises (NDEs) and Private Corporate (PCs) engaged in extraction or related activities of these minerals. Estimates of NDEs and PCs are compiled in three broad categories viz. coal mining, crude oil mining and other mining. Other mining relates to metallic and non-metallic mining.

Methodology adopted for NEs and PC are given below-

III.4.2.2 Estimates of Non- Departmental Enterprises (NDEs):

At all India level, the GVA at basic prices are computed from the annual financial statements of NDEs. State-wise distribution of GVA has been made in the following manner:

(a) In case of fuel minerals State-wise distribution has been made on the basis of number of employees and gross block in States for these enterprises using information from the Department of Public Enterprises (DPE) publication.

(b) For estimates of other mining (other than fuel minerals) estimates, States-wise and mineral wise distribution is done on the basis of information received from Indian Bureau of Mines (IBM). (Monthly Statistics of Mineral Production).

III.4.2.3 Estimates of Private Corporate (PC) Sector:

MCA-21 data base is used for all India estimates following production approach. Mineral–wise and State-wise distribution is done in the following manner-

(a) For crude oil mining, allocation is done based on state wise production of crude oil in private corporate sector, available from the Ministry of Petroleum and Natural Gas.

(b) For coal mining, the allocation is done at all India level based on the data available on State wise value of production of coal in private sector from website of Office of Coal Controller.

(c) For estimates of other mining (other than fuel minerals) estimates States-wise and mineral wise distribution is done on the basis of information received from Indian Bureau of Mines (IBM). (Monthly Statistics of Mineral Production).

Salt: The production value is obtained from the Office of Salt Commissioners and the Input rates are derived from the analysis of Hindustan Salt Rate. Using these GVA of salt is computed.

Minor Mineral:-

For Minor Mineral other than sand: Estimated productions of minor minerals are obtained from States and the input rates (received from IBM) of non-metallic minerals are considered. Using these two, GVA of the minor mineral is computed.

Minor Mineral-Sand: Total sand production is estimated indirectly, as per the study conducted by the Central Building Research Institute. The value of sand used in the construction is estimated as 7.21% of the total value of inputs used for the activity. Since inputs are valued at purchaser's prices, suitable adjustments of trade transport margins were made to arrive at the value of output for sand from the corresponding annual estimate of the value of inputs in construction. Thereafter, using the input rate from IBM for sand, the GVA of sand extraction is derived. Total estimated GVA is distributed among States in proportion to the production of the sand reported by States. But this exercise has its own limitations. All the states do not provide sand estimates for all the years. Some states have abnormal trend leading to the sand allocated estimates very volatile. Any discrepancy in one state lead to several fluctuating trends for other states as well. If an updated sand estimates are provided by the state geological department the allocation of the sand to the state would not be any issue.

(i) The input rates for the minerals which are required for the constant price estimates are not provided by IBM in a routine manner. The latest input rates available are for the year 2013-14.

(ii) For the minor minerals the data is primarily taken from the states. Some states do get the production data but do not get the price data. Some state geological departments are yet to start collecting data for the newly classified minor minerals. States have been advised to communicate the same to the respective geological departments and if needed CSO may intervene.

(iii) The NDE and the PC does not provide mineral wise information regarding metallic and non-metallic minerals. So, the IBM structure is used. If the entire list of the NDE and the Pvt corporate is available, state wise mineral wise and state wise allocation could be done easily.

(iv) **Recommendations** To avoid the problem of sand, instead of allocating sand to the states on the proportion of sand estimates received from the states every year, the proportion may be fixed in the base year. Another alternative can be to allocate the All India sand estimates on the basis of the GSVA from the construction sector.

III.4.2.4 Estimation Procedure for Constant Price Estimates: The estimates at constant prices are computed as follows:

(i) Coal and Petroleum & NG: The estimates at current prices are deflated using the respective WPI.

(ii) For Metallic and Non-Metallic Minerals: The estimates at current prices are deflated using deflators compiled using IBM data on production, price and input rates.

(iii) For Minor Minerals: The estimates at current prices are deflated using the deflators compiled using the using IBM data on production, price and input rates for non-metallic minerals.

III.4.3 Methodology for Compiling and Allocating National level estimates of Gross Value Added (GVA) for Electricity Sector to States/UTs:-

III.4.3.1 GVA Estimation, Electricity:- Gross Value Added of electricity in new series are compiled as sum of estimates of Departmental Enterprises (DEs), Non- Departmental Enterprises (NDEs) and Private Corporate (PC). Methodology for the State wise estimates derived from all India estimates are presented below:

(a) **Departmental Enterprises (DEs):-** Budget Documents are used for computing All India estimates as well as States wise allocation.

(b) **Non-Departmental Enterprises (NDEs):-** All India estimates are compiled after the analysis of Annual reports of Public Sector Electricity Generating and Public Sector Power Grid companies. State–wise distribution for the Electricity Generating Companies is done on the basis of state wise electricity generated. State-wise distribution for the Power Grid Companies is done on the basis of state wise compensation of employees and value of asset for the enterprise, available from the DPE Publication.

(c) **Private Corporate (PC):**- MCA-21 data base is used for All India estimates. For distribution of GVA among States a weighted indicator has been developed combining State-wise generation of electricity in private sector in 2011-12 (from Ministry of Power) and State-wise electrical energy sold by private companies in 2010-11 (from the latest publication of C.E.A.). This indicator is used for allocation by States in different years.

III.4.3.1 Recommendations: (i) At present for the Electricity sector only the DE, NDE and the PC part is considered. There is need for exploring how the unorganised part of the Electricity can be taken into consideration. (ii) The estimates at constant prices at All India level are compiled using the Quantum Index for Electricity. IIP electricity index is used when quantum index is not available.

III.5 OTHER ISSUES

III.5.1 I-O ratios: Input-output (I-O) ratios are important for the construction of SUTs. These are also used elsewhere. Sufficiently detailed I-O ratios are not available for the unorganized manufacturing sector. It is recommended that specialised surveys may be devised for estimating I-O ratios. Conducting such surveys periodically – once in three or four years – should be adequate for the purpose in respect of selected units of ASI, and similar exercise may be carried out for unorganised sector also.

III.5.2 Studies based on ASI and MCA data: It has been suggested earlier that there should be a cross-validation study on data on corporate bodies with single manufacturing unit available from the two sources, ASI and MCA. Since ASI data now contain the CIN of companies for the plants that belong to the corporate sector, a study may be undertaken in respect of plants belonging to non-reporting but active companies in the MCA list. Such plants need to be identified. Whether plants are open or closed may be ascertained. In case some of them are open, the value of important parameters such as GVA may be assessed. The ratio of GVA of plants belonging to (a) reporting companies and (b) not reporting but active companies should be compared. This is expected to help in refining the PUC based scaling-up that is currently being done. More importantly, this may help in developing a data-collection strategy free from duplication of data collected from multiple sources, leading to substantial savings of resources.

III.5.3 **Reviewing the IIP methodology at the stage of next revision**: Since IIP-manufacturing understates the growth rates in real value in corporate manufacturing, a downward bias in estimated growth rate in manufacturing GVA is created when IIP is used in the absence of ASI data. Manna (2105) has suggested an alternative method of computing IIP in which the total production of each of the sample factories are taken rather than taking, for each sample factory, the production of the selected item(s) for which the factory was selected in the sample for the purpose of compilation of IIP. His estimates show that the growth rate indicated by the alternate IIP is much closer to the growth rate in real value added than the official IIP series. For 2011-12, the official IIP-manufacturing series records a growth rate of 3 percent whereas the growth rate in real value added in organized manufacturing was 14.9 percent. The alternate IIP suggested by Manna (2015) shows a growth rate of 14.7 percent, which is quite close. More research is needed on the divergence between IIP growth rates and real GVA growth rates and the insights gained from such research should be utilized at the stage of next revision of IIP series.

III.6 MAIN RECOMMENDATIONS

III.6.1 Comparison of growth rates in unorganized manufacturing between 67th and 73rd Round and that reflected by IIP and ASI (Quasi) may be carried out to assess the appropriateness of present method.

III.6.2 Labour Input approach (through PLFS estimates) for moving the estimates of unorganized manufacturing may be considered as an alternative to ASI(Quasi)/IIP Growth rates, being applied presently.

III.6.3 Explore the possibility of getting state-wise distribution of GVA of the private corporate sub-sector from MCA data.

III.6.4 Strengthen the quality of data collected by states in the state sample allocated to them, which may be then be pooled with the central sample for deriving the state-wise distribution of the GVA in manufacturing within ASI coverage

III.6.5 Cross-validation study on data on corporate bodies with single manufacturing unit available from the two sources - MCA and the ASI. Additionally, a study of plants covered in ASI data belonging to non-reporting but active companies in the MCA list should be undertaken. In the same vain, the ratio of GVA to PUC should be compared between companies that submit their return by the specified due date and those that submit return after the due date. A related research that may be undertaken using ASI and MCA data is to identify plant covered in ASI data which belong to active but not reporting manufacturing companies in the MCA list. The ratio of GVA to invested capital for such plants should be studied in comparison with plants that belong to companies in the MCA list which are active and reporting.

III.6.6 Reviewing the coverage of the ASI after a few years, once the recommended studies are completed.

III.6.7 The work on Business Register should be completed quickly for all states and UTs, so that ASI coverage can be expanded for all states/UTs by including large manufacturing units which are present in the Business Registers but not registered under the Factories Act.

III.6.8 The criterion for inclusion of units in the USU frames has to be revised for the unorganised sector surveys. For the time being, perhaps, a list of large units not registered under the Factories Act but included in the ASI frame may be provided to field workers for excluding them from the USU frames. For the long run, a procedural protocol, involving the Inspectors of Factories, may be laid down for developing frames of ASI.

III.6.9 To capture the contribution of companies in various sectors including manufacturing, besides classifying companies as per NIC codes from CIN, information from MGT 7 and MGT 9 Forms may be used. MCA may try to ensure that all companies file information on description of main business activities in MGT 7.

III.6.10 To begin with, corrected NIC classifications for top 500 companies (in terms of turnover) and top 10-15 companies in each compilation category used by NAD may be provided to MCA. So that the verification and corrections for them are done on a priority basis in MCA database also.

III.6.11 To accurately account for contribution due to any activity in a multi-activity company, the usability of information available from MGT 7 may be explored.

III.6.12 NAD may identify additional variables which are to be extracted from MCA21 and provided for GDP calculations.

III.6.13 NAD may also share list of additional information that is required from MCA as per SNA.

III.6.14 To enable accurate State-wise distribution of GVA, MCA may explore the availability of information on number of establishments along with location, industrial activity and some other variables like fixed assets /No. of workers / wage bill etc. for each company.

Since the CDM project would be extracting all information that the companies provide, such information may be extracted from Forms/attachments on priority basis.

III.6.15 MCA may make data on companies more accessible to public by devising query based system.

III.6.16 The cases of non-reporting but active companies need to be identified to ensure that their information is not used for scaling up when they weren't involved in production process e.g. when they were in the process of winding up etc.

III.6.17 Besides the PUC being currently used for blowing up the estimates, use of alternative indicators like fixed assets etc., may be explored for future. Further refinements in terms of compilation category-wise scaling up factors or size class-wise scaling up factors within compilation categories may be explored. Studies based on ASI and MCA data may be undertaken for refining the method of scaling up currently being used.

III.6.18 Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

III.6.19 The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys in mind.

III.6.20 As and when detailed GST data become available, the possibility of using GST data in the process of estimation of manufacturing sector GVA should be explored. In particular, an attempt should be made to explore the possibility of developing an indicator based on assessable value of manufacturing goods for the purpose of moving the GVA estimate of the household sector and the quasi-corporate sector till the time ASI data for the relevant year become available. Also, GST data should be used to cross-validate the IIP series. This is important because the IIP series plays an important role at present for the estimation of GVA of the quasi-corporate and household sectors of manufacturing.

III.6.21 Detailed investigation should be done on the divergence between IIP growth rates and real GVA growth rates and the insights gained from such research should be utilized at the stage of next revision of IIP series

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Annexure – III.1

MCA Database

"MCA21" an e-governance project was implemented by MCA since 2006. It is now a large electronic repository of Indian corporate sector, presently managed by Infosys. Companies registered under Companies Act, 2013 are mandated to file all documents relating to incorporation, compliance, approvals, annual statutory returns, etc. electronically through MCA21 system. As on 31st March 2018, the MCA21 system stored information for about more than **17 lakh companies** registered under the Companies Act.

MCA21 system is focused on administration of the Companies Act which is required to capture and store Companies related data.

MCA21 project facilitates efiling of various forms and applications under the Companies Act, 2013 and the Rules and Regulations thereunder. The key details relevant to efiling are presented hereinafter. eforms are been grouped under various categories such as:

- Company Registration
- Compliance Related Filing
- Change Services
- Charge Management
- Investor Services
- Provisions Related to Managerial Personnel
- Approval Services – Head Quarter
- Approval Services – Regional Director
- Approval Services – RoCs
- Informational Services
- Annual Filing

eforms once filed are stored in a electronic repositories in Data Center located in Delhi with Backup at the Data Recovery Site at Chennai -- this electronic repository is mainly the data center containing all the present and historical data filed by corporates till date.

Shareable Information by MCA21:

Broadly MCA21 shares information related to the following:

- **Reports**
  - Annual Reports
  - Report on Nidhi Companies
  - Monthly MCA Newsletters
  - Monthly Information Bulletin
  - Other Adhoc Reports
- **Company/LLP Information**
  - Master Details
  - Incorporated or Closed during the month
  - Based on Activity
  - Based on Ownership
  - Under Alert
  - Forms filed under FTE
  - List of LLP who have filed Form 24

- **Company Statistics**
    - Indian and Foreign Companies, LLPs
    - Paid Up Capital Reports- Companies Limited By Share
    - CSR Data and Summary

Corporate Data Management (CDM)

Ministry of Corporate affairs (MCA) collects financial and corporate data from all registered companies in India. Companies are mandated to file documents relating to incorporation, compliance, approvals, annual statutory returns, etc. electronically in the system. It has been over a decade now when IT systems were implemented in MCA and as such, the ministry possess over 10 years of rich corporate data in electronic form. As on date, the MCA21 system stores information of about more than 17 lakh companies registered under the Companies Act.

MCA's data repository has great potential for preparation of analytical statements which may be used for policy formulation, evidence based decision making and corporate governance. Many government agencies often seek this corporate data for diverse purposes such as fraud investigation, economic growth indicators, evidence based decision making, etc.

The Ministry has been receiving requests from government and non-government agencies, research institutes, individual researchers etc. for updated, authentic company level information in the complete enumeration frame. To effectively meet this demand it is necessary that raw data undergoes processes like data cleaning, data pre-processing, data mining and data analytics.

Apart from accessing information readily available in the system, there is a need to seek supplementary information from companies as and when needed for policy analysis and regulation, etc. Matters like export/import revenue, external finance transactions, quarterly performance of companies, are some of the instances where different agencies sought such information for which enabling provision exists in section 405 of the Companies Act, 2013.

The Corporate Data Management Project was initiated by the Ministry of Corporate affairs (MCA), Government of India as a Plan Scheme in the year 2015-2016. In 2006 the Ministry of Corporate Affairs implemented the first ever mission mode e-governance project in the Country which enabled the electronic submission of documents and payments and created a new e-governance environment for MCA stakeholders. MCA21 system has created a large electronic repository of corporate sector information of the country. Being a transactional system, MCA21 could not deliver the full utilization of this large electronic information repository and therefore needed a forward linkage to explore the potential of Data mining and implementing business analytics and intelligence system.

Hence, with the objective of disseminating corporate sector data in a structured manner, the Corporate Data Management System was envisaged to create an in-house data mining and analytics facility by transforming the present transactional system into a Data Warehouse.

Shareable Information by CDM:

- **Reports which can be generated and shared directly through CDM**
    - Balance Sheet Reports
    - Profit and loss account Reports
    - Deposits
    - Unclaimed and unpaid amounts
    - CSR Reports
    - XBRL Statements
    - Shareholding Pattern
    - Indebtedness

- Remuneration of KMPs
- Auditor Details
- Auditor Resignation Details
- Particulars of Shares held
- Penalties

- **Information shared with some manual intervention**

    - Need based data sharing with external agencies like NSSO, CSO, RBI, IIPA etc.,
    - Monthly Information Bulletin including Sector wise and State wise corporate data reporting
    - Data in terms of select Financial Parameters of the Companies Such as Revenue, Sales Turnover, Fixed Assets, Taxes and Profit & Loss etc.,
    - Release of visual info graphics on MCA Data
    - Publishing Data Cuts and Stories
    - Time series/Penal Data/ Cross section Data reports on Industry financials
    - Report on Economy Sector wise financial aggregates
    - Unit Level/Sector wise/State wise Ratio Analysis Reports

- **Information shared with some Restrictions/Authorization**

    - CDM Financial Ratios
    - CDM Data Validation Rules
    - CDM Provision Reports
    - Reports on abnormal Variations in key KPIs

Currently the data is shared by MCA/CDM with CSO/RBI twice in a year as depicted below:

1. **In the month of December**:
   Data is shared as on **30th of November for the previous financial year filing such as in Dec 2017 it is shared as on 30/11/2017 on filings of FY 2016-17**
2. **In the month of August:**
   Share date as on 31st of July **for the previous financial year filing and final data in respect of incremental data of Previous to previous year such as in Aug 2018 data is shared as on 31/07/2018 on filings of FY 2016-17(incremental) final date of FY 2015-16.**

The entire data being shared has been divided into four Phases as detailed below:

1. **Phase I:**
   It contains data for previous year and current year balance sheets and profit and loss statements, 23AC and 23ACA forms and XBRL data.
   Broadly the data fields captured are as below:

23AC Form Parameters Captured:

1. CIN	**2.** Name of the Company
3. Whether the company is a subsidiary company as defined under section 4	**4.** CIN of the holding company, if applicable
5. Name of the holding company	**6.** Whether the company has a subsidiary company as defined under section 4
7. If yes, indicate number of subsidiary company	**8.** Financial Year Opening and Closing Date:
9. Date of filing	**10.** Equity and Liabilities
11. Share holders' funds	**12.** Share capital
13. Reserves and surplus	**14.** Money received against share warrants
15. Share application money pending allotment	**16.** Non-current liabilities
17. Long term borrowings	**18.** Deferred tax liabilities
19. Other long term liabilities	**20.** Long term provisions
21. Current Liabilities	**22.** Short term borrowings
23. Trade Payables	**24.** Other Current Liabilities
25. Short term Provisions	**26.** Total
27. Assets	**28.** Non-current assets
29. Fixed Assets	**30.** Tangible Assets
31. Intangible Assets	**32.** Capital Work in progress
33. Intangible assets under development	**34.** Non-current investments
35. Deferred tax assets	**36.** Long term loans and advances
37. Other non-current assets	**38.** Current assets
39. current investments	**40.** Inventories
41. Trade receivables	**42.** Cash and cash equivalents
43. Short term loans and advances	**44.** Other current assets
45. Total	**46.** Percent paid up capital held by foreign company
47. Percent paid up capital held by foreign holding company and or through its subsidiaries	**48.** Capital Reserve
49. Gross Fixed Assets	**50.** Depreciation and amortization
51. Miscellaneous expenditure to the extent not written off or adjusted	

23ACA:

1. CIN	**2.** Name of the Company
3. Period of Profit and loss account: from	**4.** Period of Profit and loss account: to
5. Date of filing	**6.** Whether schedule VI of the companies Act 1956 is applicable
7. Type of industry	**8.** Revenue from operations
9. Domestic Turn over	**10.** Domestic Turn over: sale of goods manufactured
11. Domestic Turn over: sale of goods traded	**12.** Domestic Turn over: sale of supply of services
13. Export Turn over	**14.** Export Turn over: sale of goods manufactured
15. Export Turn over: sale of goods traded	**16.** Export Turn over: sale of supply of services
17. Other Income	**18.** Total Revenue (I+II)
19. Expenses	**20.** Cost of materials consumed
21. Purchase of stock in trade	**22.** Change in inventories of finished goods, work in progress and stock in trade
23. Employee benefit expenses	**24.** Managerial remuneration
25. Payment to Auditors	**26.** Insurance Expenses
27. Power and Fuel	**28.** Finance Cost
29. Depreciation and amortization expenses	**30.** Other Expenses
31. Total Expenses	**32.** Exceptional items
33. Extraordinary items	**34.** Profit before tax
35. Tax Expense	**36.** Tax Expense: Current tax
37. Tax Expense: Deferred Tax	**38.** Profit / (Loss) from discontinuing operations
39. Tax expenses from discontinuing operations	**40.** Proposed dividend
41. Revenue subsidies or grants received from government authority	**42.** Rent paid
43. Consumption of stores and spare parts	**44.** Total number of product / services category
45. product / services category code (ITC/NPCS 4 digit code)	**46.** Description of the product or service category
47. Turnover of the product or service category	

Phase-1 BS- Previous and Current:

	CIN
	Name of the Company
	Content Of Report
ELR (Note) ==>	Type Of Report
[201600] Notes - Related party	Whether Company Is Subsidiary Company
[202800] Notes - Subsidiary information	Whether Company Has Subsidiary Companies
[100100] Balance sheet	Share Capital
	Reserves And Surplus
	Money Received Against Share Warrants
	Shareholders Funds
	Share Application Money Pending Allotment
	Deferred Government Grants
	Minority Interest
	Long Term Borrowings
	Deferred Tax Liabilities Net
	Foreign Currency Monetary ItemTranslation Difference Liability Account
	Other Long Term Liabilities
	LongTerm Provisions
	Noncurrent Liabilities
	ShortTerm Borrowings
	Trade Payables
	Other Current Liabilities
	Short Term Provisions
	Current Liabilities
	Equity And Liabilities
	Tangible Assets Capital Work In Progress
	Fixed Assets
	Noncurrent Investments
	Deferred Tax Assets Net
	Foreign Currency Monetary Item Translation Difference Asset Account
	LongTerm Loans And Advances
	Other Noncurrent Assets
	Noncurrent Assets
	Current Investments
	Inventories
	Trade Receivables
	Cash And Bank Balances
	ShortTerm Loans And Advances
	Other Current Assets
	Current Assets
	Assets
[201000]GrossCarrying Amount Member	Tangible Assets

[201100]GrossCarrying Amount Member	Intangible Assets
[100100] Balance sheet	ProducingProperties
	PreproducingProperties
	IntangibleAssets under development
[200200] Dividend Appropriation	DividendAppropriation
[201000] Revaluation Increase DecreaseTangible Assets	Revaluation Increase DecreaseTangibleAssets
	Revaluation Increase Decrease Intangible Assets
	SRN
	Filing date

Phase-1 PL-Previous and Current

	CIN
	Name of the Company
ELR (Note) ==>	Content Of Report
	Type Of Report
[100200] Statement of profit and loss	Revenue From Sale Of Products
	Revenue From Sale Of Services
	Excise Duty
	ServiceTax Collected
	Other DutiesTaxes Collected
	Revenue From Operations Other Than Finance Company
	Revenue From Interest
	Revenue From Other Financial Services
	Revenue From Operations Finance Company
	Revenue From Operations
	Revenue
	Cost Of Materials Consumed
	Purchases Of Stock In Trade
	Changes In Inventories Of Finished Goods Work In Progress And Stock In Trade
	Employee Benefit Expense
	Finance Costs
	Depreciation Expense
	Amortisation Expense
	Depletion Expense
	Depreciation Depletion And Amortisation Expense
	Expenditure On Production Transportation And Other Expenditure PertainingTo E And P Activities
	Other Expenses
	Expenses
	Profit BeforeTax
	Current Tax
	Deferred Tax
	Tax Expense

	Profit Loss For Period From Continuing Operations
	Profit Loss From Discontinuing Operations Before Tax
	Tax Expense Of Discontinuing Operations
	Profit Loss From Discontinuing Operation After Tax
	Profit Loss For Period
[300500] Notes - Subclassification and notes on income and expenses	Net Gain Loss On Foreign Currency Fluctuations Treated As Other Operating Revenue
	Miscellaneous Other Operating Revenues
	Interest Income
	Dividend Income
	Net Gain Loss OnSale Of Investments
	Rental Income On Investment Property
	Net Gain Loss On Foreign Currency Fluctuations Treated As Other Income
	Surplus On Disposal Discard Demolishment And Destruction Of Depreciable Tangible Asset
	Gain On Disposal Of Intangible Asset
	Amount Credited To Profit And Loss As Transfer From Revaluation Reserve On Account Of Additional Depreciation Charged On Revalued Tangible Assets
	Excess Provision Diminution In Value Investment Written Back
	Excess Provisions Bad Doubtful Debts Advances Written Back
	Income Government Grants Subsidies
	Income Export Incentives
	Income Import Entitlements
	Income Insurance Claims
	Income From Subsidiaries
	Interest And Income Tax Refund
	Income On Brokerage Commission
	Income On SalesTax Benefit
	Excess Provisions Written Back
	Other Allowances Deduction Other Income
	Miscellaneous Other Nonoperating Income
	Other Nonoperating Income
	Income From PipelineTransportation
	Other Income
	Interest Expense
	Other Borrowing Costs
	Net Gain Loss On Foreign Currency Transactions And Translations Treated As Finance Costs
	Salaries And Wages
	Contribution To Provident And Other Funds
	Expense On Employee Stock Option Scheme And Employee Stock Purchase Plan
	Commission Employees
	Employee Medical Insurance Expenses
	Leave Encashment Expenses
	Gratuity

	Pension Schemes
	Voluntary Retirement Compensation
	Other Retirement Benefits
	Staff Welfare Expense
	Other Employee Related Expenses
	Rent
	Repairs To Building
	Repairs To Machinery
	Insurance
	Central Excise Duty
	Purchase Tax
	Other CessTaxes
	Cost Taxes Other Levies By Government Local Authorities
	Provision WealthTax
	Rates AndTaxes Excluding Taxes On Income
	Research Development Expenditure
	Information Technology Expenses
	Donations Subscriptions
	Transportation Distribution Expenses
	Cost Repairs Maintenance Other Assets
	Cost InformationTechnology
	Cost Insurance
	Cost Octroi
	Cost Transportation
	Cost Lease Rentals
	Cost Royalty
	Provision Bad Doubtful Debts Created
	Provision Bad Doubtful Loans Advances Created
	Adjustments To Carrying Amounts Of Investments
	Net Provisions Charged
	Discount IssueShares Debentures Written Off
	Miscellaneous Expenditure Written Off
	Write Off Assets Liabilities
	Loss On Disposal Of Intangible Asset
	Loss On Disposal Discard Demolishment And Destruction Of Depreciable Tangible Asset
	Royalty PertainingTo E And P Activities
	Cess PertainingTo E And P Activities
	Education Cess Pertaining To E And P Activities
	National Calamity Contingency Duty Pertaining To E And P Activities
	Extraction Cost Pertaining To E And PActivities
	SalesTax PertainingTo E And P Activities
	Geological And Geophysical Expenditure Pertaining To E And P Activities
	Administrative Expenditure PertainingTo E And PActivities

	Research And Development Expenditure Pertaining To E And P Activities
	Pipeline Operation And Maintenance Expenditure Pertaining To E And P Activities
	Other Expenditure Pertaining To E And P Activities
	Exceptional Items Before Tax
	Extraordinary Items Before Tax
	Prior Period Income Before Tax
	Prior Period Expense Before Tax
	Prior Period Items Before Tax
[400100] Disclosure of general information about company	Name Of Company
	Corporate Identity Number
	Type Of Industry
	Date Of Start Of Reporting Period
	Date Of End Of Reporting Period
	Nature Of Report Standalone Consolidated
	Total Number Of Product Or Service Category
	Product Or Service Category ITC 4Digit Code
	Turnover Of Product Or Service Category
	SRN
	Filing date

Phase II

[200200] Notes - Reserves and surplus		
	Reserves at beginning of period	Reserves at end of period
Capital reserves [Member]		
Capital redemption reserves [Member]		
Securities premium account [Member]		
Debenture redemption reserve [Member]		
Revaluation reserve [Member]		
Share options outstanding account [Member]		
Capital reserve consolidation [Member]		
Employee stock options outstanding [Member]		
Deferred employee compensation [Member]		
Other reserves [Member]		
Other funds [Member]		
Foreign currency translation reserve [Member]		
	Surplus [Member]	
Reserves at beginning of period		
Profit (loss) for period		
Total dividend appropriation		
Total dividend tax appropriation		
Transfer to general reserve		
Reserves at end of period		

[200300] Notes - Borrowings		Borrowings (during Current Year)	Borrowings (during Previous Year)
Long Term	Borrowings [Member]		
	Bonds [Member]		
	Debentures [Member]		
	Term loans from banks [Member]		
	Working capital loans from banks [Member]		
	Borrowing from government semi-government bodies [Member]		
	Borrowing from foreign institutional agencies [Member]		
	Borrowing from foreign companies [Member]		
	Term loans from others [Member]		
	Loans repayable on demand [Member]		
	Intercorporate borrowings [Member]		
	Deferred payment liabilities [Member]		
	Deposits [Member]		

	Commercial paper [Member]		
	Loans and advances from related parties [Member]		
	Long-term maturities of finance lease obligations [Member]		
	Other loans and advances [Member]		

[200300] Notes – Borrowings		Borrowings (during Current Year)	Borrowings (during Previous Year)
Short Term	Borrowings [Member]		
	Bonds [Member]		
	Debentures [Member]		
	Term loans from banks [Member]		
	Working capital loans from banks [Member]		
	Borrowing from government semi-government bodies [Member]		
	Borrowing from foreign institutional agencies [Member]		
	Borrowing from foreign companies [Member]		
	Term loans from others [Member]		
	Loans repayable on demand [Member]		
	Intercorporate borrowings [Member]		
	Deferred payment liabilities [Member]		
	Deposits [Member]		
	Commercial paper [Member]		
	Loans and advances from related parties [Member]		
	Long-term maturities of finance lease obligations [Member]		
	Other loans and advances [Member]		

	Company total inventories [Member]		Inventories (during Current Year)	Inventories (during Previous Year)
[200600] Notes - Subclassification and notes on liabilities and assets		Raw materials [Member]		
		Work-in-progress [Member]		
		Finished goods [Member]		

		Stock-in-trade [Member]		
		Stores and spares [Member]		
		Loose tools [Member]		
		Transferable development rights [Member]		
		Certified emission rights [Member]		
		Other inventories [Member]		

[200400] Notes - Non-current investments	Type of non-current investments		Non-current investments (during Current Year)	Non-current investments (during Previous Year)
		Investment in public sector equity instruments		
		Investment in subsidiaries equity instruments		
		Investment in other Indian companies equity instruments		
		Investment in public sector preference shares		
		Investment in subsidiaries preference shares		
		Investment in other Indian companies preference shares		
		Investments in government or trust securities		
		Investments in debentures or bonds		
		Investments in mutual funds		
		Investments in partnership firms		
		Investment property		
		Investment in foreign sources		
		Other non-current investments		

[200500] Notes - Current investments	Type of current investments		Current investments (during Current Year)	Current investments (during Previous Year)
		Investment in public sector equity instruments		
		Investment in subsidiaries equity instruments		
		Investment in other Indian companies equity instruments		
		Investment in public sector preference shares		
		Investment in subsidiaries preference shares		
		Investment in other Indian companies preference shares		
		Investments in government or trust securities		
		Investments in debentures or bonds		
		Investments in mutual funds		
		Investments in partnership firms		
		Investment property		
		Investment in foreign sources		
		Other current investments		

[200600] Notes - Subclassification and notes on liabilities and assets	Cash and bank balances		during Current Year	during Previous Year
		balance with banks		
		Cheques, drafts on hand		
		Cash on hand		
		Others (Cash & Cash Equivalent)		
		Other bank balances		

Phase III Requirements (Revised): Fixed asset block of Balance sheet
Table (A): Tangible Assets: Separate tables for current year and previous year

CIN	1	
Type of Asset	2	
Assets held under lease/Assets given under operating lease/Owned assets	3	
FY Opening	4	
FY Closing	5	
Tangible assets at beginning of period	6	Gross carrying amount
		Accumulated depreciation and impairment
Additions other than through business combinations tangible assets	7	Gross carrying amount
		Accumulated depreciation and impairment
Acquisitions through business combinations tangible assets	8	Gross carrying amount
		Accumulated depreciation and impairment
Depreciation tangible assets	9	Gross carrying amount
		Accumulated depreciation and impairment

CIN	1	
Type of Asset	2	
Assets held under lease/Assets given under operating lease/Owned assets	3	
FY Opening	4	
FY Closing	5	
Impairment loss recognised in profit or loss tangible assets	10	Gross carrying amount
		Accumulated depreciation and impairment
Reversal of impairment loss recognised in profit or loss tangible assets	11	Gross carrying amount
		Accumulated depreciation and impairment
Revaluation increase (decrease) tangible assets	12	Gross carrying amount
		Accumulated depreciation and impairment
Disposals tangible assets through demergers	13	Gross carrying amount
		Accumulated depreciation and impairment

CIN	1	
Type of Asset	2	
Assets held under lease/Assets given under operating lease/Owned assets	3	
FY Opening	4	
FY Closing	5	
Disposals tangible assets, others	1	Gross carrying amount

	4	Accumulated depreciation and impairment
Total disposals tangible assets	15	Gross carrying amount
		Accumulated depreciation and impairment
Increase (decrease) through net exchange differences tangible assets	16	Gross carrying amount
		Accumulated depreciation and impairment
Other adjustments tangible assets, others	17	Gross carrying amount
		Accumulated depreciation and impairment

	CIN		1
	Type of Asset		2
	Assets held under lease/Assets given under operating lease/Owned assets		3
	FY Opening		4
	FY Closing		5
	Total other adjustments tangible assets	18	Gross carrying amount
			Accumulated depreciation and impairment
	Total changes in tangible assets	19	Gross carrying amount
			Accumulated depreciation and impairment
	TangibleAssets at End of Period	20	Gross carrying amount
			Accumulated depreciation and impairment
	[DepreciationMethodTangibleAssets]	21	
Additional Information	[UsefulLivesOrDepreciationRatesTangibleAssets]	22	

Phase III Requirements (Revised): Fixed asset block of Balance sheet

Table (B):Intangible Assets: Separate tables for current year and previous year

CIN	1	
Type of Asset	2	
Internally generated intangible assets/ Intangible assets other than internally generated	3	
FY Opening	4	
FY Closing	5	
Intangible assets at beginning of period	6	Gross carrying amount
		Accumulated depreciation and impairment
Additions through internal development	7	Gross carrying amount
		Accumulated depreciation and impairment
Additions other than through business combinations intangible assets	8	Gross carrying amount
		Accumulated depreciation and impairment
Acquisitions through business combinations intangible assets	9	Gross carrying amount
		Accumulated depreciation and impairment

CIN	1	
Type of Asset	2	
Internally generated intangible assets/ Intangible assets other than internally generated	3	
FY Opening	4	
FY Closing	5	
Total additions to intangible assets	10	Gross carrying amount
		Accumulated depreciation and impairment
Amortization intangible assets	11	Gross carrying amount
		Accumulated depreciation and impairment
Impairment loss recognised in profit or loss intangible assets	12	Gross carrying amount
		Accumulated depreciation and impairment
Reversal of impairment loss recognised in profit or loss intangible assets	13	Gross carrying amount
		Accumulated depreciation and impairment

CIN	1	
Type of Asset	2	
Internally generated intangible assets/ Intangible assets other than internally generated	3	
FY Opening	4	
FY Closing	5	
Revaluation increase (decrease) intangible assets	14	Gross carrying amount
		Accumulated depreciation and impairment

Disposals intangible assets through demergers	15	Gross carrying amount
		Accumulated depreciation and impairment
Disposals intangible assets, others	16	Gross carrying amount
		Accumulated depreciation and impairment
Total disposals intangible assets	17	Gross carrying amount
		Accumulated depreciation and impairment

CIN		1
Type of Asset		2
Internally generated intangible assets/ Intangible assets other than internally generated		3
FY Opening		4
FY Closing		5
Retirements of intangible assets	18	Gross carrying amount
		Accumulated depreciation and impairment
Increase (decrease) through net exchange differences intangible assets	19	Gross carrying amount
		Accumulated depreciation and impairment
Other adjustments intangible assets, others	20	Gross carrying amount
		Accumulated depreciation and impairment
Total other adjustments intangible assets	21	Gross carrying amount
		Accumulated depreciation and impairment

CIN		1	
Type of Asset		2	
Internally generated intangible assets/ Intangible assets other than internally generated		3	
FY Opening		4	
FY Closing		5	
	Total changes in intangible assets	22	Gross carrying amount
			Accumulated depreciation and impairment
	Intangible assets at end of period	23	Gross carrying amount
			Accumulated depreciation and impairment
Additional Information	[Depreciation Method TangibleAssets]	24	
	[Useful Lives Or Depreciation RatesTangible Assets]	25	

Phase IV – Earning & Expenditure RBI Both XBRL& non-XBRL

Additional Variables for Earnings & Expenditure in Foreign Currency	
ELR (Note)	Varaible
[300600] Notes - Additional information statement of profit and loss	ValueOfImports Of RawMaterials
	ValueOfImports Of Components And SpareParts
	ValueOfImportsOfCapitalGoods
	ValueOfImportsCalculated On CIFBasis
	ExpenditureOnRoyalty
	ExpenditureOnKnowhow
	ExpenditureOnProfessional And ConsultationFees
	ExpenditureOnInterest
	ExpenditureOnOtherMatters
	ExpenditureInForeignCurrency
	FOBValueOf Manufactured GoodsExported
	FOBValueOfTraded Goods Exported
	EarningsOnExportOfGoodsCalculated On FOB Basis
	EarningsOnRoyalty
	EarningsOnKnowhow
	EarningsOnProfessional And ConsultationFees
	Earnings On Royalty Knowhow Professional And ConsultationFees
	Earnings On Interest
	Earnings On Dividend
	Earnings On Other Income
	Earnings In Foreign Currency

Annexure - III.2

Periodic Labour Force Survey (PLFS)

National Sample Survey Office (NSSO) under the MOSP&I has been given the responsibility of the entire PLFS project which include formulation of sampling design, data collection, data processing and publication of reports periodically. A Standing Committee on Labour Force Statistics (SCLFS) which has been constituted by NSSO under the Chairmanship of Prof. S. P. Mukherjee, Emeritus Professor, University of Calcutta with the broad terms of reference to periodically review the whole system of collection, compilation and dissemination of Labour Force Statistics and to make recommendations thereof, has formulated the sampling design and structure of the schedule of enquiry for the PLFS.

Sampling design of PLFS

In PLFS a rotational panel sampling design will be used in urban area. In this sampling scheme 25% of the sample first stage units will be replaced in every quarter with a new panel of FSUs. About 5776 FSUs will be surveyed in every quarter. The panel will be of two years' duration to accommodate the changes in the urban frame in the intercensal period in the subsequent panel of two years' duration.

For rural areas, as usual, fresh samples will be selected quarterly, while the frame will remain same for each two-year period. In rural areas, in each quarter, only 25% FSUs of annual allocation (as is done in each sub-round of NSS rounds) will be covered. About 7024 sample villages will be covered every year.

A household in an urban area will be visited four times (once in each quarter) to collect information on changes in the labour force characteristics of the household members. However, there will not be any revisit in the rural samples.

Structure and content of the Schedule of enquiry for PLFS

Data from each sample household will be collected using two types of schedules of enquiry, viz. Sch. 10.4 (First visit) and Sch. 10.4 (Revisit). Whereas information on both usual status and Current Weekly Status (CWS) will be collected during the first visit, only CWS will be collected in sub-sequent visits to the households.

Use of Technology for reduction of time lag and to improve the quality of data

NSSO has been, traditionally, using paper schedule to collect information in its surveys. Collection of information through paper schedule suffers from a plethora of disadvantages, like longer processing time caused due to data transcription, execution of data scrutiny and validation programme subsequent to data transcription. All these result in delay in bringing out the results of the survey. Since primary aim of the periodic labour force survey is to generate indicators of labour market at a short span in every quarter, speed of data processing has to be an inbuilt aspect of the survey operation. This can be achieved only when data collection in the field is done through computer assisted personal interviewing (CAPI) method.

For PLFS, CAPI solution developed by the World Bank is used for collection of information. Unlike in the paper schedule, data for PLFS will be collected in the field using Tablets with the help of

CAPI software. The CAPI software platform enables Seamless transition from Paper Aided Personal Interview (PAPI) system in an intelligent, simple and efficient manner using IT solutions.

The list of indicators to be derived from the proposed PLFS

PLFS is designed to generate the indicators of labour market operations using two approaches: (i) **usual status** approach and (ii) **current weekly status** approach.

Annual estimates (for both rural and urban areas) would be generated for major parameters like Labour force participation rate (LFPR), worker population ratio (WPR), unemployment rate (UR), distribution of workers by industry, occupation, workers employed in informal sector and conditions of employment of the workers.

The quarterly estimates would be for the key labour force parameters like WPR, LFPR and UR in CWS and the estimates of their change will be generated for the urban areas only.

CHAPTER IV : SERVICES SECTOR STATISTICS

IV.1 INTRODUCTION

IV.1.1. This chapter on services sector statistics consists of six sections, including the present one. For placing the discussion in a proper perspective, the salient features of the present practice of compilation of Indian National Accounts Statistics (INAS) are described in Section IV.2. Section IV.3 relates to discussion and recommendations relating to data gaps and quality issues. It is felt that the data that are available but do not meet the standards of reliability are not of the required quality. In fact, such data are not recommended to be used for compiling any kind of derived statistics. Thus, the quality issues are discussed along with data gaps rather than with accessibility of data. The Section IV.4 deals with improving access to data. The issues of timeliness of production and dissemination of data are also included in this section. The recommendations for improvement are provided for each issue discussed in these two sections. Section IV.5 consists of discussions on other related issues. All the recommendations made for strengthening Services Sector statistics are consolidated in Section IV.6.

IV.2 PRESENT PRACTICE OF INAS COMPILATION

IV.2.1 SNA Sectoring of Institutional unit

The discussion here is the same as in sub-section III.2.1 in Chapter III above and therefore not repeated here. The reader may kindly review that section.

IV.2.2 Sectoring for compilation of INAS

The discussion here is the same as in sub-section III.2.2 in Chapter III above and therefore not repeated here. The reader may kindly review that section.

IV.2.3 Compilation of Institutional sector accounts – an overview of methodology

IV.2.3.1 *Current-price GVA* estimates – organised sectors: For compilation of GDP, the activity-wise GVAs are first worked separately for each institutional sector. The data for compiling current-price estimates of GVA of non-financial services are annually available for the organised sector. The GVA estimates of General Government and DEs & DCUs are compiled using data available from Government budgets of Central and States Governments and accounts of autonomous bodies and local bodies. The GVA estimates of NDEs & NDCUs are compiled using data available from Profit and Loss accounts and Balance Sheets. For the Private Corporate sector, MCA database available from M/o of Corporate Affairs is now used for working out their GVAs.

IV.2.3.2 *Constant-price GVA* estimates – organised sectors: The constant-price estimates of GVA for each of these organised sub-sectors are mostly obtained from the current-price estimates by deflating by relevant WPI/CPI. There are, however, no appropriate price indices for deflating the current-price estimates to constant-price estimates.

For some of the activities in some institutional sub-sectors, the constant price estimates are obtained by extrapolating the base-year GVA estimate by volume indicators. Table-1 shows the volume indicators used for obtaining constant-price estimates and Table-2 the price indices used for deflating the current-price estimates.

Table-1: Volume indicators used for extrapolation of current-price base-year estimate for the organised sector

Institutional sector/ sub-sector	**Economic activity**	**Volume indicator**
DE, NDE	Road Transport	Volume index of transport (Mech. Quantum Index)
DE, NDE, Pvt. Corp	Water Transport	Index of cargo handled
DE, NDE, Pvt. Corp	Services Incidental to Transport	Growth rates of Air, Water and Road estimates
Pvt. Corp	Road Transport	Growth in registered vehicles
Pvt. Corp	Air Transport	Air volume index (Private)
NDE	Air Transport	Air volume index (Public)

IV.2.3.3 Base-y*ear* estimates of unorganised sectors: In the case of Household sector and quasi-corporate sector, the base-year estimates are derived from the results of NSSO's Enterprise Survey (NSS 67th Round) and Employment and Unemployment Survey-EUS (NSS 68th Round). The GVA is estimated as GVAPW (Gross Value Added per Worker) X Labour input (LI) for the base year 2011-12. GVAPW has been taken from the 67th round and the EUS (NSS 68th round) has been used for estimating the LI engaged in each of the compilation categories (cc). Thereafter multiplying GVAPW 67th round and estimated number of workers from 68th round gives an estimate of GVA of the compilation category for the base year 2011-12.

Table-2: Price indices used for deflating current-price estimates to constant-price estimates for the organised sector

Institutional sector/ sub-sector	Economic activity	Price index
NDE, Pvt. Corp	Telecommunication	CPI (Transport & Communication)
NDE	Broadcasting	CPI (Transport & Communication)
Pvt. Corp	Cable operator, Recording & broadcasting services	CPI (Transport & Communication)
Pvt. Corp	Repair and Maintenance of Motor Vehicles and sale of motor vehicles	WPI of commodities traded
DE, NDE, Pvt. Corp	Wholesale trade, except motor vehicles	WPI of commodities Traded
Pvt. Corp	Retail trade (except motor vehicle)	WPI of commodities Traded
NDE, Pvt. Corp	Hotels & Restaurants	WPI of commodities Traded
GG, Pvt. Corp	Education	CPI Education
GG, Pvt. Corp	Human health activities & Care activities	CPI Health
Pvt. Corp	Activities of membership organisations	CPI Misc.
Pvt. Corp	Recreational cultural and sporting activities	CPI Recreation
Pvt. Corp	Other services (Hair, washing etc.)	CPI Misc.
NDE	Recreational, cultural and sporting activities	CPI Misc.
NDE	Real Estate Activities	CPI-General
Pvt. Corp	Real estate	WPI
Pvt. Corp	Renting	WPI
Pvt. Corp	Computer and related activities	WPI
Pvt. Corp	Research and development	WPI
Pvt. Corp	Other business activities	WPI

IV.2.3.4 *Constant-price GVA* estimates – unorganised sectors: The unorganised sectors' GVA estimates at *constant-price* for succeeding years are obtained in two different ways. For some of the CCs, the *constant-price* estimates are obtained by directly extrapolating base year estimates by suitable quantity indices. For the rest of the CCs, the *current-price* estimates are obtained first thereafter deflated with suitable indices for getting constant price estimates (see Table 3).

IV.2.3.5 *Current-price GVA* estimates – unorganised sectors: These again are obtained in two different ways. As stated in the preceding paragraph, for some of the CCs, the base-year estimates are simply extrapolated by suitable current-prices-growth indicators for arriving at *current-price* estimates. For the rest of the CCs – for which *constant-price*

estimates are derived by extrapolating *base-year* estimates – suitable price indices are used for inflating the *constant-price* estimates to current-price estimates (see Table 3).

Table-3: Price indices and volume indicators used for obtaining current-price estimates and constant-price estimates for the unorganised sector

Activity	Current price estimate	Constant price estimate
Road Transport	Transport & Communication CPI (Combined) (Base 2012)	Growth in registered vehicles
Water Transport	WPI	Index of cargo handled
Services Identical to Transport	Growth rates of Road and Water Transport estimates at current prices	Growth rates of Road and Water Transport estimates at constant prices
Courier activities	Service Tax of Courier activities (MH 105)	CPI (Transport & Communication)
Cable operator	Service Tax of Cable operator (MH 154)	CPI (Transport & Communication)
Tele-communication	Service Tax of Telecommunication (MH-101, 135, 136, 160, 195 & 198)	Telecommunication (Minutes of Usage) from TRAI
Recording, publishing & broadcasting services	Corporate Growth	CPI (Transport & Communication)
Repair and Maintenance of Motor Vehicles/ sale of motor vehicles	WPI of traded Commodities	Stock of commercial vehicles/ Sales growth of total vehicles
Whole sale trade except of motor vehicles	Unorg. index of sale tax turnover	WPI of commodities traded
Retail trade (except motor vehicle)	Unorg. index of sale tax turnover	WPI of commodities traded
Repair of computers and personal and household goods	Service Tax of Minor Head - 161 (Maintenance and Repair Services)	WPI of commodities traded
Hotels & Restaurants	Corporate Growth	WPI of commodities traded
Education	Education including Coaching (21.68)	CPI Education
Human health activities & Care activities	Human health activities & Care activities (17.10)	CPI Health
Activities of membership organisations	Service Tax of Membership of Clubs or Associations (Service Tax-179)	CPI Misc.
Recreational cultural and sporting activities	Consumer expenditure growth(non-food) (17.26)	CPI Recreation
Other services (Hair, washing etc.)	Consumer expenditure growth(non-food) (17.26)	CPI Misc.
Real Estate Activities	Corporate Growth	CPI Misc.

Activity	Current price estimate	Constant price estimate
Computer and Related activities	Corporate Growth	CPI Misc.
Legal activities	Corporate Growth	CPI Misc.
Accounting, book-keeping	Corporate Growth	CPI Misc.
Research and development & Other Professional Services +veterinary activities	Corporate Growth	CPI Misc.
Administrative and support services, excluding Renting of machinery & equipment without operator, personal / household goods	Corporate Growth	CPI Misc.
Storage and Warehousing	Corporate Growth	WPI

Note: 'MH' stands for minor head of Service Tax (which falls under the Major Head '0044' in classification of product taxes.

IV.2.4 Data Sources – for INAS compilation

IV.2.4.1 *Public sector*: Data for compiling Public sector estimates of aggregates relating to (i) production, (ii) income generation, (iii) distribution of income, (iv) final consumption and (v) capital formation at current prices are regularly available through Central & State budgets and Local body accounts, Departmental and Non-Departmental Enterprises' and Government companies' annual accounts. The constant price estimates are compiled by deflation using suitable price indices or by using relevant volume indices.

IV.2.4.2 *Private corporate sector*: For the Private corporate sector, regular data is available from Ministry of Corporate Affairs (MCA). These form the basis of estimating the aggregates relating to (i) production, (ii) income generation, (iii) distribution of income and (iv) capital formation. The availability and coverage of the MCA is being examined in detail by the Sub-Committee on Industrial Statistics. Thus, the present report focuses on issues relating only to services sector in the MCA data set.

IV.2.4.3 *Gross State Domestic Product (GSDP) of Private corporate sector*: The general methodology for compiling the estimates of state income is to first compile the estimates at disaggregated level for each economic activity and then aggregating them for the whole region/state. The national-level estimates of services activities for the corporate sector are compiled using the MCA data. These are allocated to the States on the basis of data available from other sources. The state-wise LI are applied on national level GVA estimates for trading activities for preparing state-wise estimates of GVA of trading activities. For education, health, real estate & professional services and storage industries to the state-wise LI estimates are used for allocating national-level GVA estimates to different States. The LI estimates used for this purpose relate to only the private corporate sector. The data of domestic and foreign tourists is used for preparing state wise estimate of Hotel and Restaurant industry. The state-wise navigable length and cargo handled data are used for

preparing state-wise estimates of water transport. The state-wise data on number of registered vehicles are used for preparing state wise estimates of road transport.

IV.2.4.4 *Unorganised sector*: The only source of data available for compiling the estimates of unorganised segment of services sector is the NSS Enterprise Surveys and these are conducted only once in every 5 years. These surveys provide data for estimating only the aggregates relating to (i) production, (ii) income generation, (iii) distribution of income and (iv) capital formation.

IV.2.4.5 Consequently, at the time of base year revision of National Accounts, only benchmark estimates are available from these surveys. To compile subsequent years' estimates, some activity-specific physical indicators are used to compile constant price estimates in the current series. Current price estimates are compiled using relevant price indices.

IV.2.4.6 The benchmark estimates of the unorganised sector are compiled by compilation categories.[23] In the INAS, the base-year estimates of GVA of each compilation category were obtained as the product of estimated labour input (LI) and the estimated gross value added per worker (GVAPW). The estimates of LI and GVAPW for current series were based on the results of NSSO's Employment & Unemployment Survey of the 68th round (2011-12) and Unorganised sector survey of the 67th round (2010-11) respectively. These surveys are designed primarily to produce reliable estimates for most of the CCs at the national level only. The overall sample size of these surveys are not adequate for producing reliable state-level estimates for the CCs. Of the 38 Services sector CCs, 6 are carried out almost entirely in the organised sector. Thus reliable estimates for the unorganised sector are required for 1120 State/ UT (35) X CC (32) combinations. It has been found from 68th round data that among 1120 combinations, just about 8% combinations have RSE of WPR below 15%. (Please refer to Tables (5) & (6) in Section 5.)

IV.2.4.7 *Gross State Domestic Product (GSDP) of unorganised (household and quasi corporate) sector*: As for the private corporate sector, the national-level estimates, based on the results of Enterprise surveys and Employment & Unemployment surveys of the NSSO, are allocated to different states. The indicators for preparing state-wise estimates are almost the same as corporate sector discussed in paragraph 2.4.3. The estimates of LI used for estimating GSDP for household sector relate to enterprises not maintaining accounts, while those used for quasi-corporate sub-sector relate to enterprises maintaining accounts.

IV.2.4.8 For estimating final consumption of the households and NPISHs taken together, called Private Final Consumption Expenditure (PFCE), the present practice adopts a commodity-flow approach for most of the components. A large number of rates and ratios are used for obtaining PFCE from the supply-side estimates. Only for three goods (salt, spices and *pan*) services (health and hotel & restaurant) consumption in the base-year

[23] Compilation categories are groupings of NIC 5/4/3-digited codes, which collectively cover all the economic activities considered for INAS.

PFCE estimate, NSSO consumption expenditure survey data are used and this is usually conducted once in five years.

IV.2.4.9 Thus, the data sources currently used for compilation of aggregates relating to (i) production, (ii) income generation, (iii) distribution of income, (iv) final consumption and (v) capital formation can be grouped into the following three broad types:

IV. Administrative
- Government budgets & accounts – for
  - General Government
    - Central ministries
    - State departments – local bodies
    - NPIs serving Government
  - Corporate sector – DCUs, NDCUs and Quasi-corporate
- MCA21 – for the corporate sector.
- Others – NABARD

V. Statistical Surveys – for mainly households and NPISHs
- Unorganised sector surveys
- AIDIS
- NSS Consumption Expenditure Surveys

VI. Compiled indices and indicators – volume indicators and price & quantity indices.

IV.3 DATA GAPS AND QUALITY ISSUES

IV.3.1 Identifying data gaps

IV.3.1.1 Data gaps of severest concern are evidently in respect of unorganised services sector. The share of the unorganised segment is around 40% in the GVA of services sector. But, the only source of data available for compiling of the estimates of unorganised segment of services sector is the NSS Enterprise Surveys and these are conducted only once in every 5 years. Besides the unorganised segment, the estimates of the quasi-corporates are also based on data available as infrequently as the unorganised sector. Thus, about a half of the estimated GVA of the services sector is based on current indicators relevant to the sector as annual enterprise survey results are not available at present.

IV.3.1.2 Thus, at the time of base year revision of National Accounts, only benchmark estimates are available from these surveys. To compile subsequent years' estimates, currently some activity specific physical indicators are used to compile constant-price estimates. The current-price estimates are compiled using relevant price indices.

IV.3.1.3 There are serious data gaps in respect of compilation of national accounts for the organised sector as well. There are a substantial number of public sector units (DCUs and NDCUs) for which data are not available in time. Coverage of autonomous institutions (NPIs serving government) and local bodies is far from complete. The data on private corporate sector available from the Ministry of Company Affairs do not provide accurate information on economic activity (NIC code) and that required for distributing national level estimates over the States. Data gaps and issues relating to quality of available data are discussed sub-sector by sub-sector in the following sub-sections.

IV.3.2 General Government

IV.3.2.1 Whereas for the Central and States' Governments, the coverage is complete, there are data gaps for the local bodies as the accounts for the local bodies are available only for some states with the financial assistance from the Thirteenth Finance Commission. The shortfall in local bodies' coverage is made up by using the information on the grants made to them.

IV.3.2.2 The Non-Profit Institutions (NPIs) serving government which are the autonomous bodies financed and controlled by the government are included in the general government sector. There is some data gap in the central government NPIs. At present, the NPIs covered in the system accounts for about 60% of the total grants made by the Central Government to them. On the other hand, there is severe data gap for the state government NPIs as most of States are not capturing the required data of the State-funded NPIs.

IV.3.2.3 As per 2008 SNA, the RBI is placed in the corporate financial sector and the expenditure incurred by the RBI is considered as transfer to the General Government and included in the Government Final Consumption Expenditure. It was noted that there are NPIs funded by the RBI, like IGIDR, NIBM etc., for which data, except for the transfers made by the RBI, are not captured in the system at present. Thus, their contributions are missing in the national accounts.

IV.3.2.4 *Recommendations*: The following were recommended regarding improvement of data availability for compilation of accounts of the general government:

(iii) The States may be granted financial assistance to develop a system of compiling accounts of local bodies.

(iv) The concerned Central Ministries, State Departments and RBI may be requested to put in place a system of (a) compiling necessary data on NPIs serving government (autonomous bodies) in a form specified by the

NAD; otherwise (b) providing audited accounts of NPIs to the NAD; otherwise (c) providing a list of grant recipients to the NAD.

(v) All Ministries' may be requested to ask for audited accounts from the recipients of grants in a specified format. The format may be developed in consultation with the NAD.

(vi) Request may also be made to NPIs to submit their audited accounts in an accessible format to CSO.

(vii) Request to be made to all Ministries to provide list of NPIs in their jurisdiction to CSO along with details of funding.

(viii) The MCA may lay down a system of updating list of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

IV.3.3 Corporate Sector

IV.3.3.1 Corporate sector consists of Government enterprises, private corporate sector, cooperatives and the quasi-corporate bodies. Data on these are available from different sources.

IV.3.3.2 *Government Enterprises*: Government Enterprises include DCUs and NDCUs. The NDCUs can be companies as well as public enterprises that were created by the Government. For the DCUs there is no data gap, as the information becomes available from the budget documents. Reports giving audited accounts for most of NDCUs of the Central Government are available. But for some of NDCUs there is a time lag in getting the reports. At the stage of first revision, the coverage of the available annual reports is just about 67% of the GVA of the NDCUs. It improves considerably (to 93%) at the stage of second revision – still not complete. The shortfall in coverage is made up by repeating the information from the latest available reports of the units for which reports are not available.

IV.3.3.3 There are also Non-Departmental Enterprises, mostly of the State Governments, for which required data are not available to the system. There are about 150 such units at present. It is apprehended that most of the non-reporting units are the loss making ones. As of now, no adjustment is made in the estimates for these units.

IV.3.3.4 *Private Corporate sector*: This consists of both financial and non-financial corporates as well as quasi-corporate bodies. The issues relating to the financial corporate sector is expected to be discussed and dealt with in the Committee on Financial Sector. However, it was noted that there is a variation in case of financial services data between MCA and RBI due to difference in activity descriptions in MGT[24]-7 and MGT-9.

[24] MGT-xs are reporting formats designed by M/o Corporate Affairs.

IV.3.3.5 *Non-financial Corporate*: The MCA is the main data source for non-financial corporate sector. The data are extracted from the annual reports – submitted in XBRL and AOC-4 formats – of the companies and made available to the NAD in a dataset called MCA-21. This is the most comprehensive dataset on the corporate sector available in the system. Yet, the coverage of MCA-21 accounts for about 85%, in terms of PUC, of the total PUC of the non-financial corporate sector. In the INAS, the shortfall in the coverage of the sector is made up by using the information of PUC.

IV.3.3.6 The most important gap in MCA-21data relates to the information at the regional (State) level. For the companies operating in more than one State, there is no way of ascertaining the distribution of GVA of such a company over its States of operation. In absence of details of a company's state-wise activities, the national-level GVA estimates are allocated to States in proportion to (i) State-level GVA estimates obtained from ASI for manufacturing activities, (ii) The indicators for allocating services sector estimates have been mentioned in para IV.2.4.3 above.

IV.3.3.7 The national level GVA estimate for an activity in the corporate sector is allocated among states/UTs in proportion to respective LI estimate of entities, which maintain accounts, in the activity. Ideally, the corporate sector GVA at the national level ought to be allocated in proportion to LI in the corporate sector. But, separate estimates of LI for the corporate sector are not available from the Employment and Unemployment surveys of the NSSO.

IV.3.3.8 The other data gaps in MCA-21 in the context of compilation of national accounts aggregates of non-financial service sector are (i) absence of Financial details (like loans, bonds, shares, debentures etc.) in AOC-4 returns, which are not required to be submitted by relatively small companies; (ii) 'Royalties' (especially for mining) payment not available either in AOC-4 or XBRL returns.

IV.3.3.9 Moreover, the MCA-21dataset has serious quality issues. The economic activity or activities (NIC codes) pursued by a company is extracted out of the CIN (Corporate Identification Number), assigned to the company at the time of registration. But the activities currently pursued are often different from the NIC code reported at time of registration; the activity-mix often undergo change in due course of time. The MCA-21 dataset is not designed to include all the economic activities pursued by a company. However, the representative of the MCA suggested that the MGT-7 forms contain information regarding activity-mix of the companies. There are also other serious inconsistencies in the MCA-21 data.

IV.3.3.10 It was reported that estimates of State-level aggregates can be compiled using information available in the "Cost Audit Report (CAR)", available with the MCA. The Cost Audit Report can be used for extracting auxiliary information from MCA data. This information may be used for compiling regional accounts. But, the CARs are not available in digitised form at present. The MCA is working on a project which could provide the data in any file format that can be read and digitized.

IV.3.3.11 *Cooperatives*: The NABARD is the main source of data on cooperatives. The NSSO does not cover Cooperatives in their surveys. It was felt that as the NABARD is the

nodal regulatory authority, information for this type of enterprises may be collected from NABARD. It was also pointed out that information on financial cooperatives is published with a time lag and no information is available for the non-financial cooperatives.

IV.3.3.12 A recently published paper[25] on issues relating to improving Cooperatives' data availability in future, the author acknowledges that timeliness of data availability is a matter of serious concern. The author observes that the NABARD obtains data through Registrar of Cooperative Societies (RCS) but the data are not received regularly from many states. For the cooperative banks, the data availability in future is likely to improve with bringing of all District Cooperative Central Banks (DCCBs) on to Core Banking Solutions (CBS) platform and launching of a portal by NABARD for online submission of returns by the client institutions. About 63000 Primary Agricultural Cooperative Credit Societies are proposed to be linked to CBS of DCCBs. But, the data regarding non-credit societies, which again flows through RCS, is going to be a problem till serious efforts are made to overhaul the data generation and flow system.

IV.3.3.13 The NSC may take up the issue of overhauling system of data collection from the cooperative society with the NABARD. Since, the NABARD is the agency responsible for regulating Cooperative societies and has a system of data collection, efforts should be made to make the system functional as a part of strengthen national statistical system, rather than conducting surveys to collect data on cooperatives.

IV.3.3.14 *Recommendations*: Noting the gaps and shortcomings of the data available for the corporate sector, the following recommendations are made:

(i) The MCA may take up the issue of difference in frame of Non-banking Financial Institutions (NBFIs) between MCA & RBI with the RBI and reconcile the difference.

(ii) The MCA may put in place a system of extracting information from the CARs and MGT-7 of companies operating in more than one States and/ or pursuing more than one economic activity and making them available to the NAD for compilation of regional and industrial sector accounts.

(iii) MCA need to sensitize the user Companies about NIC-2008 in filing MGT-7 & MGT-9 forms, including its differences with NIC 2004 used in CIN, to facilitate GVA compilation by NAD.

(iv) MCA may be requested to lay down a system of updating of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

(v) A procedure of regular meeting of the NAD and MCA officials may be put in place to (a) discuss the requirements of the NAD from the MCA data, (b) review the current list of items & equations and (c) devise scrutiny checks on MCA data.

[25] Satyasai, K.J.S (2017): Inclusive Flow of Funds Accounts and Cooperative Sector", *Special Proceedings of 19th Annual Conference of SSCA held at SKUAST, Jammu during March 06-08, 2017;* pp 83-92.

(vi) A study needs to be undertaken to examine, how the information extracted from CARs and MGT-7 regarding multi-state operations and activity-mix can be used for distributing a company's GVA and related aggregates over States and industries.

(vii) FOD to use the list of companies generated from MCA and find out location and operational details of these companies and also identify if there are any enterprises that are in existence in a particular state but not in the MCA list. This will be a one-time exercise. Necessary resources need to be provided to FOD for the task.

(viii) Type Study needs to be undertaken for finding way out to deal with missing data on financial details and 'royalty on natural resources' payments.

(ix) Expenditures during Construction (EDC) is a part of "Capital Formation and Output", thus getting this information separately is essential for compiling national accounts. Type Study needs to be undertaken for finding way out on how to deal with missing data on EDC.

(x) Many of the PSUs receive grants / subsidies once in three or more years from the government. Type Study needs to be undertaken for finding way out devising an appropriate treatment of these receipts of the companies.

(xi) Attempts ought to be made both by CSO and State DES to get annual reports of non-reporting NDCUs.

(xii) The NSC[26] may consider taking up the matter of making data on cooperatives available according to a time schedule with the NABARD.

IV.3.4 Quasi-corporate

IV.3.4.1 The data for quasi-corporates come from NSS survey. The data for quasi-corporate is extracted from NSS survey with the help of an item of information provided for in the survey schedule. The piece of information is "whether the enterprise maintains accounts". If the enterprise maintains accounts than it is treated as quasi-corporate otherwise the enterprise is treated to be in the household sector. The estimation issues are discussed in unorganised sector below.

IV.3.5 Household Sector

IV.3.5.1 The household sector covers unincorporated enterprises, including partnerships enterprises, excluding those maintaining books of accounts. Those maintaining books of accounts are considered as quasi-corporate bodies since the revision of INAS in 2011-12. The only source of value added estimates of services activities in this sector is the NSS Enterprise surveys. The results of NSS Employment & Unemployment surveys are also used for estimating GVA of this sector. Both these surveys are usually conducted

[26] National Statistical Commission

quinquennially. The results of such a survey conducted with a reference period closest to the base-year of an INAS series are used for preparing base-year estimates. The base-year estimate is extrapolated for subsequent years. The enterprise and employment and unemployment data are annually required for preparing estimates of unorganised sector.

IV.3.5.2 For the current series (2011-12) of the INAS, the procedure of Labour Input Method was further refined. The 67th round NSS survey provides estimates of workers classified as owners, hired workers and helpers. The data on GVA and capital was also taken from 67th round. All these data were prepared as per compilation categories. A Cobb-Douglas function was fitted using the above mentioned variables and estimates of coefficients for each category of workers thus obtained were applied on NSS 68th round data for arriving at effective LI.

The Cobb-Douglas function:

$$\text{Log } Y = \text{Log } A + \beta \text{ Log } K + \alpha \text{ Log } [L2 + \delta 1\, L1 + \delta 2\, L3] + \gamma S$$

Where Y = GVA, K = Capital, L1 = Owner,
L2 = Hired worker (formal + informal), L3 = Helper
S = Dummy variable for sector (Rural=0, Urban=1)

IV.3.5.3. State-level estimates for compiling GSDP

IV.3.5.3.1 For compilation of GSDP too, the economy is divided into the same set CCs. The State-level estimates of GVA of different CCs are arrived at using the same sources and methods as that for national-level estimates, only the indicators used for this purpose are different. But the estimates of GVAPW and LI for many of the CCs are far from reliable for most of the States. For these CCs, the sample size of NSS surveys is such that only national estimates are found reliable. This present sample size is not sufficient for preparing industry-wise estimates at state level. The NSS 67th round state x industry enterprise data shows that in many cases the number of sampled enterprises is zero or less than 35. This provides a very thin sample at state x industry level.

IV.3.5.3.2 The services sector estimates at state level, where possible, should be compiled by the States using pooled data of central and state samples with the help of NSSO. It is suggested to use of MCA data for state level estimates of organised segments of service sectors.

IV.3.5.3.3 Further, it is suggested that for compilation of State-level estimates of domestic products, the CCs mainly for the unincorporated enterprises may be combined to form such broader activity groups that the RSEs of the estimated GVAs (LI X GVAPW) for them be within tolerance limits.

IV.3.5.4 Estimates of Capital Formation

IV.3.5.4.1 This consists of Gross Fixed Capital Formation, (GFCF), change in stocks of inventories (CIS) and valuables. GFCF estimates are compiled for four broad categories of assets:

i. Dwellings, Other Buildings & Structures (DOBS);
ii. Machinery & Equipment (ME);
iii. Cultivated Biological Resources (CBR); and
iv. Intellectual Property Products (IPP).

IV.3.5.4.2 The DOBS is compiled separately for *pucca* and *kutcha* construction. For the *pucca* constructions and ME, the GFCF is estimated using a commodity flow approach based respectively on on-site cost of construction materials used in construction industry and net availability of four categories of fixed assets; electrical machinery, non-electrical machinery, transport equipment and others. CBR assets consist of livestock and plantation assets. The estimate of livestock is compiled using the Increment in livestock (for breeding, dairying and draught animals). Estimates of IPP asset for the Country is compiled through Expenditure approach, which includes:- R&D, Mineral Exploration & Evaluation, Computer Software & Databases and Others.

IV.3.5.4.3 For *kutcha* constructions, GFCF is compiled, separately for each institutional sector, using an expenditure approach. The estimates of *kutcha* construction undertaken by the public and private corporate sector are prepared by expenditure approach using data from budget documents of central/state governments and local authorities, technical reports of NABARD and annual reports of public sector and private sector enterprises. The estimates for the household sector are based on (decennial) All India Debt & Investment Surveys and Housing Condition survey of NSSO.

IV.3.5.4.4 The most serious data gap in estimation of capital formation (as well as GVA of construction industry) is the absence of direct data on construction works. Indirect approaches adopted at present rely on a number of rates and ratios. The data used for estimating the value of *kutcha* constructions at present are not of satisfactory quality.

IV.3.5.5 Private final consumption expenditure (PFCE)

IV.3.5.5.1 The estimates of PFCE are in general obtained by a commodity-flow approach. Only for a few goods (salt, spices and *pan*) and services (health and Hotel & Restaurant), the PFCE estimates are based on direct observations made in the Household Consumption Expenditure survey (CES) of the NSSO. For the current series (2011-12) of INAS, the estimates of these components of PFCE are based on the results of CES 2011-12. For the subsequent years, the estimates are derived by applying PFCE to output ratio on the current year's output.

IV.3.5.5.2 *Recommendations*: Having observed serious data gaps particularly for the unorganised sector (household and quasi corporates), the following recommendations are made.

(i) The available resources may be reallocated to make provision for conducting unorganized sector surveys on an annual basis.

(ii) A dedicated survey on construction activities is required to be conducted with regular periodicity.

IV.3.6 NPISHs

IV.3.6.1 There is no dedicated survey for NPISHs. The data for this institutional sector are also obtained from the NSS surveys. However, NPISH being in the coverage of NSS 67th, the data required for compiling base-year benchmark GVA estimates for NPISHs were available for the current INAS series. Similar estimates are expected to be available from the NSS 73rd Round for use in the future. The estimates pertaining to NPISH are, however, not brought out separately.

IV.3.6.2 *Recommendations*: Noting the gaps and shortcomings of the data available for the NPISHs sector, the following recommendations are made:

(i) The information on the activities provided by NPISH, covered under NSS Enterprise Survey may be examined and used on experimental basis to prepare estimates of NPISH segment

(ii) As NPISH get foreign grants and are therefore, registered with M/o Home Affairs under FCRA. Hence administrative data relating to NPISHs available from Ministry of Home affairs may be explored.

(iii) There is also a need for dedicated survey on NPISHs. NSSO may be requested to take up separate surveys on NPISH, making use of NPISH census as frame.

(iv) The NAD may develop a separate format for extracting the required data from book of accounts of NPISHs for compilation of INAS.

IV.3.7 Derived indices and indicators – Price, volume and quantity indices

IV.3.7.1 It was indicated that in the service production indices that are available at present there are some issues relating to its coverage, classification, levels etc. Requirement is of indices having same classification and levels as followed in National accounts.

IV.3.7.2 DIPP is compiling experimental business service price indices for i) Banking, ii) Trade, iii) Business Service, iv) Postal, v) telecom (Cellular), vi) Air Transport, vii) Port Services, viii) Insurance, ix) Railway Transport and x) Road Transport (freight). But there are some issues relating to how usable they are at present, such as (a) all price indices are not based on the exact activity/ product composition as followed in the National Accounts, (b) base years are different, (c) irregularity in data flow etc. Most importantly, the indices are based on data from organized sectors only. It was also informed that major problem was to get data from unorganised sector.

IV.3.7.3 Economic Statistics Division of CSO is compiling production indices of some services but they are restricted to public sector only. These indices are prepared using the methodology as suggested in the OECD manual and are in the preliminary stage.

IV.3.7.4 Following Recommendations are made:

(i) All price indices should be on a same base year.
(ii) Classifications followed for Business service Price Indices (BSPI) should be consistent with National accounts. DIPP may be requested to ensure consistency with the methods of National Accounts compilation while constructing the BSPI.

IV.3.8 Data Sources yet to be used for INAS

IV.3.8.1 It is suggested to list out some products (statistical exercises of collecting primary data and extraction from administrative sources) whose results can help in improving the data/ indicators that are being used. Further it is also suggested that, there is a need to take stock of existing products, work-in-progress and future products.

IV.3.8.2 Efforts are being made for getting the GST data. As the GST has recently been implemented, it would take some time to get the GST data. Thereafter, GST data would be studied, as to how it could be used in national accounts at national and states levels.

IV.3.9 Data expected to be available in near future

IV.3.9.1 It was informed that the Expenditure Finance Committee (EFC) would support a capacity development scheme during 2018-2021. Under the scheme, the unincorporated surveys, annual surveys of services sector and Periodic Labour Force Survey (PLFS) are proposed to be conducted annually.

IV.3.9.2 The results of Unincorporated Non-Agricultural Enterprises in Manufacturing, Trade and Other Services (excluding Construction), NSS 73rd Round are expected to be released soon, and data would be available for national as well as regional level estimation of GVA.

IV.3.9.3 The PLFS would help to get workforce estimates for urban areas at quarterly basis and rural and urban areas on annual basis. These workforce estimates may help in compilation of state level estimates as well.

IV.3.9.4 Following Recommendations are made:

(i) PLFS data can be used as indicators i.e. in lieu of present physical indicators.
(ii) Committee also suggested using rates and ratios from PLFS which will be available annually.

IV.4 IMPROVING ACCESS TO DATA

IV.4.1 The problem of estimation at the regional levels was highlighted. There were suggestions that MCA can help CSO to get information at the state level. It was stated that State level estimates can be compiled using information available in the “Cost Audit Report (CAR)”. The Cost Audit Report can be used for extracting auxiliary information from MCA

data. This information may be used for compiling regional accounts. It was reported that MCA is working on a project which could provide data in any file format that can be read and digitized. It was also pointed out that there are industrial classification issues with MCA data.

IV.4.2 It was pointed out that there are classification issues in case of frame of Companies' data received from the Ministry of Company Affairs (MCA). Often the activity description in Company data differs from that indicated by the NIC code embedded in the CIN. It was pointed out that the CIN, based on NIC 2004, is supposed to provide the original intention for which a company was established. At present, the Companies are providing the activities which contribute to their overall turnover in a year, using NIC 2008 classification, through the filing of MGT-7 and MGT-9 forms. The CSO may explore the possibilities of distributing the GVA of a Company across the activities provided in MGT-7. The MCA was also advised to upload NIC 2008 in their website and sensitize the Companies about its use in MGT-7 and MGT-9. The MCA representative said that they will look into this issue and do the needful.

IV.4.3 Following recommendation is made:

(i) MCA may be requested to take appropriate measures to ensure improved access to Cost Audit Report (CAR) for identification of economic activities carried out by company and distribution of their establishments over States.

IV.5 OTHER ISSUES

IV.5.1 On data to be collected in the ASSS

IV.5.1.1 Coverage of Annual Survey of Services (ASSS) is going to be very similar to that of MCA21. What should then be collected in the ASSS so that it serves filling data gap of MCA and avoid duplication of efforts. We have to deliberate on this farther. Representatives from FOD/SDRD made a presentation on NSS 74th round and Periodic Labour Force Survey (PLFS). It was pointed out that three different sources – Economic Census (EC), Business Register (BR) and MCA frame – were used to build the frame for the 74th round survey. The list of units from the EC considered for this purpose was restricted to only those having 10 or more workers, while the BR consists of only those units that are registered under at least one of the six specified acts.

IV.5.1.2 Thus, the coverage of the 74th round NSS – conducted as a prelude to Annual Survey of Services Sector – was only the organized sector. The utility of such annual surveys was discussed in detail. It was pointed out that the annual surveys would provide sub-national estimates, state level estimates, and probably better data for industrial classification that are not possible from the MCA-21.

IV.5.1.3 *Recommendations*: After detailed discussion on the gaps and shortcomings of the data available for the corporate sector and conduct of annual survey of services, the following recommendations are made:

(i) Available resources can be used to conduct annual surveys for collecting data on the parameters necessary for preparing sub-national estimates

(like State/district-wise employment, gross fixed assets, which are also used by the NDCUs) for only the multi-State Companies and devote the resources saved for conducting unorganized sector surveys on an annual basis.

(ii) NSSO may be requested to prepare a technical report on 74th Round, covering

- accuracy of EC-based frame examined in the first phase and
- non-responses by reasons in the second phase of the survey, and
- national- and state-level RSEs by compilation category, separately for corporate sectors, quasi-corporates and other incorporated enterprises.

IV.5.2 Possibilities of using results of Periodic Labour Force Survey (PLFS)

IV.5.2.1 NSSO has initiated Periodic Labour Force Survey (PLFS) from 1st April 2017. NSSO made a presentation on PFLS covering sampling design, rotational scheme, and schedules of enquiry. A rotational sampling design has been adopted for survey. The survey is designed to produce estimates of worker population ratio (WPR) by broad industry group – annually for rural areas and quarterly for urban areas.

IV.5.2.2 The sample sizes to be used for generating WPR estimates for rural and urban areas in PLFS would be comparable to those of Employment & Unemployment Survey of the 68th Round. Sub-committee thus called for a presentation on the relative standard errors (RSEs) of WPR estimates of the 68th Round.

IV.5.2.3 NSSO made a presentation on relative standard errors (RSEs) at both level National as well as State level estimates of workforce participation rates (WPRs) of 68th round of NSS. The RSEs for the compilation categories (CCs) at national level and State level were examined. The RSEs at national level for the CCs pursued mainly by the unincorporated enterprises were found to be within tolerable limits. But, at the State level, the RSEs for most of the CCs were not within tolerance limit. The following is a summary of relevant observations:

Of the 38 Services sector CCs, the following 6 are carried out almost entirely in the organised sector:

(i) Transport via Railways, (ii) Administrative and support services excluding rental and leasing services, (iii) Postal activities, (iv) Transport via pipelines, (v) Air Transport, and (vi) Sewerage, waste management and remediation activities.
Table 5 reveals that, of the rest, there are 4 CCs for which RSEs are beyond 15% even at the all-India level.

Table 5: Relative Standard Error (RSE) of all-India level estimate of WPR by Services Sector CCs – NSS 68th Round

CC sl. no.	Activity description	RSE (%)
with RSE < 5%		
33	Whole sale trade except of motor vehicles and motor cycles	4.47
34	Retail sale trade except of motor vehicles and motor cycles	1.69
36	Hotels & Restaurants	4.91
39	Non-scheduled passenger land transport	3.20
40	Motorised freight transport	4.36
60	Coaching services	2.35
61	Human health activities and care services with/without accommodation	4.54
66	Custom tailoring	4.36
with 5%< RSE < 10%		
32	Sale of motor vehicles and motor cycles	7.72
35	Repair of computers and personal and household goods	5.64
38	Scheduled passenger land transport	5.80
41	Non-motorized freight transport	7.93
50	Telecommunication	9.09
53	Computer related services	6.87
54	Legal activities	8.46
56	R & D and other professional, scientific and technical services	6.99
59	Academic tutoring services	8.51
63	Activities of membership organizations	7.85
64	Washing & cleaning of textiles and fur products	8.71
65	Hair dressing and other beauty treatment	6.17
67	Other personal service activities	5.60
68	Private households with employed persons	5.91
with 10%< RSE < 15%		
46	Services incidental to transport	11.52
51	Recording, Publishing and Broadcasting services	14.04
52	Real Estate activities	10.30
55	Accounting & book keeping activities	13.33
57	Rental and leasing services	13.98

Table 5: Relative Standard Error (RSE) of all-India level estimate of WPR by Services Sector CCs – NSS 68th Round

CC sl. no.	Activity description	RSE (%)
62	Recreational, cultural and sporting activities	11.03
With RSE > 15%		
43	Water Transport	24.85
45	Storage & Warehousing	20.09
48	Courier activities	18.12
49	Activities of cable operators	19.61

At the State level, the RSEs for most of the CCs were not within tolerance limit. Table 6 shows that even for the CCs for which the RSE of all-India level estimates are below 5%, the number of state for which the corresponding RSEs are below 15%.

Table 6: Number of States for which RSE of WPR are within 15% tolerance limit for *less-than-5%-RSE* CCs at all-India Level – NSS 68th Round

CCs with RSE < 5% at all-India level	No. of States for which RSE		
	< 10%	10% - 15%	**Total (< 15%)**
33	0	6	**6**
34	19	7	**26**
36	1	6	**7**
39	5	6	**11**
40	0	6	**6**
60	13	13	**26**
61	0	4	**4**
66	0	7	**7**

For the rest of the Services-sector CCs, the RSEs of State-level WPR estimates are generally much above 15% tolerance limit.

IV.5.2.4 *Recommendations*: Following recommendations are made:

(i) Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

(ii) From NSS surveys, CC-wise estimates at State level are not satisfactory (due to high RSEs as noticed from 68th Round results). Therefore, broader activity wise estimates alone need to be used by States/UTs for their estimates including proxy indicators used at present.

(iii) The CC-wise services sector estimates based on NSS data may be used at national level provided RSEs are below 15(%). Sub-committee refers the issue of RSEs to the main "Real sector committee" for consideration in the context of using NSS results for unorganised segments of industries.

(iv) State level RSE`s for activities at broader levels may be estimated by states using pooled data in coordination with NSSO. States capable of compiling pooled estimates may use these estimates for compilation of services sector estimates.

(v) The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys.

IV.5.3 On 2008 SNA Compliance

IV.5.3.1 *Compilation of insurance-related aggregates*: Non-life insurance premium paid by enterprises are treated as partly intermediate consumption (IC) and partly transfers, according to the 2008 SNA. But, over the years, the GVA estimates of manufacturing establishments in the Annual survey of Industries (ASI) are computed with the entire amount of non-life insurance payment included in IC. This is also included in IC in the production account of non-departmental enterprises. Most importantly, the Goldar Committee report recommends considering 'premiums', 'insurance charges' and 'insurance costs' payable reported in MCA21 as IC. The question is whether or not the 'imputed insurance service charges' (IISC) estimated at macro-level is allocated to the industries. In the Sources & Methods (Brochure 2011-12) for the current series of national accounts, there is no mention of allocating 'imputed insurance service charges' (IISC) to industries.

IV.5.3.2 The following recommendation is made:

The imputed non-life insurance service charges (IISC) need to be allocated to industries using appropriate indicator which could be sums insured instead of taking insurance charges as intermediate consumption.

IV.5.4 Standardization of operational definitions

IV.5.4.1 At present, separate experts' groups are constituted for economic census and different surveys. The currently used definition and concepts often vary from survey to survey. Thus, there is a need of adopting standard definitions, concepts and compilation for the data collection.

IV.5.4.2 *Recommendations*: Following recommendations are made

(i) NAD may immediately take up preparation of an updated glossary of terms – definitions of macro-economic aggregates – and put it in public domain.

(ii) A task force be constituted to take up the task of standardizing the essential contents of enterprise / establishment / Labour Force surveys – like ASI, Annual Survey of Services (ASS), Unorganised sector surveys and PLFS.

IV.5.5 Reporting survey results

IV.5.5.1 The definitions of terms used in survey reports are often found to be at variance with the internationally accepted standard definitions. On the other hand, the concepts and definitions followed for compilation of the INAS mostly follow these definitions. This leads to considerable uncalled for misunderstanding and misinterpretation of the survey results.

IV.5.5.2 *Recommendations*: To avoid misinterpretation, the survey results presented in the reports should be based only on observations made in the survey and not figures based on assumptions. If such figures are at all presented, they should be accompanied with appropriate caveats.

IV.6 MAIN RECOMMENDATIONS

All recommendations, consolidated sub-section-wise are as under:

IV.6.1 Recommendations made in Section IV.3.2 regarding improvement of data availability for compilation of accounts of the general government:

(i) The States may be granted financial assistance to develop a system of compiling accounts of local bodies.

(ii) The concerned Central Ministries, State Departments and RBI may be requested to put in place a system of (a) compiling necessary data on NPIs serving government (autonomous bodies) in a form specified by NAD; otherwise (b) providing audited accounts of NPIs to NAD; otherwise (c) providing a list of grant recipients to NAD.

(iii) All Ministries' may be requested to ask for audited accounts from the recipients of grants in a specified format. The format may be developed in consultation with the NAD, CSO.

(iv) Request also made to NPIs to submit their audited accounts in an accessible format to CSO.

(v) Request to be made to all Ministries to provide list of NPIs in their jurisdiction to CSO along with details of funding.

(vi) The MCA may be requested to lay down a system of updating list of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

IV.6.2 Recommendations made in Section IV.3.3 regarding the gaps and shortcomings of the data available for the corporate sector:

(vii) The Ministry of Corporate Affairs (MCA) may take up the issue of difference in frame of Non-banking Financial Institutions (NBFIs) between MCA & RBI with the RBI and reconcile the difference.

(viii) The MCA may put in place a system of extracting information from the CARs and MGT-7 of companies operating in more than one States and/ or pursuing more than one economic activity and making them available to the NAD for compilation of regional and industrial sector accounts.

(ix) MCA need to sensitize the user Companies about NIC-2008 in filing MGT-7 & MGT-9 forms, including its differences with NIC 2004 used in CIN, to facilitate correct/ improved CC's –wise GVA compilation by NAD.

(x) MCA may lay down a system of updating of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

(xi) A system of regular meeting of the NAD and MCA officials may be put in place to (a) discuss the requirements of the NAD from the MCA data, (b) review the current list of items and equations and (iii) devise scrutiny checks on MCA data.

(xii) How the information extracted from CARs and MGT-7 regarding multi-state operations and activity-mix can be used for distributing a company's GVA and related aggregates over States and industries need to be examined.

(xiii) FOD may use the list of companies generated from MCA as discussed in (xii) above and find out the location and operational details of these companies. Necessary resources need to be provided to FOD for the task.

(xiv) Type Study needs to be undertaken for finding way out to deal with missing data on financial details and 'royalty on natural resources' payments.

(xv) Expenditures during Construction (EDC) is a part of "Capital Formation and Output", thus getting this information separately is essential for compiling national accounts. Type Study needs to be undertaken for finding way out on how to deal with missing data on EDC.

(xvi) Many of the PSUs receive grants / subsidies once in three or more years from the government. Type Study needs to be undertaken for finding way out devising an appropriate treatment of these receipts of the companies.

(xvii) Attempts ought to be made both by CSO and State DESs to get annual reports of non-reporting NDCUs.

(xviii) The NSC may take up the matter of making data on cooperatives available according to a time schedule with the NABARD.

IV.6.3 Recommendations made in Section IV.3.5 regarding the shortcomings of the data available for the Household sector:

(xix) The services sector estimates at state level, where possible, should be compiled by the States using pooled data of central and state samples with the help of NSSO. Also use of MCA data for state level estimates of organised segments of service sectors is recommended.

(xx) For compilation of State-level estimates of domestic products, the CCs pursued mainly by the unincorporated enterprises may be combined to form such broader activity groups that the RSEs of the estimated GVAs (WPR X GVAPW) be within tolerance limits.

(xxi) Having observed serious data gaps particularly for the unorganised sector (household and quasi corporates), it is strongly recommended that the available resources may be reallocated to make provision for conducting unorganized sector surveys on an annual basis.

(xxii) A dedicated survey on construction activities is required to be conducted with regular periodicity.

IV.6.4 Recommendations made in Section IV.3.6 regarding gaps and the shortcomings of the data available for the NPISH sector:

(xxiii) There is a need for dedicated survey on NPISHs. NSSO may be requested to take up separate surveys on NPISH, making use of NPISH census as frame.

(xxiv) The information on the activities provided by NPISH, covered under NSS Enterprise Survey may be examined and used on experimental basis to prepare estimates of NPISH segment

(xxv) As several NPISH get foreign grants and are therefore, registered with M/o Home Affairs under FCRA. Hence administrative data relating to such NPISHs available from Ministry of Home affairs may be explored.

(xxvi) The NAD may develop a separate format for extracting the required data from book of accounts of NPISHs for compilation of INAS.

IV.6.5 Recommendations made in Section IV.3.7 regarding gaps and the shortcomings of the data available on derived indices:

(xxvii) The large gap in services sector price indices needs urgent strengthening. Further, all service price indices should have the same base year.

(xxviii) Business service Price Indices should be consistent with National accounts. DIPP may be requested to ensure consistency with the methods of National Accounts compilation while constructing the BSPI.

IV.6.6 Recommendations made in Section IV.3.9 regarding expected data to be available in future:

(xxviii) Periodic Labour Force Survey (PLFS) data can be used as indicators i.e. in lieu of present volume indicators.

(xxix) Use may be made of rates and ratios from PLFS which will be available annually.

(xxxi) For compilation of the all India estimates, physical indicators from PLFS surveys when available may be examined.

IV.6.7 Recommendations made in Section IV.4 regarding improving access to MCA 21 data:

(xxxii) MCA may take appropriate measures to ensure improved access to Cost Audit Report (CAR) for identification of economic activities carried out by company and distribution of their establishments over States.

IV.6.8 Recommendations made in Section IV.5.1 regarding gaps and shortcomings of the data available for the corporate sector and conduct of Annual Survey of Services (ASS):

(xxxiii) Available resources can be used to conduct annual surveys for collecting data on the parameters necessary for preparing sub-national estimates (like State/district-wise employment, gross fixed capital formation, which are also used by the NDCUs) for only the multi-State Companies and devote the resources saved for conducting unorganized sector surveys on an annual basis.

(xxxiv) NSSO may prepare a technical report on 74th Round, covering (a) accuracy of EC-based frame examined in the first phase, (b) non-responses by reasons in the second phase of the survey and (c) national- and state-level RSEs by compilation category, separately for corporate sectors, quasi-corporates and other incorporated enterprises.

IV.6.9 Recommendations made in Section IV.5.2 regarding possibilities of using results of Periodic Labour Force Survey (PLFS):

(xxxv) Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

(xxxvi) From NSS surveys, CC-wise estimates at State level are not satisfactory (due to high RSEs as noticed from 68th Round results). Therefore, broad activity

wise estimates alone need to be used by States/UTs for their estimates including proxy indicators used at present.

(xxxvii) The CC-wise services sector estimates based on NSS data may be used at national level provided RSEs are below 15(%).

(xxxviii) State level RSE`s for activities at broader levels may be estimated by states using pooled data in coordination with NSSO. States capable of compiling pooled estimates may use these estimates for compilation of services sector estimates.

(xxxix) The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys.

IV.6.10 Recommendations made in Section IV.5.3 –IV.5.5 regarding 2008 SNA compliance, Standardization of operational definitions and reporting survey results:

(xxxx) The imputed non-life insurance service charges (IISC) need to be allocated to industries using appropriate indicator which could be sums insured instead of taking insurance charges as intermediate consumption.

(xxxxi) NAD, CSO may on priority take up preparation of an updated glossary of terms – definitions of macro-economic aggregates – and put it in public domain.

(xxxxii) A task force be constituted to take up the task of standardizing the essential contents of enterprise / establishment / Labour Force surveys – like ASI, Annual Survey of Services (ASS), Unorganised sector surveys and PLFS.

(xxxxiii) To avoid misinterpretation, the survey results presented in the reports should be based only on observations made in the survey and not figures based on assumptions. If such figures are at all presented, they should be accompanied with appropriate caveats.

CHAPTER: V CONVERSION OF OLD GDP SERIES TO NEW BASE YEAR, 2011-12

As the revised GDP series with 2011-12 as Base year is available only from 2011-12, converting the old GDP series consistent with the new Base series becomes crucial for public policy research purpose. In this chapter, an attempt has been made to generate the back series of GDP/GVA data with the base year 2011-12. Three possible approaches can be considered for generating the back series. One approach is broadly based on the new GDP methodology by using the base data wherever available (such as MCA-21 data, which is available from 2007-08). Another method is based on production shift approach. These two methods are discussed further below. A third approach is to project the old series using the base year 2004-05 forwards up to, say, 2014-15, then adjust it to the 2011-12 base by comparing it with the new series. However, this approach has not been tried so far and is not discussed further below.

V.1 BACK SERIES COMPILATION BASED ON REVISED METHODOLOGY

V.1.1 The new series of National Accounts Statistics (NAS) with base year 2011-12 have been revised and released on 29th January, 2015. Whenever a new series of NAS is introduced with an updated base period, it is an accepted practice to link the old series to the new series to provide a comparable set of national accounts statistics for users.

V.1.2 The approach followed in this method is the same as was followed for compilation of new series to the extent similar data sets were available. Thus, estimates of GVA have been compiled separately for different institutional sectors. Public corporations and general government sector were backcasted by splicing. Private Corporate sector was back casted using CMIE data due to non availability of reliable MCA data sets. The unincorporated sector were backcasted by indicators used in the new series.

V.1.3 To elaborate, MCA21 data has been used to estimate the corporate segments of the economy in the new series. While the MCA data is available from 2006-07 under an e-governance initiative of the GOI but not on a comparable basis. For the past years although data was available but was unusable due to issues of taxonomy units or unit reporting problems. The data set stabilised only after 2010-11 onwards. Thus in order to backcast the series from 2004-05 till 2010-11, CMIEs PROWESS database was used.

V.1.4 In the case of manufacturing sector, for the private corporate sector, ASI growth rates of this sector have been used which were available for the period.

V.1.5 In the case of construction sector, for estimating the value of output of construction materials, value of output was estimated from dataset of CMIE for related companies.

V.1.6 Based on these adjustments, the CSO has estimated the growth rates of GVA /GDP estimates from 2004-05 to 2011-12 at current and constant prices. However, they are tentative estimates and need to be deliberated on by the Advisory Committee of National Accounts Statistics. Hence these estimates are not being presented in this report.

V.2 LINKING OLD SERIES WITH NEW BASE YEAR BY USING PRODUCTION-SHIFT APPROACH[27]

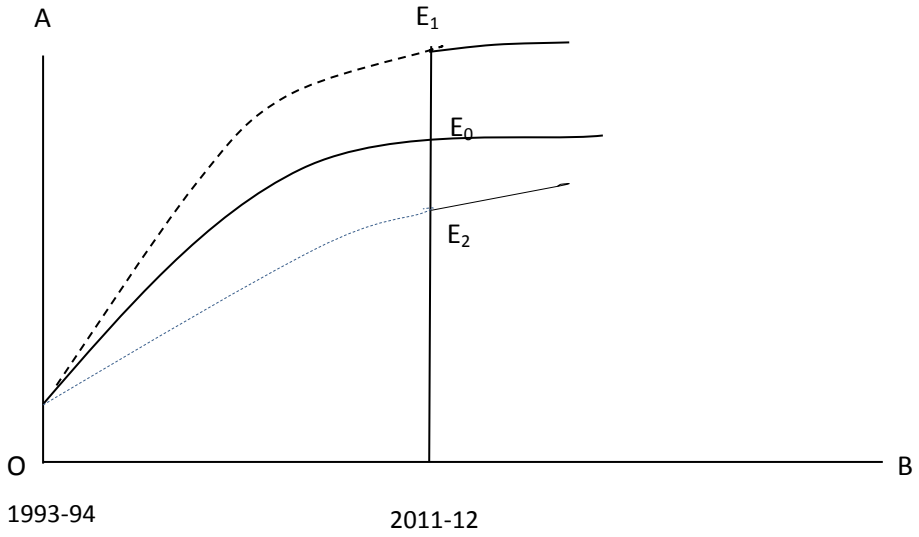
V.2.1 Availability of consistent and long time series data of GDP in India is an issue due to frequent changes in the base years. The change in the base period from 2004-05 to 2011-12 at the all India level has led to this problem. As the change in the base period is done based on shift in the production curve as well as by using new data sets such as MCA-21, simply price splicing, which is normally done, is not sufficient. While one can make efforts in generating consistent back series by getting into source data at a high level of disaggregation, the absence of some of the new datasets such as MCA-21 before 2006-07, could limit such exercise only up to 2006-07. But most importantly one is not clear, even if such data is generated up to 2006-07, if the data is consistent and free of noise. In this note, an attempt has been made to generate back series using production shift approach (quantum correction factor). This is similar to the method used in Bhanumurthy & Singh (2013) which follows a slightly modified version as used in Bhattacharya & Sakthivel (2002). This method is superior compared to the standard splicing method generally adopted for generating back series of GDP and GSDP as and when base year is changed.

V.2.2 In the 2011-12 series, compared to the past revisions, the new series at the disaggregated level, either shift upwards or downwards compared to 2004-05 series. Hence, it is necessary to either shift upwards or downward the production curve while generating the consistent back series. Here an attempt has been made to generate a new back series up to 1993-94 with 2011-12 as the base year. There are two steps: first, we take the nominal GDP, compute the difference in output of each sector for period 2011-12 between the old series (2004-05 base) and the new series (2011-12 base) for which data are available. This difference in the output at 2011-12 between two series has occurred either due to upward or downward shift in the production curve that includes new economic activities and/or exclusion of few older activities that are extinct. Now to get the new back series on the base year 2011-12, we first assume that this shift in production has not occurred in a single year. This difference in output, which appears in the year 2011-12, needs to be redistributed asymptotically backwards with an annual declining rate up to year 1993-94. This can be better understood from figure−6.1, where E_0 is the common year (here it is 2011−12) and the difference of output due to change in production is represented by the gap E_1-E_0 or $E_2- E_0$. (Here E_1 is the sector with higher values in the new series compared to old series and E_2 is the sector with lower values in the new series compared to old series. In this case, to get the new back series from 1993-94, i.e., for nineteen years, we use the formula $Y^*_{2010-11}=Y_{2010-11} + (E_1-E_0)*(18/19)$ for 2010-11, $Y^*_{2009-10} =Y_{2009-10} + (E_1-E_0)*(17/19)$ for 2009-10 and finally $Y^*_{1993-94} =Y_{1993-94} + (E_1-E_0)*(1/19)$, where superscript '*' indicates new back series. It may be noted from the graph that the difference has been redistributed by sliding backward up to year 1993-94 shown as dashed line, indicating a declining weight backwards for the new economic activities in the production basket. In the next step, we

[27] The committee would like to thank Ms Kanika Gupta of NIPFP for her research assistance.

compute the price deflator with 2011-12 by simple splicing and then divide the nominal series by this deflator to get real GDP at 2011-12 prices.

Figure−5.1: Shift in Production Curve with change in Base year



V.2.3 The new back series of both the GDP at Market Price as well as GDP at Factor Cost at the disaggregated level are presented in Appendix Table A5.1 and A5.2 respectively in Annexure V.1. One observation here is that in the case of GDP at market price, the revised series appear to be smooth and comparable to the new series. However, when we look at the growth rates, there are some differences, although not significant and this is largely due to the 'Discrepancy' variable, which is found to be highly volatile.

V.2.4 Simple stability checks, using structural break tests (Bai-Perron test), are undertaken on the aggregate GDP at Market Prices (both current and constant prices) to understand whether the current method creates any statistical breaks in the new back series. It was found that the series are smooth as the structural breaks are not found at point 2011-12.

V.2.5 Table-5.1 below shows the growth rates based on new back series (2011-12 base).

Table-5.1 New Back Series (2011-12 base) Growth Rates (in %)

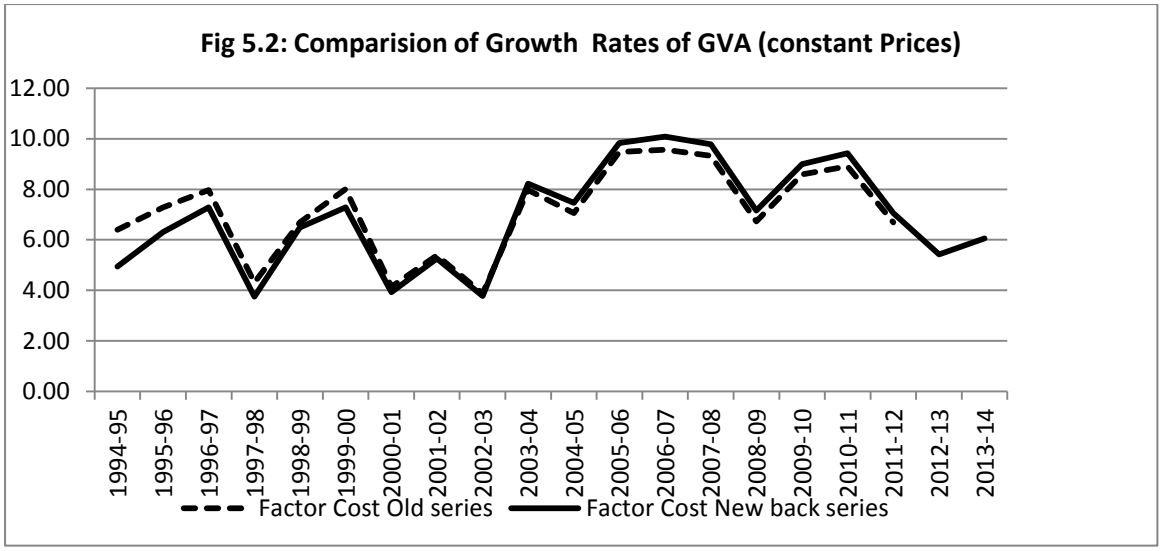
Year	GVA (current)	GVA (constant)	GDPMP (Current)	GDPMP (constant)
1994-95	15.20	4.94	15.91	5.40
1995-96	16.01	6.31	16.38	6.71
1996-97	15.63	7.28	15.04	6.94
1997-98	10.61	3.75	10.17	3.47
1998-99	15.06	6.49	14.43	5.94
1999-00	10.61	7.28	11.35	8.24
2000-01	7.45	3.93	7.45	3.66
Year	**GVA (current)**	**GVA (constant)**	**GDPMP (Current)**	**GDPMP (constant)**

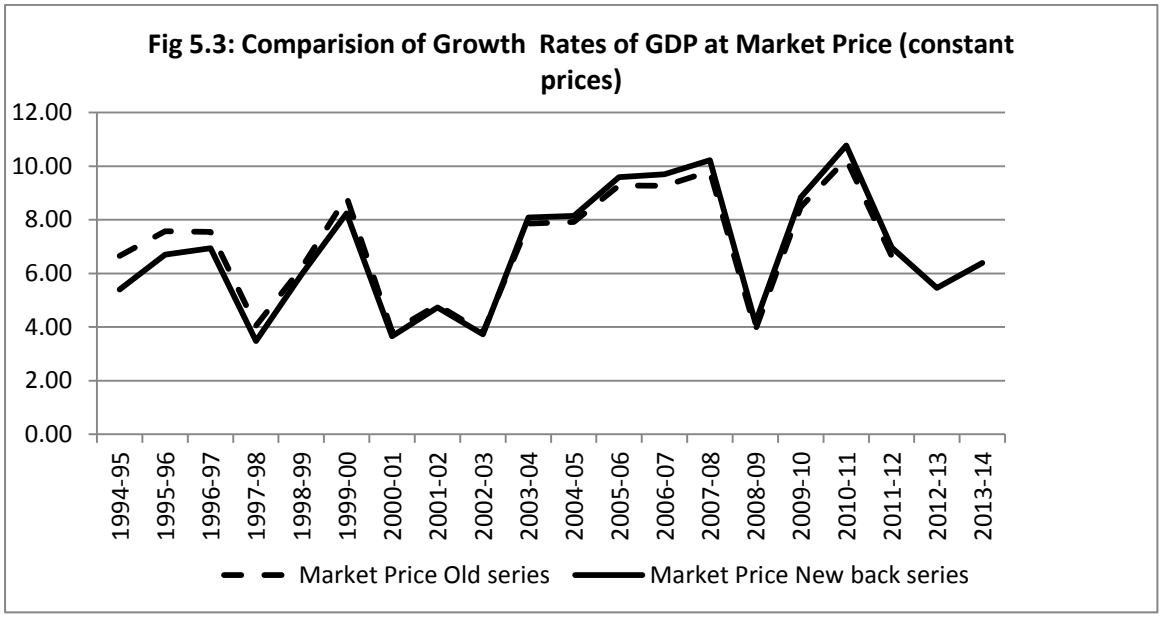
2001-02	8.59	5.26	8.06	4.73
2002-03	7.65	3.78	7.58	3.73
2003-04	12.29	8.22	12.28	8.08
2004-05	13.60	7.47	14.56	8.15
2005-06	14.47	9.83	14.24	9.60
2006-07	17.14	10.08	16.75	9.70
2007-08	16.40	9.79	16.57	10.23
2008-09	16.21	7.16	13.18	4.15
2009-10	15.61	8.99	15.44	8.84
2010-11	19.22	9.42	20.73	10.78
2011-12	16.16	7.05	16.10	6.96
2012-13	13.52	5.42	13.82	5.46
2013-14	12.61	6.05	12.97	6.39

V.2.6 We have also estimated the growth rates at the aggregate level and it may be noted in table-5.2, that the difference between the growth rates in the old series (2004-05 base) and the new back series (2011-12 base) are minimal.

Table-5.2: Comparison of growth rates (constant prices) between old series and new back series (in %)

Year	Market Price Old series	Market Price New back series	Factor Cost Old series	Factor Cost New back series
1994-95	6.66	5.40	6.39	4.94
1995-96	7.57	6.71	7.29	6.31
1996-97	7.55	6.94	7.97	7.28
1997-98	4.05	3.47	4.30	3.75
1998-99	6.18	5.94	6.68	6.49
1999-00	8.85	8.24	8.00	7.28
2000-01	3.84	3.66	4.15	3.93
2001-02	4.82	4.73	5.39	5.26
2002-03	3.80	3.73	3.88	3.78
2003-04	7.86	8.08	7.97	8.22
2004-05	7.92	8.15	7.05	7.47
2005-06	9.28	9.60	9.48	9.83
2006-07	9.26	9.70	9.57	10.08
2007-08	9.80	10.23	9.32	9.79
2008-09	3.89	4.15	6.72	7.16
2009-10	8.48	8.84	8.59	8.99
2010-11	10.26	10.78	8.91	9.42
2011-12	6.64	6.96	6.69	7.05
2012-13		5.46		5.42
2013-14		6.39		6.05





V.2.7 Figures 5.2 and 5.3 shows the trends in the growth rates of both old series and new back series for both GDP at factor cost and Market prices at constant price. It may be noted that the two series are very close and consistent with each other.

The revised series at the disaggregated level is provided in the Appendix tables in Annexure V.1.

V.3 MAIN RECOMMENDATIONS

V.3.1. The estimates of GVA/GDP prepared by the CSO using its methodology for the period 2004-05 to 2011-12 may be considered by the National Statistical Commission as and when they are approved by the Advisory Committee on National Accounts Statistics.

V.3.2 The National Statistical Commission could also consider initiating an exercise to project forwards the GDP series based on the old methodology with 2004-05 as base up to, say, 2014-15 and adjust it to the new base year 2011-12 based on comparisons with the new series.

V.3.3 Meanwhile the estimates of gross domestic product and other related aggregates for the period 1993-94 to 2013-14 using the production shift method are being presented to the National Statistical Commission for consideration.

V.3.4 When the GDP and other macroeconomic aggregates based on the methods mentioned in V.3.1 and V.3.2 above become available the time series data based on all the three approaches should be compared for their robustness.

References

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Bhattacharya B B & S Sakthivel (2002),"Extending 1993-94 GSDP Series Backwards: An Alternative Methodology and Implications", *The Journal of Income and Wealth*, Vol.24, No.1 & 2, Jan-Dec, 2002.

Annexure V.1

Appendix Tables

Table A5.1: Components of Gross Domestic Product (At Market Prices) Old and New Back Series, Current Prices

Year	Private Final Consumption Expenditure		Government Final Consumption Expenditure		Gross Fixed Capital Formation		Changes in Stocks		Valuables		Exports of Goods and Services		Import of Goods and Services		Discrepancies	
	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series
1993-94	5913.08	5791.264	1030.66	1000.386	1914.56	1986.492	-17.19	2.487368	.	.	861.47	858.1042	859.99	856.6253	70.95	-15.8074
1994-95	6871.54	6627.908	1146.72	1086.173	2284.42	2428.284	140.72	180.0747	.	.	1016.07	1009.338	1047.1	1040.371	43.54	-129.975
1995-96	7920.15	7554.703	1358.83	1268.009	2950.46	3166.256	245.57	304.6021	.	.	1307.33	1297.233	1449.53	1439.436	-65.56	-325.832
1996-97	9286.29	8799.027	1540.89	1419.795	3280.46	3568.188	-149.91	-71.2005	.	.	1448.54	1435.077	1610.22	1596.761	396.72	49.69053
1997-98	10185.59	9576.511	1822.45	1671.082	3724.01	4083.671	130.44	228.8268	.	.	1652.03	1635.201	1843.33	1826.506	52.75	-381.037
1998-99	11663	10932.11	2257.16	2075.518	4270.69	4702.283	-30.23	87.83421	.	.	1952.8	1932.605	2247.45	2227.262	167.8	-352.744
1999-00	13125.37	12272.66	2588.68	2376.764	4846.66	5350.185	424.97	562.7116	155.19	160.0823	2276.97	2253.409	2657.02	2633.467	-638.84	-1246.14
2000-01	14066.61	13092.08	2734	2491.811	4951.96	5527.417	151.58	308.9989	147.24	157.0246	2781.26	2754.334	2975.23	2948.312	-170.89	-864.949
2001-02	15316.72	14220.38	2911.89	2639.427	5902.4	6549.789	-19.71	157.3863	141.87	156.5469	2907.57	2877.278	3110.5	3080.217	-566.94	-1347.76
2002-03	16202.93	14984.77	3015.73	2712.993	6011.2	6730.521	182	378.7737	139.57	159.1392	3555.56	3521.902	3799.81	3766.163	-0.56	-868.134
2003-04	17713.05	16373.08	3247.83	2914.819	6974.78	7766.033	206.67	423.1211	245.72	270.1815	4174.25	4137.226	4368.78	4331.768	185.49	-768.841
2004-05	19175.08	17713.29	3545.18	3181.896	9310.28	10173.47	801.5	1037.628	410.54	439.8938	5690.51	5650.121	6259.45	6219.073	-251.54	-1292.63
2005-06	21527.02	19943.41	4016.19	3622.632	11202.92	12138.04	1043.89	1299.696	413.92	448.1662	7120.87	7077.115	8134.66	8090.918	-256.47	-1384.32
2006-07	24766.67	23061.25	4434.77	4010.938	13437.74	14444.79	1471.01	1746.493	497.09	536.2285	9048.72	9001.599	10405.35	10358.24	-303.59	-1518.19
2007-08	28407.27	26580.03	5130.21	4676.105	16416.73	17495.71	2015.34	2310.501	535.92	579.9508	10189.07	10138.58	12191.09	12140.62	-632.55	-1933.91
2008-09	32492.84	30543.79	6153.33	5668.951	18210.99	19361.9	1067.91	1382.748	722.13	771.0531	13287.64	13233.79	16140.4	16086.56	506.19	-881.928
2009-10	37075.66	35004.79	7711.51	7196.857	20557.72	21780.57	1791.72	2126.235	1163.12	1216.935	12987.8	12930.58	16471.4	16414.2	-37.85	-1512.73
2010-11	43603.23	41410.55	8901.36	8356.434	24070.69	25365.47	2735.09	3089.283	1628.36	1687.068	17101.93	17041.35	20501.82	20441.25	302.3	-1259.33
2011-12	51418.97	49104.47	10258.95	9683.75	28610.62	29977.33	1705.96	2079.83	2466.73	2530.33	21503.26	21439.31	27219.47	27155.54	1352.2	-296.2
2012-13		56144.85		10624.04		33249.73		2145.24		2737.75		24397.07		31084.28		1225.73
2013-14		64756.5		11565.09		35156.21		1446.21		1617.61		28567.81		31918.11		1143.89

Table A5.2: Components of GVA (Base price) Old and New Back Series (current prices)

Year	Agriculture & Allied Activities		Industry		Mining & Quarrying		Manufacturing		Electricity, Gas & Water Supply		Services		Construction		Trade, Hotels, Transport & Communication		Financing, Insurance, Real Estate & Business Services		Public Administration, Defence & Other Services	
	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series	Old Series	New Back Series
1993-94	2345.7	2347.2	1665.5	1804.0	203.1	223.3	1253.0	1344.5	209.4	236.3	4147.8	3857.9	420.1	466.2	1609.9	1263.0	1056.9	1135.5	1060.9	993.3
1994-95	2701.1	2704.1	2039.9	2316.9	229.1	269.4	1548.1	1731.1	262.7	316.4	4785.3	4205.6	482.8	574.9	1921.4	1227.6	1194.4	1351.6	1186.6	1051.4
1995-96	2937.0	2941.5	2497.2	2912.7	255.4	315.9	1935.7	2210.1	306.1	386.6	5719.5	4849.9	567.9	706.1	2311.8	1271.0	1437.9	1673.7	1401.9	1199.1
1996-97	3531.4	3537.4	2816.1	3370.1	280.0	360.7	2205.8	2571.7	330.4	437.7	6628.9	5469.5	646.5	830.8	2731.4	1343.7	1586.4	1900.8	1664.7	1394.3
1997-98	3747.4	3754.9	3020.2	3712.7	337.8	438.6	2294.0	2751.4	388.4	522.6	7672.2	6223.0	803.0	1033.3	3130.9	1396.3	1806.4	2199.5	1931.9	1593.9
1998-99	4303.8	4312.8	3345.0	4175.9	360.6	481.6	2503.7	3052.6	480.6	641.7	9003.1	7264.0	950.6	1227.0	3585.4	1503.8	2105.9	2577.6	2361.2	1955.6
1999-00	4553.0	4563.5	3595.1	4564.4	417.3	558.4	2712.6	3352.9	465.3	653.1	10324.7	8295.7	1092.1	1414.6	3990.9	1562.5	2511.5	3061.7	2730.1	2256.9
2000-01	4606.1	4618.1	4002.9	5110.8	458.7	620.0	3063.0	3794.8	481.3	696.0	11310.8	8992.0	1199.0	1567.6	4417.9	1642.5	2749.4	3378.3	2944.6	2403.7
2001-02	4986.2	4999.7	4162.4	5408.8	480.6	662.1	3185.0	4008.2	496.9	738.5	12528.8	9920.2	1293.9	1708.6	4902.9	1780.6	3156.9	3864.4	3175.1	2566.7
2002-03	4850.8	4865.8	4685.1	6069.9	629.8	831.5	3485.3	4400.1	569.9	838.3	13846.1	10947.6	1448.9	1909.7	5421.3	1952.1	3560.9	4347.0	3415.0	2738.9
2003-04	5446.7	5463.2	5145.7	6669.1	641.2	863.1	3911.9	4918.1	592.6	887.9	15629.8	12441.4	1683.9	2190.7	6232.5	2416.3	4000.6	4865.2	3712.9	2969.2
2004-05	5654.3	5672.3	6009.3	7671.1	850.3	1092.3	4532.3	5630.0	626.8	948.8	18051.1	14572.9	2288.6	2841.4	7277.2	3114.1	4371.7	5315.0	4113.6	3302.3
2005-06	6377.7	6397.2	6852.4	8652.7	944.6	1206.8	5216.7	6405.9	691.1	1040.0	20674.9	16906.9	2686.3	3285.3	8466.1	3956.0	4931.0	5952.9	4591.5	3712.6
2006-07	7229.8	7250.8	8177.7	10116.5	1067.9	1350.2	6348.3	7628.9	761.5	1137.3	24125.2	20067.3	3224.3	3869.3	9983.8	5126.9	5866.0	6966.4	5051.2	4104.7
2007-08	8365.2	8387.7	9413.6	11490.9	1248.1	1550.6	7327.2	8699.3	838.3	1240.9	28042.1	23694.3	3889.1	4580.2	11500.4	6296.6	6914.6	8093.7	5737.9	4723.8
2008-09	9432.1	9456.0	10492.2	12708.0	1398.3	1721.0	8183.2	9646.8	910.7	1340.2	33111.4	28473.8	4510.3	5247.5	13108.5	7557.7	8453.7	9711.4	7039.0	5957.3
2009-10	10835.1	10860.6	11953.4	14307.6	1593.0	1935.9	9221.5	10776.6	1138.8	1595.1	38300.5	33373.1	5004.6	5787.8	14816.2	8918.5	9649.4	10985.7	8830.3	7681.0
2010-11	13196.9	13223.9	13969.2	16461.9	2048.7	2411.7	10724.9	12371.5	1195.6	1678.7	45322.6	40105.3	5715.4	6544.7	17796.3	11551.7	11652.4	13067.4	10158.5	8941.6
2011-12	14991.0	15019.5	15945.7	18576.9	2227.2	2610.4	12361.8	14099.9	1356.7	1866.7	52980.3	47473.1	6898.0	7773.4	20722.7	14131.2	13815.2	15308.8	11544.3	10259.8
2012-13		16751.1		20740.3		2858.4		15728.4		2153.5		54535.6		8493.7		16639.9		17766.3		11635.7
2013-14		19263.7		22694.0		2957.9		17134.5		2601.6		61673.8		9214.7		18744.7		20695.1		13019.4

Table A5.3 : Components of GVA at base price, current and constant prices, (New Series, Base- 2011-12)

Year	Agriculture & Allied Activities		Industry		Mining & Quarrying		Manufacturing		Electricity, Gas & Water Supply		Services		Construction		Trade, Hotels, Transport & Communication		Financing, Insurance, Real Estate & Business Services		Public Administration, Defence & Other Services	
	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price	Current Prices	Constant price
1993-94	2347.2	8556.2	1804	4956.3	223.3	1097	1344.5	3449.6	236.3	517.3	3857.9	11247.1	466.2	1863.9	1263	3184.5	1135.5	3164.2	993.3	3332.4
1994-95	2704.1	8963.9	2316.9	5738.2	269.4	1282.6	1731.1	3983.9	316.4	604	4205.6	11241.5	574.9	2107.9	1227.6	2851.3	1351.6	3462.3	1051.4	3225
1995-96	2941.5	8905.4	2912.7	6656.8	315.9	1428.1	2210.1	4696.9	386.6	676.4	4849.9	11885.2	706.1	2332.5	1271	2783.1	1673.7	3849.6	1199.1	3342
1996-97	3537.4	9790.4	3370.1	7358	360.7	1495.4	2571.7	5251.8	437.7	748.2	5469.5	12354.2	830.8	2455.9	1343.7	2691.3	1900.8	4207.9	1394.3	3536.1
1997-98	3754.9	9543.3	3712.7	7724.7	438.6	1655.4	2751.4	5405.4	522.6	818.5	6223	13251.4	1033.3	2716.9	1396.3	2623.8	2199.5	4776.5	1593.9	3772.3
1998-99	4312.8	10147.4	4175.9	8120	481.6	1750.7	3052.6	5666.9	641.7	869.2	7264	14241.8	1227	2896.2	1503.8	2656.7	2577.6	5176.1	1955.6	4154.8
1999-00	4563.5	10420.5	4564.4	8688.4	558.4	1827.9	3352.9	6055.1	653.1	963	8295.7	15723	1414.6	3150.1	1562.5	2754.5	3061.7	5610.7	2256.9	4716.4
2000-01	4618.1	10422.8	5110.8	9260.9	620	1888.9	3794.8	6512.1	696	1014.3	8992	16406.1	1567.6	3375.1	1642.5	2784.1	3378.3	5911.4	2403.7	4872.6
2001-02	4999.7	11050	5408.8	9629.5	662.1	1961.1	4008.2	6765.1	738.5	1061.5	9920.2	17409.1	1708.6	3544.7	1780.6	2953.9	3864.4	6309.8	2566.7	5021.8
2002-03	4865.8	10324.2	6069.9	10259.7	831.5	2037.3	4400.1	7252.5	838.3	1100.5	10947.6	18621.7	1909.7	3831.1	1952.1	3176.3	4347	6779.3	2738.9	5178.2
2003-04	5463.2	11257.7	6669.1	10840.9	863.1	2133.2	4918.1	7680	887.9	1172.6	12441.4	20353.1	2190.7	4251.8	2416.3	3801.1	4865.2	7147.5	2969.2	5441.7
2004-05	5672.3	11280.1	7671.1	11480.5	1092.3	2197.1	5630	8148.5	948.8	1279	14572.9	22521.1	2841.4	4720.8	3114.1	4602.1	5315	7765.8	3302.3	5730.7
2005-06	6397.2	11858.3	8652.7	12326.7	1206.8	2213.6	6405.9	8869	1040	1361.7	16906.9	25354.8	3285.3	5244.8	3956	5630.8	5952.9	8684.4	3712.6	6180
2006-07	7250.8	12349.2	10116.5	13633.7	1350.2	2354.5	7628.9	9922.2	1137.3	1476.9	20067.3	28393.2	3869.3	5678.4	5126.9	6906.4	6966.4	9735.7	4104.7	6385.6
2007-08	8387.7	13062.2	11490.9	14696.9	1550.6	2398.9	8699.3	10810	1240.9	1584.9	23694.3	31823.2	4580.2	6173.1	6296.6	8168.1	8093.7	10742.5	4723.8	6913.5
2008-09	9456	13072.4	12708	15179.2	1721	2427.5	9646.8	11198	1340.2	1647.4	28473.8	35424.5	5247.5	6423.8	7557.7	9245.6	9711.4	11810.3	5957.3	7996.9
2009-10	10860.6	13175.6	14307.6	16524.9	1935.9	2538	10776.6	12354.8	1595.1	1665.6	33373.1	39490.1	5787.8	6810.2	8918.5	10655.9	10985.7	12840.3	7681	9183.2
2010-11	13223.9	14303.9	16461.9	17612.3	2411.7	2619.3	12371.5	13275.6	1678.7	1757.6	40105.3	43788.9	6544.7	7128.8	11551.7	12892.6	13067.4	13914.2	8941.6	9686.7
2011-12	15019.5	15019.5	18576.9	18576.9	2610.4	2610.4	14099.9	14099.9	1866.7	1866.7	47473.1	47473.1	7773.4	7773.4	14131.2	14131.2	15308.8	15308.8	10259.8	10259.8
2012-13	16751.1	15242.9	20740.3	19411.2	2858.4	2626.1	15728.4	14868.7	2153.5	1916.4	54535.6	50808.7	8493.7	7800.5	16639.9	15511.4	17766.3	16800.3	11635.7	10696.5
2013-14	19263.7	16092	22694	20234.2	2957.9	2631.1	17134.5	15607.1	2601.6	1996	61673.8	54310.3	9214.7	8007.7	18744.7	16520.6	20695.1	18674.1	13019.4	11107.9

Table A5.4 : Components of GDP at Market Prices, current and constant prices, (New Series, base-2011-12)

Year	Private Final Consumption Expenditure		Government Final Consumption Expenditure		Gross Fixed Capital Formation		Changes in Stocks		Valuables		Exports of Goods and Services		Import of Goods and Services	
	At Current Prices	At constant price	At Current Prices	At constant price	At Current Prices	At constant price	At Current Prices	At constant price	At Current Prices	At constant price	At Current Prices	At constant price	At Current Prices	At constant price
1993-94	5791.3	16313.3	1000.4	3205.7	1986.5	5302.3	2.5	8.0	.	.	858.1	2047.8	856.6	2414.7
1994-95	6627.9	16846.7	1086.2	3171.6	2428.3	5945.9	180.1	401.3	.	.	1009.3	2308.6	1040.4	2953.0
1995-96	7554.7	17674.3	1268.0	3368.5	3166.3	6979.3	304.6	619.3	.	.	1297.2	3030.0	1439.4	3781.5
1996-97	8799.0	18921.8	1419.8	3480.4	3568.2	7289.6	-71.2	-156.1	.	.	1435.1	3215.5	1596.8	3684.0
1997-98	9576.5	19336.8	1671.1	3853.3	4083.7	8002.1	228.8	432.6	.	.	1635.2	3137.8	1826.5	4167.1
1998-99	10932.1	20531.1	2075.5	4335.2	4702.3	8815.0	87.8	221.0	.	.	1932.6	3572.9	2227.3	5036.5
1999-00	12272.7	21725.8	2376.8	4838.5	5350.2	9538.2	562.7	1020.2	160.1	358.6	2253.4	4216.0	2633.5	5389.3
2000-01	13092.1	22369.5	2491.8	4869.1	5527.4	9510.2	309.0	514.3	157.0	340.6	2754.3	4984.6	2948.3	5635.6
2001-02	14220.4	23642.5	2639.4	4956.4	6549.8	10901.4	157.4	404.9	156.5	333.5	2877.3	5195.6	3080.2	5797.5
2002-03	14984.8	24226.8	2713.0	4910.1	6730.5	10951.5	378.8	607.8	159.1	330.3	3521.9	6297.2	3766.2	6498.8
2003-04	16373.1	25649.3	2914.8	5034.3	7766.0	12041.5	423.1	646.2	270.2	530.6	4137.2	6904.7	4331.8	7404.0
2004-05	17713.3	26958.6	3181.9	5234.8	10173.5	14651.3	1037.6	1511.5	439.9	813.1	5650.1	8796.9	6219.1	9065.7
2005-06	19943.4	29374.3	3622.6	5728.2	12138.0	16879.8	1299.7	1841.1	448.2	808.8	7077.1	11101.2	8090.9	12033.0
2006-07	23061.3	32025.9	4010.9	5960.4	14444.8	19060.9	1746.5	2309.9	536.2	915.9	9001.6	13373.5	10358.2	14630.3
2007-08	26580.0	35193.9	4676.1	6581.9	17495.7	21959.4	2310.5	2929.4	580.0	945.4	10138.6	14169.6	12140.6	16127.8
2008-09	30543.8	37906.7	5669.0	7342.8	19361.9	22675.7	1382.7	1608.7	771.1	1183.9	13233.8	16252.7	16086.6	19807.0
2009-10	35004.8	40885.2	7196.9	8470.8	21780.6	24328.7	2126.2	2472.9	1216.9	1828.0	12930.6	15485.7	16414.2	19381.2
2010-11	41410.6	44697.5	8356.4	9012.7	25365.5	26858.6	3089.3	3405.1	1687.1	2397.4	17041.4	18539.5	20441.3	22418.0
2011-12	49104.5	49104.5	9683.8	9683.8	29977.3	29977.3	2079.8	2079.8	2530.3	2530.3	21439.3	21439.3	27155.5	27155.5
2012-13	56144.9	51790.9	10624.0	9742.6	33249.7	31457.9	2145.2	2015.3	2737.8	2599.5	24397.1	22898.4	31084.3	28790.8
2013-14	64756.5	55573.3	11565.1	9798.3	35156.2	31949.2	1446.2	1297.6	1617.6	1488.8	28567.8	24682.7	31918.1	26445.6

Note: Here as 'Discrepancies' found to be volatile and constant price series could not be estimated.

Table A5.5: GVA at Base Price and GDP at Market Price				
	Aggregate (GVA) 2011-12 series		Aggregate (GDP Market Prices) 2011-12 series	
Year	Current Prices	Constant Prices	Current Prices	Constant Prices
1993-94	8009.05	23837.23	8766.30	26129.25
1994-95	9226.53	25014.25	10161.43	27539.25
1995-96	10704.11	26592.59	11825.53	29386.06
1996-97	12376.97	28528.25	13603.82	31424.62
1997-98	13690.54	29597.87	14987.75	32515.66
1998-99	15752.71	31517.79	17150.34	34448.02
1999-00	17423.66	33812.38	19096.20	37285.22
2000-01	18720.89	35141.22	20518.41	38649.44
2001-02	20328.66	36987.98	22172.83	40477.16
2002-03	21883.33	38385.46	23853.81	41987.35
2003-04	24573.64	41541.23	26783.85	45380.52
2004-05	27916.25	44642.82	30684.59	49078.15
2005-06	31956.77	49032.85	35053.83	53787.54
2006-07	37434.64	53975.06	40924.86	59006.47
2007-08	43572.87	59256.69	47706.35	65040.31
2008-09	50637.83	63497.50	53993.74	67742.56
2009-10	58541.31	69207.72	62329.04	73729.47
2010-11	69791.02	75728.60	75249.56	81675.63
2011-12	81069.46	81069.46	87363.29	87363.29
2012-13	92026.93	85462.74	99440.13	92130.17
2013-14	103631.52	90636.49	112335.20	98013.70

1. New Series-Base year 2011-12: $Y^{*}= Y+ (E_1-E_0)*(i/21)$; i= 1,2,3,…, 19
2. $Deflator_1$ = GDP at Current prices / GDP at Constant prices *100
3. $Deflator_2$ = $Deflator_1$/ Deflator of base year (2011-12) *100
4. Real GDP = New Series/ $Deflator_2$*100

CHAPTER VI: LINKING MACRO & MICRO LEVEL DATA

VI.1 INTRODUCTION

VI.1.1 The System of National Accounts (SNA), the framework that guides most of the activities of a national statistical organization, is concerned with aggregate measures of economic activities undertaken within a nation's geographical boundary. Aggregate measures like National Income, Final Consumption Expenditure and Capital Formation are useful for policy makers and researchers when their object of inquiry is the economic performance of a nation, in absolute and relative term. These aggregate measures are also useful to monitor "people's ability to meet basic material needs and for tracking cyclical and secular changes in the economy as a whole" (Bernanke 2014).

VI.1.2 But aggregate measures do not reveal the underlying distribution of the aggregates over individuals and households engaged in their economic activities that are being measured. In other words, we need more granular data to "better capture the diversity of experience across households and firms" (Bernanke, 2014). From a methodological as well as teleological perspective, this search for distributional features of aggregate measures differs significantly from an economist's quest for micro foundation of macroeconomic theory. From an economic perspective the "Microfoundations" project is an attempt to reconcile the behavior of economy at the aggregate level with that of the optimizing behavior of rational economic agents. But critics starting from Keynes and Kalecki have pointed out that what is true at firm or household level may not be true at aggregate economy level.[1]

VI.1.3 Historically, distributional aspects of income, consumption and accumulation across households and firm have been studied by using data collected by either surveys or government for administrative purpose like income tax data. For example, till 1983, the major source of data on income distribution for USA was the Current Population Survey's (CPS) March Income Supplement. Thereafter, the Survey of Income and Program Participation (SIPP) became the main data source on income distribution in USA[2]. Another important survey providing income distributional data is Survey of Consumer Finance conducted triennially by Federal Reserve. In the case of India, NSSO's consumer expenditure survey was the main data source for study of poverty and income inequality. All these survey results provide standalone results and there is no effort to link them to national income aggregates. Similarly most of the studies on income inequality in India used survey data without establishing a direct link with national income aggregates.

VI.1.4 An Expert Group constituted by the OECD and Eurostat cited three main reasons for "developing distributional results in line with national accounts totals, in addition to distributional results already available from micro sources". (Zwijnenburg Jorrit et.al 2016). Firstly, many non-monetary transactions included in national accounts are not covered by micro data. For example, goods and services provided to the households or non-profit

institutions either free of charge or at a below market prices are accounted for in national accounts but not necessarily in micro data. Secondly, national income accounts follow a coherent framework which integrates production, consumption and accumulation accounts. Micro data are neither collected nor compiled within such an integrated framework. If distributional results are consistent with national accounts totals, it should be possible to link them to relevant macroeconomic indicators like gross domestic product, household disposable income etc. Such linking should enable policy makers to assess differential impact of any policy on various household groups. Finally, national accounts provide a benchmark for any micro dataset in terms of coverage, concepts and relevant aggregate measure. When different micro datasets are compatible with each other in respect with this benchmark, it should be possible to combine them to create a much larger dataset with many more distributional attributes.

VI.2 BACKGROUND

VI.2.1 Constitution of the sub-committee on IT Enabled Data System and Micro-Macro Linkage

VI.2.1.1 The National Statistical Commission (NSC) decided to constitute five professional committees to assist it on various technical issues (vide its order F.No.8 (64)2010-NSC dated 5th October 2016). These committees are required to examine all data related issues pertaining to estimation of GDP within the broad framework of SNA 2008. The Committee on Real Sector in its meeting held on 22nd May 2017, in turn, decided to constitute a sub-committee on "IT enabled data system and micro and macro data linkages" in consultation of the Chairman, National Statistical Commission.

VI.2.1.2 The specific terms of references of this sub-committee included:

(i) Developing a strategy for establishing an IT enabled data system for linking micro and macro level data
(ii) Spelling out a practical road map for reflecting this strategy
(iii) Addressing pending recommendations of NSC (Rangarajan Commission)

This chapter is mainly based on the report of this sub-committee. It draws on the experience of official statistical agencies of various countries in creating a micro-foundation of important macro-economic aggregates that these agencies produce.

VI.3 CONCEPTUAL FRAMEWORK

VI.3.1 From Aggregate to-Detail in an Enterprise Accounting Framework

VI.3.1.1 A manager of a business enterprise can scarcely take a business decision by looking at performance report of the enterprise at aggregate level. If growth in total sales revenue has been below par for the year under review, the manager needs to identify the

source of the observed shortfall. This can be achieved either by raising a series of queries to the data management team and thereby getting to the bottom of the problem or use a Decision Support System (DSS) that enables it to review any performance metric at various levels of granularities. For example, a bank needs to identify the sources of its rising level of non-performing assets (NPA) - by industries, by geographies, by customer types etc. Thus the reported total NPA has to be broken down by these attributes of raw data, called dimensions. This is known as Drill down. Drill down is the capability that enables an analyst to move seamlessly from an aggregate view of data to a more specific one at the click of a mouse. This is possible only when reported data satisfy two conditions- (1) aggregate is an arithmetic summation of individual raw data at the required level of granularities and (2) raw data is stored along with all its attributes in a query ready fashion . Modern reporting tool allows drill down from one level of hierarchy to a hierarchy below it. For example, total population or a component of it, say male population, can be drilled down to state level data, then to district level and further to village or urban unit level male population.

VI.3.1.2 For policy makers such a facility is extremely useful to identify the factors which could be the proximate causes of observed level or changes in the metric of interest. For example, a policy maker would like to know, which industrial sector and within that which institutional sector has lagged much behind the national GDP growth. If such questions can be answered by navigating from an aggregate report to its constituent components, it would be an ideal situation. But the possibility of such type navigation in the context of macroeconomic aggregates may not be possible for a variety of reasons.

VI.3.2 Why enterprise level DSS is not feasible in respect of aggregate measures of National Income accounts.

VI.3.2.1 The Gross Domestic Product or GDP of a nation is, in the final analysis, an aggregation of outcome of economic activities carried out by individual economic agents within the geographical cum production boundary of a nation for a specified period. From a purely accounting perspective a nation's GDP could be measured in the same way as Gross Value Added (GVA) is measured and reported in the accounts of a business enterprise. But in practice, not even a single sectoral GDP is computed by summing up the GVAs of individual enterprises, comprising the sector. This is also true for every sub-sector. The reasons for this divergence are many. Some important ones are discussed below.

VI.3.2.2 Firstly, the definitional content and measurement methodology of standard economic measures differ significantly as between National Income Accounting (NIA) and Business Accounting. The System of National Account (SNA) provides an internationally agreed upon accounting framework for building the macro-economic aggregates of a nation. But business accounts are drawn up in conformity with local taxation rules and other government policies. For example, depreciation or cost of use of capital is measured under SNA in conformity with the economic meaning of the term. But for business enterprises, individual country's tax policy determines how it would be accounted for in the balance sheet. Similarly use of book value in many cases creates divergence between business unit

level accounts and aggregate account under SNA. To account for such conceptual differences, data available from business enterprise level accounts needs to be adjusted before it can be used in NIA. Such adjustments are feasible only for a reasonably large homogenous group of business units only; such homogeneity might not be observed even at sectoral or industry level but at lower level of aggregation of micro units.

VI.3.2.3 Secondly a significantly large segment of economic agents in the production sector do not maintain proper business accounts that can be accessed by National Accountant (NA) for estimation of GDP from this segment. Such estimation is generally made conducting sample surveys and /or by imputation using other available statistics pertaining to this segment. Such imputations can only be done at a certain level of aggregation, thus making it infeasible to drill down from aggregate value to its details. For example, produce of kitchen garden is valued by NA although such outputs are meant only for self-consumption by the producing households. Obviously, it would be impossible to expect a bottom-up aggregation of such imputed incomes. However, it is still possible to carry out imputation of such incomes at a sub-national level (say at a district level) and aggregate them up to a national level.

VI.3.2.4 Thirdly, there are also economic variables that are conceptual constructs by definition without any material representation. If needed for NA, such variables can be measured only through imputation and can be done only at aggregate level- national or sub-national. For example, rental value of a self-occupied house is considered in both side of the income expenditure account of a household. This is an unobserved value by definition and has to be imputed for NIA.

VI.3.2.5 Finally, NIA treats holding gains/losses and non-transactional gains and losses differently as compared to the treatment such entries receive in business accounting. NA necessarily has to make certain adjustments to the data received from business enterprises, either through surveys or in the course of administrative process. Similarly transfer in kind to households is not recorded during household income /expenditure surveys. So NA has to make suitable estimates to prepare income and final consumption of households.

VI.3.2.6 Thus on a priori ground it is neither feasible nor advisable to embark upon a complete macro-micro linkage for national income accounts, in a way it is done in case of business enterprises. But it does not mean that one cannot organize household / enterprise level records that are either available as an outcome of state administrative process or collected through sample surveys or through periodic complete enumeration at the national level and link those to various aggregate measures.

VI.3.2.6 It would be wrong to say that SNA provides macro-economic aggregates only at a national level. SNA does provide them at a sub-national level. But its level of disaggregation does not go down to the level where actual economic decisions are taken. SNA combines these decision making units into Institutional sectors and provide

disaggregated accounts at such sectoral level. Similarly outcomes of economic transactions between transactors are classified into industrial sectors and relevant aggregate measures are made available by industrial sectors. SNA also provides aggregates by two-way classifications of transactions and transactors.

VI.3.2.7 Despite the inherent difficulty in creating a direct traceable link between macro aggregate and corresponding decision unit level measures, SNA has recognized the imperative requirement of macro-micro linkage for policy formulation and subsequent evaluation purpose. SNA 2008 has thus noted: - "Data in the form of aggregates, or averages, often conceal a great deal of useful information about changes occurring within the populations to which they relate. …. Microdata sets also make it possible to follow the behavior of individual units over time. Given the continuing improvements in computers and communications, the management and analysis of very large micro databases is becoming progressively easier. Data can be derived from a variety of different sources, such as administrative and business records, as well as specially conducted censuses and surveys" (SNA 2008,pp).

VI.3.3 Micro-macro linkage in lieu of drill down facility in the context of NIA

VI.3.3.1 The recognition of this need for macro-micro linkage for NIA is not sudden and has a fairly long history of significant effort made by many researchers as well as national statistical organizations under the leadership of multilateral organizations like OECD, EUROSTAT etc. When the cost of computing power per unit of operation started declining rapidly since early 1970s, many National Statistical organizations started exploring the possibility of creating a linkage between large micro datasets and national income aggregates. Furthermore, one needs to understand that all macroeconomic aggregates are, statistically speaking, point estimates of the underlying distribution of the variable under consideration. National Income is a sum of the income of individual economic agents of different institutional and legal representations. For a given level of NI, there could be infinite possible distribution of that total over these economic agents. Mean is only one statistics of that distribution. For policy purposes, a modern welfare state would like to know the share of different groups of the economic agents who have contributed to generate the total. So we need to know the quantiles, the Gini coefficient etc. of this distribution and its changes over time. Thus the micro-macro linkage becomes important from the perspective of understanding the distribution of income generating production process.

VI.3.3.2 In 1966, at the 14th session of UN Statistical Commission, the need for a system of distribution statistics that covered income, consumption and accumulation of household wealth was deliberated upon and UN Statistical Office was entrusted with the task of leading this international endeavor. A final version of the full system of distribution statistics that covered income, consumption and accumulation of household wealth was adopted at the 17th session of this Commission. The United Nations Statistical Office published Provisional Guidelines on Statistics of the Distribution of Income, Consumption

and Accumulation of Households in 1977. The need to link micro level income distribution statistics with macro level national accounting standards was emphasized in this document. (see Canberra Handbook 2011)

VI.3.3.3 In 1996, at the initiative of Australian Bureau of Statistics, an International Expert Group on Household Income Statistics ('Canberra Group') held its first meeting at Canberra. After 4 meetings of this group, results of the group's deliberations were brought out in the form of a handbook in 2001. Its second and revised version was published in 2011. The handbook set forth extant international standards, recommendations and best practice in preparation of income distribution of households.

VI.3.3.4 In 2008, the French government formed a 3 member commission under the chairmanship of Prof. Joseph Stiglitz and Prof Amartya Sen and Prof Jean Paul Fitoussi as two other members, to "identify the limits of GDP as an indicator of economic performance and social progress" and" to assess the feasibility of alternative measurement tools". The commission observed that the traditional GDP measures "market production – expressed in monetary units" while, to evaluate "how well –off people are", we need measures of "net national income, real household income and consumption" and their distribution across households. Putting emphasis on "household perspective" in all measures of income, consumption and wealth, the commission wanted official statistics to give "more prominence to the "distribution of income, consumption and wealth". Since "such distributional measures should be compatible in scope with average measures from the national accounts", we need to establish a linkage between micro datasets which would provide the distributional measures with the macro aggregates that would provide the consistent level estimates of "income and consumption jointly with wealth". (Stiglitz Committee Report)

VI.3.3.5 The 2009 report to G-20 Finance Ministers and Central Bank Governors on "The Financial Crisis and Information Gaps" made the following recommendations:
"Statistical experts to seek to compile distributional information (such as ranges and quartile information) alongside aggregate figures, wherever this is relevant. .The OECD is encouraged to continue its efforts to link national accounts data with distributional information" (recommendation # 16 of Data Gap Initiative-I)

VI.3.3.6 In step with the international cooperative effort to bring out distributional breakdown of national income aggregates, many individual researchers of the collaborating institutions and from academia started highlighting the need for micro-macro linkage. The IARW organized many special sessions on this topic in their annual conferences.

VI.3.3.7 In 1971, a conference on the role of the computer in economic and social research in Latin America was held in Mexico. In a paper titled "The Computer and Government Statistics" two officials from Statistics Canada argued that "the statistical office must develop facilities for storing the data collected in highly disaggregated form (to be referred to as "microdata sets"), and for retrieving quickly a large variety of unanticipated, as

well as anticipated, tabulations. Clearly, if only aggregates are stored or retained, this limits the flexibility for subsequent re-aggregation and cross-classification".

VI.3.3.8 Ruggles & Ruggles (RR) called for such linkage forcefully in their 1975 paper - "the microdata sets must be integrated with the aggregate accounts, and with one another. A microdata set relating to any given sector should add up (with appropriate weighting) to the economic constructs for that sector in the national accounts, and the microdata set for one sector should be articulated as appropriate with those of other sectors"(Ruggles and Ruggles 1975). In another paper, they brought out clearly the objective of micro-macro linkage exercise: *How can we construct an integrated and coherent data framework that will encompass both macro and micro data needs? Starting from where we are, what changes are needed? The discussion is mainly about the macro framework-the national accounts-since that is where the overall frame must be found. But its point of departure is the need to construct a total system into which microdata will fit in a logical way*. (Ruggles and Ruggles(1986)).

VI.3.3.9 Based on the above brief account of historical background to international initiative to create micro-macro linkage in the context of NIA, the following operational meaning of the term micro-macro linkage emerges from these efforts. These are:

- Micro-macro linkage must not be confused with the standard business intelligence practice of breaking down or so called drill down of a sum into its constituent units.
- Micro-macro linkage in the context of macroeconomic aggregates of NIA would mean supplementing an aggregate measure with distributional data which are consistent and compatible with macro data in terms concepts, definitions, coverage and computed value of the aggregate.

VI.4 METHODOLOGICAL APPROACHES IN ESTABLISHING MICRO-MACRO LINKAGE:

VI.4.1 Core accounts and supplementary accounts:

VI.4.1.1 Originally proposed by officials of Dutch Central Bureau of Statistics and subsequently endorsed by Ruggles and Ruggles (R&R), this approach envisages a system composed of "core" accounts along with various associated supplementary accounts. The "core" accounts would be based on only monetary transactions as it is recorded in the business accounts without any imputations or macro level adjustments. The basic idea is that for constructing core account the perceptions of transactors should be the guiding factor in its accounting treatment and not the economic perspective that SNA has justifiably adopted. For example, an individual considers personal car as an asset while SNA considers its purchase as current expenditure. R&R has considered such expenditure as capital outlay in constructing the core account for the household sector. The supplementary accounts are prepared to align the accounts with the economic perspective and framework that SNA has prescribed. According to R&R, this approach is "well suited to serve as a basis

for the integration of macro and micro data". This is fundamentally a top down approach-chipping off the imputations and attributions from the standard national accounts to its bare monetary core which can be merged with other micro databases.

VI.4.1.2 The OECD Expert Group has summarized a similar approach in five steps involved. These are:

- Step1: Adjust national accounts totals by excluding those transactors which are not part of the domestic private households. Thus, "*Non-profit Institutions Serving Households*", *persons living in non-private dwellings (prisons, retirement homes etc.)* are excluded from the production account. The consumption expenditure of the non-resident households on the national territory gets excluded from Private Final Consumption Expenditure, if not already done in national accounts
- Step 2: Determine availability of data in respect of variables of interest from macro as well as micro dataset. Identify items which are covered in national accounts but by micro dataset.
- Step3a: Carry out imputations for missing information at the micro level
- Step 3b: Scale the micro data to the adjusted national income totals
- Step 4: Clustering of households. First linking various data sources a complete set of accounts for various type of households. Households are then clustered based on their equalized disposable income. The equivalised disposable income is the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults; household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale
- Step 5: Derive relevant indicators for the household groups

VI.4.2 Building macro accounts from available micro accounts:

VI.4.2.1 Transactor level accounts are maintained by business enterprises and government entities, following double-entry book keeping methods. Since households and household enterprises generally do not maintain a structured account of their activities as producers, it would be practically infeasible to aggregate production related accounting measures like value added, value of output and input etc. along the dimension of individual household entities. Therefore, the literature on feasible methodology for building macro accounts from micro accounts invariably deals with business enterprises.

VI.4.2.2 Conceptually, the ordinary Profit & Loss P&L) Account of non-financial corporations is closely related to the production account of non-financial corporate sector of National Income. However, in practice such summation of Gross Value Added (GVA) of individual non-financial corporations to work out production account of the corresponding institutional sector of NIA. In the case of NIA, a consistency has to be maintained between production account and consumption account. There is no such requirement for a business

enterprise when it prepares its P&L account. Business accounts are, therefore, required to be adjusted in order to align with the national accounts.

VI.4.2.3 One of the major adjustments required is in respect of valuation of inventories and as a consequence in respect of valuation of output. SNA measures value of output as sales net of discounts, returns, VAT, and sales tax plus change in inventories. So method of valuation of inventories has a significant impact of valuation of output in SNA. In business accounting, a variety of methods are used in valuation of inventories like LIFO, FIFO and average cost method. SNA on the hand requires valuation of inventory by Perpetual Inventory Method (PIM). With the advancement of technology, many business enterprises are adopting PIM method instead of periodic valuation. But when a large number of business enterprises are yet to adopt PIM method for valuation of inventories, as in the case of India, capital stock and changes in the capital stock have to be estimated indirectly at some level of aggregation.

VI.4.2.4 The steps that have been adopted in countries like France to build national accounts for non-financial corporations from accounts of business enterprises are described below.

(i) Reclassification of items included in the business accounts in accordance with SNA items
(ii) Group these reclassified items to build intermediate accounts that are conceptually aligned with SNA
(iii) Items in the intermediate accounts are adjusted to make them fully compatible with SNA. These adjustments can be done with data sourced from sources other than the business accounts.

VI.4.2.5 SNA items into which all business account items have to be reclassified are:

(i) Output- This is not just sale of goods and services from business accounts. The cost of goods bought for resale must be netted out of reported net sales. In business accounts cost of such goods bought for resale is included in the cost of goods sold. Accounting for resold goods separately helps to classify an enterprise into manufacturing, trading and other services.
(ii) Intermediate consumption- Care has to be taken that cost of goods manufactured , selling , general and other expenses reflect production cost only and does not include any labour cost, cost of use of capita , property income, current transfers, capital gains or losses.
(iii) Compensation to employees- Besides wages and salaries, this item includes all expenses that are not work –related but incurred to remunerate the wage and salary earners in kind. When employers provide non-pension benefits themselves directly to their employees, former employees and defendants without involving an insurance or pension funds, remuneration for existing employees must be imputed from actuarial

calculation of required contribution to a hypothetical fund that could support such services.

(iv) Stock options- Business accounts may not record the benefits accruing to employees receiving stock options. This needs to be worked out in accordance with methodology given in SNA 2008.

(v) Depreciation- This item needs to be reworked to make it compatible with NIA

(vi) Current and capital transfer- Many items appearing in business accounts as operating expenses are in the nature of current or capital transfers in NIA. These items need to be reclassified to fit into the schema of SNA.

VI.4.2.6 Intermediate Accounts: The intermediate accounts are set up to compute output at basic prices, items of intermediate consumption at purchaser's prices and then value added. Computation of value added is computed by summing up the factor incomes available form income account of business enterprises as well as from the Intermediate Accounts.

VI.4.2.7 Building SNA production and income accounts by adjustment of Intermediate Accounts: To produce SNA accounts from the Intermediate Accounts (IA), a number of adjustments have to be made to the intermediate accounts. The areas where adjustments are required, include treatment of internal usage of output of one establishment as input in another establishment within the same corporation, treatment of cost of own construction and major repairs, treatment of cost of development of software etc. For many of these areas, published business accounts may not provide the needed details. The same can be obtained from accounts of ess ledger accounts.

VI.4.2.8 Finally, it may not be practical to assume that macro accounts can be built up entirely with data from micro accounts of business enterprises. Posner in his influential paper addressed the issue of "statistical inconsistency that arises when the Macro-enterprise sector of a complete national accounting system is put on a microdata foundation." He pointed out that the insistence of consistency between production/consumption and capital accounts is a desirable virtue in the macro level, to insist that such consistency should be observed while aggregating micro level business accounts is not helpful.

VI.4.3 Linking Macro and Micro at smaller group of transactor level

VI.4.3.1 Under this approach macro and micro accounts are not restructured or transformed. No attempt is made to link two accounts at individual unit level. This avoidance follows from the realization that national income accounting essentially follows a "quadruple entry" bookkeeping approach. Such an approach is feasible when both parties to a transaction view the transaction mutually consistent manner (Posner Linkage between). But as Maurice Copeland has noted this is not true for many market transactions –"In part also they (accounting deviations) are due to the fact that two parties to a transaction may look at it somewhat differently" (quoted in Posner(1982).

VI.4.3.2 As explained earlier in this document, NIA uses many estimates and adjustments which are available only at aggregate level, making it almost infeasible to attempt linking two sets of account at the individual transactor level. However, it may be possible to create intermediate level grouping of transactors and create macro-micro linkage at that level.

VI.4.4 Linking two sets of Micro datasets

VI.4.4.1 Macro-micro linkage is closely connected with another data management practice known as record linkage. While creating a macro micro linkage, it is advisable to create a micro dataset containing all variables of interest. Since more often than not we may not be able to lay our hand on such a comprehensive micro dataset, we need to create them by matching of record of two datasets and transfer variables from one dataset to the other. This practice of creating a new dataset by linking two sets of data through matching of records is widely practiced in medical and demographic field. By matching of two records, we generally mean that two records from two different dataset represent the same entity- which could be the same individual, the same family, or the same business. The record linkage method can be classified into two major classes – exact matching and statistical matching.

VI.4.4.2 An exact match links data for the same unit (e.g., person) from the different files by way of establishing a rule. For the creating the rule, one or more identifiers for uniqueness of records are sought. In database language we call the keys. For example, name, address, social security number etc. could be keys of records. The term “exact” does not mean that resulting matches are made without any error. Fellegi and Sunter provided a theoretical framework to identify different types of errors in matching and a mathematical model to work out an optimal linkage rule (Fellegi & Sunter(1969)).

VI.5. STRATEGY FOR ESTABLISHING DATA SYSTEM FOR MICRO-MACRO LINKAGE

VI.5.1 A strategy, in general, is comprised of three components:

(i) The vision or objective or the goal of the strategy
(ii) Milestones to be achieved in different phases of implementation of the strategy
(iii) A roadmap with clear identification of tasks, resources and responsibilities of different stakeholders working together to achieve the goal envisioned in the strategy.

VI.5.2 Vision Statement:

VI.5.2.1 In the specific context of establishing a micro-macro linkage for macroeconomic aggregates of National Income Accounts, the **strategic goal** would be:*The scope of national income accounting should include providing of distributional statistics of*

any aggregate flow measures like GDP / private final consumption expenditure and stock measures like outstanding debts along various dimensions that are useful for formulation and evaluation of public policies and various social welfare measures.

VI.5.2.2 It is evident from the above vision statement that what is being sought to achieve through micro-macro linkage is not a redefining of the current scope of NIA but augmentation of the same within the framework of SNA. It is neither expected nor necessary that each macroeconomic aggregate would be required to be broken down to its ultimate micro constituents. The objective is to analyze the distributional aspects of the aggregate measure consistently and with reasonable accordance with the aggregate.

VI.5.3 Milestones

VI.5.3.1 A vision statement provides the end point of a strategy. For practical implementation of the same we need to set more achievable goal posts. Given the paucity of requisite information, this sub-committee could only set three broad milestones, further breakdown of which can be worked out when a proper action plan is drawn up.

Short term goal: The micro-macro linkage project should start with those components of India's GDP that are based on direct accounting data. Wherever the transactors (who? aspect of SNA framework) are institutions with statutory obligation to maintain Income and asset/liability accounts, linking their individual business level accounts to their contribution to GDP could be the first feasible project established. For example, within the "Registered Manufacturing Sector", the contribution of the public limited and private limited companies should be the ideal sub-sector for which we should be able to establish micro-macro linkage. Which of the four approaches described earlier in this report would be appropriate for the purpose at hand can be decided later. The linkage need not be with regard to all types of accounts covered in NA. To begin with only production accounts should be covered, extending the effort gradually to other accounts, namely expenditure accounts and accumulation accounts. As a necessary prerequisite for undertaking activities mentioned above, construction of Business Register should get underway during this phase.

Medium term goal: In this phase of the mission, the Final Consumption Expenditure account should be the target account for micro-macro linkage, followed by the asset/liabilities account. The distributional feature of the household sector consumption expenditure is one of the most important information sets for evaluation of all redistributive welfare measures and policies of any government.

Long term goal: Apart from achieving micro-macro linkage for the most important macro aggregates of NIA, it should be possible for any authorized user to trace the chain of transformations that have generated the final statistical output from a given set of input data. This kind of data traceability is not to be confused with the standard data navigation capability called drilling down or drilling across. Here it may not be possible to directly link a given aggregate to its constituent micro level data. For example, if we are using a survey based data point, say $x_{i,j}$ and it is used to estimate the measure x at the economy level, using multipliers, drilling down from

$x_{i,j}$ to x is neither meaningful nor feasible. But it should be possible to trace all the transformations that made it possible to generate x from $\{x_{i,j}\}$.

VI.5.4 Roadmap

VI.6.4.1 Micro-macro linkage project in the context of national income accounting is one of the most challenging projects that the Indian official statistical system would embark upon, requiring significant deployment of resources. It took more than 4 years for the Canberra Group to firm up its recommendations and guidelines for production of income distribution statistics in alignment with the national income statistics. So to expect that Indian official statistical system would be in a position to embark upon any micro-macro data linkage project immediately would be, at the best, a wishful thinking.

VI.6.4.2 Before the officials statistical system takes up a micro-macro linkage project it must reach a certain level of maturity in terms of metadata management. The first principle of metadata management is to have a data model for the metadata of datasets under reference; in the present case these datasets are with reference to the national income accounts. Based on this data model, a metadata database needs to be created. The roadmap given below is drawn up under the assumption that a metadata database for all data that are used in national income accounts is in place.

(i) Constitute an expert group to undertake a Meta survey of the micro level databases that are available in the official statistical system, both at the central as well as the state level.
(ii) Create another expert group to work out the modalities of creating a comprehensive Business Register for India
(iii) Based on the recommendations of the expert group on Business register, the CSO should set up a dedicated team to reconcile the micro level accounting data of the companies registered data under Companies Act with their corresponding GDP data.
(iv) Based on the experience of the exercise above CSO should set up a special cell to carry out other projects in time

VI.6 PENDING RECOMMENDATIONS OF NSC (RANGARAJAN COMMISSION)

VI.6.1 Rangarajan Commission in its report had mentioned about the need of micro-level data for operational planning, particularly at the state level. The relevant recommendations are included in para 14.6.11 and 14.6.12 of the report (reproduced in Annexure II). The Commission surprisingly identified the State Governments as the main users of distributional statistics while the Central Government as user of only macro-level aggregates. As a result, the responsibility of producing distributional statistics, the main end result of micro-macro linkage activities, has lied with the State Governments. The State statistical Bureaus are not well equipped with required skill set to undertake a highly

complex project like micro-macro linkage. Lack of funding is another deterrent to take this up. The declarative nature of the recommendations has also not helped.

VI.6.2 The sub-committee is of the opinion that the task of launching micro-macro linkage should vest with the CSO and the Statistical Commission should make appropriate recommendations in this regard.

VI.7 MAIN RECOMMENDATIONS

1. The micro-macro linkage project should start with those components of India's GDP that are based on direct accounting data.

2. Constitute an expert group to undertake a Meta survey of the micro level databases that are available in the official statistical system, both at the central as well as the state level.

3. MOSPI should make efforts to greater use of the NSSO State samples for generation of distributions based on various attributes. It is also important to improve the quality of data generated in NSSO States samples. The requisite resources should be made available for this.

4. Create another expert group to work out the modalities of creating a comprehensive Business Register for India. MOSPI should take the lead in implementing this programme.

5. Based on the recommendations of the expert group on Business register, the CSO should set up a dedicated team to reconcile the micro level accounting data of the companies registered under the Companies Act, 2013 with their corresponding GDP data. Within the "Registered Manufacturing Sector", the contribution of the public limited and private limited companies should be the ideal sub-sector for which it should be possible to establish micro-macro linkage. This project would be in the nature of a Proof-of-concept project that this sub-committee is recommending. To begin with only production accounts should be covered, extending the effort gradually to other accounts, namely expenditure accounts and accumulation accounts.

6. After establishing macro-micro linkage for the production account, linkage for income-expenditure account followed by accumulation account for the registered manufacturing sector should be taken up. Thereafter, the household sector should be the target sector for macro-micro linkage initiative.

CHAPTER VII: SUMMARY OF RECOMMENDATIONS

VII.1 INTRODUCTION

VII.1.1 This is the concluding chapter of the Report of the Committee on Real Sector Statistics. For the convenience of the readers it consolidates in one place all the recommendations made in the earlier chapters of the Report.

VII.1.2 One recommendation cutting across chapters is that modern technology like artificial intelligence based data cleaning and new big data sources such as internet, point of sale data etc., should be used by all statistical authorities for improving the data base of the Indian economy.

VII.1.3 Another cross cutting recommendation is that all statistical agencies should use the Collection of Statistics Act 2008 more effectively for improving the quality, coverage and timely generation of statistical products.

VII.1.4 A third overarching recommendation is that the NSC should be adequately empowered to coordinate the collection of statistics across all statistical authorities and resolve such issues as may arise.

VII.2 RECOMMENDATIONS ON AGRICULTURE STATISTICS

VII.2.1 The Committee acknowledges and notes positively the detailed work done and recommendations made by the NSC, Vaidynathan Committee, Alagh Committee and Mahendra Dev Sub-Committee. To further improve the system this Committee (Real Sector) makes the following recommendations for taking action on priority basis:

A. Agriculture (Crop husbandry)

1) To revive the importance of crop statistics, funds released for flood/ drought relief, crop insurance, subsidies, etc., should be based on data supplied to the Ministry.

2) It is necessary to make an ABC analysis to determine importance within state and relative importance at “All India” level to arrive at a minimum “crop x state” list to reach at pre-determined level of coverage in terms of availability of direct data (e.g. 80 per cent of

production at state level and 70 per cent at all India level are based on direct data). Such a list will trim list of crops/ state for collection of data and will save resources.

3) ABC analysis is also required to short list 244 horticulture crops. Although area under all horticulture crops must be estimated while undertaking agriculture census, state specific important crops may be included in land records. For these crops statistically sound approach may be developed to estimate production and input cost.

4) The estimates of crop production of principle crops are derived using the area and yield estimates which are derived at number of time point depending upon time and quantum data becomes available (e.g. first estimate is prepared on the basis of intention of crop proposed to be sown, previous year yield adjusted with weather factor). For estimating level of food production, import and export policy formulation, fixing of support prices, etc. these estimates are required by the Government. Ministries of Agriculture (DESAg) and Statistics (NAD, CSO) may come together to select estimates that should be used for timely compiling of macro-aggregates.

5) All data collected should be used. Two series of experiments conducted under the National Agricultural Insurance Scheme (NAIS) and the General Crop Estimation Survey (GCES) should be combined by making necessary changes in the design to improve the efficiency of forecast.

6) For improving reliability and timeliness of the data the present system will need increasing use of upcoming techniques such as remote sensing, multiple frame survey techniques, small area estimation technique, etc. A more efficient survey design based on agro-climatic zones. Sufficient resources may be provided.

7) A number of agencies are involved in collection of agricultural statistics. It is necessary to create a nodal agency in the Ministry of Agriculture to coordinate and consolidate data.

8) Data set on agricultural activity has a wide base spread over space and time. These data are required at various level of aggregation. To manage it in an efficient manner it is necessary to develop a state of art system in which data flowing from state government can be imported after quality check. The Food and Agriculture of the UN has created FAOSTAT keeping in mind similar approach.

9) Existing nine fold classification need revision. The present classification under estimates agriculture production. The present classification was framed long ago to support revenue collection. The present classification is biased towards agriculture activity (crop husbandry, forestry and fishing activities) and does not take into account multiple use of land. This classification neither provides estimates of land used by all economic activities nor it is suitable for compiling land-labour ratio or environmental indicators. This data is also not suitable for land use planning. A suggested classification is given in Annexure III.3.

10) Creation of dataset on Agro-climatic Zones provides useful cost-effective basis for collection of basic data for developmental planning. It is necessary to strengthen this field.

B Cost of Cultivation

11) Data collected in the crop estimation survey schedule may be used for estimation of intermediate consumption for crops/ areas for compilation of national accounts where such data are not available from any other reliable sources. With the marginal increase in resources scope of this survey could be increased to cover additional information on farm harvest prices, etc. It is recommended that to make these data useful concepts and definitions may be formulated by Ministry of Agriculture and uniform procedure may be enforced in all states and union territory.

12) Concept of time use may be introduced in Cost of Production Surveys to standardised paid and unpaid family labour component for compiling estimates of factor share. This can also provide estimate of women's contribution in crop and animal husbandry activities.

C Animal Husbandry

13) It is recommended that the scope and coverage of the Integrated Sample Surveys may be expanded in a manner that reliable estimates of production are available at district level. The coverage may also be expended to include additional items like camel and sheep related products/ by-products.

14) Animal husbandry activity in the unorganized sector is also quite substantial. It is recommended that periodical surveys may be undertaken to improve the coverage of the sector.

D. Ancillary Data on Agriculture Activity

15) It is recommended that a three tier system is created with set of accounts recommended by SNA and supporting statements presenting the socio-economic data, data on natural resources (climate, soil and water), etc. This system will provides basis for "cause and effect analysis" suitable for each local level unit.

E. Forestry and Fishery Activity

16) With multiple agencies involved in collection of Forestry data and fragile boundary of forests (which are not convergent with state administrative boundary) there is a high risk of over/ under estimation of forestry activity. It is, therefore, recommended that a strong coordination unit may be established to consolidate total data and provide national level view with state wise details.

17) As regards marine fisheries statistics is concerned sampling methodology in use is considered to be satisfactory, but in case of inland fishery the present system need to be reconsidered to develop a cost effective sampling plan. It is recommended that a special effort may be made for coordinating fishery statistics and develop technology for collection of data at reasonable cost and reliability.

VII.3 RECOMMENDATIONS ON INDUSTRIAL SECTOR STATISTICS

VII.3.1 Comparison of growth rates in unorganized manufacturing between 67th and 73rd Round and that reflected by IIP and ASI (Quasi) may be carried out to assess the appropriateness of present method.

VII.3.2 Labour Input approach (through PLFS estimates) for moving the estimates of unorganized manufacturing may be considered as an alternative to ASI(Quasi)/IIP Growth rates, being applied presently.

VII.3.3 Explore the possibility of getting state-wise distribution of GVA of the private corporate sub-sector from MCA data.

VII.3.4 Strengthen the quality of data collected by states in the state sample allocated to them, which may be then be pooled with the central sample for deriving the state-wise distribution of the GVA in manufacturing within ASI coverage

VII.3.5 Cross-validation study on data on corporate bodies with single manufacturing unit available from the two sources - MCA and the ASI. Additionally, a study of plants covered in ASI data belonging to non-reporting but active companies in the MCA list should be undertaken . In the same vain, the ratio of GVA to PUC should be compared between companies that submit their return by the specified due date and those that submit return after the due date. A related research that may be undertaken using ASI and MCA data is to indentify plant covered in ASI data which belong to active but not reporting manufacturing companies in the MCA list. The ratio of GVA to invested capital for such plants should be studied in comparison with plants that belong to companies in the MCA list which are active and reporting.

VII.3.6 Reviewing the coverage of the ASI after a few years, once the recommended studies are completed.

VII.3.7 The work on Business Register should be completed quickly for all states and UTs, so that ASI coverage can be expanded for all states/UTs by including large manufacturing units which are present in the Business Registers but not registered under the Factories Act.

VII.3.8 The criterion for inclusion of units in the USU frames has to be revised for the unorganised sector surveys. Perhaps, a list of large units not registered under the Factories Act but included in the ASI frame may be provided to field workers for excluding them from the USU frames. A procedural protocol, involving the Inspectors of Factories, may be laid down for developing frames of ASI.

VII.3.9 To capture the contribution of companies in various sectors including manufacturing, besides classifying companies as per NIC codes from CIN, information from MGT 7 and MGT 9 Forms may be used. MCA may try to ensure that all companies file information on description of main business activities in MGT 7.

VII.3.10 To begin with, corrected NIC classifications for top 500 companies (in terms of turnover) and top 10-15 companies in each compilation category used by NAD may be provided to MCA. So that the verification and corrections for them are done on a priority basis in MCA database also.

VII.3.11 To accurately account for contribution due to any activity in a multi-activity company, the usability of information available from MGT 7 may be explored.

VII.3.12 NAD may identify additional variables which are to be extracted from MCA21 and provided for GDP calculations.

VII.3.13 NAD may also share list of additional information that is required from MCA as per SNA.

VII.3.14 To enable accurate State-wise distribution of GVA, MCA may explore the availability of information on number of establishments along with location, industrial activity and some other variables like fixed assets /No. of workers / wage bill etc. for each company. Since the CDM project would be extracting all information that the companies provide, such information may be extracted from Forms/attachments on priority basis.

VII.3.15 MCA may make data on companies more accessible to public by devising query based system.

VII.3.16 The cases of non-reporting but active companies need to be identified to ensure that their information is not used for scaling up when they weren't involved in production process e.g. when they were in the process of winding up etc.

VII.3.17 Besides the PUC being currently used for blowing up the estimates, use of alternative indicators like fixed assets etc., may be explored for future. Further refinements in terms of compilation category-wise scaling up factors or size class-wise scaling up factors within compilation categories may be explored. Studies based on ASI and MCA data may be undertaken for refining the method of scaling up currently being used.

VII.3.18 Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

VII.3.19 The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys in mind.

VII.3.20 As and when detailed GST data become available, the possibility of using GST data in the process of estimation of manufacturing sector GVA should be explored. In particular, an attempt should be made to explore the possibility of developing an indicator based on assessable value of manufacturing goods for the purpose of moving the GVA estimate of the household sector and the quasi-corporate sector till the time ASI data for the relevant year become available. Also, GST data should be used to cross-validate the IIP series. This is important because the IIP series play an important role at present for the estimation of GVA of the quasi-corporate and household sectors of manufacturing.

VII.3.21 Detailed investigation should be done on the divergence between IIP growth rates and real GVA growth rates and the insights gained from such research should be utilized at the stage of next revision of IIP series.

VII.4 RECOMMENDATIONS ON SERVICES SECTOR STATISTICS

VII.4.1 Recommendations made in Section IV.3.2 regarding improvement of data availability for compilation of accounts of the general government:

(i) The States may be granted financial assistance to develop a system of compiling accounts of local bodies.

(ii) The concerned Central Ministries, State Departments and RBI may be requested to put in place a system of (a) compiling necessary data on NPIs serving government (autonomous bodies) in a form specified by NAD; otherwise (b) providing audited accounts of NPIs to NAD; otherwise (c) providing a list of grant recipients to NAD.

(iii) All Ministries' may be requested to ask for audited accounts from the recipients of grants in a specified format. The format may be developed in consultation with the NAD, CSO.

(iv) Request also made to NPIs to submit their audited accounts in an accessible format to CSO.

(v) Request to be made to all Ministries to provide list of NPIs in their jurisdiction to CSO along with details of funding.

(vi) The MCA may be requested to lay down a system of updating list of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

VII.4.2 Recommendations made in Section IV.3.3 regarding the gaps and shortcomings of the data available for the corporate sector:

(vii) The Ministry of Corporate Affairs (MCA) may take up the issue of difference in frame of Non-banking Financial Institutions (NBFIs) between MCA & RBI with the RBI and reconcile the difference.

(viii) The MCA may put in place a system of extracting information from the CARs and MGT-7 of companies operating in more than one States and/ or pursuing more than one economic activity and making them available to the NAD for compilation of regional and industrial sector accounts.

(ix) MCA need to sensitize the user Companies about NIC-2008 in filing MGT-7 & MGT-9 forms, including its differences with NIC 2004 used in CIN, to facilitate correct/ improved CC's –wise GVA compilation by NAD.

(x) MCA may lay down a system of updating of all NPIs – Societies, Section-25 companies, etc. along with their annual accounts in a database format, with uniform guidelines for all the States.

(xi) A system of regular meeting of the NAD and MCA officials may be put in place to (a) discuss the requirements of the NAD from the MCA data, (b) review the current list of items and equations and (iii) devise scrutiny checks on MCA data.

(xii) How the information extracted from CARs and MGT-7 regarding multi-state operations and activity-mix can be used for distributing a company's GVA and related aggregates over States and industries need to be examined.

(xiii) FOD may use the list of companies generated from MCA as discussed in (xii) above and find out location and operational details of these companies. Necessary resources need to be provided to FOD for the task.

(xiv) Type Study needs to be undertaken for finding way out to deal with missing data on financial details and 'royalty on natural resources' payments.

(xv) Expenditures during Construction (EDC) is a part of "Capital Formation and Output", thus getting this information separately is essential for

compiling national accounts. Type Study needs to be undertaken for finding way out on how to deal with missing data on EDC.

(xvi) Many of the PSUs receive grants / subsidies once in three or more years from the government. Type Study needs to be undertaken for finding way out devising an appropriate treatment of these receipts of the companies.

(xvii) Attempts ought to be made both by CSO and State DESs to get annual reports of non-reporting NDCUs.

(xviii) The NSC may take up the matter of making data on cooperatives available according to a time schedule with the NABARD.

VII.4.3 Recommendations made in Section IV.3.5 regarding the shortcomings of the data available for the Household sector:

(xix) The services sector estimates at state level, where possible, should be compiled by the States using pooled data of central and state samples with the help of NSSO. Also use of MCA data for state level estimates of organised segments of service sectors is recommended.

(xx) For compilation of State-level estimates of domestic products, the CCs pursued mainly by the unincorporated enterprises may be combined to form such broader activity groups that the RSEs of the estimated GVAs (WPR X GVAPW) be within tolerance limits.

(xxi) Having observed serious data gaps particularly for the unorganised sector (household and quasi corporates), it is strongly recommended that the available resources may be reallocated to make provision for conducting unorganized sector surveys on an annual basis.

(xxii) A dedicated survey on construction activities is required to be conducted with regular periodicity.

VII.4.4 Recommendations made in Section IV.3.6 regarding gaps and the shortcomings of the data available for the NPISH sector:

(xxiii) There is a need for dedicated survey on NPISHs. NSSO may be requested to take up separate surveys on NPISH, making use of NPISH census as frame.

(xxiv) The information on the activities provided by NPISH, covered under NSS Enterprise Survey may be examined and used on experimental basis to prepare estimates of NPISH segment

(xxv) As several NPISH get foreign grants and are therefore, registered with M/o Home Affairs under FCRA. Hence administrative data relating to such NPISHs available from Ministry of Home affairs may be explored.

(xxvi) The NAD may develop a separate format for extracting the required data from book of accounts of NPISHs for compilation of INAS.

VII.4.5 Recommendations made in Section IV.3.7 regarding gaps and the shortcomings of the data available on derived indices:

(xxvii) The large gap in services sector price indices needs urgent strengthening. Further, all service price indices should have the same base year.

(xxviii) Business service Price Indices should be consistent with National accounts. DIPP may be requested to ensure consistency with the methods of National Accounts compilation while constructing the BSPI.

VII.4.6 Recommendations made in Section IV.3.9 regarding expected data to be available in future:

(xxviii) Periodic Labour Force Survey (PLFS) data can be used as indicators i.e. in lieu of present volume indicators.

(xxix) Use may be made of rates and ratios from PLFS which will be available annually.

(xxxi) For compilation of the all India estimates, physical indicators from PLFS surveys when available may be examined.

VII.4.7 Recommendations made in Section IV.4 regarding improving access to MCA 21 data:

(xxxii) MCA may take appropriate measures to ensure improved access to Cost Audit Report (CAR) for identification of economic activities carried out by company and distribution of their establishments over States.

VII.4.8 Recommendations made in Section IV.5.1 regarding gaps and shortcomings of the data available for the corporate sector and conduct of Annual Survey of Services (ASS):

(xxxiii) Available resources can be used to conduct annual surveys for collecting data on the parameters necessary for preparing sub-national estimates (like State/district-wise employment, gross fixed capital formation, which are also used

by the NDCUs) for only the multi-State Companies and devote the resources saved for conducting unorganized sector surveys on an annual basis.

(xxxiv) NSSO may prepare a technical report on 74th Round, covering (a) accuracy of EC-based frame examined in the first phase, (b) non-responses by reasons in the second phase of the survey and (c) national- and state-level RSEs by compilation category, separately for corporate sectors, quasi-corporates and other incorporated enterprises.

VII.4.9 Recommendations made in Section IV.5.2 regarding possibilities of using results of Periodic Labour Force Survey (PLFS):

(xxxv) Rates and ratios of PLFS may be used in the estimation of GVA of the unorganised segment of services sector, in lieu of the volume indicators used at present for extrapolating the base-year benchmark estimates.

(xxxvi) From NSS surveys, CC-wise estimates at State level are not satisfactory (due to high RSEs as noticed from 68th Round results). Therefore, broad activity wise estimates alone need to be used by States/UTs for their estimates including proxy indicators used at present.

(xxxvii) The CC-wise services sector estimates based on NSS data may be used at national level provided RSEs are below 15(%).

(xxxviii) State level RSE`s for activities at broader levels may be estimated by states using pooled data in coordination with NSSO. States capable of compiling pooled estimates may use these estimates for compilation of services sector estimates.

(xxxix) The NAD may review the composition of compilation categories for estimation of GSDP as well as national-level GDP in consultation with NSSO, keeping the RSEs of estimates based on PLFS and NSS Enterprise Surveys.

VII.4.10 Recommendations made in Section IV.5.3 –IV.5.5 regarding 2008 SNA compliance, Standardization of operational definitions and reporting survey results:

(xxxx) The imputed non-life insurance service charges (IISC) need to be allocated to industries using appropriate indicator which could be sums insured instead of taking insurance charges as intermediate consumption.

(xxxxi) NAD, CSO may on priority take up preparation of an updated glossary of terms – definitions of macro-economic aggregates – and put it in public domain.

(xxxxii) A task force be constituted to take up the task of standardizing the essential contents of enterprise / establishment / Labour Force surveys – like ASI, Annual Survey of Services (ASS), Unorganised sector surveys and PLFS.

(xxxxiii) To avoid misinterpretation, the survey results presented in the reports should be based only on observations made in the survey and not figures based on assumptions. If such figures are at all presented, they should be accompanied with appropriate caveats.

VII.5 RECOMMENDATIONS ON CONVERSION OF OLD GDP SERIES TO NEW BASE YEAR 2011-12

VII.5.1 The estimates of GVA/GDP prepared by the CSO using its methodology for the period 2004-05 to 2011-12 may be considered by the National Statistical Commission as and when they are approved by the Advisory Committee on National Accounts Statistics.

VII.5.2 The National Statistical Commission could also consider initiating an exercise to project forwards the GDP series based on the old methodology with 2004-05 as base up to, say, 2014-15 and adjust it to the new base year 2011-12 based on comparisons with the new series.

VII.5.3 Meanwhile the estimates of gross domestic product and other related aggregates for the period 1993-94 to 2013-14 using the production shift method are being presented to the National Statistical Commission for consideration.

VII.5.4 When the GDP and other macroeconomic aggregates based on the methods mentioned in V.3.1 and V.3.2 above become available the time series data based on all the three approaches should be compared for their robustness.

VII.6 RECOMMENDATIONS ON LINKING MACRO-MICRO LEVEL DATA

VII.6.1 The micro-macro linkage project should start with those components of India's GDP that are based on direct accounting data.

VII.6.2 Constitute an expert group to undertake a Meta survey of the micro level databases that are available in the official statistical system, both at the central as well as the state level.

VII.6.3 MOSPI should make efforts to greater use of the NSSO State samples for generation of distributions based on various attributes. It is also important to improve the quality of data generated in NSSO States samples. The requisite resources should be made available for this.

VII.6.4 Create another expert group to work out the modalities of creating a comprehensive Business Register for India. MOSPI should take the lead in implementing this programme.

VII.6.5 Based on the recommendations of the expert group on Business register, the CSO should set up a dedicated team to reconcile the micro level accounting data of the companies registered under the Companies Act, 2013 with their corresponding GDP data. Within the "Registered Manufacturing Sector", the contribution of the public limited and private limited companies should be the ideal sub-sector for which it should be possible to establish micro-macro linkage. This project would be in the nature of a Proof-of-concept project that this sub-committee is recommending. To begin with only production accounts should be covered, extending the effort gradually to other accounts, namely expenditure accounts and accumulation accounts.

VII.6.6 After establishing macro-micro linkage for the production account, linkage for income-expenditure account followed by accumulation account for the registered manufacturing sector should be taken up. Thereafter, the household sector should be the target sector for macro-micro linkage initiative.