Issues in Activity and Product Classification for ASI

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Abstract

National Industrial classification 2008 (NIC-2008) is a revised version of NIC-2004. The 38th session of the UN Statistical Commission recommended that countries should make an effort either to adopt national versions of the ISIC-Revision 4, or to adjust their national classifications in such a way that data can be presented according to the categories of the ISIC- Revision 4. Whenever a revised classification is adopted, concordance with the older one becomes necessary for generating time-series data. ISIC 4 and ISIC 3.1 have also provided a concordance at 4 digit level based on which concordance tables of NIC 2008 and NIC 2004 have been constructed. But such concordance is leading to over-estimation of parameters in many cases due to many to one/many references. In all such cases a word "p" is used to denote partial but for all practical purpose the "full data" are taken to generate time-series data where concordances are required. To sort out this problem, it is suggested that a rule may be defined to estimate a more reliable p for each class. So far as ASI in India is concerned, a method has been thought of to construct 'p' with reference to classification NIC 2004 (based on ISIC-3.1) conform to NIC 2008 , based on ISIC- 4. Similarly issues relating to product classification in manufacturing sector with reference to the recommendation of the UNSD are discussed in this paper.

1. Issue of classification in Industrial Statistics

1.1 The Annual Survey of Industries (ASI) is the principal source of industrial statistics in India. It provides statistical information to assess and evaluate, objectively and realistically, the changes in the growth, composition and structure of organized manufacturing sector comprising activities related to manufacturing processes, repair services, gas and water supply and cold storage.

1.2 The Standard Industrial and Occupation Classification 1962 developed on the basis of the UN International Standard Industrial Classification (ISIC) of all Economic Activities 1958 (Rev. 1) was adopted from its first ASI survey in 1960. With effect from ASI 1973-74, the National Industrial Classification (NIC) 1970 developed subsequently on the basis of ISIC 1968(Rev.2) has been adopted. The NIC 1987 that strictly followed UNISIC 1968 was adopted from ASI 1989-90 to ASI 1997-98. The classification, i.e. NIC 1998, developed on the basis of ISIC, 1990 (Rev. 3) has been adopted from ASI 1998-99. The classification NIC 2004 , based on ISIC, 2002 Rev 3.1 has been adopted from ASI 2004-05 and finally NIC 2008, based on ISIC, 2006 Rev 4 has been adopted fully at 4 digit level and implemented from ASI 2008-09.

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1.3 National Industrial classification 2008 (NIC-2008) is a revised version of NIC-2004. The 38th session of the UN Statistical Commission recommended that countries should make an effort either to adopt national versions of the ISIC-Revision 4, or to adjust their national classifications in such a way that data can be presented according to the categories of the ISIC- Revision 4. Specifically, countries should be able to report data at the two-digit (division) level of the classification without a loss of information; that is, national classifications should be fully compatible with this level of the ISIC, or it should be possible to arrange them.

1.4 NIC 2008 is based on ISIC-4 where most of the sub-class level classification is satisfactorily meeting the ASI requirement. At sub-class or ultimate 5-digit level Indianisation has been done in appropriate cases. But, some more are suggested to be done considering the diversification of product and growth of small enterprises. So far as NIC 2008 classification is concerned, some newly growing industries will remain uncaptured due to multiple activity grouping. Industrial diversification of growing Indian industries demands more sub-class classification. Some example can be highlighted:

i) In Section C, Division 10, as revealed from various market knowledge and papers, industry like Rabbit –slaughtering, preparation, Koel, Emu, Ostrich slaughtering, preparation have been growing steadily in Indian market. Thus to net the growth of these industries those should be separated out from general Poultry which chiefly includes chicken/hen/cock. Processing and preservation of crustacean, Processing and preservation of Lobster/Tiger Prawn/ Shrimp may be separated out to capture the growth of this specific high-return industry.

ii) In Division 11, Manufacturing of low alcoholic drinks (below 8%) like Breezer may be separated out from 11011. This industry is growing and enjoys a considerable share in the market having a different customer base.

iii) In Division 13, sub-classification of Khadi industries is required at 5-digit level under 1312, 1313, 1391-99 in NIC 2008. Khadi , being very important textile industry in India needs a separate classification at 5-digit level. In NIC-2004, a shadow classification at 4-digit level was done to net khadi industry but that had disturbed the concordance with ISIC. To keep concordance with ISIC, it will be better to include khadi industries under respective ISIC 4-digit group. Enough spaces are left for such inclusion at 5-digit level without changing 4-digit classification of ISIC.

iv) In Division 20, Manufacturing of Caustic Soda, Caustic Potash, main input items of all soap and detergent industries needs a separate sub-class classification. The classification 20116: Manufacture of basic chemical elements – is a too omnibus term to even moderately capture the diversification in this industry. It is a fact that mushrooming of various basic chemical industries in unorganized sector is well known. Actually entire manufacturing of inorganic alkali group needs a separate sub-class classification like inorganic acid group. Such products are basic input

material in class 2023: Manufacture of Soap, detergent etc. In ASI 2007-2008, around 2 million tonnes of caustic soda was produced in India.

v) In Division 23, newly emerging industry of Manufacturing of Vitrified Tiles in organized sector needs a separate classification. With growing need of infrastructure building, demand of vitrified tile is expected to rise sharply. This is different mechanism and plant for manufacturing of tiles which is not similar with 23952 or 23912. As of now this activity is not separately traceable.

vi) In Division 24 : Whether Washeries Plant are to be considered as manufacturing activity or not needs to be determined ?

vii) In Division 26, Manufacture of Surveillance equipment should be included in a sub-class under class 2630: Manufacture of communication equipment otherwise it may lead to misclassification or may be missed being classified under 'n.e.c.'.

viii) Under Division 27, a new upcoming industry with big domestic market Manufacture of Kitchen Chimney may be included in class 2750 .

ix) Under Division 31: Manufacture of Furniture , another activity Manufacture of decorative and ornamental articles (non-precious) may be included, otherwise this specific high return industry will be missed or misclassified. Moreover, sub-class 31003: Manufacture of furniture of metal is omnibus. Newly upcoming Manufacture of furniture of wrought iron may be classified separately.

x) In Group 32, the sub-class 32120: manufacture of imitation jewellery does not reflect the entire industry in product, cost and plant variation. A separate sub class 'Manufacture of junk jewellery with semi precious stone , metal' may be included. The activity like '32404: Manufacturer of Playing Card' needs explanation. Primarily this is a printing activity. Some industries under Division 18 are also producing playing cards.

xi) Now, non-availability of separate classification of a major polluting activity like Manufacture of chlor-alkali (caustic soda, caustic potash), with around 2 million tone production per year, as well as problem of concordance over various NICs will hinder making such database of organized sector through ASI.

2. Issues of Environment and NIC

2.1 A major challenge faced by the human race in the twenty-first century relates to insult to the environment, and the depletion of the natural resources including the threat of climate change. Be it so, there is no denying that the measurement of development in an economy must be linked with sustainability. Industrial growth is one of the important

factors in a country like India where around 25 % of GDP is contributed by the manufacturing sector. Without a doubt, industry is also the major source of pollution but, it is a global happening that environmental regulations always add to the private cost of the polluters and consequentially affect the sustainability of industrial growth.

2.2 When the trend is observed among the environmentalists or the green benches to shut down the polluting industries on the basis of complaints, public interest litigation, etc. as an immediate or interim measure to stop pollution and protect environment *causing economic loss*, this study attempts to guide the *social choice issue* to tackle the problem of sustainability through abetting industrial pollution that may also lead to a higher genuine savings while *accounting for Green GDP*.The nature that manifested its infinite variety in its own way from the time immemorial was used and mindlessly tampered with by the mankind for variety of temporal achievement that ultimately placed the man over *everything* in nature. Consequentially, the industrial growth that is instrumental in all round economic development has appeared as a serious threat to the environmental natural order. For achieving the social choice for sustainable development, a conflict is emerging *that lead to study* the growth and contribution and spatial distribution of polluting organized manufacturing sector of the country through time-series analysis of ASI data. The social choice in a welfare state like India where shut down is also considered as a measure for pollution abatement will be more explicit if ASI can pinpoint the growth and structure of such polluting industries for *understanding sustainable* development vis-à-vis national income, capital formation and employment generation.

2.3 Now, the biggest survey of the organized manufacturing sector of the government faces difficulty to provide such data from one window because of (i) non availability of proper classificatory environmental indicators related activity and product (ii) Problem on concordance at ultimate digit to prepare time-series data.

2.4 There is need to classify activities which are being carried out only for environmental protection. Such activities are now mixed up with many activities within various Divisions. Manufacturing of Pollution Control Equipment like Manufacture of Stag, Manufacture of Effluent Treatment Plant, Manufacture of exhaust fan(Industrial) , Manufacture of Sound Proof Material, Manufacture of Water Treatment Plant etc. may be taken as a separate class with a view to understanding the growth of industry producing pollution control equipment as it is understood that pollution control awareness and strict implementation policy of pollution norm in India and may be in developing economy, such industry is showing a steady rise. Therefore, a separate classification will be helpful in easy tabulation of such industry required for policy planning.

2.5 The next revision of NIC may focus towards creating a sub-group under in each for classifying only such activities as being carried for pollution control in any form. In India there are three categorization of industry by Ministry of Environment in defining polluting capacity of such industry viz. Red, Orange and Green. Depending upon the pollution potential of different industries, Pollution Control Board has classified the industrial units into three different categories: 'Red', 'Orange' and 'Green'. The Red category units have maximum pollution potential, the Orange category units have moderate pollution potential and the Green units have the least pollution potential. Further,

considering the degree of pollution among the Red units, these are classified into 'Special Red' and 'Ordinary Red' categories. Even, non-availability of separate classification of a major polluting activity like Manufacture of chlor-alkali (caustic soda, caustic potash), with around 2 million tone production per year in India hinders making such database of organized sector through ASI. It is suggested that considering the pollution potential of an industrial activity, **an alphabetic digit can be prefixed with the existing ISIC code**.

Ex:

EXAMPLES OF INDUSTRIES UNDER "RED" CATEGORIES		
Sl. No.	**Manufacturing Activity producing**	**Suggested NIC at 4 digit**
1	Cement	R-2394
2	Chlor alkali(Basic Chemicals)	R-2011
3	Iron and Steel (Involving processing from ore/scrap/Integrated steel plants.)	R-2410
4	Pulp and Paper (Paper manufacturing with or without pulping).	R-1701
5	Sugar (excluding Khandsari)	R-1072
6	Tanneries.	R-1511

EX. OF INDUSTRIES UNDER "ORANGE" CATEGORIES		
Sl. No.	**Manufacturing Activity producing**	**Suggested NIC at 4 digit**
1	Brick Manufacturing	O-2392
2	Fish processing	O-1020
3	Flour mills (excluding Domestic Aatta Chakki)	O-1061

EX. OF INDUSTRIES UNDER "GREEN" CATEGORIES		
Sl. No.	**Manufacturing Activity producing**	**Suggested NIC at 4 digit**
1	Bakery products, biscuits, confectionery	G-1071
2	Cotton and woollen hosiery	G-1312

2.6 The above examples are only illustrative. But the major issue of environment and industry will not end with environmental classification of the above industries. Most of such industries are under strict compliance rules of Pollution Control Board. But globally, the scenario has taken a shape after IPCC recommendations. The environment has to be seen from both local and global point of view. The use of input and fuel in manufacturing industry need to be analyzed from this angle. **Carbon depositing** in the environment can be an important indicator to classify industries in two distinct sectors where one sector will be the industry depositing carbon and other which are not depositing carbon. Therefore, suitable activity classification is required to be incorporated in ISIC which can be followed as a model by each participating nation.

2.7 This will help easy understanding and quick classification of stratified pollution load of a country and its spatial distribution. One digit enhancement will solve the problem of consulting multi-organisational data, in- built with definitional and coverage variation, in policy planning to stratify and study the polluting industries of a country and to create an environmental policy.

3. Issue of Mixed Activity in ISIC

3.1 One point is often felt about defining "Mixed Activity". In fast developing country like India, diversification of industrial activities , forward and backward integration, synergic management have led to mixed activities within an enterprise. The rule of choosing only major activity in determining the industry misses the major subsidiary activity at classification stage. The concept of mixed activity needs to be reviewed while further revising ISIC creating a separate guideline for recording all such subsidiary activities that are either contributing between 25-50% value additions or polluting the environment. Such classification will give answer to many micro level business queries.

4. Issue of Concordance and NIC

4.1 Whenever a revised classification is adopted, concordance with the older one becomes necessary for generating time-series data. ISIC 4 and ISIC 3.1 have also provided a concordance at 4 digit level based on which concordance tables of NIC 2008 and NIC 2004 have been constructed. But such concordance is leading to over-estimation of parameters in many cases due to many to one/many references. In all such cases a word "p" is used to denote partial but for all practical purpose the 'full data'' are taken to generate time-series data where concordances are required. In some cases for two separate 4 digit ISIC-4 code , same ISIC-3.1 codes are provided. Examples based on manufacturing sector in ASI are given below:

Ex.1

Activity	ISIC-4 (NIC - 2008)	ISIC-3.1 (NIC-2004)	Relevant activity under NIC-2004	Corresponding NIC-2004 5–digit (based on ISIC-3.1)	% share of no. of workers under each NIC-4 digit level
(1)	(2)	(3)	(4)	(5)	(6)
Manufacture of prepared meals and dishes	1075	1512(p) + 1513(p) + 1544(p) + 1549(p)	Manufacturing of fish meal	15125	1.63
			Manufacture of potato flour & meals and prepared meals of vegetables	15138	2.41
			Manufacture of macaroni, noodles, couscous and similar farinaceous products	15440	100
			Manufacture of malted foods including food for infants and invalids	15494	0.64

Ex.2

Activity	ISIC-4	ISIC 3.1
Spinning, weaving and finishing of textiles	1311	1711(p)
Weaving of textiles	1312	1711(p)

4.2 Now it is clear from the above two illustrative examples that unless 'p' is refined further, anomaly in preparing data based on such concordances is inevitable. To sort out this problem, it is suggested that a rule may be defined to estimate a more reliable p for each class. So far as ASI in India is concerned, a method has been thought of to construct ' p' with reference to classification NIC 2004 (based on ISIC-3.1) to concord with NIC 2008 , based on ISIC- 4 . It is assessed that 'worker' can be a robust variable to further refine "p" beyond 4-digit level. To work this out, within each 4-digit class, proportionate representation of each 5-digit sub-class based on number of workers has been worked out from ASI data. The said number is taken as the multiplier to tone down the relevant data for all parameters for that particular year. If under each 4-digit class , say xxxx, there are two 5-digit sub-classes , say, yyyyy with total worker size m and zzzzz with total worker size n, then multiplier for yyyyy will be m/(m+n), expressed in terms of percentage. In col. (4) of the following table, such multipliers are provided. While making concordances, the entire data set of respective 4-digit level should be toned down by such multipliers to avoid overestimation as well as duplication. This will be a better estimate than reproducing entire data at 4 –digit level. Thus it is suggested that a working rule in this regard may be adopted in ISIC.

An example based on NIC 2004 (Ref: ISIC 3.1)

NIC04-(4 digit)	NIC04-5 digit	No. of workers estimated	Multiplier
(1)	(2)	(3)	(4)
1512	15121	1482	5.39
	15122	355	1.29
	15123	12	0.04
	15124	18548	67.49
	15125	449	1.63
	15127	5898	21.46
	15129	741	2.70
1512	**Total**	**27484**	**100.00**
1513	15131	900	2.37
	15132	4892	12.89
	15133	1334	3.52
	15134	6341	16.71
	15135	1754	4.62
	15136	7074	18.64
	15137	8782	23.14
	15138	916	2.41

NIC04-(4 digit)	NIC04-5 digit	No. of workers estimated	Multiplier
(1)	(2)	(3)	(4)
	15139	5952	15.69
1513	**Total**	**37945**	**100.00**
1544	15440	3971	100.00
1544	**Total**	**3971**	**100.00**
1549	15491	88676	26.77
	15492	3886	1.17
	15493	205100	61.91
	15494	2122	0.64
	15495	9838	2.97
	15496	4823	1.46
	15497	2194	0.66
	15499	14623	4.41
1549	**Total**	**331262**	**100.00**

4.3 As concordance is a major issue in revision of any classification for preparing any relevant time series data, ISIC may issue a policy guideline in this regard in the spirit of above. As of now, in ISIC-4, the common term 'p' is used for concordance with past ISIC-3.1 to flag that the entire 4-digit level is not concordable. The same is followed in NIC. But for all practical purpose and in absence of any international guideline, the full 4-digit data of past are taken for creating reference with present which lead to serious over-estimation. Here the 'p' value is approximated by using a multiplier which is percentage representation in terms of worker strength based on ASI data of the exactly matching 5-digit (sub-class) industry within that 4-digit industry for concordance at 4-digit level. It is further clarified that such value of p is applicable only for data related to ASI. For different domain, similar method should be applied to find out the value of p on the basis of available data.

5. Issues on Product Classifications for Manufacturing Sector

5.1 The commodity classification in ASI has not been done following the UNSD recommendation since the year 2011. ASI Commodity Classification (ASICC) has been used in ASI for input and output classification for last few years. As it has not been developed in a robust manner or following any internationally accepted classificatory norms, it is suffering from many infirmities like duplication, unrecognized product, heterogeneous grouping, etc. Moreover, concordance with CPC or HS is also almost impossibility with ASICC.

5.2 Now that CPC Ver 2 is an internationally accepted product classification, CSO, IS Wing has developed National Product Code for Manufacturing Sector, 2011 (NPCMS) with the same principle.

5.3 The structure of NPCMS may be:

Five digit CPC Code + two digit Indian requirement.

CPC has a concordance with HS so there can be an easy concordance of NPCMS with ITC-HS. This is also being developed making old ASICC a subset of the entire NPCMS. Thus the main advantage of this coding structure will be the continuation with existing ITC and international comparability. It is also felt that adopted any local classificatory system for very narrow objectives may finally lead to anarchy in classification causing almost impossible task either for concordance of data sets and preparing time series data and therefore from beginning international standard and practice should be adopted.

5.4 With this principle, NPCMS has been developed and a concordance has also been established between NPCMS and ASICC for all **valid items** of ASICC.

5.5 While adopting CPC ver. 2 for NPCMS, it is often felt that the subclass level stratification in CPC is not sufficient for capturing Indian variety. As incorporation of a new subclass is beyond our scope and can only be done by UNSD for maintaining international comparability, some suggestions are given below for consideration of the appropriate body before revision of CPC ver. 2 which is due.

i) In Section 0 , agricultural primary product like beetle-leaves, bettle-nut, catechu(katha) may have a separate class classification as 0166 to avoid being classified under 'n.e.c'. Under the group 012, a new class of "Greens" may be added to accommodate variety of greens common to Indian agriculture. Product like Spinach is more suitable under this group than under ' 0121-leafy-stem vegetable' along with cabbage.

ii) In Section 2, for Food Products etc. , the sub-class like 23921- 23928 are too specific to accommodate all Indian processed varieties like onion paste, garlic paste, mixed spices paste. Again, a new group may be formed under group 231 as 2318 for Papad.

iii) Some products like pan masala, kimam, chaman-bahar cannot find a suitable place in CPC due to non-availability of proper classificatory group. Inclusion of a separate division under Section 2 may be an appropriate solution. Again, group like processed plants or parts of plants used for pharmacy, medicine etc. are not available in CPC.

6. Environment and Product (Waste) Classification

6.1 Product classification must specially stratify the waste under three categories of waste which is output of an industrial activity or any other economic activity : Hazardous Waste, Solid Waste, Biomedical Waste**.** In framing the environmental policy and management, the knowledge and data base of non-agriculture waste is considered necessary. As of now, CPC or ITC, do not provide for separate strata for all types of non-agricultural waste. It may so happen that waste of one industry can be an input of another industry and therefore, waste can either be output or input of an industry and therefore, it should get a place in product classification or waste. Therefore, a separate section in Product Classification should be started to classify all non-agricultural waste to get the necessary statistics from one window.