

# **WORKING PAPER**

## **“Index of Industrial Production**

**&**

## **Annual Survey of Industries**

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**Views expressed in this paper are those  
of the author(s) and may not be  
attributed to the Government of India.**

## **Measuring Industrial Performance**

There are multiple sources of information about the manufacturing industries. In the organised manufacturing sector, the most comprehensive information set-up consists of Annual Survey of Industries (ASI). This survey covers all factories, which employ 10 or more workers using power or 20 or more workers not using power. ASI is conducted every year but results are available with a time lag of 2 to 3 years. The collection of data is done through a structured and detailed schedule filled in by the persons of the Field Operations Division (FOD) of National Sample Survey Organisation (NSSO) and is based on statement of accounts of the unit. The frame of ASI is the factories on the register of the Chief Inspector of Factories (CIF). Registration with CIF being mandatory, it is perceived as comprehensive and complete. This frame, in actual practice, however, suffers from both inclusion and exclusion error. “The ratio of number of missing units (as estimated from NSS 51<sup>st</sup> round) to estimated number of working units as per ASI was of the order of 117 per cent for the year 1994-95; and the corresponding ratio with respect to other two variables were 28 per cent for total number of workers and 4.1 per cent for gross value added (GVA)<sup>1</sup>.” Though the number of excluded units declined in 2000-01, the ratio of value added of these missing units increased to 12.7 per cent. The magnitude of inclusion error has also been equally large. “There were 29619 units (as estimated from NSS 51<sup>st</sup> round), which employed less than 10 workers.<sup>2</sup>” Notwithstanding the inclusion and exclusion error, ASI has traditionally been (and still is) the most comprehensive and reliable source of organised manufacturing sector data providing disaggregated industry specific details of production, investment, employment and costs.

2. For the other category of factories/establishments, which are not covered under the ASI, the information is collected through the unorganised sector surveys conducted by National Sample Survey Organisation (NSSO) every 5 years. The last such survey was undertaken in 2005. The ASI and the unorganised sector surveys together therefore cover the complete manufacturing sector. The National Accounts use ASI and unorganised sector results to provide information on value addition in the registered and unregistered manufacturing sector on an annual basis by direct or blow up approach. Though the ASI has

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<sup>1</sup> Discrepancies and Validation of Indian Manufacturing Data- J.S.Bedi and P K Banerjee, Economic and political weekly, March 10, 2007

the inclusion and exclusion error, the NSSO surveys, which essentially use area based frames, cover the units which are not part of ASI. The ASI and NSSO surveys are, therefore, mutually exclusive and non-overlapping and notwithstanding the misrepresentation on either side cover the entire manufacturing sector or complete enumeration.

3. Industries are also classified as small scale industries (SSI) and Non SSI. Their classification is in terms of the investment in plant & machinery in a unit. Currently units, which have investment in plant & machinery of Rs 500 lakh and below, are classified as SSI. For the SSI sector the information is also collected independently by Development Commissioner, Micro, Small & Medium Enterprises (DCMSME) through its field offices. DCMSME also conducts a census on SSI sector every 10 years and the last census for which results are available pertain to the year 2003-04. However, while the definition of a factory under CIF has remained the same, which makes the information available on a comparable basis for a time series, investment limit used for classifying industries as SSI and non-SSI has undergone several changes over time. Unit level data from ASI and NSSO surveys though could be used to generate SSI and non SSI units, but this disaggregation is rather cumbersome. SSI and ASI units are not mutually exclusive as while the former is based on investment criteria, for ASI inclusion is based on employment. But since the coverage of ASI and NSSO survey is mutually exclusive, complete information on manufacturing sector could be considered as being available.

### **Index of Industrial Production**

4. ASI survey is annual but its summary results get delayed by 2-3 years and detailed results take even longer. NSSO's unorganised sector survey is quinquennial so information on inter year could only be estimated. Even NSSO survey results become available with a considerable time lag. Most countries, therefore, have an index of industrial production (IIP) as a short term indicator of industrial performance. IIP usually measures changes over time in the volume of work done in various sectors of industry, limited to the production of commodities, excluding agriculture and services, i.e. mining and quarrying, manufacturing, electricity, gas and water, and construction. As a volume index, it is defined as the ratio of the volume of commodities produced within a

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<sup>2</sup> Discrepancies and Validation of Indian Manufacturing Data- J.S.Bedi and P K Banerjee, Economic and political weekly, March 10, 2007

specified group of industries in a given time period to the volume produced in the same group of industries in a specified base period. The Systems of National Accounts 1993 (1993 SNA) defines a volume index that “measures the average of the proportionate changes in the quantities of a specified set of goods and services between two periods of time.”<sup>3</sup> The quantities compared are generally homogenous while the changes for different goods and services are weighted by their economic importance as measured by their values in one or other, or both, periods.

5. IIP is considered to be one of the lead indicators for short-term economic analysis because of its strong relationship with economic fluctuations in the rest of economy. Most of services, like transport, storage, communication, real estate, insurance and banking are industry dependant and are considerably influenced by industrial performance. IIP is, therefore, also used as core ingredient in the compilation of annual and quarterly national accounts and forecasts of GDP. Furthermore, the availability of IIP on a monthly basis makes it amenable to be used as a reference series in the compilation of cyclical indicators. Major advantages of the production index compared to other indicators are its combination of fast availability (relative to GDP for example) and its detailed activity breakdown such as the coverage of manufacturing sub segments. While inter country practices for compilation of IIP are not uniform, they do seem to converge in many respects. A recent compilation by the UN on country practices on collection and compilation of IIP (ESA/STATE/2008/8) covering 69 countries indicate the commonality of approaches in IIP compilation. Percentage of countries adopting common practices across specified parameters varies from 54 per cent (frequency of change in weights) to 93 per cent (use of base year information for weights).

**Table 1: Country practices for compilation of IIP**

|  | No of Countries adopting | Per cent of countries |
|--|--------------------------|-----------------------|
| Coverage- Mining, Manufacturing and Electricity      | 53                       | 76.8                  |
| Survey as Data Source                                | 55                       | 79.7                  |
| Monthly Frequency                                    | 54                       | 78.3                  |
| Combination of Volumes and Deflators for compilation | 43                       | 62.3                  |
| Use of Base year information for weights             | 64                       | 92.8                  |

<sup>3</sup> System of National Account, 1993

|                                    |    |      |
|------------------------------------|----|------|
| 5 Year frequency of weight changes | 37 | 53.6 |
| Fixed Base Approach                | 42 | 60.9 |

The system adopted in OECD countries prior to the revision of the IIP series to 2005 base, which is generally similar to the practices adopted in other countries, is indicated in Annex 1.

### **Index of Industrial Production- Indian experience**

6. IIP in India uses base year weights, which remain fixed through the entire period of the series and uses a combination of volumes and deflators in its compilation. While the usual preference is for volumes (like numbers, tonnes), deflators are used for items/sectors which are not normally amenable to a volume based measure. The commodity specific Wholesale Price Index is used as deflators. It has a monthly frequency and covers mining, manufacturing and electricity as its broad sectors with disaggregated results being provided at 2-digit industry groups for the manufacturing. The disaggregated classification of manufacturing sector is based on National Industrial Classification (NIC) generally compatible with International Standard Industrial Classification (ISICs). IIP in India is also available on the basis of sources of demand, such as, basic goods, intermediates, capital goods and consumer goods. However relative to the generally adopted practice, change of base year and as such the revision of the weights in IIP has taken a little longer in India. Further while ASI and NAS is the data source for weights, there are industry specific source agencies for providing monthly production figures, which is a unique to India. The IIP weights for the three broad sectors during last three revisions have been as under:

**Table 2: Weights to the Broad Groups in IIP**

|               | <b>1970</b> | <b>1980-81</b> | <b>1993-94</b> |
|---------------|-------------|----------------|----------------|
| Mining        | 96.90       | 114.64         | 104.73         |
| Manufacturing | 810.80      | 771.07         | 793.58         |
| Electricity   | 92.30       | 114.29         | 101.68         |
| Total         | 1000.0      | 1000.0         | 1000.0         |

7. IIP adopts a top down approach in assigning weights. The weights at the first stage of disaggregation, i.e. manufacturing, mining and electricity are in terms of their relative importance in GDP of these sectors and are derived from National Accounts aggregates. Manufacturing constitutes roughly four fifths of

IIP weights. Weights at the second stage of disaggregation, i.e. at the 2 digits NIC of manufacturing are again allocated on the basis of the relative value added of the sub sectors as in NAS. Weights at the commodity level, which is the third stage, are in terms of relative value added/output of the selected items in the basket. In the first two stages, item basket has no influence on the weights, as these are independently derived from NAS/ASI and results of the NSSO surveys for the base year while at the third stage these are derived from the sample of commodities finally selected in the index in such a manner that the total weights of the commodities within a group is equal to the weights assigned at that group level. In the selection of commodities (items), a cut off point in terms of the value added/value of output is also considered. In selection of products, however, chosen cut-off output/value added level is usually based on the ASI data or the organised sector of the manufacturing (it to some extent covers SSI sector). However, adjustments/substitution is made at the time of finalisation of the basket on the basis of the regular availability of production returns every month. The substitution/merger of items or their deletion is done in consultation with the source agencies. Though item basket and weights remain freeze for the entire series, abnormalities noticed in responses/product change, etc. are considered on case to case basis.

8. While the responsibility of generating IIP and its release has been entrusted to the Central Statistical Organisation (CSO), (in most other countries also the National Statistical Bureau is the agency for compilation and release of IIP) the index as is being compiled today gets data from 15 source agencies which includes Central Electricity Authority, Indian Bureau of Mines (IBM generates the index for mining sector and it is used in IIP), Office of Textile Commissioner, DC(MSME), Department Of Industrial Policy & Promotion (DIPP), Iron & Steel Controller and others. However, for 337 items (covered under 213 item groups<sup>4</sup>) in the manufacturing sector, the source agency is DIPP. Multiple industry specific source agencies for furnishing of production data facilitates capturing of the new units that come into production and to ensure better data quality and specifications. It is also cost effective and perhaps more credible in terms of information availability. In terms of the number of items, DIPP accounts for 61 per cent of items and 52.0 per cent of the weights. For the manufacturing sector, DIPP acts as a source for 65 per cent of the IIP weights.

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<sup>4</sup> Four of these items were dropped subsequently in 2001 both because of an erratic response and there being a single respondent reducing the number of products for DIPP to 209.

Its item basket includes even the items, which are reserved for the SSI sector and extends to the sectors/items not specifically assigned to it administratively. DIPP also has the responsibility of monitoring industrial performance and as such the major data user of IIP. The arms length relation with the data user (DIPP) and data generator (CSO) ensures that data are not get contaminated with the user bias. SSI or MSME sector has a limited presence in IIP, both in terms of the weights assigned to MSME products or the number of products actually included in the basket. IIP, therefore, essentially is an index of organised sector, in so far as it relates to the manufacturing component. IIP is currently released on 12<sup>th</sup> day of the following month (with a time lag of around 6 weeks<sup>5</sup>) with simultaneous access to all users<sup>6</sup>. Advance release calendar and access of information including the one relating to compilation methodology are available in terms Standard Data Dissemination Standards (SDDS) of the International Monetary Fund (IMF).

9. The number of items covered in 1993-94 IIP series including their grouping into product groups and their source agency is indicated in Table 3 below:

**Table 3: Number of Items and Weights as per Source Agency**

| Source Agency                               | Items | Item Groups | Weights (1000) | Remarks  |
|---|-------|-------------|----------------|--|
| Indian Bureau of Mines                      | 64    | 1           | 104.73         | Largely in Public Sector & generally considered reliable |
| Directorate of Sugar                        | 1     | 1           | 22.43          | Partially controlled                                     |
| Salt Commissioner                           | 1     | 1           | 0.52           | Commodity Specific Administrative Agency & reliable      |
| Directorate of Vanaspati                    | 12    | 11          | 16.98          | -- as above --   |
| Tea Board                                   | 1     | 1           | 7.63           | -- as above --   |
| Coffee Board                                | 1     | 1           | 1.01           | -- as above --   |
| Textile Commissioner                        | 50    | 9           | 123.28         | -- as above --   |
| Jute Commissioner                           | 7     | 5           | 5.90           | -- as above --   |
| Coal Controller                             | 3     | 3           | 1.22           | -- as above --   |
| Ministry of Petroleum                       | 16    | 14          | 23.87          | -- as above --   |
| Development Commissioner Iron & Steel       | 43    | 20          | 59.10          | -- as above --   |
| Railway Board                               | 4     | 4           | 5.56           | Departmental Undertaking & generally reliable            |
| Department of Industrial Policy & Promotion | 337   | 213         | 519.59         | Diversified Commodity Basket, large response group       |

<sup>5</sup> The release date was advanced by about 7 weeks compared to the earlier IIP series

<sup>6</sup> There is no preferential access to any user agency for IIP data

|                               |    |    |        |   |
|-------------------------------|----|----|--------|---|
| Development Commissioner MSME | 18 | 18 | 6.51   | Small weight but large response group   |
| Central Electricity Authority | 1  | 1  | 101.69 | Largely PSUs in Central or State sector |

10. It needs to be observed that except for the DIPP, the source agencies are rather product specific and generally have a narrow response base (except the textiles). In case of textiles, though response base is fairly large, commodity specific agency provides obvious advantage in having an access to information. The DIPP is in fact the source for all manufacturing items for which it has not been possible to have a product specific source. In that sense it could also be the residual source, and yet the most dominant of all. DIPP receives production returns on monthly basis and submission of this return is mandatory<sup>7</sup> for all establishments employing 50 or more workers using power. This access of information of monthly production returns facilitates obtaining information from units engaged in production of items not assigned to DIPP.

### **Representativeness of IPP as a lead indicator**

#### **How has the validation being attempted?**

11. Representativeness of IIP has been a matter of debate, particularly after 1991 or the post-industrial deregulation and reforms phase.<sup>8</sup> Though the submission of production returns has continued to be mandatory, a general perception is that the response may have deteriorated. Representativeness of IIP is also important because of its being used as a tracking variable for industrial growth. Further, since IIP, the manufacturing component of it in particular, has a correspondence with ASI; IIP is amenable for being validated through the ASI results. Validation, therefore, satisfies both the criteria of desirability and feasibility. One additional reason for a regular validation of IIP is its perceived departure from randomness in selection of products/items as substitution of products, often based on the regular availability of data, results in some departure from randomness<sup>9</sup>. Product basket of IIP, therefore, shows some kind of predominance for continuity.

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<sup>7</sup> These monthly production returns were earlier submitted to Director General of Technical Development (DGTID) under Industrial (Development and Regulation) Act. These returns are submitted to Industrial Statistical Unit of DIPP.

<sup>8</sup> Prior to 1991, Director General of Technical Development (DGTID) as the licensing agency could get information as its administrative by-product.

<sup>9</sup> The substitution and deletion of products identified in the first instance primarily happens for the manufacturing sector.

12. The magnitude of the index and growth rates as shown by IIP at the aggregate and sub-group level and their association with the NAS/ASI (population figures) could be an indicator for determining the representativeness of the index and its validity of being used as the "lead indicator". IIP and the index constructed of its three broad groups from NAS indicate that while these two indices converge for electricity sector, considerable differences exist for mining and manufacturing sectors<sup>10</sup>. NAS based index is higher for mining sector while IIP is higher for the manufacturing sector. (Table 4):

**Table 4: IIP and NAS based index (1993-94=100)**

|   | National Accounts- New Series |                    |             | Index of Industrial Production |                    |             |
|---|-------------------------------|--------------------|-------------|--------------------------------|--------------------|-------------|
|   | Mining                        | Manu-<br>facturing | Electricity | Mining                         | Manu-<br>facturing | Electricity |
| 1993-94                                   | 100                           | 100                | 100         | 100                            | 100                | 100         |
| 2000-01                                   | 138.8                         | 160.8              | 152.9       | 130.3                          | 167.9              | 154.4       |
| 2008-09                                   | 209.4                         | 275.6              | 221.8       | 176                            | 295.1              | 223.7       |
| Compound Average Annual growth (per cent) |                               |                    |             |                                |                    |             |
| 1993-2009                                 | 5.05                          | 6.99               | 5.45        | 3.84                           | 7.48               | 5.51        |
| 1993-2001                                 | 4.80                          | 7.02               | 6.25        | 3.85                           | 7.68               | 6.40        |
| 2001-2009                                 | 5.27                          | 6.97               | 4.76        | 3.83                           | 7.30               | 4.74        |

### **IIP (Manufacturing) and NAS/ASI**

13. Nearly 80 per cent of IIP weights are for manufacturing sector. Further, while mining and electricity are single product based sectors and has a designated source agency, manufacturing is further disaggregated into 17 groups. It may, therefore, be interesting to compare IIP and ASI at overall manufacturing and its group levels. The National accounts estimates for gross value added for manufacturing sector are available at current and constant (1999-2000) prices. IIP being a volume index is at constant prices, comparable series of ASI (Output) and ASI (Value Added) has been prepared in the following manner:

- a. Using NAS estimates of the value added for the organised manufacturing sector at current and constant prices, a set of deflators have been

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<sup>10</sup> NAS/ASI estimates are considered as true estimates.

developed with a base year 1993-94 for all the groups with in manufacturing sector.

- b. Applying the deflators so obtained, ASI estimates of value of output and value added at current prices have been converted to constant 1993-94 prices at the manufacturing group levels<sup>11</sup>. Separate indices have been constructed for ASI-Output and ASI-Value added because while at group level weights in IIP are derived from value added, at commodity level relative weights are assigned based on output. The Committee of CSO constituted for revising the base year of IIP did consider both the output and value added as being the determinants of weights for 1993-94 series<sup>12</sup>, though the series finally adopted value added for inter se weights among the groups.
  - c. Using these estimates at constant prices, manufacturing index has been constructed for ASI (Output) and ASI (Value Added) for the sub groups and for the manufacturing sector as a whole.
  - d. Since NAS estimates are available at constant prices, index of organised manufacturing sector and total manufacturing sector has been prepared with 1993-94 as the base. Though IIP is predominantly an index of organised manufacturing sector<sup>13</sup>, being a short term macro indicator its representativeness for the entire sector is considered desirable. Further, if the rate of growth of the unorganised sector converges, IIP could proxy the growth of both these sectors.
  - e. A chain based index of IIP has also been constructed by using the weights derived from the relative movement of index at 2-digit level with a view to identify the structural shifts in a limited way<sup>14</sup>.
14. Annual index (with a common base) so constructed and the observed rates of growth for manufacturing segment with alternate sources (Table 5) indicate

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<sup>11</sup> NAS based deflators have been used as against WPI because these are sector specific and a single deflator could be used for one industry group.

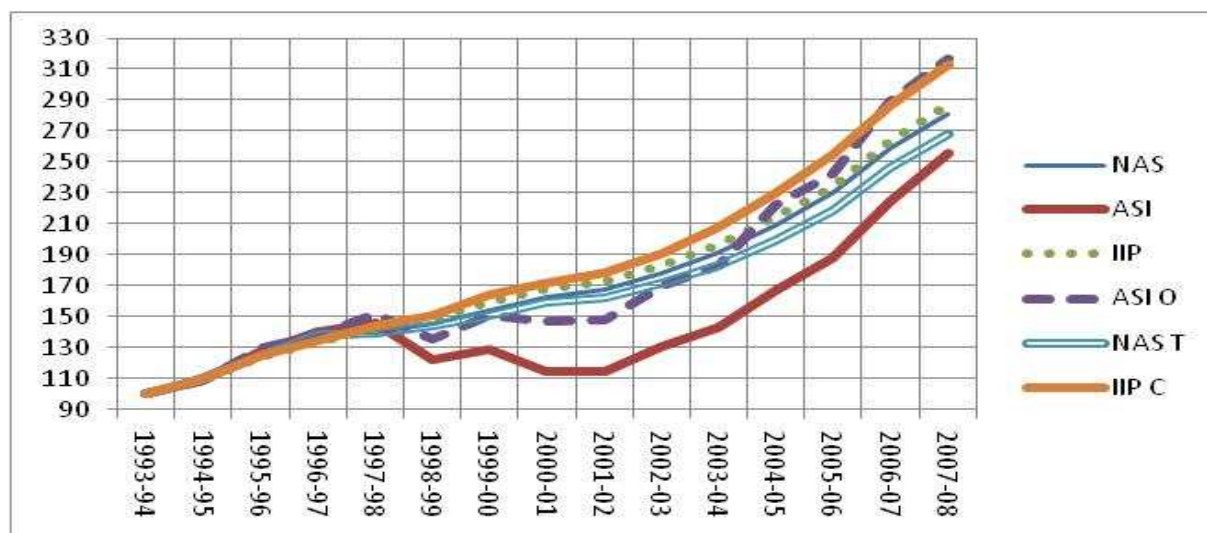
<sup>12</sup> Report of the Technical Advisory Committee to consider Construction of state Level indices for Industrial Production and Revision of base for the IIP to 1993-94

<sup>13</sup> There are only 18 products representing MSME sector and their combined weight is only 0.65 per cent of IIP.

<sup>14</sup> Chain based IIP is constructed by assigning weights in each year derived from the index at 2 digit level of the previous year. Inter se weights of the items selected are not changed.

that IIP and NAS (Organised sector) move in a narrow range<sup>15</sup>. ASI (output) is significantly higher and nearly converges to chain based IIP. ASI (Value Added) and NAS (Total Manufacturing) again move in a narrow range, though inter year variations continues to be as with other series. Lower IIP values indicate perhaps the continuation of the downward bias historically observed in IIP with respect of ASI. Compound average annual rate of growth are in the range of 7.3 per cent to 8.6 per cent.

**Fig 1: Manufacturing Sector Index with alternate sources (1993-94=100)**



**Table 5: Normalised Index of Manufacturing Sector and annual growth rates<sup>16</sup>**

|         | NAS (O) | ASI (VA) | IIP   | ASI (O) | NAS (TM) | IIP (C) |
|---------|---------|----------|-------|---------|----------|---------|
| 1993-94 | 100.0   | 100.0    | 100.0 | 100.0   | 100.0    | 100.0   |
| 1994-95 | 111.8   | 109.0    | 109.1 | 109.3   | 110.0    | 109.6   |
| 1995-96 | 127.3   | 128.3    | 124.5 | 130.0   | 125.6    | 125.4   |
| 1996-97 | 141.7   | 140.3    | 133.6 | 138.7   | 138.1    | 135.0   |
| 1997-98 | 140.1   | 146.2    | 142.5 | 152.0   | 139.5    | 143.9   |
| 1998-99 | 146.0   | 122.3    | 148.8 | 135.9   | 144.5    | 151.1   |
| 1999-00 | 154.6   | 128.8    | 159.4 | 151.1   | 151.4    | 164.4   |
| 2000-01 | 163.0   | 114.7    | 167.9 | 146.8   | 159.9    | 172.2   |
| 2001-02 | 167.5   | 114.6    | 172.7 | 148.3   | 162.1    | 178.2   |
| 2002-03 | 178.5   | 130.5    | 183.1 | 169.6   | 171.8    | 191.1   |
| 2003-04 | 191.6   | 143.2    | 196.6 | 183.3   | 183.4    | 207.9   |
| 2004-05 | 209.4   | 166.9    | 214.6 | 222.2   | 199.7    | 229.5   |

<sup>15</sup> This could be expected as IIP is used for tracking the NAS growth rates.

<sup>16</sup> NAS(OS)- National Accounts- Organised Manufacturing Sector; ASI (VA)- Annual survey of Industries- Value Added; ASI (O)- Annual Survey of Industries- Output; IIP- Index of Industrial Production; IIP (C)- IIP Chain based index; NAS (TM)- National Accounts- Total Manufacturing

|                                       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|
| 2005-06                               | 230.2 | 187.9 | 234.2 | 242.2 | 218.8 | 254.4 |
| 2006-07                               | 258.6 | 224.2 | 263.5 | 289.1 | 245.7 | 286.6 |
| 2007-08                               | 280.7 | 255.7 | 287.2 | 316.3 | 267.8 | 313.0 |
| Rate of Growth (per cent)             |       |       |       |       |       |       |
| 1994-95                               | 11.8  | 9.0   | 9.1   | 9.3   | 10.0  | 9.6   |
| 1995-96                               | 13.9  | 17.8  | 14.1  | 18.9  | 14.1  | 14.4  |
| 1996-97                               | 11.3  | 9.3   | 7.3   | 6.6   | 10.0  | 7.7   |
| 1997-98                               | -1.2  | 4.2   | 6.6   | 9.6   | 1.0   | 6.7   |
| 1998-99                               | 4.2   | -16.4 | 4.4   | -10.6 | 3.6   | 5.0   |
| 1999-00                               | 5.9   | 5.4   | 7.2   | 11.2  | 4.7   | 8.8   |
| 2000-01                               | 5.5   | -11.0 | 5.4   | -2.9  | 5.7   | 4.8   |
| 2001-02                               | 2.7   | -0.1  | 2.9   | 1.0   | 1.4   | 3.5   |
| 2002-03                               | 6.6   | 13.9  | 6.0   | 14.4  | 6.0   | 7.2   |
| 2003-04                               | 7.3   | 9.7   | 7.4   | 8.1   | 6.8   | 8.7   |
| 2004-05                               | 9.3   | 16.5  | 9.1   | 21.2  | 8.9   | 10.4  |
| 2005-06                               | 9.9   | 12.5  | 9.1   | 9.0   | 9.6   | 10.8  |
| 2006-07                               | 12.3  | 19.3  | 12.5  | 19.4  | 12.3  | 12.7  |
| 2007-08                               | 8.6   | 14.1  | 9.0   | 9.4   | 9.0   | 9.2   |
| Compound Average Annual Growth (CAGR) |       |       |       |       |       |       |
| 1993-94 to<br>2007-08                 | 7.65  | 6.94  | 7.83  | 8.57  | 7.29  | 8.49  |

15. There are significant inter year variations, as is evident from the annual rate of growth (and also the indices) observed for various indices. It is, however, interesting to note that in the first four years of the release of IIP series, all the indices of manufacturing sector performance move almost together. A break occurs afterwards and deviations tend to get wider<sup>17</sup>. The variations in the index so constructed and growth rates of IIP and NAS/ASI could either be due to weights, item basket, response quantity and quality or a combination of one or more of these factors.

16. Earlier analysis of this type had indicated that both at the two digits disaggregated and IIP (which is being examined latter in this paper) as a whole, the association has generally become weak in the later part of the index when it becomes dated. It was pointed out that, "This is mainly because the primary data that is used for computing the index has become poorer in quality and probably scarcer in quantity<sup>18</sup>." This was also admitted at the official level in the Press Note issued by CSO, which mentioned "for the registered sector, the

<sup>17</sup> One of the reasons for the indices to move together in first 4-5 years could be nearness of the base. It could also be because the effective launch of the new series happens after a gap of 5-6 years and it is possible to make additions/deletions in item basket based on responses and other information.

<sup>18</sup> R Nagraj, Economic and Political Weekly. February 6, 1999

quality of production data supplied by source agencies suffer from substantial non-response<sup>19</sup>". Similar views were expressed by the Statistical Commission, which also held the poor response as being responsible for IIP becoming non-representative of industrial performance<sup>20</sup>."

17. A study for the earlier series of IIP done by the Office of the Economic Adviser has also indicated that IIP suffers from a downward bias in industrial growth. The main difference using the IIP data and NAS estimates of output of the registered manufacturing sector at constant prices was indicated to have widened from minus 1.2 per cent during 1960-61 to 1969-70 to (-) 2.2 per cent during 1970-71 to 1979-80 and (-) 2.7 per cent during 1980-81 to 1989-90<sup>21</sup>. It also mentioned that IIP suffered from an operational problem in so far as its inability (or limited capacity) to fully capture the growth due to entry of new firms. The IIP series may appear comparable and hence robust where new addition of units more or less matches the units which have ceased production. This, however, is not the appropriate way of information capturing as the observed robustness of the index could merely be a coincidence<sup>22</sup>. Further, it is an anomalous situation because while additions/deletion of capacity of unit in the frame is captured, the new units which bring in new capacities are not considered.

18. A comparative study of industrial growth as measured by IIP and ASI (for the period 1993-94 to 2000-2001) also observed that the industrial growth shown by both IIP and ASI are almost same till the year 1998-99 and that after the year 1998-99, the deviation between two series become prominent even though for some point, the growth comes closer. Thus, the comparison of growth pattern for manufacturing sector, as a whole, for the two series IIP and ASI indices, supports the view that so long as current year is not very distant from the base year, IIP is able to measure the industrial growth fairly accurately. But when the current year is too distant from the base year, deviation between ASI indices and IIP become significant. This observation is very evident when comparison of Growth pattern at 2-digit level of National Industrial Classification (NIC) is made<sup>23</sup>.

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<sup>19</sup> Ministry of Statistics and Programme Implementation

<sup>20</sup> National Statistical Commission, 2001

<sup>21</sup> Singhi and Mishra, Industrial Statistics, Office of the Economic Adviser, 1997

<sup>22</sup> Singhi and Mishra, Industrial Statistics, Office of the Economic Adviser, 1997

<sup>23</sup> Shri R.K. Kamra and Shri S. Chakraborty

19. Significant inter year variations in the indices and their movement indicate that range bound CARG has masked these differences. Of particular significance is the index during 2000-01 and 2001-02. The index based on ASI (Output) and ASI (Value Added) actually declines in 2000-01 and has a moderate growth in 2001-02. There are no valid reasons for this observed break of this association between IIP and ASI. The break in the series becomes even clearer if these indices are reconstructed with a new 2000-01 as the base. ASI has a census and a sample sector. Until 1996-97, ASI census sector comprised of all factories employing 100 or more workers. During 1997-2000, ASI census sector was restricted to factories employing 200 or more workers. From 2000-01, ASI reverted to its earlier census sector approach. There have some changes in reporting of ASI results from 1997-98<sup>24</sup>. In view of this break of ASI series into pre 2000-01 and post 2000-01 become all the more relevant. The results of such an exercise are summarized in graph and table 6 below:

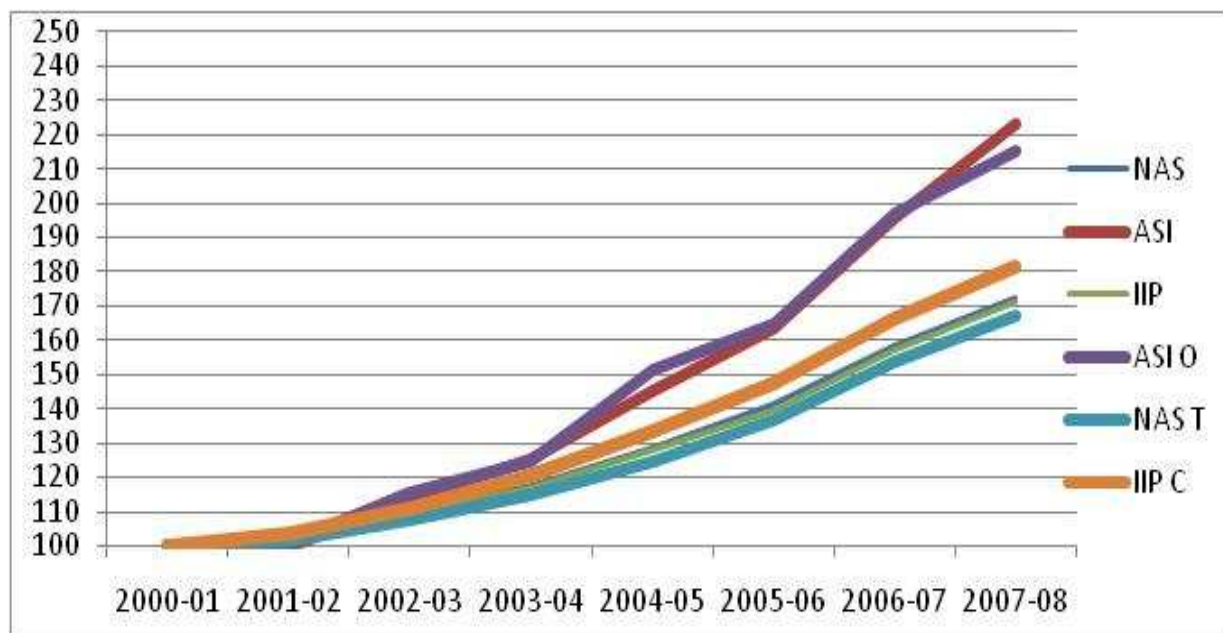
**Table 6: Normalised Index of Manufacturing Sector (2000-01=100)<sup>25</sup>**

|         | NAS<br>(O) | ASI (VA) | IIP   | ASI (O) | NAS (TM) | IIP ( C) |
|---------|------------|----------|-------|---------|----------|----------|
| 1993-94 | 61.3       | 87.2     | 59.5  | 68.1    | 62.5     | 58.1     |
| 1994-95 | 68.6       | 95.0     | 65.0  | 74.5    | 68.8     | 63.6     |
| 1995-96 | 78.1       | 111.9    | 74.1  | 88.6    | 78.5     | 72.8     |
| 1996-97 | 86.9       | 122.4    | 79.6  | 94.5    | 86.3     | 78.4     |
| 1997-98 | 85.9       | 127.5    | 84.8  | 103.5   | 87.2     | 83.6     |
| 1998-99 | 89.6       | 106.6    | 88.6  | 92.6    | 90.4     | 87.8     |
| 1999-00 | 94.8       | 112.4    | 94.9  | 103.0   | 94.7     | 95.4     |
| 2000-01 | 100.0      | 100.0    | 100.0 | 100.0   | 100.0    | 100.0    |
| 2001-02 | 102.7      | 99.9     | 102.9 | 101.0   | 101.4    | 103.5    |
| 2002-03 | 109.5      | 113.8    | 109.0 | 115.5   | 107.5    | 111.0    |
| 2003-04 | 117.5      | 124.9    | 117.1 | 124.9   | 114.7    | 120.7    |
| 2004-05 | 128.4      | 145.6    | 127.8 | 151.3   | 124.9    | 133.3    |
| 2005-06 | 141.2      | 163.8    | 139.5 | 165.0   | 136.9    | 147.7    |
| 2006-07 | 158.6      | 195.5    | 156.9 | 196.9   | 153.7    | 166.4    |
| 2007-08 | 172.2      | 223.0    | 171.0 | 215.5   | 167.4    | 181.8    |

<sup>24</sup> MR Saluja and Bhupesh Yadav- Industrial Data, PDF version

<sup>25</sup> Ref Table 5 for definitions

**Fig 2: Manufacturing Indices- Alternate Sources (2000-01=100)**



20. With shift of the base for all indices to 2000-01, while the convergence of IIP series with NAS (both organised and total manufacturing) continues, IIP level becomes significantly long compared to both ASI [output] and ASI [value added] and a downward bias of IIP becomes even sharper. The convergence (or continuing convergence) of IIP and NAS series happens because for the new series, NAS uses IIP for GDP and other estimates and not ASI.

21. While looking at representativeness of IIP, it has to be seen that the factory in the context of IDR Act (as the data from DIPP generally pertains to the IDR units) is defined as an establishment engaged in the manufacturing process having 50 workers or more workers if using power or having 100 workers or more otherwise. Thus, the definition of factory in IDR is more restrictive than that of the Factories Act and data resources naturally come from that restrictive segment<sup>26</sup>. However, since the basic objective of the index is to provide an assessment of the direction and quantum of growth and not the output levels, it

<sup>26</sup> Further, if the frame of the units is also considered fixed together with a fixed weight and fixed item, dynamism of the industrial sector remains all the more less captured.

is a moot question whether one should be concerned for all segments of the manufacturing sector. What would then be more relevant is to ensure that, at the time of changing the base year, the weights are allocated on the basis of estimates of “total production” (factory plus non-factory) of the major items being manufactured in the economy. Nonetheless this restrictive response (which is because of the coverage of source agency) increases the need for regular data validation<sup>27</sup>.

22. But IIP is not supposed to simply indicate one magic number representing overall industrial/manufacturing growth. Because, in that case, there would not be a need for such a detailed item basket a sample of products may be good enough. Moreover, it could be possible to find some other proxy variables, which could provide that figure with much less cost and effort. It would, therefore, be more interesting to look at the association between IIP and NAS/ASI at a little more disaggregated level. It does not stand to logic that a carefully selected detailed item basket covering over 500 items is not sufficient enough to ensure representativeness of IIP at 17 broad two digit NIC levels<sup>28</sup>. The number of responses and items covered at that level of disaggregation <sup>29</sup>are adequate enough to capture the industrial performance at that level.

23. To test the proposition that the movement and direction shown by IIP and NAS/ASI are associated to a considerable extent, a simple correlation coefficient has been calculated for the IIP and the NAS/ASI beside compound average annual growth (Group wise indices and rate of growth are at Annex A). The association as observed from correlation coefficient using group wise indices particularly with the ASI (both output and value added variants) is robust. This is to be expected as the indices have moved upwards. However, when rate of growth of the two indices at aggregate manufacturing level and at the level of sub group is considered, the association becomes weak.

24. CAGR during 1993-2008 indicates IIP growth is high compared with ASI (VA) and lower for ASI (output). Average mean difference, however, is less than 1

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<sup>27</sup> Validation of IIP is feasible because ASI data set which more or less corresponds to IIP Manufacturing becomes available, though with a time lag. The validation could be done both by the source agencies and the CSO so that similar mistakes could be avoided in next round or corrective actions could be taken while series is on.

<sup>28</sup> IIP is expected to be fairly representative at 2 digit level of NIC. However, its representativeness at the use based disaggregation is not automatic.

<sup>29</sup> In fact, CSO considers IIP at 2-digit NIC level robust. At the IIP disaggregated in terms of use based industries, grouping industries as basic goods, intermediates, capital goods and consumer goods, the association is considered weak.

per cent each year. Food products and chemicals and chemical products are in fact the two products where IIP growth is higher than the growth rates observed for these sectors through ASI. In other sectors, the difference between IIP growth and growth based on ASI is generally negative. The downward bias is strong in many industry sub groups, particularly wood and products, rubber, petroleum and plastic products.

**Table 7: Correlation between IIP and ASI (Output) and ASI (Value Added) at Index and Growth rate levels**

|                                      | Correlation between IIP and ASI Indices |                 | Correlation between IIP and ASI growth rates |                 |
|--------------------------------------|---|-----------------|--|-----------------|
|                                      | ASI Output                              | ASI Value added | ASI Output                                   | ASI Value added |
| Food products                        | 0.896                                   | 0.982           | 0.244  | 0.519           |
| Textiles and apparels                | 0.917                                   | 0.970           | 0.265  | 0.582           |
| Wood and wood products               | 0.103                                   | -0.284          | 0.053  | 0.072           |
| Paper and paper products             | 0.834                                   | 0.913           | -0.242                                       | -0.142          |
| Leather and leather products         | 0.623                                   | 0.741           | 0.046  | -0.084          |
| Chemicals and chemical products      | 0.910                                   | 0.979           | 0.185  | 0.789           |
| Rubber, Plastic & Petroleum Products | 0.929                                   | 0.968           | 0.134  | 0.115           |
| Non mineral metallic products        | 0.897                                   | 0.958           | 0.532  | 0.597           |
| Metals                               | 0.944                                   | 0.981           | 0.353  | 0.404           |
| Metal products & Machinery           | 0.959                                   | 0.985           | 0.459  | 0.465           |
| Transport equipments and parts       | 0.938                                   | 0.943           | 0.433  | 0.035           |
| Overall Manufacturing                | 0.900                                   | 0.977           | 0.748  | 0.751           |

25. As indicated earlier there was a disconnect between ASI and IIP during 1997-2000. It has, therefore, been considered important to look at the correlation between IIP and ASI indices including the correlation in the growth rates by breaking the series into two with the first series comparing the indices and growth rates for the period 1993-2000 and the second comparing it for the period 2000-2008. It is observed that the correlation between the indices is significantly lower during the period 1993-94 to 2000-2001. However, at the level of growth rates, the association becomes weak during the second period.

**Table 8: Compound Annual growth (1993-94 to 2007-08) of manufacturing group (per cent)**

|                                      | NAS<br>(OS) | ASI<br>(VA) | IIP  | ASI<br>(O) | NAS<br>(T) | Average Annual<br>Difference in growth<br>rates |         |
|--------------------------------------|-------------|-------------|------|------------|------------|---|---------|
|                                      |             |             |      |            |            | ASI (VA)  | ASI (O) |
| Food products                        | 6.18        | 5.35        | 7.08 | 6.43       | 6.20       | 1.73  | 0.65    |
| Textiles and apparels                | 4.75        | 5.87        | 5.67 | 7.86       | 5.26       | -0.2  | -2.19   |
| Wood and wood products               | 5.27        | 3.60        | 1.77 | 7.21       | 2.03       | -1.83   | -5.44   |
| Paper and paper products             | 2.83        | 6.18        | 6.92 | 7.15       | 4.16       | 0.74  | -0.23   |
| Leather and leather products         | 0.76        | 4.70        | 3.77 | 7.94       | 2.73       | -0.93   | -4.17   |
| Chemicals and chemical products      | 8.75        | 6.04        | 8.50 | 7.10       | 8.73       | 2.46  | 1.4     |
| Rubber, Plastic & Petroleum Products | 6.16        | 10.00       | 6.65 | 11.02      | 6.27       | -3.35   | -4.37   |
| Non mineral metallic products        | 7.72        | 11.54       | 8.74 | 8.81       | 8.13       | -2.8  | -0.07   |
| Metals                               | 9.75        | 10.43       | 8.48 | 9.26       | 9.55       | -1.95   | -0.78   |
| Metal products & Machinery           | 8.71        | 9.52        | 9.28 | 11.54      | 8.59       | -0.24   | -2.26   |
| Transport equipments and parts       | 9.58        | 10.83       | 9.97 | 12.92      | 9.62       | -0.86   | -2.95   |
| Overall Manufacturing                | 7.65        | 6.94        | 7.83 | 8.57       | 7.29       | 0.89  | -0.74   |

**Table 9: Correlation between Indices and rates of growth of IIP and ASI**

|                             | 1993-94 to 2000-2001 | 2000-01 to 2005-06 | 1993-94 to 2007-08 |
|-----------------------------|----------------------|--------------------|--------------------|
| IIP & ASI (VA)-Index        | 0.433                | 0.999              | 0.900              |
| IIP & ASI (O) - Index       | 0.902                | 0.998              | 0.977              |
| IIP & ASI (VA)-Growth rate  | 0.845                | 0.890              | 0.748              |
| IIP & ASI (O) - Growth rate | 0.835                | 0.723              | 0.751              |

26. CAGR during 2000-01 to 2007-08 indicate that the downward bias in the growth rate measured in terms of IIP becomes significant when compared with the growth rates of the manufacturing sector based on ASI. The only two sectors comprising the food products and chemicals and chemical products continue to show a higher rate of growth in terms of IIP. The difference in two growth rates is substantially higher for wood & wood products, rubber, plastic & petroleum products, metal products and machinery and transport equipments and parts.

Overall downward bias in the manufacturing growth measured in terms of IIP sticks to (-) 3.62 per cent and (-) 4.17 per cent, depending on whether the comparison is with ASI (Output) of ASI (Value Added).

**Table 10: Compound Annual growth (2000-01 to 2007-08) of manufacturing group (per cent)**

|                                      | NAS<br>(OS) | ASI<br>(VA) | IIP   | ASI<br>(O) | NAS<br>(T) | Average Annual<br>Difference in growth<br>rates |         |
|--------------------------------------|-------------|-------------|-------|------------|------------|---|---------|
|                                      |             |             |       |            |            | ASI (VA)  | ASI (O) |
| Food products                        | 6.22        | 5.13        | 6.83  | 6.36       | 5.92       | 1.7   | 0.47    |
| Textiles and apparels                | 5.39        | 7.79        | 5.26  | 7.93       | 5.43       | -2.53   | -2.67   |
| Wood and wood products               | 2.96        | 13.20       | 2.96  | 15.15      | 2.96       | -10.24  | -12.19  |
| Paper and paper products             | 6.53        | 7.79        | 6.53  | 8.32       | 6.53       | -1.26   | -1.79   |
| Leather and leather products         | 1.91        | 11.22       | 1.62  | 11.62      | 1.91       | -9.6  | -10     |
| Chemicals and chemical products      | 8.53        | 6.55        | 8.54  | 6.24       | 8.53       | 1.99  | 2.3     |
| Rubber, Plastic & Petroleum Products | 6.99        | 19.62       | 7.00  | 16.47      | 6.99       | -12.62  | -9.47   |
| Non mineral metallic products        | 5.78        | 12.98       | 5.77  | 9.39       | 5.78       | -7.21   | -3.62   |
| Metals                               | 11.10       | 17.00       | 11.11 | 13.71      | 11.10      | -5.89   | -2.6    |
| Metal products & Machinery           | 8.59        | 12.87       | 9.59  | 14.78      | 8.89       | -3.28   | -5.19   |
| Transport equipments and parts       | 10.32       | 17.22       | 10.32 | 16.68      | 10.32      | -6.9  | -6.36   |
| Overall Manufacturing                | 8.07        | 12.14       | 7.97  | 11.59      | 7.64       | -4.17   | -3.62   |

### **Alternative IIP – A failed experiment**

27. In response to the growing unreliability of the current IIP, Arun Ghosh Committee in 1998 suggested computing an alternative IIP (AIPP) by using monthly production data collected from factories employing 200 and more workers through NSSO. An exploratory exercise was undertaken by the Field Operations Division of NSSO for April 92 to March 1994. Initially NSSO, through personal visits, collected with a response rate of up to 80 per cent of factories. This method could not be continued as fell to around 27 per cent in eight months. The average response rate for 12 months during which data were collected by FOD field staff was 46 per cent, which is lower than the response rate of the existing source agencies<sup>30</sup>. Therefore, the data collection by personal visits does not seem any better than that collected by the source agencies.

### **Other issues**

<sup>30</sup> R Nagraj, Economic and Political weekly, February 6, 1999

28. To assess and judge the Representativeness of IIP, it may be useful to look at the item basket and concentration of production. Item basket at the level of DIPP has in many cases the problem of few possible respondents. A study by IIM, Ahmedabad on Competition Policy in India mentions that even during 1996-98, the three firm concentration ratios was more than 90% in about 15% of the product groups and more than 70 per cent in about 35 per cent of product group<sup>31</sup>. In such a situation, non-response of a major unit requires estimation for a significant volume of production, which makes IIP susceptible to such errors. Problems get compounded if the selected item has even fewer possible responses. Product group wise responses in since 2000 are given in Annex 2. In nearly 50 per cent of the products (product groups), average number of responses were less than 10.

**Table 11: Number of responding units (average of 2000-2008) for IIP (DIPP items)**

| Average number of responses | No of Products | Percentage of products |
|-----------------------------|----------------|------------------------|
| Above 100                   | 5              | 2.4                    |
| More than 50 but below 100  | 8              | 3.8                    |
| More than 25 but below 50   | 18             | 8.6                    |
| More than 15 but below 25   | 42             | 20.1                   |
| More than 10 but below 15   | 32             | 15.3                   |
| More than 5 but below 10    | 64             | 30.6                   |
| More than 1 but below 5     | 36             | 17.2                   |
| Single response             | 4              | 1.9                    |
| Total Products              | 209            | 100.0                  |

29. The IIP is based on fixed weights both at broad industry and item level, as derived from ASI/NAS 1993-94 (for the current base) and has the tendency to become dated, rather quickly as the exercise for changing the base year itself commences after nearly a decade and it takes about five years before a new series is actually released. The new 1993-94 series replaced the 1980-81 series only in 1998-99. Further, fixed weights system is not amenable to incorporate the new items. There are no doubt associated problems in revising the weights every year or even frequently, but it is not denying the fact that there is a need

<sup>31</sup> Competition Policy for India- Issues for a Globalised Economy- Rakesh Basant and Sebastian Morris- IIM, Ahmedabad

to have a base, which is closer to the current year to reflect the performance in an objective manner. An attempt has been to look at relative index of the current series of IIP to identify sun rise sectors from the current index. Using the overall IIP as the base, relative index has been constructed at two digit level of manufacturing and the three broad groups. Notwithstanding the representativeness of the current series of IIP, the relative index indicates sun rise sectors (Table 12). A chain based IIP using relative growth rates in the preceding year (Table 4) is another option. If these modifications are not considered, the base for the Index needs to be revised every 5 years and operationalisation of the same ought to be made within 2/3 years of the same.

**Table 12: Rates of growth of IIP Groups based on relative index (1994-95 to 2009-2010)**

| Sectors             | Average Quarterly rate of growth of current series | Average Quarterly rate of growth of Relative Index | Sectors                       | Average Quarterly rate of growth of current series | Average Quarterly rate of growth of Relative Index |
|---------------------|--|--|-------------------------------|--|--|
| Food Products       | 0.76   | -0.81  | Chemicals                     | 2.03   | 0.41   |
| Beverages & Tobacco | 3.01   | 1.44   | Rubber & Petroleum            | 1.57   | -0.06  |
| Cotton Textiles     | 0.71   | -0.91  | Non Metallic Mineral products | 1.77   | 0.20   |
| Other Textiles      | 1.48   | -0.08  | Basic Metals                  | 1.82   | 0.18   |
| Jute Textiles       | -0.07  | -1.51  | Metal Products                | 0.98   | -0.64  |
| Textile Products    | 1.79   | 0.18   | Machinery & Equipments        | 2.38   | 0.68   |
| Wood Products       | -0.26  | -1.98  | Transport Equipments          | 2.28   | 0.61   |
| Paper Products      | 1.44   | -0.13  | Others                        | 1.92   | 0.24   |
| Leather products    | 0.92   | -0.61  |                               |  |  |
| Mining              | 0.85   | -0.78  | Electricity                   | 1.27   | -0.33  |
| Manufacturing       | 1.75   | 0.11   | General                       | 1.63   | 0.00   |

30. Another problem with IIP is its hybrid frame of units. For nearly 50 per cent of the IIP weights, the IIP frame is flexible and the index is generated taking into account the entire production of these products. For another 50 per cent of

the IIP weight the frame of units is fixed. IIP in these products captures only the change in the production of the units in the frame. This leads to a downward bias because it ignores the new units which come into production. In a note of dissent to the Report of the Technical Advisory Committee on revision of base change of IIP, the DIPP had mentioned that for the organised sector the fixed frame approach may not be appropriate<sup>32</sup>. In fact, all manufacturing units covered under the Industrial (Development and Regulation) Act are required to submit a monthly production return (MPR) to DIPP. This MPR forms the basis of information that is then furnished to CSO for generation of index. This submission of MPR is mandatory for all IDR units (units employing 50 or more workers with power). While there may have some slackness in enforcing this mandatory provision, non inclusion of the new units in nearly half of IIP weight products is perhaps a methodological compromise.

31. Another problem with the Index is the unit of measurement. Since Index is a fixed base, real growth for most of the items is measured in terms of quantities such as tonnage, numbers. For capital goods and other heterogeneous products, the unit of measurement is value, which is then deflated by appropriate price deflators. Currently WPI is used as deflators. But the problem arises in respect of items that are measured in terms of quantity as it bundles the commodities of different values into a single unit. There are over 40 items in the current series of IIP which has numbers as a unit. Value range of the products bundled as numbers (wheel mounted dumpers/loaders; glazed tiles; diesel engines for DIPP and MSME; air conditioners, refrigerators; cars; commercial vehicles; wrist watches; washing machines covering domestic and laundry type as a single product; air/gas compressors for DIPP and MSME; gear boxes; electric fans, etc) may be quite significant. Globally value deflated by appropriate price deflators is the most common measure of volume indices.

32. The system is also not able to capture the technological changes. As on date we neither have such a methodology nor do we adopt a splicing method for incorporating new item/deleting the obsolete items. Splicing is not necessarily merger of two index series; it could be merger of items. Further, where there are items which have less than three producers/possible respondents, it may be

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<sup>32</sup> DIPP has generally adopted the DGTD frame, updated based on entry of new units. Further, despite the abolition of Industrial Licensing for most of the products, DIPP receives the Industrial Entrepreneur Memoranda (IEMs). Units also file part B with the implementation of IEMs.

more appropriate to club them with other items in the same industry group, because the estimates in case of non response could drastically alter the index values. The difficulties of aggregation of different products could be sorted by using the value with appropriate deflators. It is also in conformity of the basic tenets of data collection of not disclosing the identity of individual source.

33. There are no clear-cut guidelines for the number of months the data should be repeated for non-reporting units. Last reported month sometimes give a misleading picture as happened in April 2000. Provisional and revised growth rates differed significantly. Since data sets are frozen after four months, entire revision is booked in the immediate month, causing at times really significant differences. IIP as is being compiled currently is biased towards the ASI census sector or organised manufacturing. While, it may be possible to have a separate index for unorganised sector at sectoral or at aggregate level, possibility its merger with organised sector IIP to generate a combined number and aggregate and sector level needs to be explored.

34. The current series of IIP, as was with the earlier series, witnesses a gradual erosion of representativeness because of its dated base and non dynamic response. There has not being a regular validation of IIP with alternate data sources by way of an established institutional mechanism. While revision of base is a time consuming and difficult exercise, such difficulties get compounded, particularly in terms of response for the back series of information, if the base change takes longer. A quicker change and its faster operationalization become critical. However, as this study and the previous studies indicate the downward bias of IIP has not only persisted but also increased over time, there is need to look at the methodology of IIP. Validation of IIP and ASI is not only necessary to see the persistence of the difference in industrial performance based on these two sources, it is also necessary for validation of ASI. Abnormal fluctuations have also been observed in ASI data<sup>33</sup>. The validation is critical for the credibility of the entire industrial statistical information system.

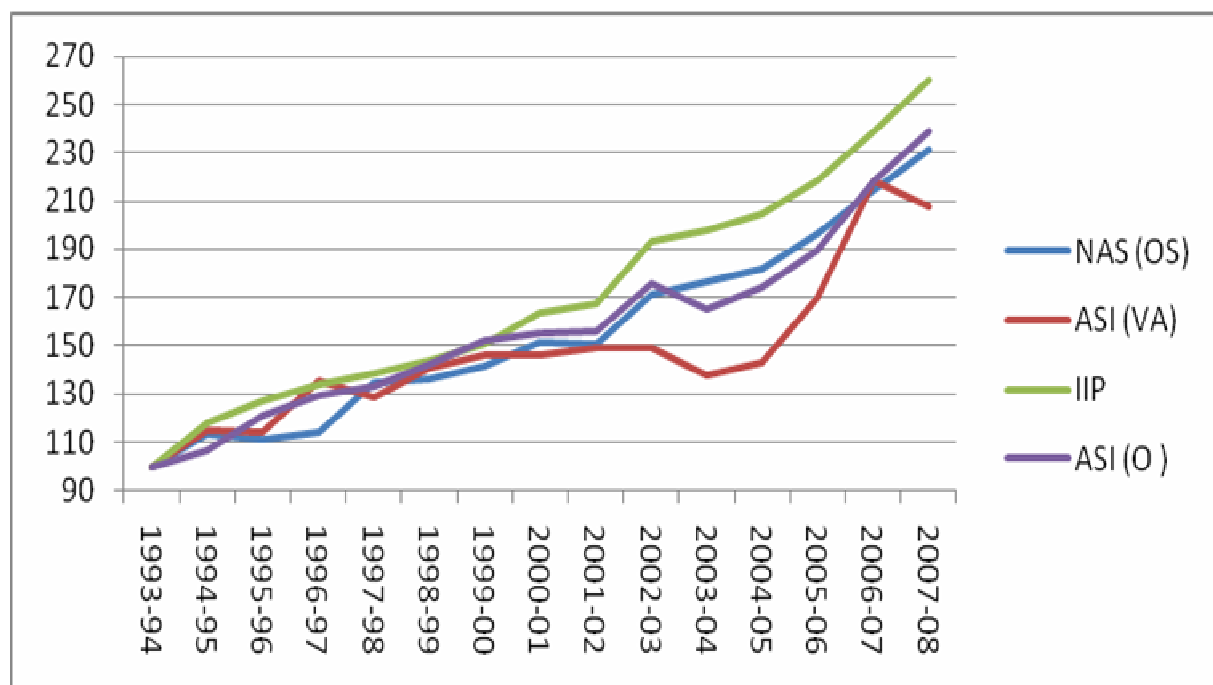
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<sup>33</sup> An Analytical Study of ASI Data, Dr Pravin Shukla- Paper presented in National Seminar on ASI, October 7, 2010

## Annex A Group wise Indices and rate of growth

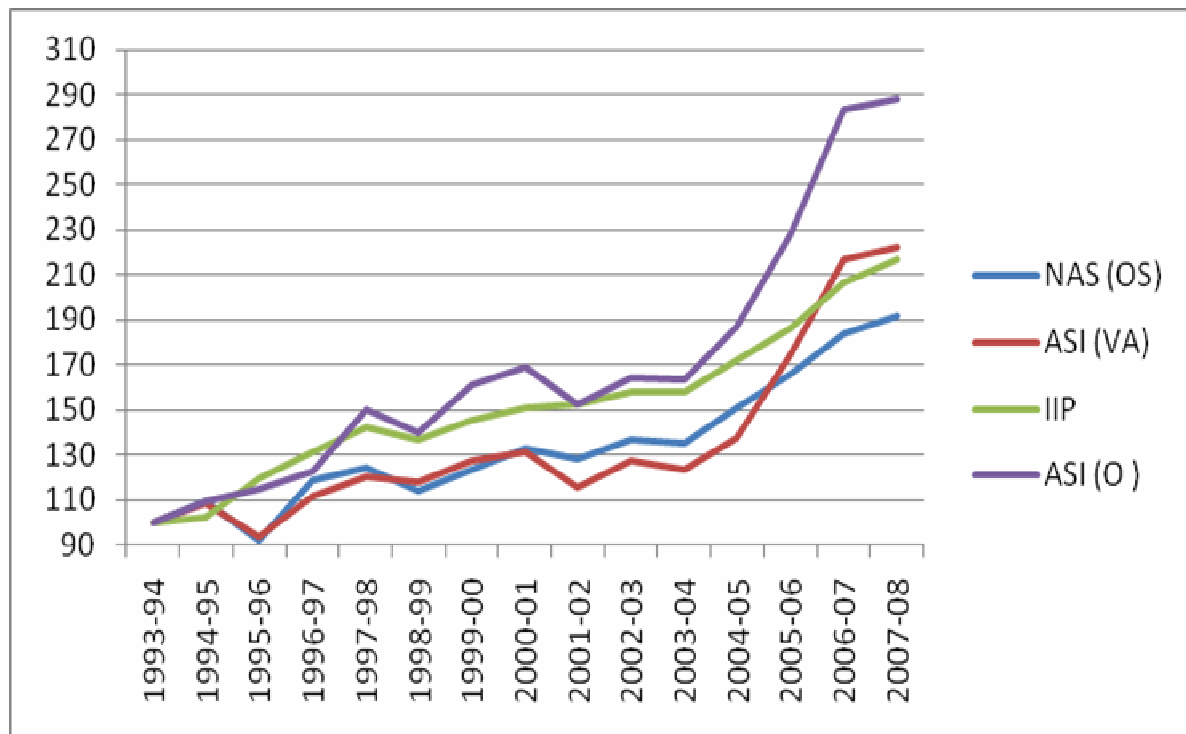
### Food Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 113.8               | 115.1    | 117.7   | 106.5 | 115.6    | 13.8                                     | 15.1     | 17.7    | 6.5  | 15.6     |
| 1995-96 | 111.2               | 114.4    | 127.1   | 121.2 | 117.8    | -2.3                                     | -0.6     | 8.0     | 13.8 | 1.9      |
| 1996-97 | 114.3               | 135.9    | 133.9   | 129.2 | 122.4    | 2.8                                      | 18.7     | 5.4     | 6.6  | 3.9      |
| 1997-98 | 134.7               | 128.7    | 138.8   | 133.5 | 136.1    | 17.8                                     | -5.3     | 3.7     | 3.3  | 11.3     |
| 1998-99 | 136.2               | 141.0    | 143.8   | 142.6 | 138.9    | 1.1                                      | 9.6      | 3.6     | 6.8  | 2.0      |
| 1999-00 | 141.4               | 146.2    | 151.0   | 152.5 | 144.8    | 3.8                                      | 3.6      | 5.0     | 7.0  | 4.3      |
| 2000-01 | 151.9               | 146.1    | 164.0   | 155.4 | 155.3    | 7.4                                      | -0.1     | 8.6     | 1.9  | 7.2      |
| 2001-02 | 151.1               | 149.5    | 167.1   | 156.2 | 153.5    | -0.5                                     | 2.3      | 1.9     | 0.5  | -1.2     |
| 2002-03 | 171.1               | 149.4    | 193.4   | 175.5 | 172.8    | 13.3                                     | 0.0      | 15.7    | 12.4 | 12.6     |
| 2003-04 | 176.3               | 137.9    | 197.9   | 164.8 | 179.7    | 3.0                                      | -7.7     | 2.3     | -6.1 | 4.0      |
| 2004-05 | 182.2               | 143.2    | 204.4   | 174.2 | 184.3    | 3.3                                      | 3.9      | 3.3     | 5.7  | 2.5      |
| 2005-06 | 196.1               | 169.5    | 218.3   | 189.4 | 197.5    | 7.7                                      | 18.4     | 6.8     | 8.8  | 7.2      |
| 2006-07 | 214.9               | 218.5    | 239.1   | 218.3 | 216.3    | 9.6                                      | 29.0     | 9.5     | 15.2 | 9.5      |
| 2007-08 | 231.6               | 207.4    | 260.5   | 239.2 | 232.3    | 7.8                                      | -5.1     | 9.0     | 9.6  | 7.4      |



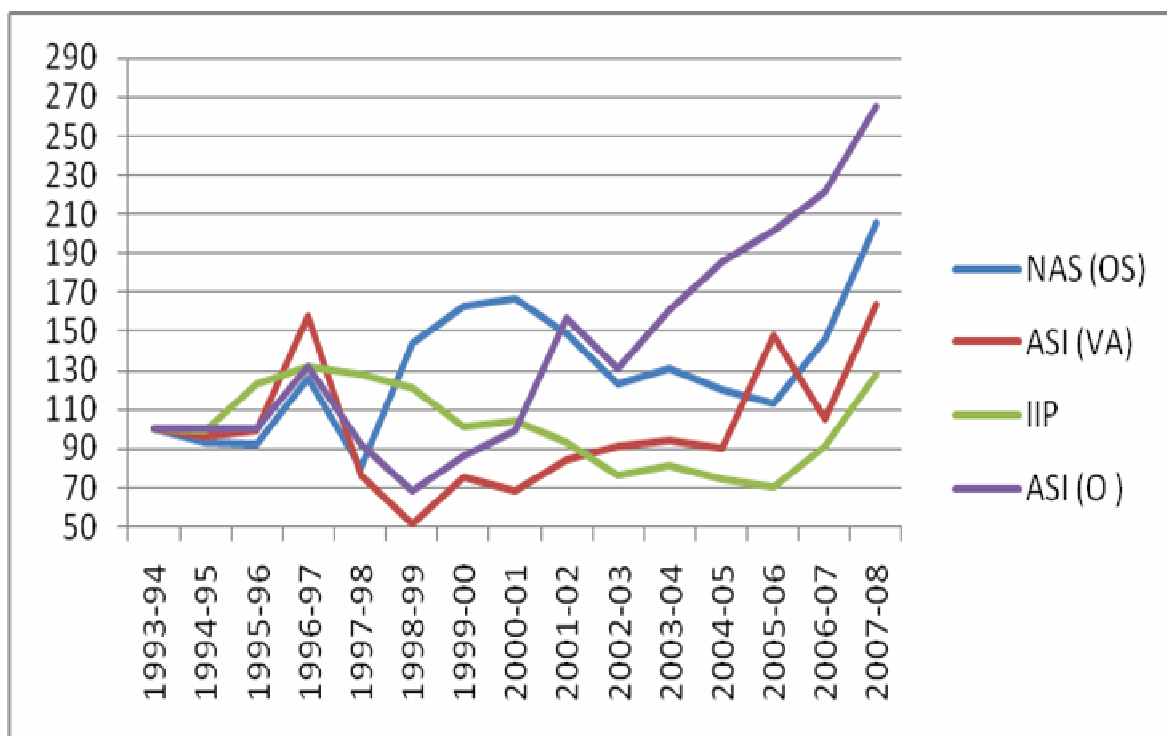
## Textiles and Apparels

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 109.2               | 108.4    | 101.9   | 109.5 | 105.2    | 9.2                                      | 8.4      | 1.9     | 9.5  | 5.2      |
| 1995-96 | 91.8                | 93.9     | 119.3   | 114.6 | 103.5    | -16.0                                    | -13.3    | 17.0    | 4.7  | -1.6     |
| 1996-97 | 118.6               | 111.7    | 131.5   | 122.7 | 123.9    | 29.3                                     | 18.9     | 10.2    | 7.1  | 19.7     |
| 1997-98 | 124.4               | 120.4    | 142.3   | 150.0 | 130.8    | 4.9                                      | 7.8      | 8.2     | 22.2 | 5.6      |
| 1998-99 | 114.3               | 117.8    | 136.6   | 140.1 | 122.0    | -8.1                                     | -2.2     | -4.0    | -6.6 | -6.7     |
| 1999-00 | 123.3               | 127.5    | 145.6   | 161.4 | 130.3    | 7.9                                      | 8.2      | 6.6     | 15.2 | 6.8      |
| 2000-01 | 132.5               | 131.5    | 151.3   | 169.1 | 141.5    | 7.5                                      | 3.1      | 3.9     | 4.7  | 8.6      |
| 2001-02 | 128.5               | 115.5    | 152.4   | 152.6 | 135.5    | -3.1                                     | -12.2    | 0.7     | -9.7 | -4.3     |
| 2002-03 | 137.1               | 127.6    | 158.1   | 164.4 | 146.0    | 6.7                                      | 10.5     | 3.8     | 7.7  | 7.7      |
| 2003-04 | 135.4               | 123.4    | 157.7   | 163.7 | 143.8    | -1.3                                     | -3.3     | -0.2    | -0.4 | -1.5     |
| 2004-05 | 151.1               | 137.7    | 172.4   | 187.3 | 161.4    | 11.6                                     | 11.6     | 9.3     | 14.4 | 12.2     |
| 2005-06 | 165.9               | 174.5    | 186.2   | 227.6 | 178.1    | 9.8                                      | 26.8     | 8.0     | 21.5 | 10.3     |
| 2006-07 | 184.2               | 216.7    | 206.4   | 283.8 | 197.8    | 11.0                                     | 24.1     | 10.9    | 24.7 | 11.1     |
| 2007-08 | 191.4               | 222.3    | 216.5   | 288.4 | 204.9    | 3.9                                      | 2.6      | 4.9     | 1.6  | 3.6      |



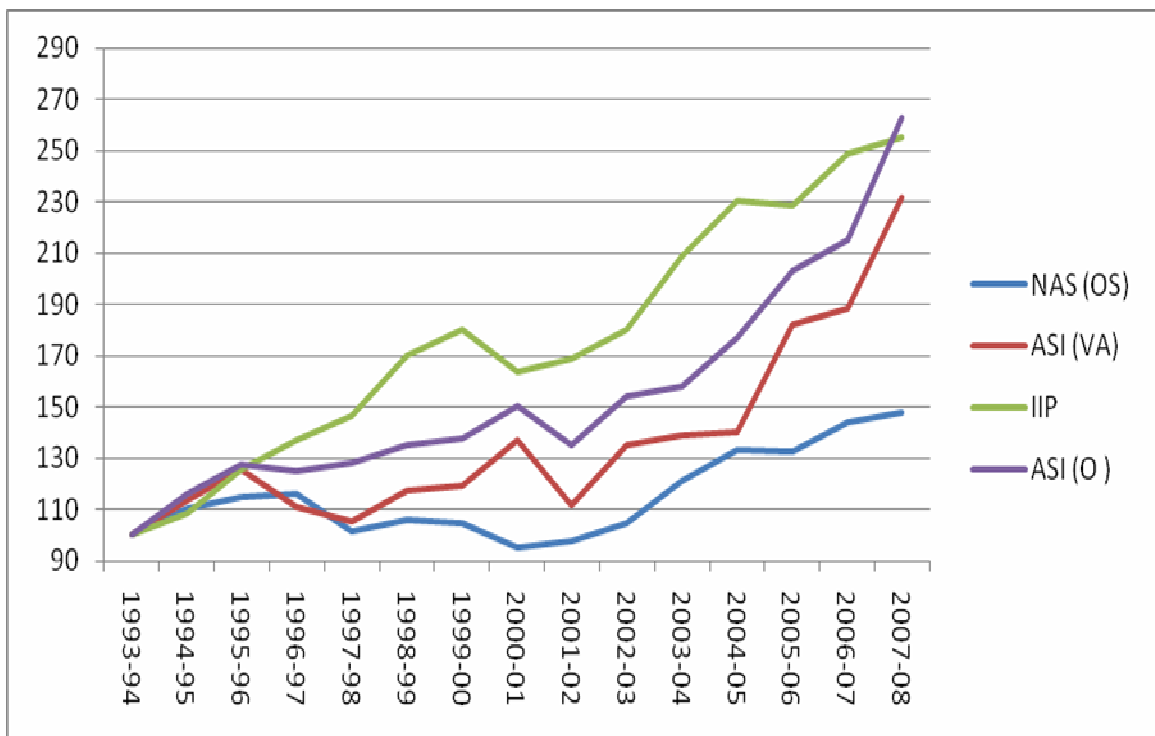
### Wood and Wood Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |       |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|-------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP   | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |       |          |
| 1994-95 | 93.6                | 96.7     | 99.3    | 100.5 | 99.0     | -6.4                                     | -3.3     | -0.7    | 0.5   | -1.0     |
| 1995-96 | 91.9                | 99.1     | 123.2   | 100.3 | 121.3    | -1.8                                     | 2.5      | 24.1    | -0.2  | 22.6     |
| 1996-97 | 126.4               | 158.2    | 131.9   | 131.9 | 131.6    | 37.5                                     | 59.7     | 7.0     | 31.6  | 8.4      |
| 1997-98 | 80.8                | 76.7     | 128.5   | 92.0  | 125.6    | -36.0                                    | -51.5    | -2.6    | -30.2 | -4.5     |
| 1998-99 | 143.5               | 52.1     | 121.0   | 68.5  | 122.3    | 77.6                                     | -32.1    | -5.8    | -25.6 | -2.6     |
| 1999-00 | 162.8               | 75.0     | 101.4   | 86.1  | 105.1    | 13.4                                     | 44.1     | -16.2   | 25.7  | -14.1    |
| 2000-01 | 167.3               | 68.9     | 104.3   | 98.8  | 108.0    | 2.8                                      | -8.1     | 2.8     | 14.7  | 2.8      |
| 2001-02 | 148.9               | 84.2     | 92.8    | 156.7 | 96.2     | -11.0                                    | 22.1     | -10.9   | 58.6  | -11.0    |
| 2002-03 | 122.7               | 91.2     | 76.5    | 130.8 | 79.2     | -17.6                                    | 8.3      | -17.6   | -16.6 | -17.6    |
| 2003-04 | 131.1               | 94.8     | 81.7    | 160.5 | 84.6     | 6.9                                      | 4.0      | 6.9     | 22.7  | 6.9      |
| 2004-05 | 119.9               | 90.8     | 74.8    | 185.7 | 77.4     | -8.5                                     | -4.2     | -8.5    | 15.7  | -8.5     |
| 2005-06 | 113.1               | 147.7    | 70.5    | 201.2 | 73.0     | -5.7                                     | 62.6     | -5.7    | 8.4   | -5.7     |
| 2006-07 | 146.0               | 105.2    | 91.0    | 221.2 | 94.3     | 29.1                                     | -28.7    | 29.1    | 9.9   | 29.1     |
| 2007-08 | 205.2               | 164.1    | 127.9   | 265.2 | 132.5    | 40.5                                     | 56.0     | 40.5    | 19.9  | 40.5     |



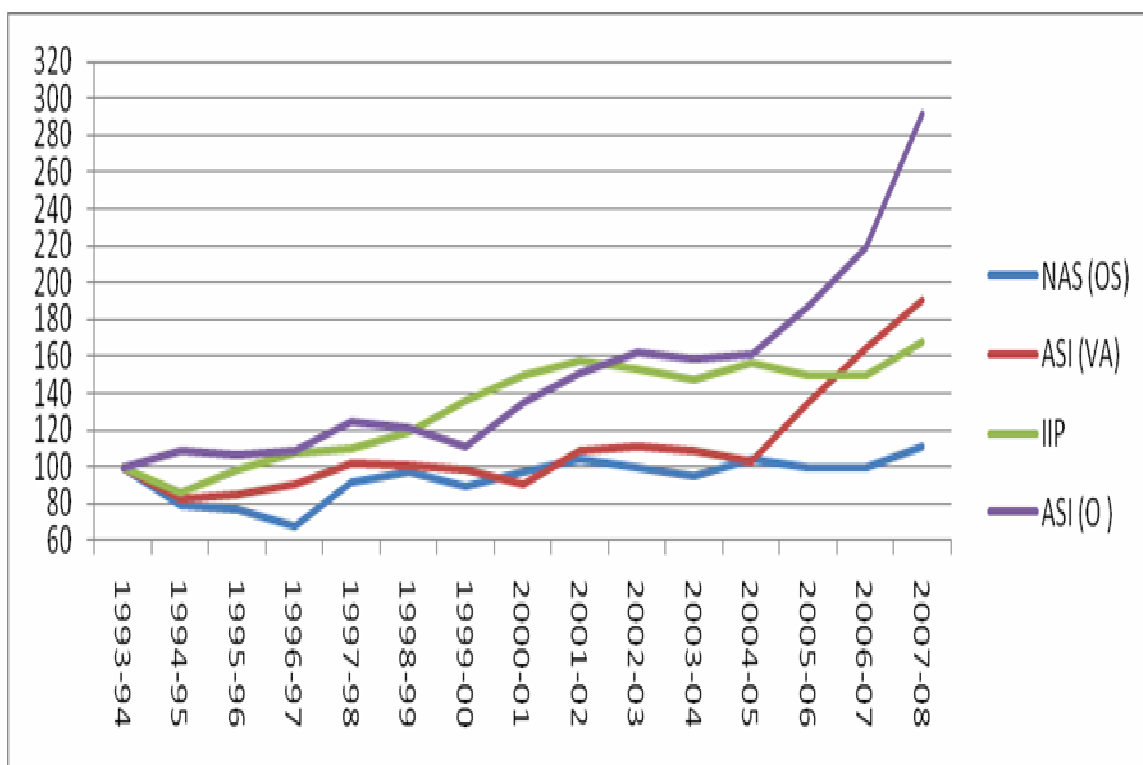
## Paper and Paper Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 110.2               | 113.3    | 108.6   | 115.9 | 109.8    | 10.2                                     | 13.3     | 8.6     | 15.9 | 9.8      |
| 1995-96 | 114.5               | 125.3    | 125.5   | 127.6 | 117.5    | 3.9                                      | 10.6     | 15.6    | 10.1 | 7.0      |
| 1996-97 | 116.3               | 111.1    | 136.9   | 124.8 | 121.9    | 1.5                                      | -11.3    | 9.1     | -2.2 | 3.7      |
| 1997-98 | 101.6               | 105.2    | 146.4   | 128.0 | 113.8    | -12.6                                    | -5.3     | 6.9     | 2.6  | -6.6     |
| 1998-99 | 106.0               | 117.4    | 169.8   | 135.2 | 123.4    | 4.3                                      | 11.6     | 16.0    | 5.6  | 8.4      |
| 1999-00 | 104.5               | 119.4    | 180.5   | 137.4 | 125.2    | -1.5                                     | 1.7      | 6.3     | 1.7  | 1.4      |
| 2000-01 | 94.9                | 136.9    | 164.0   | 150.2 | 113.7    | -9.1                                     | 14.6     | -9.2    | 9.3  | -9.2     |
| 2001-02 | 97.8                | 111.9    | 169.0   | 135.4 | 117.1    | 3.0                                      | -18.2    | 3.0     | -9.9 | 3.0      |
| 2002-03 | 104.4               | 135.0    | 180.5   | 153.9 | 125.1    | 6.8                                      | 20.6     | 6.8     | 13.7 | 6.8      |
| 2003-04 | 121.1               | 138.8    | 208.7   | 158.2 | 145.0    | 15.9                                     | 2.8      | 15.6    | 2.8  | 15.9     |
| 2004-05 | 133.5               | 140.3    | 230.7   | 177.2 | 159.9    | 10.3                                     | 1.1      | 10.5    | 12.0 | 10.3     |
| 2005-06 | 132.3               | 182.2    | 228.6   | 203.3 | 158.5    | -0.9                                     | 29.8     | -0.9    | 14.7 | -0.9     |
| 2006-07 | 143.8               | 188.6    | 248.6   | 215.2 | 172.3    | 8.7                                      | 3.6      | 8.7     | 5.9  | 8.7      |
| 2007-08 | 147.7               | 231.4    | 255.3   | 262.8 | 177.0    | 2.7                                      | 22.7     | 2.7     | 22.1 | 2.7      |



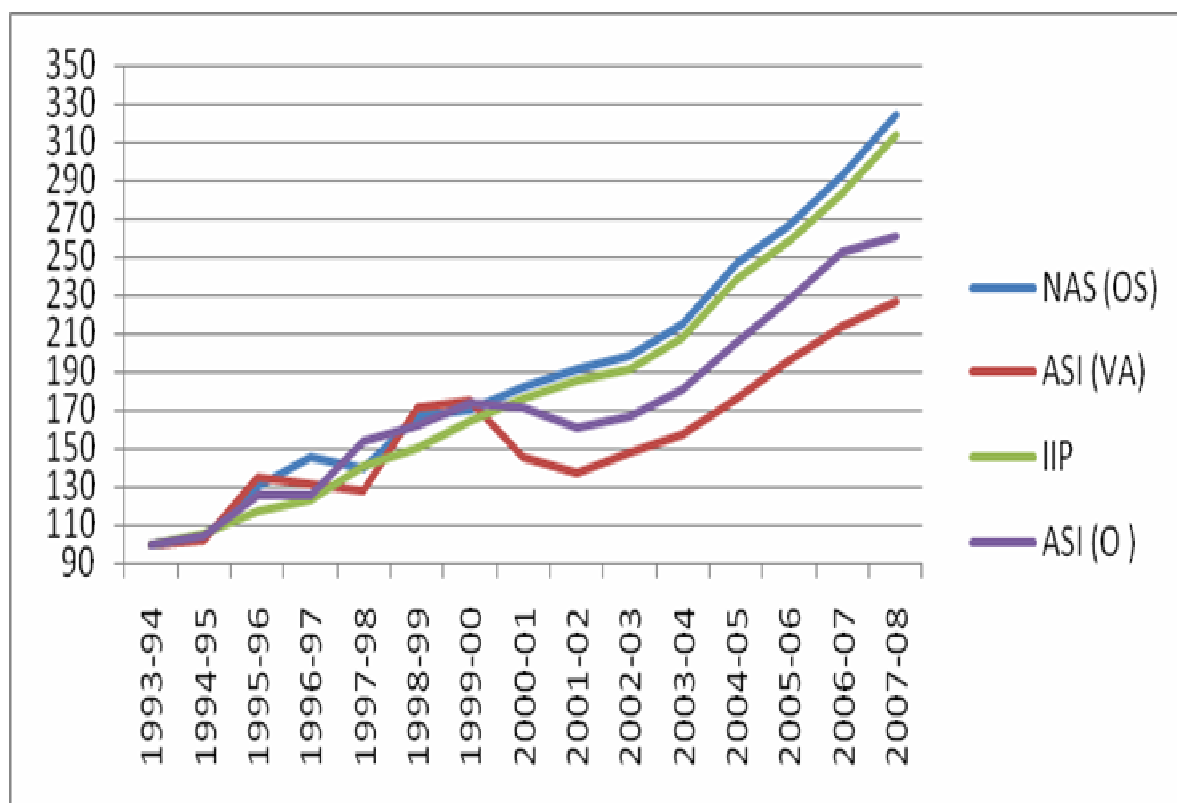
### Leather and Leather Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 79.4                | 82.4     | 86.6    | 108.5 | 83.8     | -20.6                                    | -17.6    | -13.5   | 8.5  | -16.2    |
| 1995-96 | 76.5                | 85.3     | 98.5    | 106.8 | 90.0     | -3.7                                     | 3.5      | 13.8    | -1.5 | 7.4      |
| 1996-97 | 68.3                | 90.4     | 107.8   | 108.2 | 92.6     | -10.6                                    | 6.0      | 9.5     | 1.3  | 2.9      |
| 1997-98 | 91.6                | 101.4    | 110.2   | 124.4 | 103.0    | 34.0                                     | 12.2     | 2.2     | 14.9 | 11.3     |
| 1998-99 | 97.9                | 100.2    | 119.1   | 121.5 | 110.9    | 6.8                                      | -1.1     | 8.1     | -2.3 | 7.7      |
| 1999-00 | 90.0                | 98.5     | 135.5   | 110.9 | 117.9    | -8.1                                     | -1.8     | 13.7    | -8.8 | 6.3      |
| 2000-01 | 97.4                | 90.4     | 150.0   | 135.1 | 127.7    | 8.3                                      | -8.2     | 10.7    | 21.9 | 8.3      |
| 2001-02 | 104.2               | 108.3    | 158.0   | 151.1 | 136.6    | 6.9                                      | 19.8     | 5.4     | 11.8 | 6.9      |
| 2002-03 | 99.8                | 110.9    | 152.9   | 161.9 | 130.8    | -4.2                                     | 2.4      | -3.2    | 7.2  | -4.2     |
| 2003-04 | 95.1                | 108.3    | 147.0   | 158.3 | 124.7    | -4.7                                     | -2.4     | -3.9    | -2.2 | -4.7     |
| 2004-05 | 103.7               | 103.2    | 156.9   | 161.1 | 135.9    | 9.0                                      | -4.7     | 6.8     | 1.7  | 9.0      |
| 2005-06 | 99.8                | 134.9    | 149.3   | 186.9 | 130.8    | -3.8                                     | 30.7     | -4.8    | 16.1 | -3.8     |
| 2006-07 | 99.7                | 164.0    | 150.2   | 219.5 | 130.7    | -0.1                                     | 21.5     | 0.6     | 17.4 | -0.1     |
| 2007-08 | 111.2               | 190.3    | 167.8   | 291.6 | 145.8    | 11.5                                     | 16.0     | 11.7    | 32.8 | 11.5     |



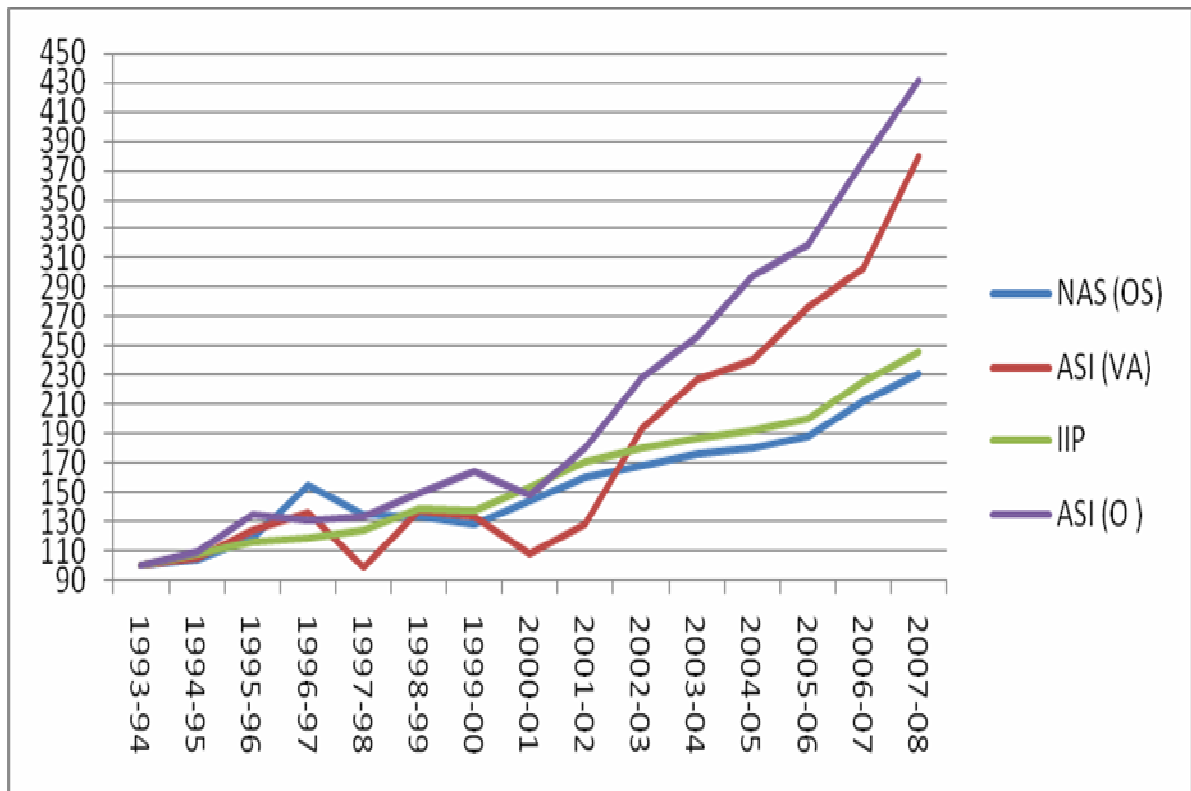
### Chemicals and Chemical Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 103.6               | 102.6    | 105.3   | 103.9 | 103.7    | 3.6                                      | 2.6      | 5.3     | 3.9  | 3.7      |
| 1995-96 | 130.6               | 134.9    | 117.1   | 125.6 | 129.5    | 26.1                                     | 31.5     | 11.2    | 20.9 | 24.9     |
| 1996-97 | 145.3               | 131.2    | 122.7   | 125.8 | 143.5    | 11.3                                     | -2.8     | 4.7     | 0.2  | 10.8     |
| 1997-98 | 139.6               | 128.2    | 140.4   | 153.2 | 139.6    | -4.0                                     | -2.2     | 14.4    | 21.8 | -2.7     |
| 1998-99 | 166.6               | 171.7    | 149.7   | 162.3 | 165.3    | 19.4                                     | 33.9     | 6.6     | 5.9  | 18.3     |
| 1999-00 | 170.2               | 175.4    | 164.6   | 173.8 | 169.7    | 2.1                                      | 2.2      | 9.9     | 7.1  | 2.7      |
| 2000-01 | 182.6               | 145.7    | 176.6   | 171.0 | 182.1    | 7.3                                      | -16.9    | 7.3     | -1.6 | 7.3      |
| 2001-02 | 191.3               | 137.8    | 185.0   | 160.9 | 190.8    | 4.8                                      | -5.4     | 4.8     | -5.9 | 4.8      |
| 2002-03 | 198.3               | 148.4    | 191.8   | 167.0 | 197.8    | 3.7                                      | 7.7      | 3.7     | 3.7  | 3.7      |
| 2003-04 | 214.4               | 157.0    | 208.4   | 180.3 | 213.9    | 8.1                                      | 5.8      | 8.6     | 8.0  | 8.1      |
| 2004-05 | 246.5               | 176.5    | 238.6   | 206.0 | 245.9    | 15.0                                     | 12.4     | 14.5    | 14.3 | 15.0     |
| 2005-06 | 267.1               | 195.7    | 258.5   | 227.8 | 266.4    | 8.4                                      | 10.9     | 8.3     | 10.6 | 8.4      |
| 2006-07 | 292.8               | 214.0    | 283.4   | 252.1 | 292.1    | 9.6                                      | 9.4      | 9.6     | 10.7 | 9.6      |
| 2007-08 | 323.7               | 227.2    | 313.4   | 261.2 | 322.8    | 10.5                                     | 6.1      | 10.6    | 3.6  | 10.5     |



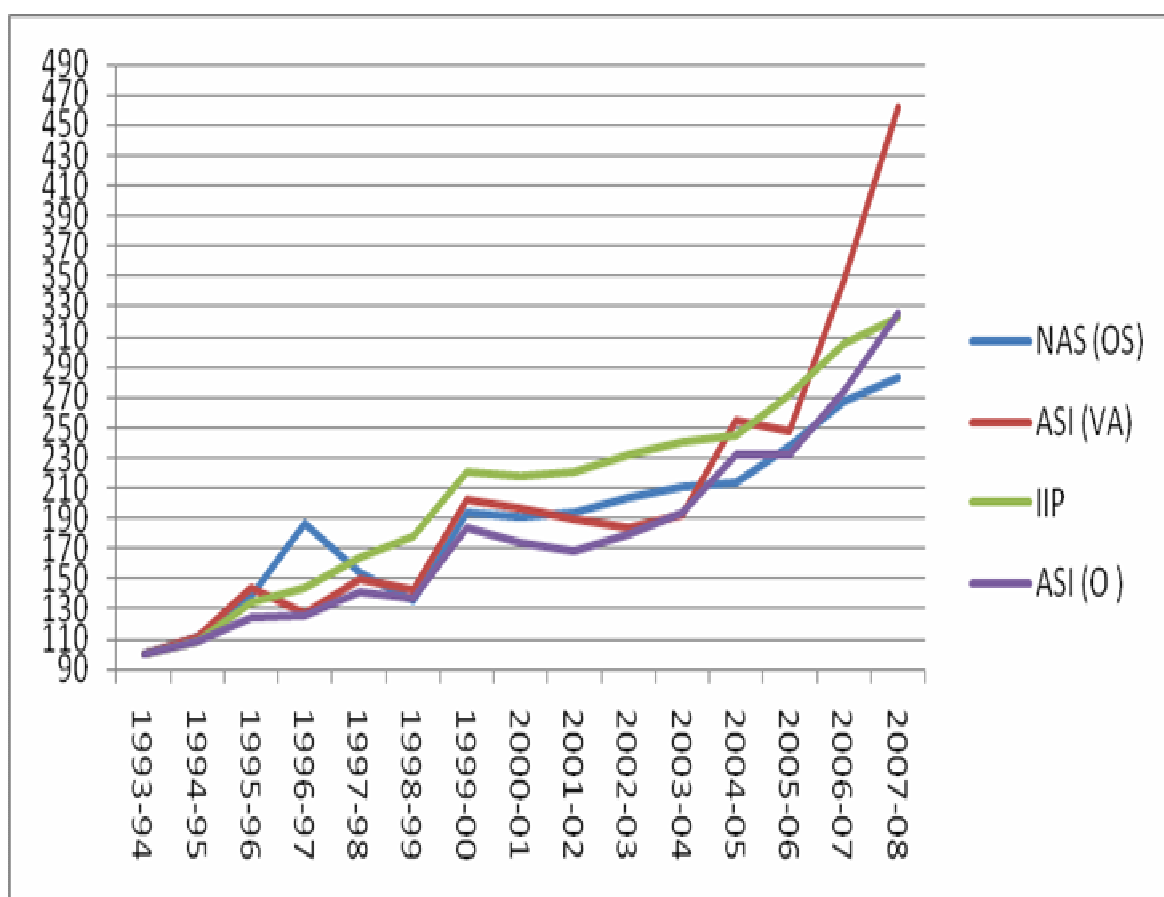
### Rubber, Plastic & Petroleum Products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 103.9               | 105.2    | 107.7   | 109.7 | 104.7    | 3.9                                      | 5.2      | 7.7     | 9.7  | 4.7      |
| 1995-96 | 118.7               | 123.8    | 116.1   | 134.5 | 118.1    | 14.2                                     | 17.7     | 7.8     | 22.6 | 12.8     |
| 1996-97 | 154.8               | 136.9    | 118.4   | 131.1 | 147.3    | 30.4                                     | 10.6     | 2.0     | -2.5 | 24.7     |
| 1997-98 | 134.8               | 99.0     | 124.6   | 133.7 | 132.7    | -12.9                                    | -27.7    | 5.2     | 2.0  | -9.9     |
| 1998-99 | 134.2               | 137.2    | 138.7   | 150.1 | 135.1    | -0.4                                     | 38.7     | 11.3    | 12.3 | 1.8      |
| 1999-00 | 128.3               | 133.4    | 137.2   | 164.7 | 130.1    | -4.4                                     | -2.8     | -1.0    | 9.7  | -3.7     |
| 2000-01 | 143.9               | 108.4    | 153.4   | 148.6 | 145.9    | 12.1                                     | -18.8    | 11.8    | -9.8 | 12.1     |
| 2001-02 | 159.9               | 128.8    | 170.4   | 180.8 | 162.1    | 11.1                                     | 18.9     | 11.1    | 21.7 | 11.1     |
| 2002-03 | 168.6               | 194.2    | 179.7   | 228.9 | 171.0    | 5.5                                      | 50.7     | 5.5     | 26.6 | 5.5      |
| 2003-04 | 176.1               | 227.2    | 187.7   | 256.6 | 178.6    | 4.4                                      | 17.0     | 4.4     | 12.1 | 4.4      |
| 2004-05 | 180.1               | 240.0    | 192.2   | 298.3 | 182.6    | 2.2                                      | 5.6      | 2.4     | 16.3 | 2.2      |
| 2005-06 | 187.9               | 277.1    | 200.5   | 318.8 | 190.5    | 4.3                                      | 15.5     | 4.3     | 6.9  | 4.3      |
| 2006-07 | 212.1               | 302.9    | 226.3   | 376.3 | 215.1    | 12.9                                     | 9.3      | 12.9    | 18.0 | 12.9     |
| 2007-08 | 230.9               | 379.8    | 246.4   | 432.0 | 234.2    | 8.9                                      | 25.4     | 8.9     | 14.8 | 8.9      |



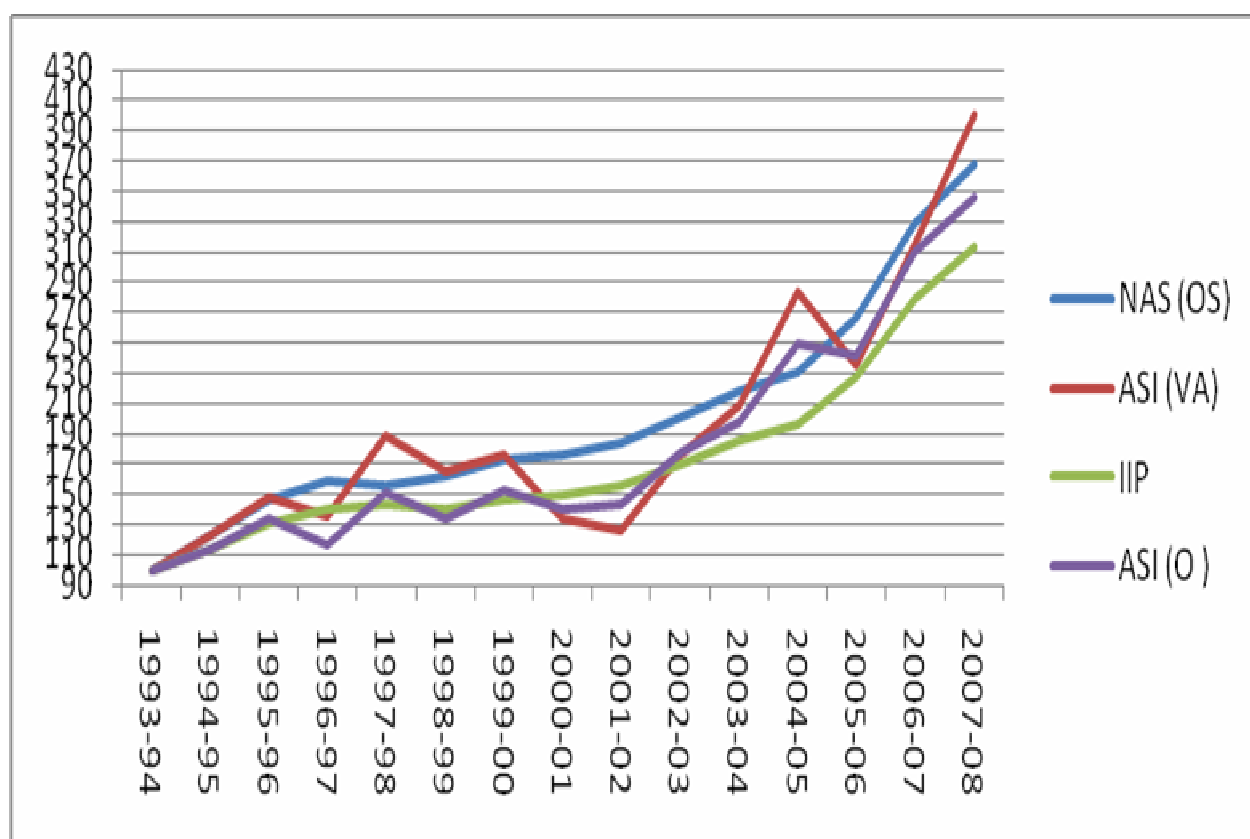
### Non metallic mineral products

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 111.1               | 111.5    | 108.3   | 108.1 | 110.0    | 11.1                                     | 11.5     | 8.3     | 8.1  | 10.0     |
| 1995-96 | 137.8               | 144.1    | 133.9   | 124.4 | 136.3    | 24.0                                     | 29.2     | 23.6    | 15.1 | 23.9     |
| 1996-97 | 186.9               | 126.6    | 144.5   | 126.0 | 170.7    | 35.7                                     | -12.2    | 7.9     | 1.3  | 25.2     |
| 1997-98 | 154.1               | 150.2    | 163.9   | 141.4 | 157.9    | -17.5                                    | 18.7     | 13.5    | 12.2 | -7.5     |
| 1998-99 | 135.9               | 142.2    | 177.5   | 137.7 | 151.8    | -11.8                                    | -5.3     | 8.3     | -2.6 | -3.8     |
| 1999-00 | 193.5               | 202.4    | 220.8   | 184.2 | 203.9    | 42.4                                     | 42.4     | 24.4    | 33.8 | 34.3     |
| 2000-01 | 191.2               | 196.4    | 218.2   | 173.9 | 201.5    | -1.2                                     | -3.0     | -1.2    | -5.6 | -1.2     |
| 2001-02 | 193.4               | 190.1    | 220.7   | 168.9 | 203.9    | 1.2                                      | -3.2     | 1.2     | -2.9 | 1.2      |
| 2002-03 | 203.3               | 184.4    | 232.0   | 179.9 | 214.3    | 5.1                                      | -3.0     | 5.1     | 6.5  | 5.1      |
| 2003-04 | 210.7               | 192.0    | 240.6   | 193.8 | 222.1    | 3.6                                      | 4.1      | 3.7     | 7.7  | 3.6      |
| 2004-05 | 214.1               | 254.6    | 244.3   | 232.7 | 225.6    | 1.6                                      | 32.6     | 1.5     | 20.1 | 1.6      |
| 2005-06 | 237.6               | 247.8    | 271.1   | 231.6 | 250.5    | 11.0                                     | -2.7     | 11.0    | -0.5 | 11.0     |
| 2006-07 | 268.0               | 347.9    | 305.8   | 275.3 | 282.5    | 12.8                                     | 40.4     | 12.8    | 18.9 | 12.8     |
| 2007-08 | 283.3               | 461.5    | 323.2   | 326.0 | 298.6    | 5.7                                      | 32.7     | 5.7     | 18.4 | 5.7      |



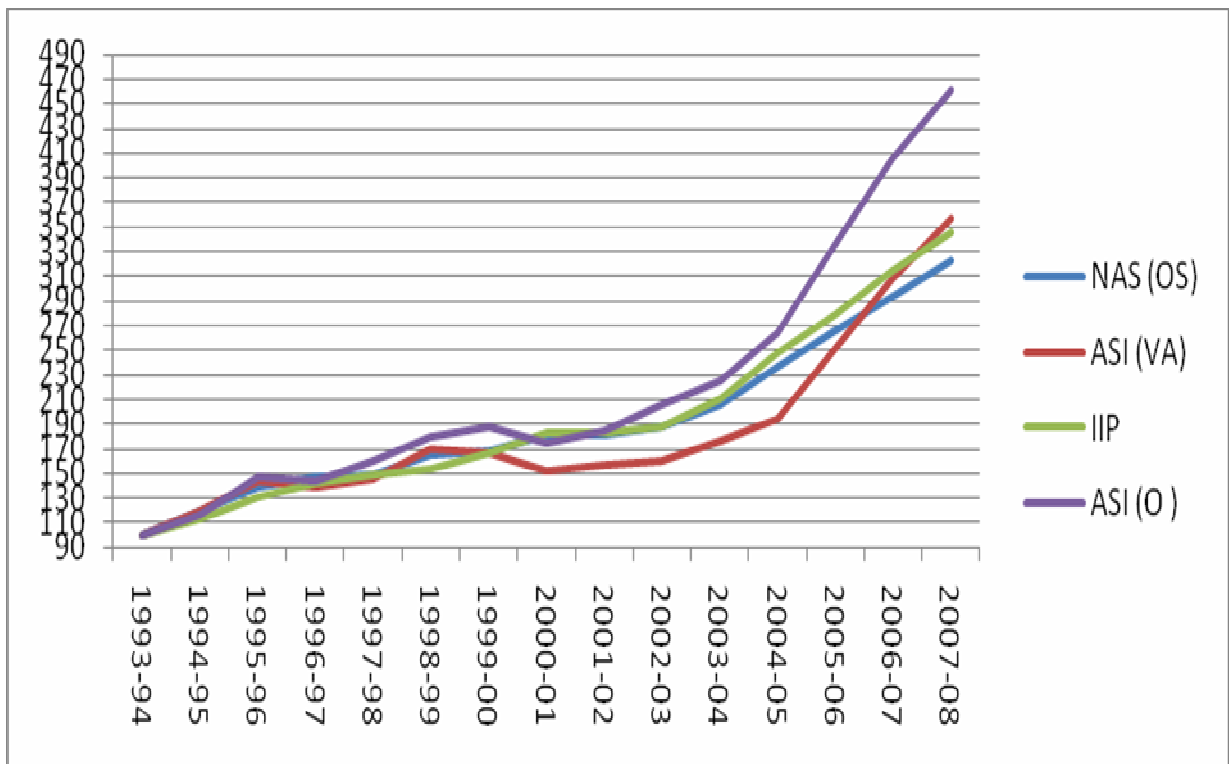
## Metals

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |       |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|-------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP   | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |       |          |
| 1994-95 | 123.4               | 122.7    | 113.1   | 113.0 | 121.7    | 23.4                                     | 22.7     | 13.1    | 13.0  | 21.7     |
| 1995-96 | 145.8               | 148.6    | 131.0   | 134.3 | 143.3    | 18.2                                     | 21.1     | 15.8    | 18.9  | 17.8     |
| 1996-97 | 158.8               | 135.4    | 139.8   | 117.5 | 155.5    | 8.9                                      | -8.9     | 6.7     | -12.5 | 8.5      |
| 1997-98 | 156.2               | 188.0    | 143.5   | 151.0 | 154.0    | -1.6                                     | 38.9     | 2.6     | 28.5  | -1.0     |
| 1998-99 | 162.6               | 165.6    | 139.9   | 134.6 | 158.7    | 4.1                                      | -11.9    | -2.5    | -10.9 | 3.0      |
| 1999-00 | 172.8               | 176.1    | 146.9   | 152.2 | 168.3    | 6.3                                      | 6.3      | 5.0     | 13.1  | 6.1      |
| 2000-01 | 176.1               | 133.6    | 149.6   | 140.5 | 171.5    | 1.9                                      | -24.1    | 1.9     | -7.7  | 1.9      |
| 2001-02 | 183.5               | 125.8    | 156.0   | 143.3 | 178.8    | 4.3                                      | -5.9     | 4.3     | 1.9   | 4.3      |
| 2002-03 | 200.5               | 176.7    | 170.4   | 177.6 | 195.3    | 9.3                                      | 40.4     | 9.3     | 24.0  | 9.3      |
| 2003-04 | 218.7               | 208.0    | 186.0   | 197.4 | 213.0    | 9.1                                      | 17.8     | 9.2     | 11.1  | 9.1      |
| 2004-05 | 230.7               | 283.9    | 196.1   | 249.3 | 224.7    | 5.5                                      | 36.5     | 5.4     | 26.3  | 5.5      |
| 2005-06 | 267.1               | 235.3    | 227.0   | 242.0 | 260.2    | 15.8                                     | -17.1    | 15.8    | -2.9  | 15.8     |
| 2006-07 | 328.1               | 314.6    | 278.9   | 310.8 | 319.7    | 22.8                                     | 33.7     | 22.8    | 28.4  | 22.8     |
| 2007-08 | 367.9               | 401.2    | 312.7   | 345.4 | 358.4    | 12.1                                     | 27.5     | 12.1    | 11.1  | 12.1     |



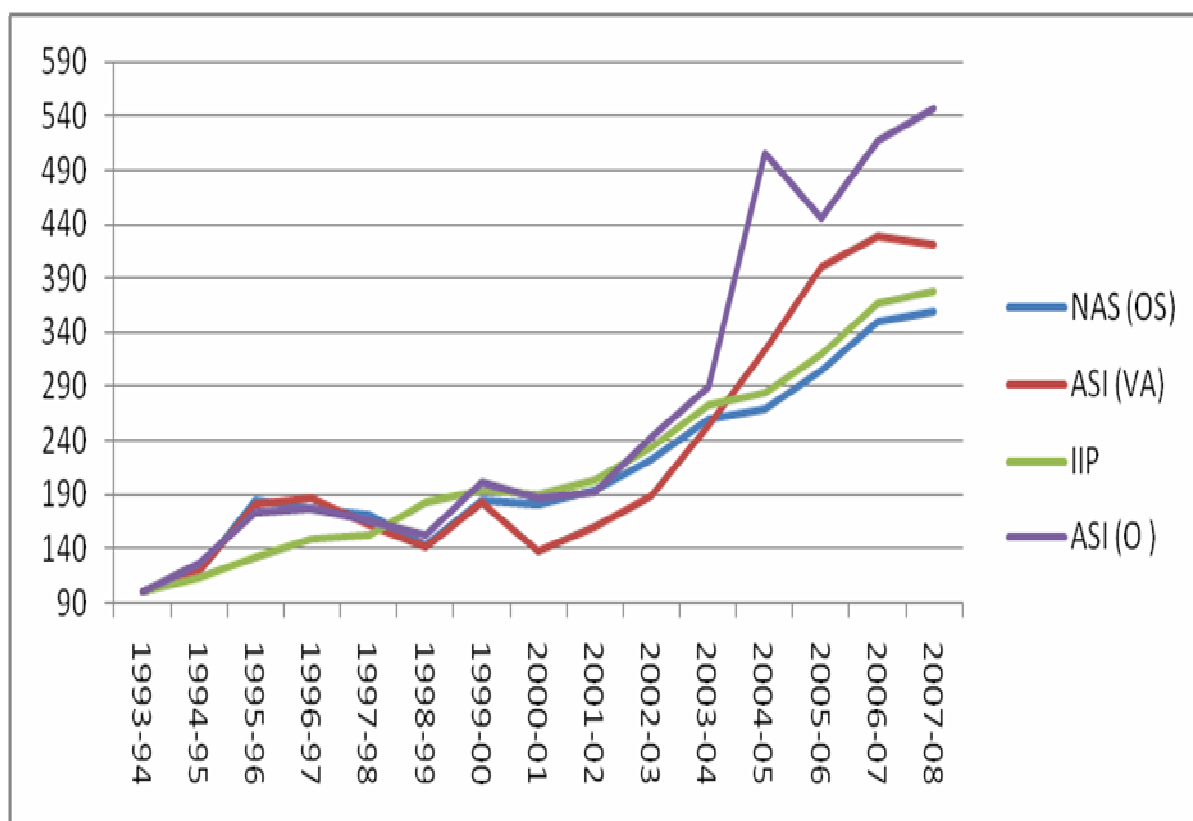
### Metal products & Machinery

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |      |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP  | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |      |          |
| 1994-95 | 118.9               | 119.9    | 112.7   | 117.0 | 115.3    | 18.9                                     | 19.9     | 12.7    | 17.0 | 15.3     |
| 1995-96 | 139.5               | 144.1    | 130.4   | 146.9 | 132.9    | 17.3                                     | 20.2     | 15.7    | 25.5 | 15.3     |
| 1996-97 | 147.8               | 139.0    | 142.4   | 143.5 | 141.1    | 6.0                                      | -3.5     | 9.2     | -2.3 | 6.2      |
| 1997-98 | 149.3               | 146.2    | 149.0   | 160.8 | 147.2    | 1.0                                      | 5.2      | 4.6     | 12.1 | 4.3      |
| 1998-99 | 164.6               | 169.6    | 154.6   | 179.6 | 160.3    | 10.3                                     | 16.0     | 3.8     | 11.7 | 8.9      |
| 1999-00 | 168.1               | 167.3    | 167.2   | 187.6 | 162.0    | 2.1                                      | -1.3     | 8.2     | 4.4  | 1.1      |
| 2000-01 | 181.0               | 153.0    | 182.5   | 175.7 | 174.7    | 7.7                                      | -8.5     | 9.1     | -6.3 | 7.8      |
| 2001-02 | 182.0               | 157.2    | 183.5   | 184.8 | 174.7    | 0.6                                      | 2.8      | 0.6     | 5.2  | 0.0      |
| 2002-03 | 187.7               | 159.8    | 187.3   | 205.2 | 181.1    | 3.1                                      | 1.6      | 2.0     | 11.1 | 3.7      |
| 2003-04 | 206.4               | 176.0    | 211.0   | 225.9 | 199.2    | 9.9                                      | 10.1     | 12.7    | 10.1 | 10.0     |
| 2004-05 | 236.6               | 193.9    | 248.2   | 263.7 | 229.5    | 14.7                                     | 10.2     | 17.6    | 16.7 | 15.2     |
| 2005-06 | 266.4               | 250.9    | 278.7   | 335.9 | 259.5    | 12.6                                     | 29.4     | 12.3    | 27.4 | 13.1     |
| 2006-07 | 294.2               | 307.7    | 314.3   | 406.4 | 287.6    | 10.5                                     | 22.6     | 12.8    | 21.0 | 10.8     |
| 2007-08 | 322.1               | 357.1    | 346.4   | 461.1 | 317.0    | 9.5                                      | 16.0     | 10.2    | 13.4 | 10.2     |



### Transport and Equipments

|         | Index (1993-94=100) |          |         |       |          | Average Annual Rate of Growth (per cent) |          |         |       |          |
|---------|---------------------|----------|---------|-------|----------|--|----------|---------|-------|----------|
|         | NAS (OS)            | ASI (VA) | ASI-(O) | IIP   | NAS (TM) | NAS (OS)                                 | ASI (VA) | ASI-(O) | IIP   | NAS (TM) |
| 1993-94 | 100.0               | 100.0    | 100.0   | 100.0 | 100.0    |  |          |         |       |          |
| 1994-95 | 119.8               | 118.7    | 112.9   | 125.9 | 119.0    | 19.8                                     | 18.7     | 12.9    | 25.9  | 19.0     |
| 1995-96 | 184.2               | 180.8    | 132.5   | 174.5 | 178.7    | 53.8                                     | 52.4     | 17.3    | 38.6  | 50.1     |
| 1996-97 | 177.0               | 187.5    | 149.1   | 177.9 | 174.0    | -3.9                                     | 3.7      | 12.6    | 2.0   | -2.6     |
| 1997-98 | 171.0               | 163.3    | 152.9   | 165.3 | 169.1    | -3.4                                     | -12.9    | 2.5     | -7.1  | -2.8     |
| 1998-99 | 143.3               | 142.6    | 183.6   | 152.9 | 147.6    | -16.2                                    | -12.7    | 20.1    | -7.5  | -12.7    |
| 1999-00 | 184.7               | 182.1    | 194.1   | 201.2 | 185.7    | 28.8                                     | 27.7     | 5.7     | 31.6  | 25.8     |
| 2000-01 | 181.1               | 138.7    | 190.3   | 186.0 | 182.1    | -1.9                                     | -23.9    | -1.9    | -7.5  | -1.9     |
| 2001-02 | 193.4               | 160.3    | 203.3   | 192.9 | 194.5    | 6.8                                      | 15.6     | 6.8     | 3.7   | 6.8      |
| 2002-03 | 221.6               | 188.7    | 232.9   | 242.5 | 222.8    | 14.6                                     | 17.8     | 14.6    | 25.7  | 14.6     |
| 2003-04 | 259.2               | 255.1    | 272.6   | 290.2 | 260.6    | 16.9                                     | 35.1     | 17.1    | 19.6  | 16.9     |
| 2004-05 | 270.0               | 323.1    | 283.7   | 506.4 | 271.5    | 4.2                                      | 26.7     | 4.1     | 74.5  | 4.2      |
| 2005-06 | 304.3               | 399.9    | 319.7   | 445.4 | 305.9    | 12.7                                     | 23.8     | 12.7    | -12.1 | 12.7     |
| 2006-07 | 350.0               | 429.0    | 367.7   | 517.7 | 351.9    | 15.0                                     | 7.3      | 15.0    | 16.3  | 15.0     |
| 2007-08 | 360.1               | 421.7    | 378.4   | 547.9 | 362.0    | 2.9                                      | -1.7     | 2.9     | 5.8   | 2.9      |



**Annex 2****Number of respondents for the products for which DIPP is the source**

| <b>Name of the product</b>                            | <b>2007</b> | <b>2006</b> | <b>2005</b> | <b>2004</b> | <b>2003</b> | <b>2002</b> | <b>2001</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Auto ancillary & parts                                | 230         | 234         | 231         | 227         | 224         | 214         | 211         |
| Paper & paper board                                   | 222         | 222         | 221         | 218         | 211         | 208         | 202         |
| Cement all kinds                                      | 181         | 181         | 181         | 181         | 181         | 181         | 181         |
| Oxygen  | 104         | 102         | 105         | 106         | 103         | 101         | 104         |
| Industrial machinery                                  | 100         | 100         | 100         | 100         | 101         | 99          | 101         |
| Sulphuric acid  | 100         | 100         | 98          | 97          | 97          | 95          | 93          |
| Rectified spirit                                      | 95          | 93          | 90          | 88          | 87          | 79          | 75          |
| Machine tools   | 87          | 87          | 88          | 87          | 86          | 83          | 82          |
| Wheat flour/maida                                     | 83          | 91          | 91          | 81          | 75          | 67          | 66          |
| Steel castings  | 57          | 57          | 57          | 55          | 54          | 51          | 54          |
| Newsprint bleached                                    | 55          | 53          | 52          | 46          | 43          | 35          | 32          |
| D.a. gases  | 60          | 58          | 60          | 59          | 59          | 57          | 60          |
| Stamping & forgings                                   | 56          | 55          | 56          | 55          | 55          | 52          | 59          |
| Phosphatic fertilizers                                | 52          | 52          | 52          | 52          | 52          | 52          | 50          |
| Caustic soda  | 45          | 44          | 44          | 44          | 44          | 42          | 41          |
| Chlorine  | 44          | 43          | 43          | 43          | 42          | 42          | 41          |
| Valves (all kinds)                                    | 45          | 44          | 45          | 44          | 41          | 39          | 39          |
| Power driven pumps                                    | 46          | 48          | 49          | 48          | 45          | 39          | 41          |
| Nitrogenous fertilizers                               | 42          | 42          | 42          | 42          | 42          | 43          | 42          |
| Milk powder of all kind                               | 40          | 42          | 41          | 41          | 40          | 37          | 29          |
| Finished leather                                      | 40          | 39          | 36          | 36          | 36          | 33          | 32          |
| C.I. castings   | 42          | 44          | 42          | 45          | 40          | 32          | 30          |
| Leather footwear western type                         | 32          | 31          | 27          | 27          | 27          | 22          | 22          |
| Indian made foreign liquor                            | 31          | 27          | 26          | 27          | 26          | 20          | 17          |
| Switchgear (circuit breakers)                         | 31          | 30          | 31          | 31          | 31          | 26          | 25          |
| Biscuits  | 30          | 28          | 28          | 26          | 24          | 12          | 12          |
| Paints, enamel & varnishes                            | 34          | 33          | 32          | 32          | 29          | 26          | 23          |
| Asbestos cement sheets and accessories                | 28          | 26          | 24          | 22          | 21          | 20          | 20          |
| Power dist. Transfmrs. Including special transformers | 31          | 32          | 32          | 29          | 24          | 22          | 22          |
| Country liquor  | 27          | 26          | 26          | 24          | 25          | 21          | 19          |
| Beer  | 27          | 26          | 26          | 27          | 26          | 24          | 25          |
| Soaps all kind  | 27          | 28          | 28          | 27          | 25          | 22          | 22          |
| Electric generators (including alternators)           | 25          | 26          | 25          | 24          | 23          | 18          | 19          |
| Electric motors                                       | 24          | 24          | 25          | 27          | 27          | 25          | 25          |
| Glazed tiles/ceramic tiles                            | 27          | 27          | 24          | 23          | 23          | 19          | 19          |
| Industrial explosives (n.g.type)                      | 23          | 23          | 21          | 20          | 20          | 19          | 19          |

|  |    |    |    |    |    |    |    |
|--|----|----|----|----|----|----|----|
| Detergents all kinds                             | 25 | 25 | 26 | 25 | 25 | 23 | 24 |
| Fatty acids                                      | 21 | 20 | 20 | 20 | 20 | 19 | 19 |
| Soft drink & soda                                | 21 | 21 | 21 | 22 | 22 | 20 | 22 |
| LPG cylinders                                    | 21 | 22 | 20 | 18 | 19 | 17 | 17 |
| Computer system and its peripherals              | 21 | 20 | 20 | 20 | 19 | 18 | 17 |
| Shoe uppers                                      | 21 | 20 | 19 | 20 | 16 | 11 | 10 |
| Synthetic resins                                 | 20 | 21 | 21 | 19 | 19 | 16 | 16 |
| Leather garments                                 | 21 | 21 | 19 | 19 | 19 | 13 | 16 |
| Material handling Equip./wagon tippler/conveyor  | 23 | 22 | 21 | 21 | 20 | 19 | 18 |
| Acetic acid                                      | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Telecommunication cables                         | 20 | 20 | 20 | 21 | 20 | 19 | 20 |
| PVC/PICL   | 23 | 24 | 23 | 21 | 20 | 16 | 17 |
| Welding electrodes                               | 20 | 20 | 20 | 22 | 20 | 20 | 20 |
| Diesel engines (stationery type)                 | 20 | 20 | 20 | 21 | 21 | 20 | 19 |
| Control panels/boards/disks                      | 20 | 20 | 20 | 18 | 18 | 17 | 17 |
| Giant tyres                                      | 19 | 19 | 19 | 20 | 20 | 20 | 22 |
| T.V. receivers                                   | 16 | 17 | 17 | 16 | 14 | 10 | 13 |
| Tractor tyres                                    | 18 | 18 | 18 | 19 | 19 | 19 | 20 |
| Storage batteries                                | 19 | 19 | 18 | 18 | 16 | 9  | 9  |
| Electric motors phase one                        | 20 | 19 | 17 | 18 | 17 | 15 | 15 |
| Motor starters and contractors                   | 19 | 21 | 20 | 20 | 18 | 17 | 16 |
| Medical and surgical instruments                 | 18 | 18 | 18 | 18 | 18 | 16 | 16 |
| Aluminium extrusions                             | 18 | 18 | 18 | 17 | 17 | 16 | 15 |
| Complete tractors                                | 17 | 17 | 17 | 16 | 15 | 15 | 14 |
| Commercial vehicles                              | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Boilers  | 17 | 17 | 17 | 15 | 14 | 15 | 14 |
| Bottles/bottle wares                             | 17 | 17 | 18 | 18 | 17 | 17 | 16 |
| Protection system/switch board/switch gears etc. | 17 | 16 | 15 | 17 | 15 | 11 | 11 |
| Plywood commercial                               | 18 | 20 | 20 | 20 | 21 | 14 | 14 |
| Laminates (decorative)                           | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Ball & roller & needle bearings                  | 15 | 15 | 16 | 16 | 15 | 14 | 14 |
| Process control instruments                      | 17 | 17 | 17 | 17 | 18 | 16 | 16 |
| Gear boxes                                       | 20 | 20 | 20 | 20 | 18 | 13 | 13 |
| Formaldehyde                                     | 16 | 16 | 16 | 16 | 16 | 16 | 15 |
| Cigarettes                                       | 15 | 15 | 15 | 15 | 15 | 15 | 14 |
| Bolts & nuts                                     | 15 | 16 | 16 | 15 | 15 | 15 | 16 |
| GI lamps   | 15 | 15 | 15 | 15 | 13 | 13 | 12 |
| Glycerine  | 17 | 15 | 15 | 14 | 14 | 15 | 15 |
| Polyester fibre                                  | 14 | 13 | 13 | 13 | 13 | 13 | 13 |
| Tin metal containers                             | 15 | 15 | 15 | 14 | 14 | 15 | 17 |

|  |    |    |    |    |    |    |    |
|--|----|----|----|----|----|----|----|
| Refrigerators (domestic)                         | 14 | 14 | 13 | 13 | 11 | 8  | 8  |
| Fluorescent tubes                                | 14 | 14 | 13 | 14 | 12 | 12 | 13 |
| Monocrotophos                                    | 14 | 14 | 14 | 13 | 12 | 10 | 11 |
| Washing/ laundry machines                        | 14 | 12 | 12 | 12 | 10 | 5  | 4  |
| Insulated cables & wires of all kinds            | 14 | 14 | 13 | 13 | 13 | 12 | 12 |
| Organic pigments                                 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Reactive dyes                                    | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Matches  | 14 | 14 | 17 | 15 | 12 | 6  | 4  |
| Two wheeler tyres                                | 13 | 12 | 12 | 12 | 12 | 11 | 11 |
| Electric fans of all kinds                       | 13 | 12 | 14 | 12 | 12 | 10 | 10 |
| Adhesives all types                              | 13 | 13 | 15 | 14 | 13 | 10 | 9  |
| Window type air conditioners                     | 11 | 10 | 10 | 9  | 9  | 7  | 5  |
| Laboratory & scientific instruments              | 13 | 13 | 13 | 12 | 12 | 12 | 12 |
| Giant tubes                                      | 12 | 12 | 12 | 13 | 13 | 13 | 13 |
| Cranes   | 14 | 12 | 12 | 11 | 11 | 11 | 9  |
| ACSR conductors                                  | 12 | 14 | 14 | 13 | 13 | 12 | 12 |
| Passenger cars                                   | 12 | 11 | 11 | 11 | 11 | 10 | 10 |
| Leather goods                                    | 10 | 10 | 12 | 10 | 8  | 7  | 4  |
| Fire works                                       | 16 | 20 | 20 | 14 | 10 | 8  | 8  |
| Aluminium wire rods                              | 11 | 11 | 10 | 10 | 9  | 9  | 9  |
| Air and gas compressors                          | 13 | 12 | 12 | 12 | 11 | 9  | 9  |
| Cutting tools (lathe tools, tool bits, milling ) | 11 | 11 | 11 | 11 | 11 | 12 | 12 |
| Winding wires                                    | 10 | 10 | 10 | 10 | 8  | 8  | 8  |
| Dry cells  | 11 | 11 | 12 | 12 | 11 | 11 | 10 |
| Scooter and mopeds                               | 11 | 11 | 11 | 12 | 12 | 12 | 12 |
| Motor cycles                                     | 11 | 11 | 11 | 10 | 10 | 9  | 9  |
| Wrist watches                                    | 11 | 11 | 11 | 11 | 10 | 10 | 10 |
| Stamping (lamination)                            | 12 | 12 | 12 | 12 | 11 | 10 | 10 |
| Furnaces all types                               | 11 | 11 | 12 | 9  | 8  | 6  | 6  |
| Chocolate  | 10 | 8  | 9  | 8  | 8  | 6  | 6  |
| Aluminium rolled products                        | 10 | 11 | 11 | 10 | 7  | 7  | 7  |
| Turbines (steam and hydro)                       | 10 | 10 | 10 | 9  | 9  | 9  | 8  |
| Telephone instruments                            | 10 | 11 | 11 | 10 | 10 | 9  | 9  |
| Hair oil/ ayurvedic hair oil                     | 11 | 9  | 11 | 7  | 5  | 4  | 3  |
| Contraceptives                                   | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Malted food                                      | 9  | 9  | 9  | 9  | 9  | 8  | 8  |
| Soda ash   | 10 | 10 | 9  | 9  | 9  | 8  | 8  |
| Toothpaste                                       | 11 | 8  | 8  | 5  | 3  | 4  | 4  |
| Carbon black                                     | 9  | 9  | 9  | 9  | 9  | 9  | 8  |
| Electrolytic capacitors                          | 9  | 9  | 10 | 10 | 10 | 10 | 11 |

|  |    |    |    |    |    |    |    |
|--|----|----|----|----|----|----|----|
| Springs  | 10 | 10 | 10 | 10 | 10 | 9  | 10 |
| Polished granite/ stone chips                      | 12 | 15 | 17 | 16 | 13 | 10 | 10 |
| Hydraulic machines/ hydraulic cylinders            | 8  | 8  | 9  | 9  | 9  | 8  | 6  |
| Auto lamps   | 10 | 10 | 11 | 10 | 8  | 10 | 8  |
| Pvc sheets (unsupported)                           | 9  | 9  | 9  | 9  | 9  | 9  | 6  |
| Ship building (including ship repairs.)            | 9  | 9  | 9  | 9  | 9  | 9  | 9  |
| Acetic anhydride                                   | 9  | 9  | 9  | 9  | 9  | 9  | 9  |
| Phthalic unhydride                                 | 8  | 8  | 8  | 8  | 8  | 8  | 8  |
| Synthetic rubber                                   | 9  | 10 | 10 | 10 | 6  | 6  | 6  |
| HDPE   | 6  | 6  | 6  | 6  | 6  | 5  | 4  |
| Ampicillin   | 8  | 8  | 8  | 8  | 8  | 8  | 7  |
| Rubber conveyer belting                            | 7  | 7  | 7  | 7  | 6  | 6  | 6  |
| Aluminium ingots                                   | 8  | 8  | 8  | 8  | 8  | 7  | 7  |
| Bicycles of all kind                               | 8  | 8  | 7  | 7  | 6  | 6  | 6  |
| Tape recorders                                     | 8  | 8  | 8  | 8  | 8  | 7  | 8  |
| Printing machinery                                 | 8  | 8  | 8  | 8  | 8  | 8  | 8  |
| Methanol   | 7  | 7  | 8  | 8  | 8  | 7  | 7  |
| Bicycle tyres                                      | 8  | 8  | 8  | 8  | 7  | 5  | 5  |
| Rubber footwear                                    | 7  | 7  | 7  | 7  | 7  | 7  | 6  |
| Drums & barrels                                    | 7  | 7  | 2  | 1  | 1  | 1  | 1  |
| Welded link chains                                 | 7  | 7  | 7  | 7  | 7  | 7  | 7  |
| Razor blades                                       | 7  | 7  | 7  | 7  | 7  | 7  | 8  |
| Refrigeration & air conditioning plants            | 7  | 7  | 8  | 7  | 6  | 6  | 7  |
| A.C. Single phase house service meters             | 7  | 7  | 7  | 7  | 7  | 7  | 7  |
| Bopp film  | 7  | 7  | 7  | 7  | 7  | 6  | 6  |
| Sealed compressors for air conditioning & regriger | 7  | 7  | 7  | 7  | 7  | 6  | 6  |
| Sulpha drugs                                       | 7  | 7  | 7  | 7  | 7  | 6  | 6  |
| Pressure cookers                                   | 7  | 8  | 7  | 7  | 6  | 6  | 6  |
| Monoblock pumps                                    | 7  | 7  | 6  | 6  | 6  | 6  | 6  |
| Phenol   | 6  | 6  | 6  | 6  | 6  | 6  | 5  |
| PVC resins   | 6  | 6  | 6  | 6  | 6  | 6  | 6  |
| Toothpowder  | 7  | 5  | 5  | 3  | 4  | 4  | 4  |
| Bicycle tubes                                      | 7  | 8  | 8  | 8  | 6  | 4  | 3  |
| Aluminium foils                                    | 8  | 8  | 8  | 8  | 6  | 5  | 4  |
| Spun pipes   | 6  | 6  | 6  | 6  | 6  | 5  | 5  |
| Power capacitors                                   | 7  | 8  | 7  | 7  | 6  | 6  | 7  |
| A.C. poly phase house service meters               | 7  | 7  | 7  | 7  | 7  | 6  | 6  |
| Agricultural implements                            | 7  | 8  | 8  | 8  | 8  | 6  | 6  |
| Linear alkyl benzene                               | 5  | 5  | 5  | 5  | 5  | 5  | 4  |

|  |   |    |    |    |   |   |   |
|--|---|----|----|----|---|---|---|
| Particle board                               | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| PVC pipes/tubes                              | 7 | 9  | 9  | 7  | 7 | 5 | 4 |
| Asbestos cement pressure building pipes      | 5 | 5  | 6  | 5  | 5 | 5 | 5 |
| Auto rickshaws                               | 5 | 5  | 6  | 6  | 5 | 5 | 5 |
| Alarm time pieces                            | 5 | 6  | 6  | 5  | 5 | 4 | 4 |
| Endosulfan                                   | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| H.T. insulators                              | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| Agarbathi                                    | 7 | 10 | 12 | 9  | 5 | 3 | 3 |
| Railway/ concrete sleeper                    | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| Diamond tools                                | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| Wheel mtd dump loaders                       | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| Corrugated boxes/cartons (all kinds)         | 6 | 7  | 9  | 11 | 8 | 3 | 2 |
| Ethylene                                     | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Ethylene glycol                              | 5 | 5  | 5  | 5  | 5 | 5 | 5 |
| Rubber hoses (other type)                    | 5 | 5  | 5  | 5  | 5 | 5 | 4 |
| LDPE   | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Optical whitening agents                     | 5 | 4  | 4  | 4  | 5 | 4 | 4 |
| Titanium dioxide                             | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Trimethoprin                                 | 4 | 4  | 4  | 4  | 4 | 3 | 3 |
| Cine film & x-ray films                      | 4 | 4  | 4  | 4  | 4 | 3 | 3 |
| Wire ropes                                   | 4 | 4  | 4  | 4  | 4 | 4 | 5 |
| T.v. picture tubes                           | 4 | 3  | 3  | 3  | 3 | 2 | 2 |
| Jeep type vehicles                           | 4 | 4  | 4  | 4  | 4 | 4 | 5 |
| Pulp rayon grade                             | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Parts & acces. (pump & compressor)           | 4 | 4  | 4  | 4  | 4 | 4 | 3 |
| Gelatine                                     | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Graphite electrodes and anodes               | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Aluminium collapsible tubes                  | 4 | 4  | 4  | 4  | 4 | 4 | 5 |
| Viscose staple fibre                         | 4 | 4  | 4  | 3  | 3 | 3 | 3 |
| Nylon tyre cord                              | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Azo dyes                                     | 4 | 4  | 4  | 4  | 4 | 4 | 4 |
| Leather footwear Indian type                 | 3 | 3  | 3  | 3  | 3 | 3 | 2 |
| Caprolactum                                  | 3 | 3  | 3  | 3  | 3 | 2 | 2 |
| Rubber chemicals                             | 3 | 3  | 3  | 3  | 3 | 3 | 3 |
| Copper metal (cathode)                       | 3 | 4  | 4  | 6  | 4 | 3 | 3 |
| Lifts  | 3 | 3  | 3  | 3  | 3 | 3 | 3 |
| Syringes (all types)                         | 3 | 3  | 3  | 3  | 3 | 3 | 1 |
| Metallic utensils excluding pressure cookers | 7 | 8  | 10 | 9  | 6 | 2 | 2 |
| Writing instruments                          | 4 | 4  | 4  | 5  | 4 | 1 | 1 |
| Photo film / roll film                       | 3 | 3  | 3  | 3  | 3 | 2 | 2 |

|                                      |      |      |      |      |      |      |      |
|--------------------------------------|------|------|------|------|------|------|------|
| Penicillin                           | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Typewriters                          | 3    | 3    | 3    | 3    | 3    | 3    | 4    |
| DMT                                  | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| PF moulding powder                   | 2    | 2    | 2    | 2    | 2    | 3    | 3    |
| Cooling towers                       | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Vitamin C                            | 2    | 2    | 2    | 2    | 2    | 2    | 1    |
| Vitamin A                            | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Well/off shore platforms             | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Dumper                               | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Viscose tyre cord                    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Sewing machines                      | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| Lighting, fitting & fixtures         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| High-explosive nitro-glycerene based | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| Calcium carbide                      | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| Total                                | 3933 | 3933 | 3920 | 3836 | 3697 | 3420 | 3377 |