

CHAPTER 12

TRANSPORT, STORAGE AND COMMUNICATION

Coverage

12.1 The economic activities covered in this sector are (i) transport by railways, (ii) transport by other means, namely, road transport (mechanised and non-mechanised), water transport (coastal, ocean and inland), air transport and services incidental to transport, (iii) storage, (iv) communication services rendered by Post & Tele-communication Departments and Overseas Communication Services. The budgets of the railways and communication services which are integral part of Central Government budget documents include allied activities which according to standard industrial classification should belong to respective sectors. Following this principle, railway workshops and railway manufacturing establishments like Chittaranjan Locomotive Works, Integral Coach Factory, Diesel Locomotive Works and Wheel & Axle Plant are excluded from railway transport and included in the `manufacturing` sector. Construction activity of the railways is also excluded and taken into account in the `construction` sector. Expenditure on education, medical & health services are also excluded here and included in `other services`. Similarly, the activities relating to post office savings bank, postal life insurance and telecommunication workshops are excluded from communication and included in `banking`, `insurance` and `manufacturing` sectors respectively.

Methodology and Source material

12.2 The output of transport, storage and communication services cover the value of the services which these sectors deliver to domestic producers, households and the rest of the world. Due to the nature of data available, the estimates of gross and net value added are prepared following the income approach.

Sources of Data

12.3 The principal sources of data for Railways and Communication are (i) Annual Report and Accounts and Annual Statistical Statements brought out by the Ministry of Railways (Railway Board), (ii) Budget Documents of the Central Government on Railways and Communication, and (iii) Annual Reports and Accounts of the Indian Posts & Telecommunication Departments. The major source of information in the case of Transport by other means and storage are (1) Population Census giving the estimated number of workers, (2) Follow-up Surveys of EC providing estimates of value added per worker, (3) annual reports and accounts of public sector undertakings dealing with transport and storage services and (4) budget documents for departmental enterprises.

12.4 The Annual Report and Accounts and Annual Statistical Statements brought out by the Ministry of Railways (Railway Board) contain comprehensive statistics on all important aspects of the working of government railways and also some basic data in respect of non-government railways appropriation accounts, budget documents of the Central Government Railways containing (1) budget of the railways-revenue and expenditure of the Central Government, (ii) the demand for grant for expenditure of the Central Government on railways, (iii) works, machinery and rolling stock programme of railways and (iv) explanatory memorandum on railway budget.

12.5 The annual budget documents of the central government contain (i) demand for grants for expenditure of the central government on Department of Posts & Department of Telecommunication, (ii) detailed demand for grants of Ministry of Communication and (iii) explanatory memorandum on the budget of Central Government, Union Government Finance Accounts and their annual reports and the annual reports of the Indian Posts & Telecommunication Departments.

12.6 Details of data on working force and the availability of annual reports of public sector undertakings are similar to the trade sector discussed in chapter 11.

12.7 The first EC follow-up surveys on transport was conducted in 1979-80 alongwith trade, hotels & restaurants and second by CSO during Enterprise Survey of 1983-84.

Estimates at Current Prices

Railways

12.8 In line with the recommendations of the UN, that large departmental enterprises which serve the public be given the status of quasi-corporate enterprises, in the new series, the Railways and Communication have been separated from other small departmental enterprises. The railway budgets are analysed and the three sets of accounts namely, the production account, the income and outlay account and the capital finance account are prepared for the complete activity of government railways as discussed in chapter 23 on 'Public Sector'. The GDP at current prices is obtained from the production account as the sum of compensation of employees and operating surplus which is also equal to gross output less intermediate consumption in the form of purchases of goods and services, CFC and indirect taxes less subsidies. As mentioned earlier the GVA thus obtained from the production account relates to the entire activity of the government railways. This includes the GVA, pertaining to the manufacturing, construction and the 'other services' activities also, within the government railways which are subtracted from the total product to arrive at the current price estimates of value added for government railway transport services. To this is added the GVA from non-government railways, the share of which is quite small.

Transport by other means

12.9 Estimates are prepared separately for public and private sectors. The public sector covers both departmental and non-departmental enterprises. Estimates of GVA in case of public sector are obtained from the economic analysis of annual reports of non-departmental enterprises and budget documents of departmental enterprises. In case of private sector, the approach followed is to estimate total GVA as the product of GVA per worker and the number of workers engaged in each activity.

Public sector

12.10 Public sector transport services include not only passenger transport by bus and tramways, ocean and inland water transport and scheduled air services but also the supporting services to water and air transport. The more important categories of supporting water transport services are operation and maintenance of piers, docks, pilotages and light houses and similar services. In case of air transport, the supporting services are operation of airports, flying facilities, radio beacons, flying control centres, radar stations, etc. The annual reports of all public sector transport enterprises (e.g. State Road Transport Corporations/Companies, Shipping Corporation of India, Moghul lines, Poompuhar Shipping Corporation, Kerala Inland Navigation Corporation, Central Inland Water Transport Corporation, Dredging Corporation of India, Port Trusts, Air India, Indian Airlines, Vayudoot, International Air Port Authority of India, etc.) are analysed to obtain the estimates of GVA. For the supporting services like light houses, light ships, etc., similar relevant materials available from the budget documents of the concerned ministries/state governments are analysed.

Private sector

12.11 **Mechanised road transport:** In the case of mechanised road transport comprising passenger and freight transport by buses and other motor vehicles, the measurement procedure requires data on number of workers and GVA per worker. The estimates of

value added per worker are based on follow-up surveys of EC conducted by CSO and NSSO during 1979-80 and CSO in 1983-84. GVA per worker available from these surveys have been interpolated to estimate the data for the intervening years 1980-81 to 1982-83. The GVA per worker available from the Enterprise Survey, 1983-84 has been used as such for 1983-84. For years subsequent to 1983-84, value added per worker for each category available from 1983-84 survey has been moved forward with the help of Economic Adviser's Consumer Price Index (CPI) number for urban non-manual employees in respect of transport and communication.

12.12 Estimates of workers in the private sector are obtained by deducting from the total working force, the corresponding working force in the public sector. Figures of working force in public sector are obtained from the publication "Performance Statistics of State Road Transport Undertakings" compiled by the Central Institute of Road Transport, Pune. Total number of workers for 1980-81 are based on 1971 and 1981 Population Censuses results duly adjusted for secondary and marginal workers. (These details are discussed in the Chapter 17 on Working Force). These have been moved to other years with the help of changes in the (i) number of buses and tramways for passenger transport, (ii) number of trucks for freight transport, and (iii) number of other motor vehicles (taxi, auto-rickshaws and other motor vehicles) for passenger and freight transport. Data on number of transport vehicles for each category are available from the "Motor Transport Statistics", released annually by the Ministry of Surface Transport.

12.13 **Non-mechanised transport:** In the case of non-mechanised road transport comprising of (i) hackney carriages, bullock-carts, ekkas, tongas, etc., (ii) transport by animals like horses, elephants, mules, camels, etc., and (iii) transport by man (including rickshaw pullers, hand cart pullers, porters, coolies, etc.) and (iv) services incidental to road transport and unorganised inland water transport, the estimates are first prepared for 1980-81 as a product of GVA per worker and the corresponding working force. The estimates of GVA per worker in 1980-81 for various categories are arrived at by interpolating the GVA per worker of 1979-80 and 1983-84 separately for rural and urban areas. The estimates of number of workers are obtained from the Population Census based working force after due adjustment for the secondary and marginal workers.

12.14 Estimates of GVA for different types of non-mechanised road transport and inland water transport for subsequent years are first prepared at constant prices and then at current prices by superimposing the price effect as reflected by CPI number for industrial workers.

12.15 **Private shipping companies:** The annual accounts of private shipping companies engaged in ocean and coastal services are analysed for obtaining estimates of GVA. However, to ensure complete coverage of such companies (non-response to the extent of 5 per cent) the results of the analysis are inflated on the basis of total gross registered tonnage (available from the Ministry of Surface Transport) and tonnage covered in the analysis.

12.16 **Other sailing vessels:** For other ocean and coastal services (sailing vessels) in rural and urban areas, the estimates of GVA per worker are obtained by interpolating the value added per worker using the results of 1979-80 and 1983-84 follow-up surveys. The number of workers in 1980-81 is obtained by deducting the estimated number of workers in shipping companies/corporations (already covered under public and private sectors) from the estimated total number of workers in ocean and coastal transport. The number of workers in shipping companies/ corporations is obtained from their annual reports while the total number of workers is estimated on the basis of census working force after duly adjusting for reference period and subsidiary and marginal workers. For subsequent years, estimates of GVA are first prepared at constant prices and then at current prices by superimposing the price effect as reflected by CPI number for industrial workers.

12.17 **Water transport supporting services:** For supporting services to water transport in the private sector, the base year estimates are prepared using interpolated value added per worker as obtained from 1979-80 and 1983-84 surveys and the estimated number of

workers. Number of workers in private sector services is obtained by deducting the number of workers in the public sector (obtained from DGE&T) from the total workers for the sub-sector. For subsequent years, these services are assumed to follow the same trend as the corresponding public sector services.

12.18 Air transport: In the case of air transport in the private sector comprising non-scheduled operators, flying and gliding clubs, the estimates are prepared using data collected directly from such undertakings.

12.19 Services incidental to transport: In the case of services incidental to transport comprising packing, crating, operations of travel agency, etc., the estimates are prepared on the basis of annual data on commission paid to the booking agencies by shipping companies, air companies, railways and road (freight) transport. Such data for shipping, air and road transport companies are available in their annual reports whereas for railways, these are directly collected from the zonal offices of railway through mail enquiry.

Storage

12.20 Estimates are prepared separately for (i) public warehousing, (ii) cold storages covered under ASI, and (iii) rest of storages (n.e.c.).

12.2 Estimates in respect of public sector warehousing are based on analysis of annual accounts of central and state warehousing corporations. In case of cold storages covered under ASI, the annual estimates of GVA as available from the ASI have been used.

12.22 For the rest of the storages n.e.c., the estimates are first prepared for the benchmark year 1980-81 as a product of number of workers and value added per worker. The GVA per worker is based on the result of Enterprise Survey, 1983-84 duly adjusted to correspond to 1980-81 with the help of CPI number for urban non-manual employees. The working force for 1980-81 is obtained by subtracting the number of workers in public sector warehousing and cold storages covered under ASI from the total number of workers. For subsequent years, estimates are first prepared at constant prices and then at current prices. The current price estimates have been obtained from those at constant prices by superimposing the price effect as revealed by the CPI number for urban non-manual employees.

Communication

12.23 As in the case of government railways, separate economic accounts, namely, the production account, income & outlay account and the capital finance account have been constructed and presented in the new series. Domestic product is calculated exactly in the same way as explained under the section dealing with railways.

12.24 From 1.4.1986, the activities of the Overseas Communication Service and Delhi & Bombay telephone districts have been taken out of the departmental commercial enterprises and have been converted into wholly owned companies, namely Videsh Sanchar Nigam Limited, and Mahanagar Telephone Nigam Limited respectively. Although, this change will have no effect on the domestic product from this sector but from the year 1986-87 onwards, production, income and outlay & capital finance accounts of communication sector covered under departmental enterprises will stand reduced by the activities of these two Nigams. On the other hand, these activities will form part of the account for the non-departmental non-financial enterprises.

Estimates at Constant Prices

12.25 The estimates at constant prices are prepared separately for each category of transport, generally by carrying forward the base year estimates by relevant indicators measuring the volume of activity (Appendix 12.1).

Railways

12.26 The estimates at constant prices are prepared by carrying forward the base year estimates with the combined indicator of passenger kilometers and net tonne kilometers. The physical indicators are combined using passenger earnings and goods earnings for the base year (1980-81) as weights. Relevant data are obtained from the Railway Board.

Transport by other Means

12.27 **Mechanised road transport:** In the case of mechanised road transport, the indicator for carrying forward the base year figures is the estimated number of workers in each category (except public bus transport) which is assumed to change at the same rate as the corresponding number of vehicles. However, in case of public sector passenger transport, the indicator is based on number of buses in public sector. This is estimated from the total number of buses by assuming that the rate of the number of buses in public and private sector will be the same ratio as number of workers in these sectors.

12.28 **Non-mechanised road transport and inland water transport:** For non-mechanised road transport and inland water transport in private sector, a weighted volume index is constructed with indices of industrial (manufacturing) and agricultural production, the weights being their contributions to GVA in the base year.

12.29 **Shipping companies and supporting services:** In the case of ocean and coastal water transport by shipping companies, the base year estimates are moved forward with the composite index of volume of cargo handled and passenger carried by the Indian shipping companies. For supporting services to water transport, the base year estimates of GVA are moved forward with the volume index based on cargo handled at major ports. Also for ocean and coastal transport by other sailing vessels, the indicator is the volume of cargo carried by sailing vessels. These data on volume of cargo are available annually from the Ministry of Surface Transport.

12.30 **Air transport:** In the case of scheduled operators in air transport as well as for IAAI, the indicator is the weighted index of revenue passenger kilometers, cargo tonnes kms. and mails tonnes kms, weights being the ratio of traffic revenues from these services in 1980-81. The source of information is the annual reports of Air India, Indian Airlines and Vayudoot. For non-scheduled air operators, flying and gliding clubs, the estimates at current prices are deflated by the CPI number for urban non-manual employees.

12.31 **Services incidental to transport:** For services incidental to transport, the estimates of GVA at current prices are deflated by the overall implicit price index of air, water and road (freight) transport services.

Storage

12.32 The estimates of GVA from warehousing at current prices are deflated by the change in warehousing charges per tonne of average capacity used in warehousing corporation to obtain estimates at constant prices. In the case of cold storages and the rest of the storages n.e.c., the base year estimates are moved forward by the number of workers engaged to arrive at the estimates at constant prices.

Communication

12.33 The estimates at constant prices are prepared by carrying forward the base year estimates with the help of combined weighted index of number of money orders, number of telegrams, number of telephones and number of postal articles handled, weights being the gross earnings in the base year.

Quality and limitations of Data base

12.34 The estimates of value added from Railways and Communication are based on up-to-date and reliable information.

12.35 For mechanised road transport, the 1981 census data on number of workers adjusted to mid 1980-81 for subsidiary and marginal workers are projected to other years on the basis of data on number of buses, trucks, taxis and auto-rickshaws and other vehicles. Such data with full coverage are made available by the Ministry of Surface Transport with a time lag of 1-2 years. The estimates in respect of public sector are based on the current data. Estimates of value added per worker in private sector undertakings are based on periodical follow-up surveys of EC. Beyond 1983-84, the value added per worker has been projected with the growth in CPI number for non-manual employees.

APPENDIX 12.1 : List of indicators used in the preparation of estimates at constant prices in respect of transport by other means & storage

Item	Indicator
(1)	(2)
1. Mechanised road transport Public sector Private sector	Estimated number of buses in public sector undertakings, number of vehicles separately for each category of transport vehicles viz., buses, freight carriers, other motor vehicles
2. Non-mechanised road transport and inland water of transport in private sector	Weighted index of indices industrial (mfg.) and agricultural production
3. Organised water transport	Volume of cargo handled at major ports
4. Sailing vessels	Volume of cargo carried
5. Scheduled operators in air transport and IAAI	Volume of traffic carried
6. Non-scheduled operators flying and gliding clubs and civil aviation	CPI number for urban non-manual employees
7. Services incidental to transport	Implicit price index of GVA of road (freight), air and water transport.
8. Warehousing	Changes in the warehousing charges per tonne of average capacity utilised
9. Cold storage and other storage (n.e.c.)	Number of workers