QUARTERLY ESTIMATES OF GDP

Introduction

29.1 The Cenrtal Statistical Organisation (CSO) introduced the quarterly estimates of Gross Domestic Product (GDP), on 30.6.1999, with effect from, the estimates for the fourth quarter-Q4 (January-March) of 1999, both at constant (1993-94) and current prices. The Quarterly Gross Domestic Product (QGDP) estimates are released by the CSO on the last working day after two months, except the first quarter GDP estimates which are released on the last working day after three months.

29.2 The production approach is used for compiling the QGDP estimates, in terms of gross value added (GVA) and is broadly based on the benchmark-indicator method. In this method, for each of the industry-groups, namely, agriculture, forestry, fishing, mining, manufacturing, electricity, gas and water supply, trade, hotels and restaurants, transport, storage and communication, banking and insurance, real estate, ownership of dwellings and business services, public administration, a key indicator or a set of key indicators for which data in volume or quantity terms is available on quarterly basis, are used to extrapolate the value of output/value added estimates of the previous year. For example, in the case of agriculture sector, the set of key indicators are the quarterly estimates of agriculture production (at individual crop level) and in the case of manufacturing sector, the key indicators are the index of industrial production (at 2-digit industry group level). In general terms, quarterly estimates of GDP are extrapolations of annual series of GDP. The estimates of GVA by industry are compiled by extrapolating value of output or value added with relevant indicators.

29.3 For compiling the QGDP Estimates at constant prices, the estimates at constant prices of the previous year are extrapolated with the growth rates observed in the physical/proxy key indicators. For compiling the estimates at current prices, firstly the implicit price deflators are estimated using the data on prices available from the wholesale and consumer price indexes of the respective industry groups. These industry-wise implicit price deflators are then super-imposed on the QGDP Estimates compiled at constant prices, to obtain the industry-wise estimates at current prices.

29.4 The quarterly GDP estimates of different sectors at constant prices are compiled according to two alternative methods, depending upon whether the GDP estimates are to be derived as value of output minus value of inputs, or as GDP estimates directly. In the case of industries, agriculture, forestry, fishing and mining, where the former approach is followed, the commodity-level value of output at constant prices of the previous year is extrapolated with the growth in production of the particular commodity during the reference quarter. In these industries, for those commodities for which quarterly production data is not available, their values of output are first estimated for the entire year using the trend available from the past years' data, and the annual estimate is apportioned equally among the four quarters of the year. The quarterly value of output of each of these four industries is the sum of value of output of individual commodities within these four industries. For estimating the quarterly value of inputs in these four industries, the previous year's input-output ratio is applied on the quarterly estimated value of output, separately for each of these four industries.

29.5 In the case of all other industries, the gross value added estimate for the reference quarter is directly estimated at different disaggregated levels (for example, in the case of manufacturing at 2-digit National Industries Classifiction (NIC) level) by extrapolating the estimated GDP of the same quarter of the previous year with the growth rate observed in the physcial indicator during the reference quarter.

29.6 A table giving the various indicators used in compiling the QGDP estimates, industry-wise, is given at *Appendix 29.1*.

Estimates at constant Prices

29.7 The industry-wise details of the methodology of estimating the QGDP Estimates at constant prices is described in the following paragraphs.

Agriculture including livestock

29.8 For estimating the qurterly value of output of this industry, commodity-wise quarterly agriculture production data is required. However, agriculture production data is available only by two seasons (kharif or summer and rabi or winter). In order to compile estimated quarterly agriculture production from the season-wise production data, the India Crop Calendar (ICC), 1998 is used. The ICC presents the calendar of harvesting operations. This document gives the periods of harvesting of crops in different

seasons/states. Using the season-wise production data and the India Crop Calendar, 1998, the Ministry of Agriculture prepares the estimates of quarterly agriculture production of different crops.

29.9 The above method of compiling quarterly agriculture production estimates assumes that the entire production of a particular state/season/crop occurs in the harvesting period. By adopting this method, the total estimated agriculture production during the four quarters of a financial year (April to March) will be different from the one relating to the agriculture year (July to June). However, for annual national accounting purposes, the CSO has been adopting the total crop production in an agriculture year as that in the financial year. The two estimates of annual crop production differ to the extent of the difference in production during April-June of the two successive years. Therefore, in order to ensure consistency between the quarterly GDP estimates and the annual GDP estimates, the agriculture production estimates in the four quarters of a financial year are adjusted on a prorata basis to that of the total production in the agriculture year.

29.10 In the case of livestock products, quarterly estimates of production are available for the three major items, namely, milk, egg and wool, from the Department of Animal Husbandry and Dairying, Ministry of Agriculture. These estimates are compiled through special tabulations of the questionnaires on annual Integrated Sample Survey (ISS). This survey is conducted in three seasons, namely, summer, rainy and winter, primarily to estimate the yield rates of production per different categories/ages/breeds of animals.

29.11 The crops/livestock products for which the quarterly production data is available are rice, wheat, jowar, bajra, barley, maize. Ragi, small millets, gram, tur, urad, moong, masur, khesari, moth, kulthi, peas & beans, other kharif pulses, other rabi pulses, groundnut, sesamum, rapeseed & mustard, linseed, castorseed, safflower, nigerseed, coconut, sunflower, soyabean, cotton, jute, mesta, sanhemp, blackpepper, dry chillies, dry ginger, turmeric, arecanut, cardamom, corander, potato, tapioca, garlic, sweet potato, banana, onion, sugarcane, tobacco, guarseed, milk, egg and wool.

29.12 For estimating the value of inputs of agriculture sector for the reference quarter, the annual input-ouput ratios of the previous year are adopted. The quarterly GVA estimate for the agriculture sector is obtained as the difference between quarterly estimates of value of output and material inputs.

Forestry

29.13 In the absence of quarterly production data on major and minor forest products, the annual estimates of the current year are prepared first, separately for the three items, namely industrial wood, fuelwood and minor forest products, by using the average annual growth rate observed in these items during the past few years. The estimated values of output of forestry products during the reference quarter is taken as $1/4^{th}$ of the annual forecast of value of output of forestry products. The inputs of forestry sector are taken to be 10 per cent of value of output, both for the annual estimates and the quarterly estimates.

Fishing

29.14 The quarterly estimates of production of inland and marine fish are available from the Ministry of Agriculture. Using this quarterly production data, quarterly estimates of value of output of inland and marine fish are compiled. For estimating the value inputs, the previous year's input-output ratio is adopted.

Mining

29.15 The data on production of coal, crude petroleum and the Index of Mining, are available on monthly periodicity. For the reference quarter, the quarterly production data on crude petroleum, coal and the Index of Mining are used to estimate the values of output of crude petroleum, coal and other major and minor minerals, respectively. The value of inputs in the mining sector are estimated separately for fuel minerals and all others, based on the previous year's input-output ratios for these minerals.

Manufacturing

29.16 The data on Index of Industrial Production (IIP) for the manufacturing sector is available on monthly periodicity at 2-digit level of National Industrial classification (NIC). For the reference quarter, the GVA estimate at 2-digit level is compiled by extrapolating the previous year's GDP estimate at 2-digit level with the growth in IIP observed in the particular 2-digit industry group in the reference quarter.

Electricity, Gas And Water Supply

29.17 The indicator for the electricity is taken to be the monthly Index of Electricity. For the reference quarter, the growth rate in this index is used to extrapolate the previous year's estimates. For the gas and water supply industry groups, the annual forecast is first made using the

past trends and the same is apportioned equally among the four quarters of the year.

Construction

29.18 The key indicators of the *pucca* (modern type*)* construction are taken to be the production of cement, steel, bricks & tiles and the Index of Industrial Production (IIP) relating to fixtures & fittings, monthly data on which is available. For the quarterly GDP estimates, the *pucca* construction part is compiled using the growth observed in the production of cement and cement products (using the indicator cement), iron & steel (using the indicator steel), bricks & tiles (using the indicator coal) and timber and roundwood (using the indicator IIP-wooden fixtures). For the *kutcha* construction part of GDP of construction sector, the annual forecast is first made using the past trends and the same is apportioned equally among the four quarters of the year.

Trade, Hotels And Restaurants

29.19 The key indicator of the sector, namely, the index of gross trading income is computed on the basis of the total estimated gross trading income. The gross trading income for each commodity producing sector (agriculture, livestock, forestry, fishing, mining, registered manufacturing, unregistered manufacturing and imports) is computed using the estimated of value of output of the respective sectors. From the estimated total gross trading income, an index of gross trading income is compiled. For the reference quarter, the growth in the index of gross trading income, which is compiled by using the values of output of the commodity producing sectors during the reference quarter, is used to extrapolate quarterly GVA estimate of the corresponding quarter of the previous year.

Railways

29.20 The data on the two key indicators of this sector, namely, passenger kilometers and net tonne kilometers are available every month. Using this, a single weighted average quantum figure is obtained, with the earnings from passengers and freight as weights. With the help of quarterly data on the two key indicators of this sector, namely, passenger kilometers and net tonne kilometers, a weighted average quantum figures is compiled for the reference quarter. Using the growth rate observed in this indicator, the quarterly GVA of the reference quarter is estimated for the railways.

Transport Other Than Railways

29.21 The data on indicators of this sector, namely, number of commercial vehicles on road (estimated from the production of

commercial vehicles), cargo handled at major ports and passenger kilometers flown and freight tonne kilometers flown, in the case of civil aviation, are available on monthly basis. The quarterly data on the production of commercial vehicles, cargo handled at major ports and passenger kilometers flown and freight tonne kilometers flown, in the case of civil aviation are used to compile the GDP estimates for the reference quarter of the sub-sectors, road, water and air. For the sub-sector, services incidental to transport, the annual forecast is first made using the past trends and the same is apportioned equally among the four quarters of the year.

Communication

29.22 For the quarterly estimates, the indicator used is the total stock of telephone connections in the country, monthly data on which is available. The growth observed in this indicator is used to estimate the GDP of the industry.

Banking and Insurance

29.23 For the banking industry, the physical indicator is the sum of aggregate deposits and bank credits (deflated by the wholesale price index). The data on these items is available on monthly basis. For insurance, the physical indicator for the life insurance component is the sum of life insurance (sum assured) and life fund (deflated by the wholesale price index). The data on these items is available on quarterly basis. For the non-life insurance component, the indicator taken is the non-life fund (gross less claims) deflated by the wholesale price index. This data is available on quarterly basis. The growth in various indicators of the sector mentioned above are used to estimate the QGDP of the respective sub-groups of the banking and insurance industry.

Public Administration and Defence

29.24 The indicator for deriving the quarterly GDP estimate is taken as the revenue expenditure of the central government deflated by the consumer price index (industrial workers) [CPI(IW)], in the absence of quarterly data on expenditure of centre and state governments on salary and wages. The data on these indicators is available on monthly basis. For the quarterly estimates, the data on revenue expenditures of central government and the expenditures on salaries and wages by the State governments are available. This data is used to compile the quarterly GVA estimates of this economic activity.

Other Services

29.25 The estimates of GDP of "other services" consist of two components, namely, the public sector

component and the private sector component. For the quarterly estimates, the indicator used for the public sector part is the same as that used in the public administration and defence. For the private sector part, the annual forecast is first made using the past trends and the same is apportioned equally among the four quarters of the year.

Estimates at current prices

29.26 The QGDP estimates at current prices are compiled by superimposing the Wholesale Price Index/CPIs on the QGDP estimates at constant prices, at major industry group level. This is done by estimating the Implicit price deflators (IPDs) for each quarter, using the relevant price indexes, for the reference quarter. The QGDP estimate at current prices for each industry equals the product of QGDP for the quarter at constant prices and the IPD for the quarter of that industry.

Appendix 29.1

INDICATORS USED FOR QUARTERLY ESTIMATES OF GDP

SECTOR	INDICATORS
1. agriculture	Quarterly agriculture production estimates of forecast crops
2. livestock	Quarterly production of milk, egg and wool
3. forestry	Apportioning the annual forecast equally in all the four quarters.
4. fishing	Quarterly production of inland and marine fish
5. mining and quarrying	Production of coal, crude petroleum and IIP (Mining)
6. manufacturing	Index of Industrial Production (Manufacturing).
7. electricity, gas and water supply	Index of Industrial Production (Electricity)
8. construction	Production of cement, steel, coal and IIP (Group 27)
9. trade, hotels and restaurants	Gross Trading Index, which is computed using the value of output of commodity producing sectors and imports
10. railways	Net tonne Kms. and Net passenger Kms.
11. transport by other means	Number of commercial vehicles in operation for the road activity, cargo handled at major ports for the water activity and passenger kilometers flown and freight tonne kilometers flown for the air industry.
12. communication	Total number of telephones (basic, WLL and Cell) installed.
13. banking and insurance	aggregate deposits, bank credits and the wholesale price index for the banking sub-sector, life insurance (sum assured) and life fund and wholesale price index for the life insurance part of the insurance sub-sector and non-life fund (gross less claims) and the wholesale price index for the non-life insurance part of the insurance sub-sector
14. public administration	Central government revenue expenditure; expenditure on salaries and wages by the state governments and consumer price index (industrial workers)
15. other services	For the public sector component, the same indicator as in 14 and for the private part, apportioning equally in all the four quarters.

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