

GDP OF HEALTH SERVICES – INDIA’S ESTIMATION PROCEDURES

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I. Introduction

1. As compared to goods producing industries, whose output can be measured relatively easily as product of prices and quantities of commodities produced, both at nominal and constant prices, the same measurement in respect of service industries is difficult. More specifically, if these services are provided by the non-market producers (general government and non-profit institutions serving households), measuring their output even at nominal prices is much more difficult. The problem gets further aggravated and becomes challenging if one tries to measure volumes or output and value added at constant prices in respect of services provided by non-market producers.

2. The most commonly used methods for measuring output and value added for service industries involve in bifurcating the producers in each economic activity into market producers (who provide services at economically significant prices, which will normally enable the producers to generate operating surplus after meeting input costs) and non-market producers (who provide most of their output to others either free or at prices which are not economically significant). For the market producers engaged in service activities, output in nominal terms is measured from the books of accounts broadly as sum of sales and changes in inventories. On the other hand, for the non-market producers, output is measured at nominal prices on the basis of input cost approach, as sum of inputs, compensation of employees and consumption of fixed capital. For both market and non-market producers, output and value added at constant prices is generally estimated by deflating the estimates of nominal prices by a relevant price deflator (mostly the CPIs or the PPIs) or by extrapolating the base year estimates with physical (volume) indicators.

3. The simple deflation procedure (using a price index) results in incorrect measures of volumes of output in the case of service industries, and more specifically for non-market producers. This gives rise to the question of what is the best procedure for measuring the output of services in terms of volumes or the GDP at constant prices for services. Different countries follow different procedures in their quest for measuring the volumes of services produced, especially by non-market producers, as close to reality as possible. These procedures include indicators based on outputs, outcomes and quality of services. Vast literature on the country practices followed in measuring volume of services is available in public domain and the proposed OECD Handbook ‘Measuring Education and Health Volume Output’ is expected to provide comprehensive guidance to the compilers of national accounts. The 1993 SNA, the UK-ONS’s Atkinson Review on Measurement of Government Output and Productivity for the National Accounts and the Eurostat Handbook on price and volume measures in national accounts also provide guidelines on these aspects.

4. This paper provides an overview of India’s practices in measuring the GDP of health services, separately for market and non-market producers and also separately for the nominal and constant price estimates. Section 2 provides the coverage of health services in India’s GDP estimates, with Section 3 covering data sources in its estimation. Section 4 highlights the methods followed for estimating GDP at current prices, separately for the three segments of the economy, namely, the public sector, (general government and public enterprises), private corporate sector (non-financial corporations) and unorganised sector (household and non-profit institutions serving households). Section 5 presents the procedures

¹ Views expressed in some sections are the personal views of author

followed for estimating GDP at constant prices, again separately for the same three segments of the economy. Concluding remarks are given in Section 6.

II. Coverage of Health Services

4. The present series of India's national accounts (base year 1999-2000, series changed every five years) follows the National Industrial Classification (NIC), 1998, which is identical with the ISIC Rev. 3 in structure upto the 4-digit level. The NIC 1998 is a 5-digit classification with the 5th digit catering to the national requirements.

5. The economic activity of Health Services in India's national accounts includes the following 3-digit codes of ISIC Rev 3.0 :

- 851 – Human Health Activities
 - 8511 - Hospital activities
 - 8512 - Medical and dental practice activities
 - 8519 - Other human health activities
- 851 – Veterinary activities [including clinico-pathological and other diagnostic activities pertaining to animals and birds]

6. ISIC Code 853 in respect of Social work activities, which is part of the ISIC Rev. 3 Tabulation Category N : Health and Social work, and Division 85 : Health and Social work, is not included under health services)

III. Sources of Data for estimating Value Added of Health Services

7. The main data sources for estimating value added in health services are:

(i) Public Sector

- Budget documents of (a) central government and (b) state governments, and accounts of (c) local bodies and (d) autonomous government institutions (refer to ISIC Code 7514 - Ancillary service activities for the Government as a whole), in respect of health services provided by public authorities (which is the general government sector of 1993 SNA);

(ii) Private Corporate Sector

- Annual accounts of private corporate sector (this sector is the same as non-government financial and non-financial corporations of 1993 SNA); and

(iii) Private Unorganised Sector (this sector includes unincorporated enterprises in the Household sector and the NPISHs)

- *Sources of data for the benchmark estimates*
 - For estimating Number of jobs in private unorganised sector
 - 10-yearly Population Census and 5-yearly Employment and Unemployment surveys of National Sample Survey Organisation (NSSO) for estimating the total workforce in the country (in terms of total number of jobs performed),

- Annual Employment Market Intelligence (EMI) of the Directorate General of Employment and Training (DGET), Ministry of Labour for the workforce estimates in the organised sector (i.e. those working in government and private corporate sector). This data when subtracted from total workforce in the country gives the estimated labour input in private unorganised sector.
- For estimating value added per worker (VAPW)
 - Periodic (usually once in five years) Unorganised Enterprise Surveys conducted by the NSSO.
- *Sources of data for annual estimates*
 - Administrative data on number of medical and para-medical personnel, published annually by the Central Bureau of Health Intelligence, Ministry of Health and Family Welfare in their publication "Health Statistics in India".
 - 5-yearly Consumer Expenditure Surveys of NSSO, for the data on household consumption expenditure of health services.

IV. Method of Estimating GVA at nominal prices

8. The approach to compile the Gross Value Added (GVA) for most services sectors in India has been (a) to group the establishments engaged in providing services (both market and non-market) under three institutional sectors, namely, (i) **public sector** (which conforms to 1993 SNA's general government sector and government controlled enterprises in financial and non-financial corporations); (ii) **private organised sector** (all other financial and non-financial corporations); and (iii) **private unorganised sector** (household and NPISH).

Public Sector

9. The government, being a non-market producer, provides most of the output of health services either free or at prices which are not economically significant. The procedure adopted in India for measuring this output is the input cost approach (total costs incurred in their production), as sum of intermediate consumption, compensation of employees, consumption of fixed capital (CFC) (for output at factor cost) and other taxes, less subsidies, on production (for output at basic prices). Data on intermediate consumption and compensation of employees is compiled by analysing the budget documents (i.e., after reclassifying the item-wise expenditures of government according to economic-cum-purpose classification). This work of analysing each and every entry in the budget documents is undertaken every year, therefore, direct annual data on these items for the public sector is available. For the data on CFC, it is mentioned that no allowance is made for CFC in the case of administrative departments, as such this information is not available in the budget documents. The CFC, therefore, is estimated separately through the perpetual inventory method (PIM)². For the GVA estimation, the total intermediate consumption is excluded from the value of output. There is no operating surplus in the case of health services provided by public authorities. However, for the public enterprises providing health services, GVA is measured by including the operating surplus (or loss).

² For a detailed discussion on PIM and CFC, please see Chapter 6 of 1993 SNA; and Chapter 6 of OECD Manual Measuring Capital: A Manual on the Measurement of Capital Stocks, Consumption of Fixed Capital and Capital Services

10. In the case of local authorities and autonomous government institutions, information supplied by some of the State governments on expenditures made for producing health services is made use of, while for the rest, estimates are prepared by utilising the information on current and capital grants made to these institutions. This data is available in the Budget documents of Centre and State Governments.

11. Normally, the non-market output is to be recorded at the time it is produced (and delivered simultaneously), therefore, the correct procedure to measure the output is on accrual basis. However, since government accounting in India is on cash-basis, the Indian National Accounts measure the output of public health services on cash basis only.

Private Corporate Sector

12. The main data source for estimating the GVA of producers of health services in the private corporate sector is the Reserve Bank of India's (RBI) Company Finance Statistics, which are based on audited annual accounts of companies. The value added at factor cost is measured as gross output less intermediate consumption or as sum of compensation of employees and gross operating surplus. The production taxes net of production subsidies is added to the GVA at factor cost to obtain GVA at basic prices.

13. However, due to the sampling nature of RBI studies on company finances (the sampling fraction is about 1 per cent), it is difficult to obtain robust estimates of value added in this sector for each economic activity, particularly for activities like health and education services, although data on output and GVA is available through special tabulations. With the current initiatives on developing a comprehensive data base on corporate sector, it is hoped that reliable activity-wise data on corporate sector would be available in the near future.

14. The other alternative procedure followed for estimating the GVA of health services in private corporate sector is through the labour input method³. The data on total number of workers engaged in this activity is available annually from the DGET (please see para 7 above). The estimated gross value added per worker (VAPW) in the establishments of private corporate sector producing health services is available for the benchmark years from the enterprise surveys conducted by the NSSO. The product of these two gives the estimated GVA in health services in private corporate sector, for the benchmark year (which is the year in which the enterprise survey was conducted). For estimating the GVA for subsequent years, the GVA of benchmark year is extrapolated using the growth in consumer expenditure of health services. The other indicator that is looked at for extrapolating the benchmark GVA estimates is the growth in the value added of 'other services' industry, as available from the RBI's annual studies on company finances.

Private unorganised Sector

15. The units included under this sector are the unincorporated enterprises and the non-profit institutions serving households (NPISHs) providing health services. The approach followed for estimating the GVA of health services provided in this sector is the labour input method. The estimates of GVA are initially prepared for a benchmark year using the labour input method, and for estimating the GVA for subsequent years, the benchmark GVA is extrapolated with suitable indicators on which data is available annually.

³ Please refer to the OECD Handbook on Measuring the Non-observed Economy

16. The labour input estimates for producers of health services in the private unorganised sector are obtained by subtracting the number of workers in the public and private corporate sector in the same activity as available annually from the DGET, from the total estimated number of workers in the country also in the same activity, as available from the decennial Population Census and the 5-yearly Employment and Unemployment surveys of NSSO. So obtained labour input for producers of health services in the private unorganised sector is multiplied with the VAPW available from the enterprise surveys of NSSO for producers of health services. This procedure is applied separately for rural and urban areas in the base year. For subsequent years, the estimates at current prices are prepared using the trends in consumption expenditure on medical and health services by households, as revealed by the NSS surveys on consumer expenditure.

GVA of health services in private unorganised sector in the benchmark year	=	Workforce in establishments producing health services in private unorganised sector (total workforce in this activity– workforce in public and private corporate sectors in the same activity) * Gross Value Added Per Worker
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17. The Indian national accounts provide data on GDP, both at factor cost and at basic prices. For the basic price estimates, information available from the budget documents on total production taxes and total production subsidies are used. Since industry-wise information on these taxes and subsidies is not available, the total production taxes and production subsidies are allocated to different sectors and industries on the basis of year-wise estimates of net capital stock.

18. Out of the total GVA of health services, public, private corporate and private unorganised sectors account for 30%, 10% and 60%, respectively.

V. Method of Estimating GVA at constant prices

19. The approach to compile GVA at constant prices for health services is different in the above three institutional sectors. In some sectors, price deflators are used on the estimates at nominal prices, which in others physical indicators of volumes are used to extrapolate the base year estimates.

Public Sector

20. The general procedure for estimating the output and GVA for producers of services in the public sector at constant prices is to deflate the corresponding estimates of output and GVA at nominal prices by the CPI for industrial workers.

Private Corporate Sector

21. Previously, the volume indicators of number of medical and para-medical personnel were used to extrapolate the benchmark estimates of GVA. The data on these indicators are published annually by the Central Bureau of Health Intelligence, Ministry of Health and Family Welfare in their publication "Health Statistics in India". However, this administrative data has time-lag and sometimes is not consistent with other available information. Also, improvements in productivity (and quality) of personnel is not taken into account when only numbers of employees are used as a volume indicator. Therefore, the indicator presently being used to extrapolate the benchmark year GVA for health services is the annual growth observed in consumption expenditure of households on health services, deflated by the CPI.

Private Unorganised Sector

22. As in the case of private corporate sector, the indicator for extrapolating the benchmark estimates of GVA for health services in the private unorganised sector, is the annual growth observed in consumption expenditure of households on health services deflated by the CPI. Previously, administrative data on number of medical and para-medical personnel was being used as the volume indicator to extrapolate the benchmark GVA, but the same has been discontinued due to its inherent weaknesses, as explained in para 21 above.

VI CONCLUDING REMARKS

23. Measuring health services output at nominal prices or in real terms, by both market and non-market producers is extremely challenging. At nominal prices, output of market producers is measured on the basis of their annual accounts. However, output of non-market producers (government and the NPISHs) in health services in nominal terms is measured on cost basis, which includes CFC on the assets owned by these producers. There is, thus, no operating surplus for non-market producers and the same services are measured differently for market and non-market producers.

24. The real output of health services ideally should be measured in terms of volumes which takes into account the outputs, outcomes and quality of services, both for market and non-market producers. However, in practice it is difficult to obtain reliable data on these, and there is also the problem of aggregating volumes of different health services into a single output indicator.

25. In the Indian national accounts, output of health services in nominal prices is measured on (a) input costs basis for non-market producers in the public sector, (b) directly from the annual accounts for the market producers in private corporate sector, as also through the labour input method, and (c) through the labour input method for the market producers in private unorganised sector.

26. For measuring the output of health services in real terms, consumer price index is used to deflate the nominal price estimates for non-market producers in the public sector. For the market producers, the benchmark estimates are extrapolated with the annual growth observed in consumption expenditure of households on health services deflated by the CPI. The earlier procedure of using administrative data on number of medical and para-medical personnel as the volume indicator to extrapolate the benchmark GVA for these producers, has been discontinued due to its inherent weaknesses.

27. The present procedure of estimating output of health services in real terms, especially for the non-market producers, needs to be revisited. Database on outputs and outcomes alongwith quality aspects, of different health services provided by the producers needs to be developed for better estimation of output and GDP of health services in real terms.

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