Chapter 14

INDIA'S NATIONAL ACCOUNTS

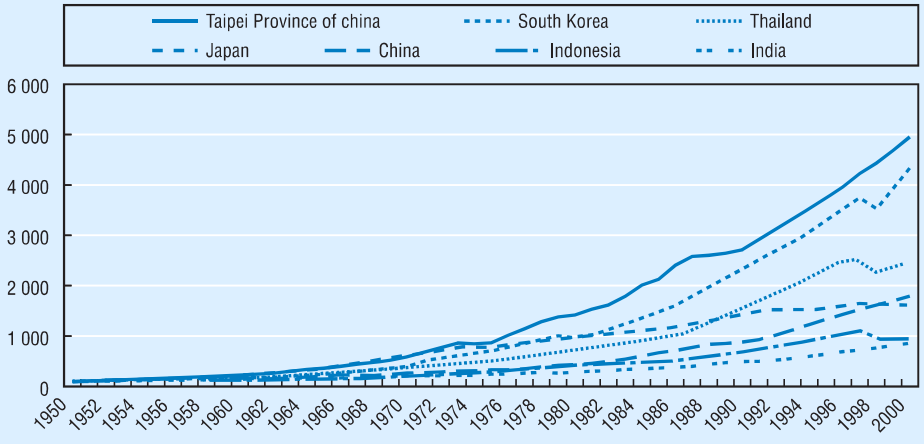
1. Introduction

With a population of more than 1 billion, India is the second-largest country in the world, and because of a higher growth rate, its population is expected to surpass that of China in the near future. However, as Figure 1 in Chapter 13 shows, despite a comparable population, India's GDP is less than half that of China. The latest World Bank estimates rank India's GDP (based on Purchasing Power Parities, or PPP) in fourth position – between that of Japan and Germany.

Since Independence in 1947, Indian governments have generally pursued economic policies designed to provide economic stability, ensure adequate food supplies and limit income disparities. Currency controls made India an unattractive target for foreign investors, and while this provided stability – for example, India avoided an economic downturn following the Asian financial crisis of 1997 – it also meant that India had to forego the many growth-promoting advantages that accompany foreign direct investment.

Figure 1. **Long term growth of GDP in India and six other Asian countries**

1950 = 100



Source: Angus Maddison (2001), *The World Economy: A Millenium Perspective*, OECD, Paris.

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Figure 1 shows that India's long-term economic growth has been substantially less than that of other countries in Asia. Between 1950 and 2000, real growth of GDP in India averaged only 4.4% annually compared with growth of well over 6% in Taipei Province of China, South Korea, Thailand and China. Because of its high population growth rate, India's per capita GDP grew only 2.3% annually compared with more than 4% in China and more than 6% in Taipei Province of China.

India is now increasing its links with the outside world. With a large population of well educated, English-speaking and computer-literate young people, India is particularly well situated to exploit e-commerce and other information technology services. Since the mid-1990s, growth of GDP has averaged 6% annually, and the growth rate appears to be accelerating. If these higher rates of growth continue, India could begin to rival China as an economic giant.

In this chapter, we address the following questions: 1) how does India estimate its GDP; and 2) how reliable are the results?

2. Background

Indian statisticians helped develop the first UN *System of National Accounts* in 1953 and to revise it in 1968 and 1993. India has its own professional association devoted to national income measurement – the Indian Association for Research in National Income and Wealth – which brings together official statisticians from central and state statistical offices, academics, staff from research institutes, and data users from the business community. Also, the Indian statistical office hosts the Delhi Group, consisting of official statisticians from many countries working to improve measurement of the informal sector within the SNA framework.

Given this background, it is not surprising that India's national accounts have closely followed the recommendations of the successive versions of the SNA, although the lack of basic data has restricted their ability to implement the full system of accounts.

Since 1948, India's Central Statistical Organisation (CSO) has published estimates of the country's GDP by type of activity, but it was not until 1969 that the first estimates were made for capital formation and saving. Estimates of household consumption expenditure were released a few years after that, and estimates are now available for all the final expenditure components – household and government consumption, gross fixed capital formation, change in inventories and net exports.

The CSO is still working toward a full set of non-financial accounts for all sectors. These are available for the public sector, but the CSO has not yet compiled the income and outlay accounts for the household sector. This is a major gap in view of the importance of household enterprises in India.

Quarterly GDP estimates were first published for the quarter ending March 1999, with the estimates now carried back to 1996. The CSO now regularly publishes quarterly GDP estimates at both current and constant prices, showing value added according to type of economic activity. There are no quarterly estimates for the final expenditure component of GDP.

3. Some special features of India's national accounts

Public sector

The public sector plays an important role in the Indian economy, and the national accounts show separate accounts titled "public sector", which combine government, public financial and non-financial enterprises, and "departmental enterprises" (such as railways, irrigation, communication, forestry, public works departments and government printing works). The public sector generates nearly a quarter of the GDP, although the share is now declining.

Lakhs and crores

A *lakh* is a unit in the traditional number system used in India and Bangladesh, and it is equal to 100 000. A hundred lakhs make a *crore*. Indian statistics commonly use lakhs and crores to express large aggregates. Table 1 shows GDP estimates for India denominated in *crores* of rupees. One crore equals 10 million.

Accounting (or fiscal) year for national accounts

India is still predominantly an agricultural society with the majority of the population living in rural areas. The agricultural year runs from July, when the monsoon rains arrive, through June of the following year. The national accounts, and most other economic and financial statistics, follow a fiscal year that lies between the agricultural and calendar years. This fiscal year starts on 1st April and ends on 31st March of the following year.

4. How does the CSO estimate the national accounts?

Annual accounts

The most reliable estimates of India's GDP are those made from the production side – *i.e.* by summing the value added of different kinds of activities. Table 1 shows the standard format used in presenting these basic estimates of GDP. The last column in the table shows the rates of growth for the various kinds of activities from 1994 to 2004. Note the

Table 1. **Indian gross domestic product by economic activity**

Crore Rupees, 1993-94 prices.

	1993-4	1998-9	1999-0	2000-1	2001-2	2002-3	2003-4	Annual growth
Agriculture, forestry and fishing	241 967	286 094	286 983	286 666	304 666	283 393	310 611	2.7
Mining and quarrying	20 092	26 391	27 269	27 919	28 608	31 185	33 195	5.2
Manufacturing	125 493	184 578	191 925	206 189	213 681	227 642	243 400	6.9
Organised	81 873	120 116	124 514	134 324	140 517	150 412	161 115	7.1
Unorganised	43 620	64 462	67 411	71 865	73 164	77 230	82 285	6.6
Electricity, gas and water	18 984	26 988	28 401	29 632	30 715	31 659	32 827	5.6
Construction	40 593	54 389	58 740	62 651	65 161	69 911	74 819	6.3
Trade, hotels and restaurants	99 369	156 874	168 199	174 927	190 436	206 046	224 113	8.5
Trade	93 206	146 464	156 628	162 564	176 579	191 629	208 121	8.4
Hotels and restaurants	6 163	10 410	11 571	12 363	13 857	14 417	15 992	10.1
Transport, storage and communications	51 131	78 883	87 608	98 329	107 395	120 922	141 446	10.7
Transport and storage	41 711	57 821	61 910	65 748	68 686	72 684	80 076	6.8
Communications	9 420	21 062	25 698	32 581	38 709	48 238	61 370	20.7
Finance, real estate, business services	90 084	131 892	145 863	150 907	157 746	171 463	183 718	7.4
Banking and insurance	41 665	70 549	79 971	78 974	81 726	91 050	97 871	9.0
Real estate and business services	48 419	61 343	65 892	71 933	76 020	80 413	85 847	5.9
Community, social and personal services	93 632	136 658	153 379	161 372	169 537	176 141	186 419	7.2
Public administration and defence	43 636	62 209	70 432	72 073	73 965	75 230	79 482	6.3
Other community, social, personal services	49 996	74 449	82 947	89 299	95 572	100 911	106 937	7.9
Gross Domestic Product at factor cost	781 345	1 082 747	1 148 367	1 198 592	1 267 945	1 318 362	1 430 548	6.2

Source: Statement 10 in the Central Statistical Organizations's annual publication, *National Accounts Statistics*.

particularly rapid growth in communications, hotels and restaurants and trade. Growth in *organised* manufacturing, banking and insurance, and other community, social and personal services has also exceeded the overall growth rate.

In estimating GDP, a fundamental distinction is made between the *organised* and *unorganised* sectors of the economy.[1]

Basically, the *organised* sector consists of government administration, state-owned enterprises and other corporate enterprises. Thus, for example:

- In agriculture, the organised sector consists mainly of plantation crops – primarily tea, coffee and rubber.

- Organised forestry covers only production of timber and fuel-wood by the State Forestry Departments.
- In manufacturing, the distinction between organised and unorganised depends on whether the enterprise is registered under the 1948 Factories Act, the objectives of which were to ensure the safety, health and welfare of the workers employed in factories, and to prevent haphazard growth of factories. Enterprises are required to register under the Act (and thus count as organised) if they either have 10 employees and use electricity, or if they do not use electricity and have 20 or more employees.
- All electricity producers and suppliers are included, but only the suppliers of public gas and water (not the producers).
- Organised construction consists of federal and state construction departments and private corporate enterprises.
- The organised financial sector includes the commercial banks and insurance companies but excludes pawn-brokers and professional money lenders;
- Other services cover public health, education and sanitary services, TV and radio broadcasting and recognised educational institutions in the private sector.

The *unorganised* sector includes everything else and produces nearly 60% of GDP at the present time. Table 2 shows that the unorganized sector generates virtually all GDP in agriculture, forestry and fishing, and is larger than the organised sectors in construction, trade, hotels and restaurants, and transport and communications. Its contribution to manufacturing and other services is also substantial.

Table 2. **Share of the organised and unorganised sectors in India's economy**
2001-2002 (in %)

	Unorganised	Organised	Total
Agriculture, forestry and fishing	25.5	0.9	26.4
Mining and quarrying	0.2	1.8	2.0
Manufacturing	5.0	8.4	13.4
Electricity, gas and water supply	0.1	1.0	1.0
Construction	3.9	2.5	6.4
Trade, Hotel, restaurants	11.9	3.8	15.6
Transport and communications	3.9	2.8	6.7
Real estate, financial services and ownership of dwellings	5.4	7.6	13.0
Community, social and personal services	2.6	12.8	15.4
Total	58.5	41.5	100.0

Source: Ramesh Kolli and S. Hazra, Estimation of Informal Sector Contribution in the Net Domestic Product – Indian Experience, Eighth Meeting of the Expert Group on Informal Sector Statistics (Delhi Group), Nadi (Fiji Islands), 29-31 March, 2005.

For the organised sector, the main data sources for compiling the estimates are the budget documents of central and state governments, the annual accounts of public sector undertakings, the *Annual Survey of Industries,* as well as the results of company finance studies by the Reserve Bank of India. The workforce in the organised sector is estimated from the *Employment Review* published by the Directorate General of Employment and Training, Ministry of Labour.

With the exception of agriculture, forestry and fishing, estimates of value added in the *unorganised* sector are first prepared for a benchmark year. They are based on the number of workers in each economic activity together with estimates of value added per worker. Specifically:

- The data on unorganised employment for the benchmark year are taken from the Employment and Unemployment Survey, released every five years by the National Sample Survey Organisation (NSSO), as well as data from the decennial Population Census.
- The estimates of value added per worker for the benchmark year are compiled from the results of the follow-up Enterprise Surveys, carried out by the CSO and NSSO. These surveys use area frames provided by the Economic Census, conducted once in about seven years.

For other years, the benchmark estimates of GDP are extrapolated from various physical indicators and price indices. Clearly, the further the base year recedes into the past the less reliable the estimates become, and because of the large contribution of the *unorganised* sector, this significantly affects the overall reliability of the GDP estimates. Some of the physical indicators are also fairly crude and assume fixed ratios – for example between trade and commodity output – which may not be valid when the economy is undergoing structural change.

The estimates of value added in agriculture, forestry and fishing, for both the organised and unorganised sectors, are prepared using data from administrative sources, and they are based on the production approach. In the case of agriculture, production of crops is estimated from the total area devoted to each crop and the yield estimates. The value of output is estimated using the average prices in the primary marketing centers during the peak marketing period. Similarly, in the case of livestock products, output of milk, egg, wool, meat, etc., is estimated by the number of animals and the yield rates, and the value of output is derived using average farm-gate prices. Inputs of the agricultural sector are estimated using data from the Annual Cost of Cultivation Studies by the Ministry of Agriculture. Value added in respect to forestry and fishing is based on estimating ratios of inputs to outputs.

Final expenditure share of GDP

Estimates of household final consumption expenditure are obtained from a commodity flow table in which total supply (production plus imports) is allocated to intermediate or final uses. Total supply includes the value of farm products produced for consumption within the household. Household final consumption expenditure includes consumption expenditures of non-profit institutions serving households.

The annual estimates of government final consumption are compiled from budget documents of central and state governments.

Gross fixed capital formation is estimated by three different methods: as the sum of saving and net capital inflow from abroad; estimated purchases of capital assets; and capital outlays by user industries. Three independent – and different – estimates are thus generated. The first is considered to be the most accurate.

Estimates of changes in inventories are made separately for the public sector, the private corporate sector and the household sector. While estimates for the public and private corporate sectors are based on current data, those for the household sector use five-yearly benchmark surveys and assume steady net accumulation of inventories over the five-year period.

Acquisitions (*minus* disposals) of valuables are not currently accounted for in the national accounts due to lack of data (see Box 1).

Quarterly national accounts[2]

The CSO publishes quarterly GDP estimates, both at current and constant prices, for the following kinds of activities:

- agriculture, forestry and fishing;
- mining and quarrying;
- manufacturing;
- electricity, gas and water supply;
- trade, hotels, transport and communication;
- real estate, ownership of dwellings and business services; and
- other services.

The estimates are made by what is usually termed the *indicator approach*. The annual estimates for the previous year serve as the basis for the estimates, and the value added for each kind of activity is moved forward in line with various indicators. These include: quarterly agriculture production estimates; the monthly index of industrial production; monthly data on the production of cement, steel, commercial vehicles; cargo handled at

Box 1. **Household saving in India**

In India, gold plays an important role in household saving. As in many Asian countries, Indian women cherish gold jewellery, not only as a sign of wealth and proof of their husbands' devotion but also as an investment. Gold jewellery can easily be converted to cash at pawnbrokers or commercial banks, many of which have special counters for the purchase of gold ornaments. Prices are determined by weight without consideration of artistic merit. Much of this jewellery is bought by banks in Europe, where it is melted down to ingots before finding its way back to Asia to be converted into jewellery, thus restarting the cycle.

The *1993 SNA* came up with the notion of "valuables" in recognition of the fact that in countries like India acquisition and disposal of gold constitutes a significant form of household saving. But Indian statisticians have not devised a way of estimating inventories or net changes in the value of gold held by households and do not record valuables in the national accounts. However, this form of saving is important for people who do not have access to bank loans, such as farmers needing money for seeds or fertilisers or small-scale entrepreneurs wanting to purchase equipment or premises. The level and changes of true household saving, *i.e.* including gold, may be quite different from the published estimates.

A special feature of the CSO estimates of household saving is that they start from estimates of households' financial saving ("net lending" in SNA terminology). These are then adjusted by adding or subtracting capital transfers, capital accumulation and consumption of fixed capital to arrive at an estimate of household saving. This is an unusual way to proceed, since most countries prefer to estimate household saving by compiling a full set of income and outlay accounts, showing the progression from income earned from production through to disposable income and household saving. India's CSO cannot yet do this, which is why it must start from the side of financial saving.

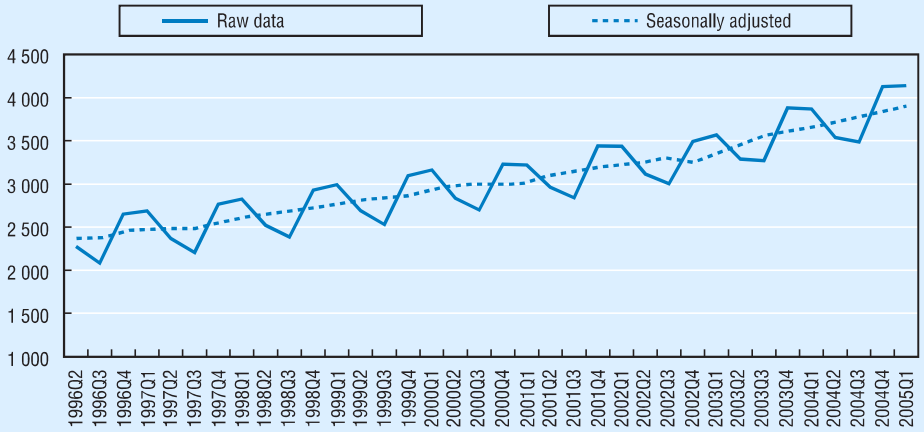
major ports; bank credits and deposits; postal and telecommunication revenue; net premiums received on life and non-life insurance; and revenue expenditure of central government.

As each new set of annual estimates becomes available, the quarterly estimates are revised to be consistent with them.

As in most non-OECD countries, India does not seasonally adjust the quarterly accounts. Figure 2 shows that there is very marked seasonality in the quarterly series, and in the absence of a seasonal adjustment, users have to compare the current quarter with the same quarter in the previous year. In trying to detect the latest changes in the economy, users are effectively making use of only two quarterly observations, and is less efficient than using a seasonally adjusted series that makes use of several recent quarters. The seasonally adjusted series in Figure 2 is calculated by the OECD using the Census X-12 method and is published in the OECD's *Main Economic Indicators.*

Figure 2. **Quarterly GDP: original and seasonally adjusted data**

100 million rupees, 1993-94 prices



Estimates at constant prices

For most kinds of economic activities, current price estimates are prepared first and then converted into constant prices. But for activities for which the estimates are first made using labour inputs, it is the other way round (constant prices are converted into current ones).

There is no unified approach for compiling the constant price estimates; for goods-producing activities double deflation is generally used, while for other activities either single deflation or extrapolation using a volume indictor is used.

5. Publication of national accounts

India releases its GDP estimates by economic activity every three months; the estimates for a given quarter are released at the end the next quarter.

Initial estimates of annual national income are released by the CSO, approximately two months before the end of the year, and they're known as "advance estimates" for national income. These cover the Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP), Net Domestic Product (NDP), as well as per capita net national product at factor cost, and GDP by industry. Estimates are made at both current and constant prices (see Box 2).

Box 2. **Advance estimates**

India's CSO is one of the few government statistical agencies to publish advance estimates of the main national accounts aggregates. These are released in January, or about two months before the close of the fiscal year used for national accounts, which runs from the beginning of April to the end of the following March. In most countries, forecasts of the annual output are published by private research institutes, or in some countries by finance ministries as part of the budget process.

The advance estimates give current and constant price estimates of Gross and Net National Income, Gross and Net Domestic Product and per capita National Income. The advance estimates use information on expected agricultural production – usually quite firm by that time – and data on production during the previous eight months for the mining, manufacturing, transport and banking sectors. Estimates for government are mainly based on the budget estimates. The advance estimates are subsequently revised four times – once when the "quick estimates" are released 10 months after the end of the financial year, and in the three following years. As Table 3 indicates, quite large revisions are often made to the advance estimates.

Table 3. **Real growth rates in GDP estimates**

	Advance estimates	Revised advance estimates	Quick estimates	First revision	Second revision	Third revision
1999-2000	5.9	6.4	6.4	6.1	6.1	6.1
2000-01	6.0	5.2	4.0	4.4	4.4	4.4
2001-02	5.4	5.4	5.6	5.8	5.8	
2002-03	4.4	4.3	4.0	4.0		
2003-04	8.1	8.2	8.5			
2004-05	6.9	6.9				

Advance estimates are released two months before the close of the year, on 7th February.
Revised advance estimates are released along with fourth-quarter estimates, three months after the close of the fiscal year.
Quick estimates are released 10 months after the close of the fiscal year, on 31st January.

Source: India's National Accounts Statistics (various publications and press notes).

The next estimate is referred to as the "quick estimate" and is released 10 months after the end of the fiscal year – *i.e.* in January. There are additional revisions in each of the three following years.

6. Where to find data on India's national accounts

The Central Statistical Organisation publishes full details of the national accounts in its annual publication, *National Accounts Statistics.* For long time series, see *National Accounts Statistics, Back Series 1950-51 to 1992-93* (CSO 1999). Recent national accounts can be accessed at *http://mospi.nic.in/mospi_nad_main.htm.* A convenient site for summary national accounts statistics is provided by the Reserve Bank of India – *www.rbi.org.in.*

The CSO last published methodological information in *National Accounts Statistics – Sources and Methods, 1989*. An exhaustive review of Indian national accounts by Uma Datta Roy Choudhury was published in 1995 (*National Income Accounting*, MacMillan India, New Delhi 1995). More recent methodological reports have been written by Ramesh Kolli of the CSO National Accounts Department and can be accessed via the Internet under his name.

There are several international sources for Indian national accounts statistics, including the OECD *http://stats.oecd.org/mei*, and the IMF *http://dsbb.imf.org/Applications/web/sddsnsdppage/*. Both websites contain methodological information as well as the latest statistics.

7. Conclusions

In her book, *National Income Accounting*,[3] Roy Choudhury summarises a long-standing debate within India on the reliability of the country's national accounts. She describes four approaches that have been used to assess the accuracy and reliability of the accounts:

Comparison of alternative estimates. In the national accounts, household consumption expenditure is estimated by the commodity-flow method in which the supply of goods and services is first estimated from statistics on imports and domestic production and is then allocated to its various uses – namely exports, intermediate consumption, net additions to inventories, government consumption and household consumption. But for many years, India has done a national sample survey of households (NSS), which provides data on expenditures and consumption of own produce that should be broadly comparable with the national accounts figures. Studies made in the 1970s[4] showed that the CSO figures used in the national accounts were generally 5% to 10% higher than the NSS figures, suggesting possible overestimation of household consumption and the possible under-estimation of other uses. ▶ I.

I. Many OECD countries record discrepancies of a similar size between the expenditures reported in household budget surveys and national accounts estimates of private final consumption expenditure. The difference is partly explained by under-reporting in household surveys of expenditure on tobacco, alcohol, gambling and other expenditures than members of the household wish to minimise or to conceal from other household members. In addition, the coverage of household surveys is usually more restricted than the household sector as defined in the national accounts.

Discrepancies in GDP estimates from the production and expenditure sides. Roy Choudhury shows that over a period of nearly 40 years the difference between GDP expenditure and GDP production has ranged from –2.6% to +1.4%. There is no evidence of bias (*i.e.* one estimate consistently exceeding the other), and the differences appear to be falling over time.

Revisions of estimates. Leaving aside the advance estimates, which are more like forecasts, she found that the revisions are usually upwards, but they are not large. And by the time the final revision has been made the difference is usually +1% or less. At first, this seems comforting, but it is really more a measure of the uncertainty surrounding the initial estimate rather than a measure of inherent reliability. The fact that later revisions are small may just mean that no better information subsequently became available to correct an estimate that was based on weak data in the first place.

Estimation procedures. For several parts of the accounts, only partial data are available, or complete data are available only for an earlier period. The national accountants then have to base their estimates on assumptions about relationships between some currently available statistic and their target statistic. Roy Choudhury cites several estimation procedures that she considers dubious, including the assumption that value added by household enterprises in trade and transport moves in line with the estimated total value of commodity output, and that rural household investment moves in line with the level of output in agriculture and related activities. Overall, Roy Choudhury finds that more than 60% of total GDP is based on current information that directly measures the target variable. This implies that a substantial portion of the accounts are still based on outdated statistics and assumptions that may be questionable.

This last point on the estimation procedures is particularly important. As noted above, nearly 60% of GDP generated is attributed to the *unorganised* sector, and these estimates are based on information that is only being updated at intervals of five years or more. This may have mattered less when GDP was growing slowly, but with the rapid growth recorded since the 1990s the assumptions of stable relationships between employment and value added that underlie the estimates are highly questionable.

Rapid structural changes also affect the reliability of the constant-price estimates. These use a fixed base year that is updated once every decade. The high growth rates now being recorded mean that the base year used will rapidly become out-of date; in general, the use of base year prices that are no longer representative exaggerates inflation.

An attempt to quantify error margins was made about 50 years ago by India's National Income Committee. Based on "expert guesses" of the likely margins of error for each kind of activity in the national accounts of 1948, the committee concluded that margins of error ranged from 10% in the *organised* sectors of mining, manufacturing, finance, rail transport, etc., to 20% in agriculture, and to more than 30% in *unorganised* manufacturing trade, transport and other services. The committee also concluded that assuming independence

in the errors (so that some would cancel out), GDP was likely to have an overall error level of around plus or minus 10%. It is clear that data sources and estimation procedures have improved substantially since then, but it seems realistic to assume that at the present time error margins are at least 5% at the level of total GDP, with larger errors in economic activities in which unorganised producers are particularly important.

Notes

1. The CSO has presented a number of detailed papers describing the sources and methods of the Indian national accounts at meetings of the *Delhi Group on Informal Sector Statistics*. See in particular Ramesh Kolli and S Hazra, *Informal Sector Contribution in the Net Domestic Product – Indian Experience* and Ramesh Kolli *Measuring Non-Observed Economy – Practices Followed in Indian National Accounts Statistics.* These papers are available on the Delhi Group web-site: unstats.un.org/unsd/methods/citygroup/delhi.
2. For a full description of the sources and methods for India's quarterly accounts, see Ramesh Kolli, Data Sources used to Compile Quarterly GDP Estimates – Experience of India, OECD/ADB/ESCAP Workshop on Quarterly National Accounts, June 2002, Bangkok, *www.unescap.org/stat/meet/qgdp/qgdp.asp.*
3. Uma Datta Roy Choudhury National Income Accounting, MacMillan India, 1995 (pp. 252-263).
4. Minhas *et al*., Journal of Income and Wealth, July 1980.