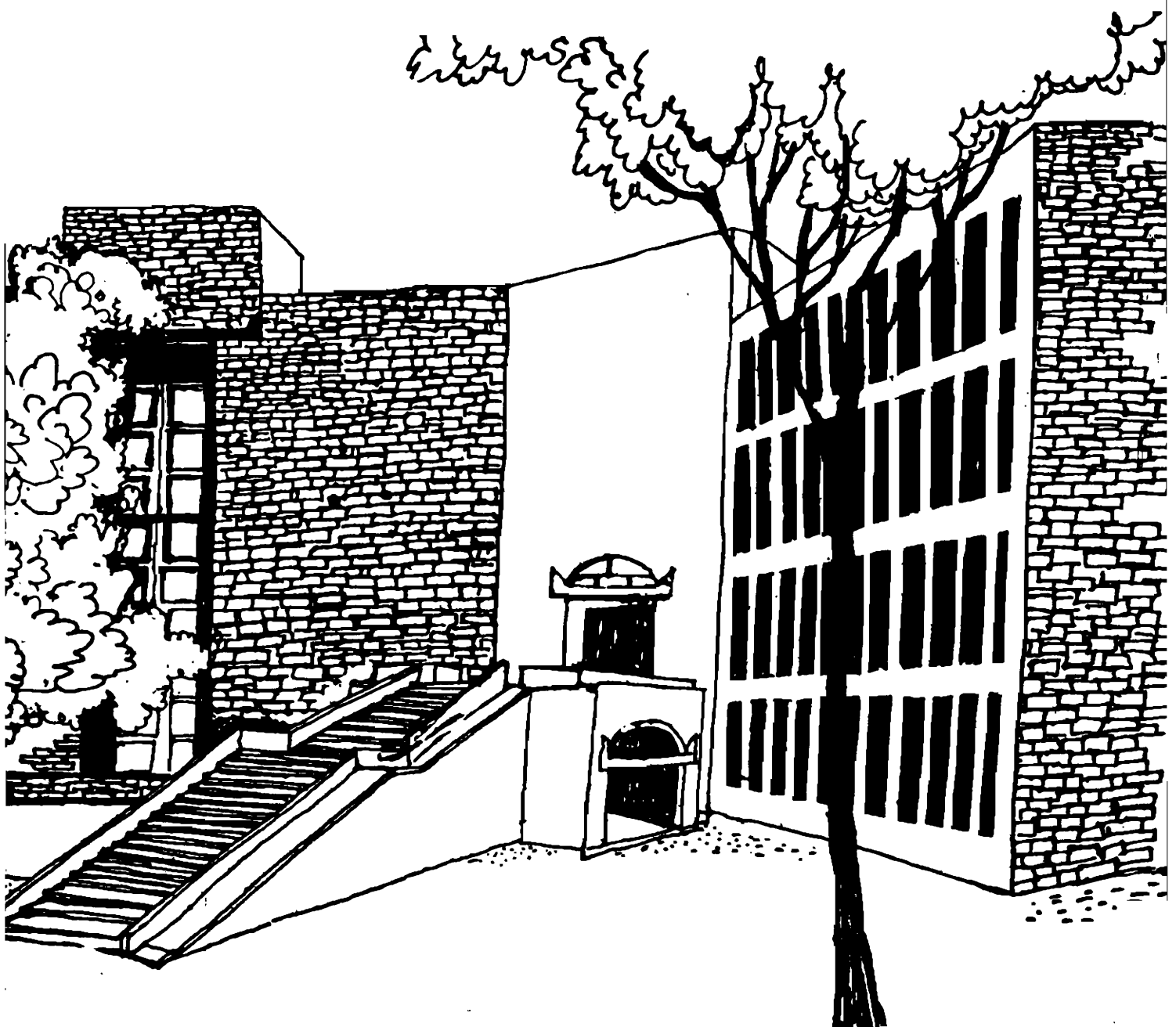




Working Paper



**FIRST ESTIMATES OF STOCK OF CAPITAL
AT STATE LEVEL
AND DATA GAPS IN INDIA**

By

Ravindra H. Dholakia

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**First Estimates of Stock of Capital at State Level
and Data Gaps in India**

- Ravindra H.Dholakia
IIM, Ahmedabad-380015

Abstract

In the present paper the methodology and data sources to construct estimates of capital stock as on March 31, 1961 for 15 major state economies in India are described pointing out gaps in the availability of required data. The estimates of capital stock at state level in India are also presented by three broad sectors: primary, secondary and tertiary for the year 1960-61.

First Estimates of Stock of Capital at State Level
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Official estimates of the capital stock for the Indian economy were first published by CSO in December 1988. They pertained to the stock as on March 31, 1981. Several non-official estimates of the capital stock or the stock of reproducible tangible wealth for the Indian economy were made for earlier years by individual scholars and the Reserve Bank of India. Most of these were referred to by the CSO (1988). The ones which were not mentioned by CSO (1988) are Bakul Dholakia (1974) and Brahmananda (1982) who bring out the relevance and usefulness of such estimates to the analysis and evaluation of the growth experience of the Indian economy. Implicitly assumed growth of capital stock in the preparation of India's Seventh Five Year Plan was also brought out and its implications examined for the consistency and feasibility. (See Ravindra Dholakia, 1986). The Eighth Five Year Plan, however, remains silent on this critical parameter in spite of an official estimate of capital stock for the Indian economy being available to the Planning Commission at the time of its preparation. The Planning Commission's neglect of the CSO's efforts and CSO's neglect of individual scholars' efforts at estimating and using such estimates for various purposes provide a background to the task of estimating capital stock at state level in India.

No official estimate to-date exists for the capital stock in any of the Indian states. Even in terms of individual efforts, this field has not received much attention. The only available set of estimate of capital stock at state level in India was prepared as a part of a Ph.D. Thesis (See, Ravindra Dholakia, 1977). These estimates pertained to 15 major state economies in India for the years 1961 and 1971 and covered the primary, secondary and tertiary sectors. These estimates were used by Dholakia and Dholakia (1980) for examining interstate variations in incremental capital output ratio and by Ravindra Dholakia (1983) for examining interstate variations in capital intensity and capital productivity in India. With marginal revisions, the estimates were published in a book (Ravindra Dholakia, 1985) devoted to analysis of regional growth disparities in India. The book describes the methodology of estimation of capital stock briefly in an appendix. The purpose of the present paper is to describe the methodology in detail pointing out the gaps in the availability of required data to estimate capital stock at state level in India. It may be noted here that these estimates suffered from several limitations. Most of these were on account of data availability. However, some of them were also on account of constraints of time and resources faced by the author. Thus, there is a scope for improving the estimates even with the same state of availability of data in certain sectors.

Before we discuss the methodology and data gaps for estimating capital stock for Indian states, it is necessary to

point out that the concept of capital stock used in the study corresponds essentially to capital as a factor of production. However, as is commonly the case, such a definition is hardly ever followed rigidly in practice. (See Denison, 1967; p.34). It may also be noted that the stock of capital in the study refers to the capital stock existing in different states at a point of time rather than the capital stock belonging to different states. Thus, these estimates are consistent with the state income estimates which are based on income originating concept rather than income accruing concept. The study aimed to initiate the efforts in the direction of preparing some rudimentary estimates of the stock of real capital for each of the major 15 Indian ~~states for~~ the years 1961 and 1971 which would be broadly consistent and comparable in scope and coverage over the period and among the states. The procedure followed for this purpose was to estimate the capital stock by detailed sectors of the state economy as identified in the income accounts.

The method of estimation varied from sector to sector largely on account of differing degrees of availability of basic statistical source material. Estimation of capital stock as on March 31, 1961 for the major state economies in India is discussed for selected sectors along with gaps in the availability of required data in the following sections.

II Capital Stock in Agriculture

For the purpose of estimation, capital stock in agriculture can be conveniently classified into the following six components (i) Public Irrigation, (ii) Private Irrigation and other land improvements, (iii) Farm Houses, (iv) Agricultural Implements and Machinery, (v) Livestock, and (vi) Working Capital in agriculture. Looking to the basic method of estimation, we can group these six components into the following four broad categories:

(a) **Public Irrigation and Private Irrigation:** The basic source of data for this category consists of different editions of Indian Agriculture in Brief issued by Directorate of Economic & Statistics, Ministry of Food, Agriculture, C.D. and Co-operation, Government of India. This publication gives data on the classification of land by source of irrigation. However, it does not provide classification by public and private sources. Since the public irrigation consists largely of the irrigation by canals, we can take the area under public irrigation to be equivalent to the area under Government canals. The net area under private irrigation can be obtained by deducting the net area under public irrigation from the total net area under irrigation. The state plan documents could be considered as an important source for the value of capital stock in public irrigation. However, they suffer from some limitations, e.g., (i) they cover only state sector schemes; (ii) regional allocation in major projects involving more than one states as beneficiaries is not given;

(iii) planned expenditures and actual expenditures differ substantially; (iv) time flow of actual expenditures by items are not readily available at state level and more so for district and block level schemes; etc. Although most of these problems can be effectively tackled and resolved by the State Statistical Bureau (SSB) interested in obtaining the estimate of capital for the concerned state, such data are currently not available readily or in published form. Moreover, the problem of estimating the value of the capital stock in public irrigation in a state at the beginning of planning would still remain.

Thus, in view of almost complete lack of required information on the value of capital in public and private irrigation at the state level, what we can assume is that the value of the capital stock in public irrigation per hectare of area under public irrigation remains the same in each state as the corresponding national average in the base year 1960-61. Similarly, we may assume that the value of capital in private irrigation per hectare of area under private irrigation also remains the same in each state as the corresponding national average in the base year 1960-61. Since the required values of net capital stock in public and private irrigation at the All-India level for the base year 1960-61 are available from the study by B.H.Dholakia (1974; p.153), we can find out the values of the net stock of capital in public and private irrigation for the year 1960-61 for each state.

(b) Farm Houses and Agricultural Implements & Machinery: The basic source of data for this category consists of the survey conducted by the Reserve Bank of India (1965). However, there are some limitations of these data from our point of view. Firstly, this survey covers only the rural households. Secondly, the 1961-62 survey (AIRDIS) refers to 31st December, 1961. Finally, it reports the stock of buildings and implements & machinery owned by cultivator and non-cultivator households, but does not provide any information on the stock of buildings and implements and machinery used in farm business by states. However, the 1961-62 survey (AIRDIS) gives the information on the stock of buildings and implements and machinery used in farm business at the all India level. Applying these proportions obtained at the All India level for the cultivator and non-cultivator households to the reported values in each state, we can derive the corresponding estimates of the value at current prices of farm houses and agricultural implements and machinery for rural households in each state.

The estimates of farm houses and agricultural implements and machinery so derived for the year 1961-62 (i.e., 31st Dec. 1961) had to be carried backward to March 31, 1961. For this purpose a later survey by RBI (1976) can be used by making the same adjustments as described above. This survey referred to June 30, 1971. These figures can be extrapolated geometrically to derive corresponding estimates for the year 1960-61 (i.e., 31st March 1961). Having so obtained the estimates of the stock of real capital in

farm houses and agricultural implements and machinery for rural areas, we can derive the corresponding estimates for all areas in each state by assuming that the value of each of these components per agricultural worker in urban areas remains the same as that in rural areas.

(c) **Livestock:** The basic source of data on livestock in Indian States consists of the above mentioned two surveys by the RBI and the Livestock Census of 1961. The two surveys by the RBI gives data on the value of livestock owned by rural households at current prices for the two years 1961-62 and 1971-72. These figures suffer from the same limitations as pointed out earlier in the case of farm houses and agricultural implements and machinery. Moreover, in the case of livestock, we do not have any information contained in the same source regarding the value of livestock actually used in the farm business even at the all India level. We have, therefore, to depend on the study made by B.H.Dholakia (1974) for the proportion of livestock used in farm business. Applying this ratio to the reported figures on the value of livestock owned by rural households, we can arrive at the value of livestock used in farm business at current prices for rural households in each state for the years 1961-62 and 1971-72. Then, we can geometrically extrapolate these figures to get the corresponding figure in each state for 1960-61. We can then assume that value of livestock per agricultural worker in urban areas remains the same as that in rural areas in each

state.

(d) Working Capital in Agriculture: Although some studies at the all India level, make a flat assumption that the stock of working capital in agriculture forms one-tenth of the corresponding net product (See, Bakul Dholakia, 1974 and RBI Bulletin, 1965), we can make use of the data from farm management studies in different states to derive appropriate percentages. This would capture interstate variation in the working capital requirements in agricultural sector. The estimates of all these components of the capital stock in agriculture for Indian states for the year 1960-61 (i.e. March 31, 1961) are presented below in Table 1.

III Registered Manufacturing

The basic source of data for estimating capital stock in this sector of the state economies in India consists of various volumes of the Annual Survey of Industries (ASI), which contain detailed data on the census sector industries; and various reports of the National Sample Survey (NSS) containing data on the sample sector industries. However, there are some obvious limitations of data given by these survey reports. Firstly, the data given by the ASI Census and sample sectors do not exhaust the entire Registered Manufacturing sector because ASI gives data only for the reporting units. Therefore, the ASI data by themselves are not consistent with the income estimates in the

Registered Manufacturing sector prepared by the State Bureaux. Secondly, the data given by ASI on the fixed capital represent the depreciated book values of capital assets which hardly make any sense as far as their economic interpretation is concerned.

Regarding the first limitation of these data, we can take the ASI Census plus Sample sectors less industry groups 511 and 512 as comprising a fairly major part of the Registered Manufacturing sector in any state economy in India. In order to get an estimate of the net stock of capital that is consistent with our estimates of income originating from the same sector, we can apply the capital-output ratio obtained from the ASI Census plus sample sectors less industry groups 511 and 512 to our corresponding estimates of the income originating in the Registered Manufacturing sector. This amounts to assuming that the part of the sector not reported by ASI also has the same capital-output ratio as the one reported by ASI. In the light of the availability and nature of data, this seems to be perhaps the most plausible assumption to make. Regarding the second limitation of these data, the problem is to get an estimate of the net stock of fixed capital for the bench-mark year 1960-61 at current prices.

To resolve these two problems, we can follow the so-called "perpetual-inventory" method which consists in preparing a fairly long time series of capital formation at the constant base year prices and cumulating the figures year by year after making deductions for capital consumption. (For details see, Goldsmith,

1951; and Barua, 1959]. However, in view of the inadequacy and non-availability of the required data to prepare a fairly long time series of fixed capital formation for each state in India, we have to estimate the net stock of fixed capital in the sector directly.

To obtain the estimate of the net stock of fixed capital in ASI Census plus Sample sector less industry group 511 and 512 for the bench-mark year 1960-61, we can make the use of price-inflators at all India level for the year 1960-61 estimated by B.H.Dholakia (1974). These price-inflators at all India level are estimated at 1.6004 for structures and construction and 1.4477 for machinery and equipments. The next task is to obtain the value of structures and construction and machinery and equipment for each state in the year 1960-61. However, the data given by ASI at the state level are not so disaggregative and at the disaggregated level where the ASI reports the data by industry and by states, we almost invariably find some of the states being clubbed in each industry group. The clubbed category of states also does not remain the same for different industries. This practice might have been followed with a view to avoiding identification of individual units. However, the result is that we cannot get the value of structures and construction and machinery and equipment for each state in the year 1960-61.

Under these circumstances, what we can do is to take the composition of structures and construction and machinery and

equipment in the total fixed capital of those industries for which the required break-up is available at the state level. We may, then, assume that the remaining industries in a given state also have, in aggregate, the same average composition of fixed capital (i.e., break-up into structures and construction and machinery and equipment) as the one obtained by aggregating the separately available industries in that state. We may, then, use the composition of fixed capital so obtained as weights to be attached to the price-inflators for structures and construction and machinery and equipment estimated at the all India level to derive an overall price-inflator for the state in question. Table 2 below gives the proportions (weights) of structures and construction and machinery and equipment in the total fixed capital in the separately given industries along with the overall price-inflator, so derived, in each state for the registered manufacturing sector.

By applying these price-inflators to the reported figures on total fixed capital in ASI Census plus sample sector less the industry groups 511 and 512, we can arrive at the corresponding net stock of fixed capital in 1960-61 at current prices. Adding to this, the corresponding stock of working capital which is reported at current prices only, we can get the corresponding total net stock of capital. Then by taking the ratio of the of capital so derived with the corresponding value added, the required estimates of the capital-output ratio for the 1960-61 for the Registered Manufacturing sector in all the

Indian states.¹ These ratios are presented along with other ratios in the Table 3 below.

IV Unregistered Manufacturing:

Actually, there does not exist any basic statistical source of data pertaining to capital particularly for the year 1960-61 in this sector. However, for the purpose of estimating capital stock in this sector, we can make use of the data on ASI sample sector because the industries covered by ASI in its sample sector are on an average small in size and, therefore, can serve as a good proxy for the Unregistered Manufacturing sector. Here, it should be noted, we certainly do not mean to use the capital-output ratio in the ASI Sample sector for the Unregistered Manufacturing sector. All that we need to assume is that the interstate variations in the capital-output ratio in the Unregistered Manufacturing sector remain the same as the interstate variations in the capital-output ratio in the ASI sample sector, because at the all India level, estimate of the capital-output ratio in Unregistered Manufacturing sector for the year 1960-61 is available from a study by Roy Chaudhury (1977).

The method of obtaining the estimates of capital-output ratios in Unregistered Manufacturing sector of each state economy in the two years consists in preparing a series of capital-output

¹ The capital output ratios obtained for old Punjab are assumed to apply to both Punjab and Haryana for 1960-61 for the sectors Registered Manufacturing, Unregistered Manufacturing and Electricity, gas and water supply.

ratios by states as well as all India for the ASI Sample sector and, then, taking index of these series with all India capital-output ratio as the base and then applying these indexes to the estimates of capital-output ratios at all India level for the Unregistered Manufacturing sector given by Roy Chaudhury (1977) to get the corresponding estimates of capital output ratios in the Unregistered Manufacturing Sector for each state in the year 1960-61. These ratios are presented in Table 3 below along with other ratios.

For this purpose, we require the net stock of fixed capital at 1960-61 prices for the ASI sample sector. The figures reported by ASI represent the depreciated book values which suffer from the same limitations as already pointed out in the preceding section of the present paper. Moreover, ASI does not report the composition of fixed capital in the sample sector by states. Therefore, we can use the same overall price-inflator derived above for the Registered Manufacturing sector for each state to convert the 1960-61 book values into the net stock of fixed capital at current prices in the ASI Sample sector. Then, adding the stock of working capital to the net stock of fixed capital, so derived, for the year 1960-61, and then, dividing the total net stock of capital by the corresponding value added, we derive the capital-output ratio in the ASI sample sector for the year 1960-61.

V Electricity, Gas and Water Supply:

The basic source of data on capital in this sector consists of various annual reports of the ASI. The industry groups 511 and 512 reported by the ASI represent a large part of this sector and hence we can follow exactly the same method to estimate net stock of capital in Electricity, gas and water supply sector as we have followed in the case of the Registered Manufacturing sector. For these industry groups viz., 511 and 512 details about the composition of fixed capital are available at the state level for the year 1960-61 for all states except Kerala, Orissa and Tamil nadu. In respect of these three states, the details pertaining to the industry groups 511 & 512 are clubbed along with the Union Territories of Delhi and Tripura since each of these states had only one factory reporting the data. To separate the fixed capital, working capital and value added in these three states, we can use the following method. First of all we can get the total number of factories in each of these individual states for which separate data are not available. Then, we can sum up such factories in each region to get the total of factories for which separate data are not available for one or more of these five regions. Then, we can take the corresponding data on totals of fixed capital, working capital and value added for each state for the number of factories for which separate data are not available. Thus we can talk about the per factory value for the category of clubbed industries for each state and each aggregate. Then, the regional profile of per

factory value (in this category) in relation to average value for each aggregate for all (i.e., five) regions can be assumed to be valid for the industry groups 511 & 512 also, so that it can be applied to the per factory value of the corresponding aggregate for all regions for the industry groups 511 & 512. With the help of the per factory values of the three aggregates so obtained, we can find out total of each aggregate in each state for the industry groups 511 & 512. Applying their percentage distribution to the corresponding reported totals, we can get the estimates of fixed capital, working capital and value added for the three states viz., Kerala, Orissa and Tamil Nadu for the industry groups 511 & 512 in the year 1960-61. For these industry groups, the proportions of structures and construction and Machinery and equipment in fixed capital in these three states can be assumed to be the same as those for the clubbed category of the states as a whole.

Now, we can use the composition of fixed capital as the weights to be attached to the all India figures based on the reported break-up of fixed capital into structures and construction and machinery and equipment to derive the overall price-inflators in the case of each state for converting the 1960-61 reported book values of fixed capital into the net stock of fixed capital at current prices for the ASI industry groups 511 & 512. The composition of fixed capital (weights) and the price-inflator so obtained for each state for electricity, gas and water supply sector are presented below in Table 2.

By applying these price-inflators to the reported figures on fixed capital, we can get the net stock of fixed capital in 1960-61, adding the stock of working capital in 1960-61 to which would yield the total net stock of capital in 1960-61 in the ASI industry groups 511 & 512. Taking a ratio of the total net stock of capital to the value added in 1960-61 would generate the required estimate of the capital-output ratio in the year 1960-61 for each state. These ratios are presented below in Table 3 along with other ratios.

VI Residential Dwellings:

The basic source of data on capital stock in this sector consists of the two surveys made by the RBI (1965 and 1976). The surveys report the value of the stock of buildings owned by rural households at current prices. Out of this, the stock used in farm business is referred to as Farm Houses. We have already separated Farm Houses from the total stock of buildings (see section II-b above). The remaining stock of buildings fall under the category of Residential Dwellings in rural areas. By following the same methodology as we did in the case of Farm Houses above, we can get the estimates of the net stock of capital in Residential Dwellings for rural areas in the year 1960-61. For the urban areas, however, in the light of complete lack of information, we can use the estimate at the all India level obtained directly from the data given in the Brochure on the Revised Series of National Product, CSO (1967), pp.63-67 for

the bench-mark year 1960-61 at current prices to compute the per capita value of Residential Dwelling in urban areas in the year 1960-61. This value turns out to be Rs.470.37 which can be applied to each state in order to get the net stock of capital in Residential Dwellings in urban areas for the year 1960-61.

VII Other Sectors:

In this section, our primary task is to derive consistent and comparable estimates of the net stock of capital in the following sectors of the 15 major state economies in India for the year 1960-61: (1) Forestry and Fishing, (2) Mining and Quarrying, (3) Construction, (4) Railways, (5) Communication, (6) Transport by other means, (7) Trade, Storage, Hotels and Restaurants, (8) Banking and Insurance and (9) Other services. Unfortunately, practically no information at the state level in India is readily available on the basis of which we can prepare consistent and comparable estimates of the net stock of capital in these sectors in the year 1960-61. However, at the all India level, some work has been done in this direction by individual scholars. Two of such studies taken together provide the capital output ratios for all the nine sectors mentioned above for the year 1960-61 (See, Roy Choudhury, 1977, and B.H.Dholakia, 1974). For seven of the nine sectors mentioned above, viz., Mining and Quarrying, Railways, Communications, Transport by other means, Trade, Storage, Hotels & Restaurants, Banking & Insurance and Other Services, the study made by Roy Chaudhury (1977) gives the

capital-output ratios for the year 1960-61 at the all India level. For the remaining two sectors, viz., Forestry & Fishing and Construction, the study made by B.H.Dholakia (1974) gives the estimates of the capital-output ratio for the year 1960-61 at the all India level. These capital-output ratios at all India level by the nine sectors for the year 1960-61 are presented below in Table 4. To derive the estimates of the net stock of real capital in these nine sectors in each State, we can assume that the capital-output ratio at 1960-61 prices in each one of the individual sectors remains the same in all states. In other words, we assume that the all India sector-wise capital-output ratio applies to all states in the respective years.

With the help of the estimates of real income originating by detailed sectors in different state economies and the capital-output ratios given in Tables 3 & 4, we can arrive at the estimates of net stock of real capital in all the sectors (except agriculture and residential dwellings) of the state economies in India. The estimates of agricultural capital stock and of residential dwellings are directly derived. The detailed sectoral estimates of state domestic product (SDP) for the year 1960-61 are presented below in Table 5. These estimates are essentially from CSO as far as the aggregate is concerned. The methodology to derive sectoral estimates in each of the state economies is discussed by R.H. Dholakia (1985, Appendix A). The estimates of net capital stock aggregated into three broad sectors are presented below in Table 6.

VIII Concluding Remarks:

In the present paper, detailed methodology followed to construct the first estimates of capital stock in 15 major Indian states for the year 1960-61 is described. As it can be readily observed, the estimates are rudimentary since they are based on several empirical assumptions to replace hard data and information. In most of the cases, the assumptions are inevitable because of complete lack of the required information at the state level. National parameters are used for each state economy in some cases. While such a method necessarily ensures comparability and compatibility of the concept and estimates of the regional aggregate, it fails to capture the regional variations reflecting special features of the state economies. However, in the initial stages of estimation efforts such compromises have to be made. With passage of time, most of the data gaps can be filled. In any case, with respect to the supra-regional transactors, CSO is currently providing the estimates of the gross fixed capital formation to different SSBs. With some more efforts, CSO can provide the estimates of capital stock in these sectors to the SSBs.

Reliable estimates of capital stock at state level can throw very useful light on the Indian growth experience and analysis. At a later stage, one can also consider the question of the behaviour of factor rewards and the role of governmental interventions across states in India. It may be noted here that for such purposes we need the estimates of capital stock and real

capital formation including changes in stocks or working or circulating capital. Although the estimates of the fixed capital formation at constant prices is a welcome addition to the state income accounts, more useful estimates would be for the capital formation at constant prices. Only the latter estimates can be used to calculate incremental capital output ratio at the state level and hence the overall investment rate for the state. Estimates of saving rate for the state can, then, be used for estimating the net flow of savings to or from the state. This could provide an important link in the preparation of more comprehensive state income accounts considering the interstate capital flows. One possible way to estimate the capital formation at constant prices is by taking difference between real capital stock at two points.

Recently, SSBs have also started preparing estimates of gross state domestic product along with net state domestic product. An implicit estimate of depreciation by sectors is thus available at the state level. Even a rudimentary estimate of Fixed Capital Stock by sectors at state level would make the estimate of depreciation or capital consumption more meaningful. Unfortunately, the estimates discussed in the present paper do not provide the break-up between fixed capital stock and working capital in several sectors of the state economies. A lot of work needs to be done in this field very urgently to improve the quality of state accounts.

REFERENCES

1. Barna T. (1959): "Alternative Methods of Measuring Capital," in *Income and Wealth*, Series VIII, R. Goldsmith and C. Saunders (eds.), London: Bowes and Bowes.
2. Brahmananda, P.R. (1982): *Productivity in the Indian Economy - Rising Inputs for Falling Outputs*; Bombay: Himalaya Publishing House.
3. CSO (1988): *Estimates of Capital Stock of Indian Economy As on 31 March, 1981*, Ministry of Planning, Govt. of India, December.
4. Denison E.F. (1967): *Why Growth Rates Differ: Postwar Experience in Nine Western Countries*; Washington D.C. : The Brookings Institution.
5. Dholakia B.H. (1974): *Sources of Economic Growth in India*, Baroda, Good Companions.
6. Dholakia. B.H. and R.H.Dholakia (1980): "State Income Inequalities and Interstate Variations in the Growth of Real Capital Stock in India." in *Economic & Political Weekly*, Vol.15. Sept.20.
7. Dholakia R.H. (1977): *Interstate Variations in Economic Growth in India*, Ph.D. Thesis, M.S.University of Baroda, April.
8. Dholakia, R.H. (1983): "Regional Aspects of Economic Growth and Productivity Change in India." *Indian Economic Journal*, Conference Number, December.
9. Dholakia, R.H. (1985): *Regional Disparity in Economic Growth in India*, Himalaya Publishing House, January.
10. Dholakia, R.H. (1986): "Sources of Economic Growth in India Implied by the Seventh Five Year Plan 1985-90," *Indian Economic Journal*, Vol.33, No.4, April-June.
11. Goldsmith, R. (1951): "A Perpetual Inventory of National Wealth," *Studies in Income and Wealth*, Vol.14, New York: National Bureau of Economic Research.
12. RBI (1965): "All India Rural Debt and Investment Survey, 1961-62. Tangible Wealth, Capital Expenditure and Capital Formation of Rural Households," *RBI Bulletin*, June.

13. RBI (1976): *All India Debt and Investment Survey, 1971-72, Assets and Liabilities of Rural Households As on 30th June, 1971*, Bombay.
14. RBI Bulletin (1965): "Estimates of Saving & Investment in the Indian Economy: 1950-51 to 1962-63," March.
15. Roy Chaudhury, U.D. (1977): "Industrial Breakdown of Capital Stock in India." *Journal of Income & Wealth*, Vol.1, No.2, April.

Table 1

**Estimates of the Stock of Capital in Agriculture at
1960-61 Prices for the Year 1960-61
(As on March 31, 1961)**

(Rs. in lakhs)

States	Public Irriga- tion	Private Irriga- tion	Farm House	Imple- ments & Machinery	Live- stock	Working capital
1. Andhra	24463	37126	10169	5093	19467	6836
2. Assam	1335	12585	2636	1064	6083	1464
3. Bihar	9922	35655	11514	3570	16605	4310
4. Gujarat	1206	14430	7248	6613	16178	2648
5. Haryana	16302	5837	4372	1947	7949	586
6. Karnataka	4284	14640	7193	4234	12952	3728
7. Kerala	2939	4740	4851	1215	2017	1495
8. M.P.	8123	11324	7904	6620	23503	5050
9. Maha- rashtra	3950	20081	7419	7497	20747	4732
10. Orissa	3654	18213	4873	1973	7579	1819
11. Punjab	20809	19707	6861	3754	11186	658
12. Rajasthan	9922	28416	6387	5442	24201	1635
13. Tamil Nadu	16321	36962	8304	5814	11158	5681
14. U.P.	36926	71986	26660	12187	42106	10184
15. W. Bengal	7252	22415	6891	2176	9257	3174

Source: See the text.

Table 2

**Composition of Fixed Capital and Price Inflaters for
Registered Manufacturing and Electricity,
Gas and Water Supply**

States	Registered Manufacturing Sector			Electricity, Gas and Water Supply		
	Share in Fixed Capital of		Price Inflatior	Share in Fixed Capital of		Price Inflatior
	Structure & Construction	Machinery & Equipment		Structure & Construction	Machinery & Equipment	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Andhra	0.3089	0.6911	1.4949	0.1702	0.3298	1.4737
2. Assam	0.4916	0.5084	1.5228	0.1262	0.8738	1.4670
3. Bihar	0.1380	0.8620	1.4688	0.1184	0.8816	1.4658
4. Gujarat	0.2984	0.7016	1.4933	0.2557	0.7443	1.4867
5. Karnataka	0.2693	0.7307	1.4888	0.7165	0.2835	1.5571
6. Kerala	0.3715	0.6285	1.5044	0.1151	0.3849	1.4653
7. M.P.	0.3683	0.6317	1.5039	0.1453	0.8547	1.4699
8. Mahara- shtra	0.3324	0.6676	1.4985	0.1566	0.8434	1.4716
9. Orissa	0.2682	0.7318	1.4887	0.1151	0.3849	1.4653
10. Punjab*	0.2698	0.7302	1.4889	0.1773	0.8227	1.4748
11. Rajasthan	0.3465	0.6535	1.5006	0.0600	0.3400	1.4569
12. Tamil Nadu	0.3076	0.6924	1.4947	0.1151	0.8849	1.4653
13. U.P.	0.3030	0.6970	1.4940	0.3005	0.6995	1.4936
14. W. Bengal	0.3373	0.6627	1.4992	0.2335	0.7665	1.4834

* Including Haryana
Source: See the text.

Table 3

**Estimated Capital-Output Ratios (at 1960-61 Prices)
for Three Selected Sectors by States
1960-61**

States	Registered Manufacturing	Unregistered Manufacturing	Electricity, Gas & Water Supply
1. Andhra	3.7228	1.8866	17.8667
2. Assam	3.4527	4.1129	21.0000
3. Bihar	5.4623	2.3015	11.4186
4. Gujarat	2.1570	2.6432	7.9064
5. Karnataka	2.9432	1.8634	73.7500
6. Kerala	2.3770	1.9236	15.3346
7. M.P.	2.9190	3.2846	19.9266
8. Maharashtra	2.2707	2.3034	11.7826
9. Orissa	5.5609	3.7443	37.3667
10. Punjab*	2.4313	1.4917	12.7143
11. Rajasthan	3.6757	4.1845	11.4375
12. Tamil Nadu	2.1845	1.7727	8.5385
13. U.P.	2.8109	3.2081	9.8215
14. W. Bengal	2.7278	2.7496	9.8659

* Includes Haryana

Source: See the text.

Table 4

**Estimates of Capital-Output Ratios in
Selected Sectors*
(All India)**

Sectors	1960-61
1. Mining & Quarrying	1.35
2. Railways	12.19
3. Transport by Other Means	6.51
4. Communication	3.63
5. Trade, Hotels & Restaurants	1.42
6. Banking and Insurance	1.08
7. Other Services	0.36
8. Forestry & Fishery	0.97
9. Construction	0.29
10. Unregistered Manufacturing	2.36

* Estimates are based on figures of capital stock and output valued at 1960-61 prices.

Source: Roy Choudhury (1977) and B.H.Dholakia (1974).

Table 5

**Estimates of Comparable SDP for the Year 1980-81
at Current Prices**

(Rs. in lakhs)

Sectors	A.P.	Assam	Bihar	Gujarat	Haryana	Karnataka	Kerala	M.P.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Agriculture	65100	24400	50700	35300	16800	35500	23000	50500
2. Forestry	726	618	673	401	82	1485	579	3308
3. Fishery	933	928	892	209	4	271	481	68
4. Mining & Quarrying	807	357	4273	126	25	851	260	1457
5. Registered Manufacturing	3050	1470	6573	9400	770	4701	2709	2468
6. Unregistered Manufacturing	5528	1647	2924	5483	1978	3289	2113	7221
7. Construction	4851	2361	6072	4473	1249	2803	2182	3600
8. Electricity, Gas & Water Supply	490	14	82	408	127	26	222	242
9. Railways	1704	617	3933	1772	183	541	298	2642
10. Communication	269	201	281	238	101	233	156	319
11. Other Transport	2708	606	1160	642	917	1598	2248	822
12. Trade, Storage, Hotels & Restaurants	13255	3582	7906	9718	2549	8488	5867	5801
13. Banking & Insurance	726	330	465	906	138	715	414	563
14. Real Estates & Ownership of Dwelling	2842	451	3820	2319	393	1887	1119	2243
15. Public Admi- nistration	3079	1250	2577	1362	488	1478	1091	1965
16. Other Services	8532	2059	6869	4742	1096	4435	3782	4583

Table 5 (Contd.)

Sectors	Maha- rastra	Orissa	Punjab	Rajas- than	Tamilnadu	U.P.	W. Bengal
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Agriculture	67600	21400	24500	32700	54100	107200	52900
2. Forestry	1385	1214	69	391	314	2245	377
3. Fishery	510	102	9	16	866	125	1542
4. Mining & Quarrying	375	803	2	370	115	156	2041
5. Registered Manufacturing	24758	742	1646	846	3952	5661	13666
6. Unregistered Manufacturing	6740	2808	1954	4190	7585	10167	7321
7. Construction	9357	1932	4614	2734	4071	7169	9771
8. Electricity, Gas & Water Supply	806	34	317	68	1018	333	1026
9. Railways	2669	610	379	1156	1229	3446	2533
10. Communication	1145	95	239	170	550	587	1176
11. Other Transport	3570	353	1299	711	2090	3019	4773
12. Trade, Storage, Hotels & Restau- rants	24011	2354	3386	5112	16673	17032	18771
13. Banking & Insurance	5272	175	435	359	1497	1022	1720
14. Real Estate & Ownership of Dwelling	5428	939	675	975	2529	4376	4334
15. Public Admi- nistration	3660	1138	388	1687	2660	4057	2421
16. Other Services	6714	4601	1789	2513	11169	11707	8728

Source: See R.H.Dholakia (1985).

Table 6

Estimates of Capital Stock at 1960-61 Prices

(Rs. in lakhs)

States	Year 1960-61			Total
	Primary	Secondary	Tertiary	
1. Andhra	104763	24010	147970	276743
2. Assam	26667	13016	35817	75500
3. Bihar	83094	50164	143901	277159
4. Gujarat	48915	36236	106302	191453
5. Haryana	37078	5219	40685	82982
6. Karnataka	48734	21927	92281	162942
7. Kerala	18216	11488	65745	95449
8. M.P.	70797	33933	112275	217005
9. Maharashtra	66264	74963	198650	339877
10. Orissa	39188	16284	44567	100039
11. Punjab	63051	8258	69499	140808
12. Rajasthan	76398	21936	73978	172312
13. T.N.	85385	34338	151003	270726
14. U.P.	202348	50820	270439	523607
15. W. Bengal	53206	62997	182640	298663
TOTAL	1023924	465589	1735752	3225265

Source: See the text.

