MEASUREMENT OF REAL NATIONAL INCOME IN PAKISTAN

by Abdul Ghafoor Khan[1]

INTRODUCTION

THE official estimates of real national income of Pakistan by industrial origin for the years 1949–50 to 1960–1[2] are shown in Table I. These have been computed by the Central Statistical Office. The estimates represent the net national product at factor cost and at constant prices. These estimates have been obtained in part by direct valuation of the annual physical volume of primary industries, i.e. agriculture, livestock, fisheries, forestry and mining, at base year prices, and in part by adjustment of base year values of manufacturing industries by quantum indices. The contribution of other sectors has been obtained either by extrapolating the benchmark values by employment indicators or by using the current wages and salaries bill. Thus the result is a mixture of estimates at constant and current prices; it does not adequately represent the real national income.

An attempt has been made in this paper (i) to reconstruct the real income estimates both by means of direct valuation in constant prices and by deflation of current-price estimates, and (ii) to compare the results arrived at by two different methods. The estimates of real income for the years 1949–50 to 1960–1 arrived at by two independent approaches are presented in Tables II and IV.

DIRECT VALUATION IN BASE YEAR PRICES

The procedure of estimation, limitations and main problems in each sector are briefly described below.

Agriculture and Mining

The estimates of real income originating in agriculture and mining have been computed by direct valuation of physical output in constant average prices of the base period 1949–50 to

[2] Published in the *Statistical Bulletin*, March 1962, issued by the Central Statistical Office, p. 506. The presentation of these estimates has been recast in this paper to conform to the U.N. pattern of industrial origin of net national product.

1951-3,[1] whereas the official estimates for agriculture are based only on the reported data. I have also included an estimated amount of 4 per cent of the value of net output of agriculture for non-reporting areas. It may be mentioned that India too adds 4 per cent of the value of the net output of agriculture for non-reporting areas.[2] However, the inherent weakness of the estimates of agricultural output still exists, in the sense that the method of estimating crops yields is rather subjective in character and thus the reported production data contain an unknown margin of error.

Manufacturing

The estimates of manufacturing are computed in two parts, for large-scale and for small-scale industries. The main problem in both large and small-scale industries has been that of the non-availability of production data on a regular basis. The first Census of Manufacturing Industries in Pakistan was conducted in 1953, but it had a very limited coverage and therefore the data of value added yielded by that Census were not utilized to develop estimates of large-scale manufacturing.

The results of the 1954 Census of Manufacturing Industries, which had comparatively wider coverage, provided fairly accurate data on value added. These were used as benchmarks after making due allowance for non-reporting industries. The 1954 benchmark figures were in current prices, hence a wholesale price index of selected domestic manufactured products was prepared to deflate the benchmark figures so as to express them in constant prices. The estimates for other years, preceding and following, have been obtained by adjusting the benchmark 1954 value of output by the quantum index of industrial production. Unfortunately, the index of industrial production is based on a limited number of manufactured products and therefore it does not reflect the true position in the manufacturing sector, especially when industrialization is going apace. It is considered that the contribution of this sector is underestimated. The degree of underestimation is being investigated.

Benchmark data for value added in small-scale industries are not available and therefore the employment in small-scale

[1] The four-year base has been adopted to smooth out the abnormal market fluctuations, as there was no single year during that period which could be termed as normal.

[2] See *Final Report of the National Income Committee*, 1954, issued by the Department of Economic Affairs, Ministry of Finance, Government of India.

industries reported in the 1951 Population Census and the earnings of employers, employees and self-employed persons engaged in small-scale industries was taken as a basis for valuation of the contribution of this sector for the year 1950–1. The estimates for other years, preceding and following, have been adjusted by the rate of population growth, assuming that employment in this sector has moved in proportion to the increase in population. The estimates are not satisfactory and need to be improved on the basis of firm benchmarks now becoming available from the national sample surveys conducted by the Central Statistical Office.

Construction

In the official estimates, the contribution of this sector has been included in the services sector. In my estimates, the income originating in the construction industry has been segregated from the estimates of services and shown separately. These estimates are based on the employment data reported in the Population Census of 1951 and the estimated earnings of the persons engaged in the construction activity. The estimates for the years before and after 1951 have been arrived at by extrapolating the benchmark 1951 data by the rate of population growth. In view of the brisk development activity both in public and private sectors of the economy, the estimates based on changes in population do not seem to be satisfactory. However, in the absence of any data on construction, it has been very difficult to determine the magnitude of underestimation.

Electricity, Gas, Water and Sanitary Services

In the official estimates the income originating in electricity, water and sanitary services is included in 'public administration and defence' as these services are provided by the provincial and local governments. Since this practice is contrary to U.N. principles of national income accounting, the contribution of electricity, water and sanitary services has been segregated from public administration and defence and shown separately in my estimates. The income from the production of natural gas is included in mining and that from its distribution in wholesale and retail trade.

Transport and Communication

The estimates of transport other than railways have been

obtained by extrapolating the benchmark value for 1950–1, based on the employment reported in the 1951 Population Census and the estimated earnings, with an indicator of year to year change in the number of transport vehicles. The official estimates of railways and communication (post, telegraph and telephone, which are public enterprises) are based on the annual wages and salaries representing current value estimates, and therefore the contribution of railways and communications is overestimated to the extent of price changes occurring during the period. In my estimate, the contribution of railways and communication has been measured in real terms by deflating the amount of wages and salaries with the cost of living index.

Wholesale and Retail Trade

There has not yet been any survey of distributive trades in Pakistan and therefore no benchmark data on the contribution of wholesale and retail trade are available. The number of persons employed in the distributive trades as reported in the 1951 Population Census and the average estimated earnings of the persons engaged in this sector have been taken as the basis of valuation of the contributions of wholesale and retail trade for the year 1950–1. The benchmark value for 1950–1 has been adjusted backward and forward by changes in income originating in agriculture, mining and manufacturing, as it is the product of these industries which is distributed through trade channels.

Banking, Insurance and Real Estate

In official estimates the income originating in banking and insurance has been measured by annual wages, salaries and the operating surplus, and therefore the contribution of this sector is expressed in current money terms, resulting in overestimation to the extent of price changes over time. My estimates have been derived by deflating the current money value with the cost of living index; this represents real output of this sector. A further improvement has been made in my estimates by adding the contribution of non-scheduled banks, which was not included in the official estimates. The sub-sector 'real estate' has been included in the services sector.

Ownership of Dwellings

The estimates for ownership of dwellings and other buildings

have first been produced for 1950–1 on the basis of the number of buildings (both dwellings and non-dwellings) reported in the 1951 Population Census and the estimated net rent per building. The benchmark figures for 1950–1 have been extrapolated backward and forward by the rate of population growth, assuming that the number of buildings has increased in proportion to the increase in population. This assumption has been confirmed by an intercensal (1951 and 1961 censuses) study on the growth of population and housing.

Public Administration and Defence

The official estimates of income originating in public administration and defence are computed on the basis of annual wages and salaries, i.e. in terms of current value, and are over-estimated to the extent of price changes occuring during the period. In order to compute real income for this sector current values accounted for in the official estimates have been deflated by the cost of living index. In the official estimates the contribution of electricity, water and sanitary services is included in this sector. In my estimates the income from electricity, water and sanitary services has been segregated from public administration and defence and shown separately.

Services

The estimates for this sector have been based on the employment data reported in the 1951 Population Census and the estimated earnings of persons engaged in services. The 1950–1 estimates thus arrived at have been extrapolated by the rate of population growth, assuming that employment in services has moved with the growth in population. The slow development in the fields of education and health (as compared to rapid growth in population) does not substantiate this assumption and therefore the contribution of this sector seems to be overestimated. In the official estimates, the income originating in construction is included in the services sector. In the estimates presented in this paper the construction sector is shown separately.

Net Factor Income Payments Abroad

The estimates for this sector are based on the net investment income payments derived from the balance of payments statistics. In order to express the contribution in real terms, the current annual net investment income has been deflated by the

import price index. It is, however, felt that the present estimates are short of the amount of factor income payments abroad, which are included in some other heads under the existing classification of balance of payments statistics followed in Pakistan. The degree of underestimation is being investigated.

DEFLATION OF CURRENT SERIES

The Central Statistical Office in Pakistan prepared in 1955 its first series of national income estimates in current prices for the years 1949–50 to 1953–4,[1] which are reproduced in Table III. These estimates were based on very scanty data and were later discontinued due to non-availability of the necessary current information. In view of the weak nature of these estimates and non-availability of any firm price deflator, no attempt whatsoever was made to convert them into real income estimates.

The author has made an experimental attempt to derive real income estimates from the current income series computed afresh for the years 1949–50 to 1960–1 and presented in Table IV. The new estimates of national income at current prices have been constructed partly by the product and partly by the income approach. The contribution of agriculture, mining and large-scale manufacturing has been computed on the basis of value added in these industries. The estimates of banking, insurance and public administration and defence have been adopted from the official estimates where the contribution of these sectors have been shown in terms of current values. The estimates of wholesale and retail trade, ownership of dwellings and services have been derived by adjusting their real product shown in Table II by price changes indicated by the cost of living index.

Subsequently, the aggregates of the current income series have been deflated in a single operation by the cost of living index which is the only official price deflator available in the country. It is interesting to note that the results of this exercise have come remarkably close to the estimates of national income in constant prices contained in Table II. These results have been further compared with an independent estimate of national expenditure of Pakistan of the year 1960–1 prepared by Mr. M. A. H. Khandkar of the Planning Commission[2] under the supervision

[1] Published in the *Pakistan Statistical Year Book* 1955, issued by the Central Statistical Office, Government of Pakistan, Karachi.

[2] Khandkar, M. A. H., 'A method of estimating national expenditure of Pakistan', a paper read at the C.E.N.T.O. Conference on National Income Accounting held at Murree (Pakistan) from 7th to 17th May 1962.

TABLE I

Industrial Origin of National Product of Pakistan at Constant Prices: Official Estimates, 1949–50 to 1960–1[1]

(At 1949-50 to 1952–3 average prices)

(Rs. million)

	1949–50	1950–1	1951–2	1952–3	1953–4	1954–5	1955–6	1965–7	1957–8	1958–9	1959–60	1960–1[3]
1. Agriculture, forestry and fisheries	10,696	11,072	10,850	11,239	11,955	11,858	11,335	12,224	12,099	11,819	12,578	13,051
2. Mining and quarrying	20	23	27	32	33	35	37	44	47	52	56	65
3. Manufacturing	1,216	1,298	1,396	1,525	1,781	1,958	2,219	2,392	2,491	2,603	2,801	2,918
4. Construction[2]	—	—	—	—	—	—	—	—	—	—	—	—
5. Electricity, gas, water and sanitary services[2]	—	—	—	—	—	—	—	—	—	—	—	—
6. Transport and communications	442	504	513	519	534	538	565	584	611	646	685	701
7. Wholesale and retail trade	1,606	1,671	1,654	1,725	1,857	1,867	1,832	1,987	1,973	1,951	2,080	2,161
8. Banking and insurance	43	51	58	60	62	71	83	92	99	112	117	128
9. Ownership of dwellings	1,031	1,045	1,059	1,080	1,101	1,123	1,145	1,167	1,190	1,214	1,239	1,264
10. Public administration and defence	810	853	1,034	1,019	1,025	1,018	1,065	1,082	1,111	1,199	1,118	1,193
11. Services	1,494	1,524	1,554	1,585	1,617	1,648	1,681	1,714	1,748	1,783	1,818	1,853
Net domestic product at factor cost	17,358	18,041	18,145	18,784	19,965	20,116	19,962	21,286	21,369	21,379	22,492	23,334
Net factor income payments abroad	− 10	− 9	− 8	− 14	—	− 9	− 26	− 12	− 8	− 10	− 18	− 19
Net national product at factor cost = National income	17,348	18,032	18,137	18,770	19,965	20,107	19,936	21,274	21,361	21,369	22,474	23,315

Source: Central Statistical Office.

Notes:—

[1] The time reference of the estimate is April to March.
[2] The estimates for these sectors are included in the Services sector.
[3] Figures are provisional.

TABLE II

Industrial Origin of National Product of Pakistan at Constant Prices: Author's Estimates,[1] 1949–50 to 1960–1[2]

(At 1949–50 to 1952–3 average prices)

(Rs. million)

	1949–50	1950–1	1951–2	1952–3	1953–4	1954–5	1955–6	1956–7	1957–8	1958–9	1959–60	1960–1
1. Agriculture, forestry and fisheries	11,006	11,392	11,156	11,157	12,303	12,196	11,653	12,578	12,447	12,155	12,944	13,455
2. Mining and quarrying	21	23	27	32	33	35	37	44	47	52	56	65
3. Manufacturing	1,216	1,298	1,396	1,525	1,781	1,958	2,219	2,392	2,491	2,603	2,801	2,918
4. Construction	71	72	73	75	77	78	80	81	83	85	87	88
5. Electricity, gas, water and sanitary services	18	19	18	18	19	21	23	23	23	26	26	27
6. Transport and communications	442	514	507	492	512	531	551	557	554	598	611	614
7. Wholesale and retail trade	1,606	1,671	1,654	1,725	1,857	1,867	1,832	1.987	1,973	1,951	2,080	2,161
8. Banking and insurance	48	59	61	58	61	76	85	87	88	103	100	104
9. Ownership of dwellings	1,031	1,045	1,059	1,080	1,101	1,123	1,145	1,167	1,190	1,214	1,239	1,264
10. Public administration and defence	793	880	986	885	915	969	984	936	898	1,001	871	887
11. Services	1,423	1,452	1,481	1,510	1,540	1,570	1,601	1,633	1,665	1,698	1,731	1,765
Net domestic product at factor cost	17,675	18,425	18,418	18,957	20,199	20,424	20,210	21,485	21,459	21,486	22,546	23,348
Net factor income payments abroad	— 10	— 9	— 8	— 14	—	— 9	— 26	— 11	— 8	— 14	— 18	— 19
Net national product at factor cost = National income	17,665	18,416	18,410	18,943	20,199	20,415	20,184	21,474	21,451	21,472	22,528	23,329

Notes:—

[1] The estimates are tentative and subject to further improvements.
[2] The time reference of the estimate is April to March.

of Dr. E. F. Szczepanik. These two estimates show only a very narrow difference.

The cost of living index used to deflate the current series is by no means an appropriate price deflator, because the scope and coverage of this index is very narrow, in the sense that it represents only industrial workers of five selected centres. But however crude the deflator may be this simple experiment has paved the way for deriving national income at constant prices from the estimates of national income at current prices.

Official estimates of national income in current prices are now being prepared. Simultaneously work is also being done on the expansion and improvement of the existing cost of living index and the construction of a comprehensive wholesale price index. It is hoped that in the near future it will be possible to complete official estimates in current prices and then the real income will be derived by using the improved price deflator. This is in conformity with the report of the Committee of Experts on National Accounts of Pakistan, which has recommended that firm estimates of national income at current-price should be constructed first and then the real income estimates derived by applying a national income deflator.

TABLE III

Industrial Origin of National Product of Pakistan at Current Prices 1949–50 to 1953–4

(Rs. million)

	1949–50	1950–1	1951–2	1952–3	1953–4
1. Agriculture, forestry and fisheries	10,288	10,323	11,178	10,847	10,470
2. Mining and quarrying	21	26	30	37	38
3. Manufacturing	1,091	1,150	1,218	1,325	1,517
4. Construction[1]	—	—	—	—	—
5. Electricity, gas, water and sanitary services	—	—	—	—	—
6. Transport and communications	442	504	513	529	536
7. Wholesale and retail trade	1,655	1,669	1,804	1,772	1,745
8. Banking and insurance	43	51	58	68	69
9. Ownership of dwellings	1,005	1,036	1,053	1,072	1,089
10. Public administration and defence	808	858	1,048	1,032	1,052
11. Services	1,473	1,543	1,576	1,608	1,639
Net domestic product at factor cost	16,826	17,160	18,478	18,290	18,155
Net factor income payments abroad	− 11	− 9	− 9	− 14	—
Net national product at factor cost	16,815	17,151	18,469	18,276	18,155

Source: Central Statistical Office.

[1] The estimates for these sectors are included in the Services sector.

TABLE IV

Industrial Origin of National Product of Pakistan at Current Prices: Author's Estimates, 1949–50 to 1960–1

(Rs. million)

	1949–50	1950–1	1951–2	1952–3	1953–4	1954–5	1955–6	1956–7	1957–8	1958–9	1959–60	1960–1
1. Agriculture, forestry and fisheries	11,006	10,822	11,491	13,059	13,533	12,562	12,352	14,213	15,061	14,221	16,180	17,626
2. Mining and quarrying	21	26	30	37	38	36	39	50	57	61	70	85
3. Manufacturing	1,216	1,233	1,437	1,723	1,960	2,017	2,352	2,703	3,014	3,045	3,501	3,823
4. Construction	71	68	75	85	85	79	85	92	100	99	109	115
5. Electricity, gas, water and sanitary services	18	18	19	20	21	22	24	26	28	30	32	35
6. Transport and communications	442	488	522	556	563	547	584	630	670	700	764	814
7. Wholesale and retail trade	1,606	1,587	1,704	1,949	2,043	1,923	1,942	2,245	2,387	2,283	2,600	2,831
8. Banking and insurance	48	55	63	66	68	78	90	99	107	120	125	136
9. Ownership of dwellings	1,031	933	1,091	1,220	1,211	1,157	1,214	1,319	1,440	1,420	1,549	1,656
10. Public administration and defence	793	836	1,016	1,000	1,006	998	1,043	1,058	1,086	1,171	1,089	1,162
11. Services	1,423	1,379	1,525	1,706	1,694	1,617	1,697	1,845	2,015	1,987	2,164	2,312
Net domestic product at factor cost	17,675	17,505	18,973	21,421	22,222	21,036	21,422	24,280	25,965	25,137	28,183	30,595
Net factor payments abroad	— 11	— 9	— 9	— 14	—	— 9	— 34	— 18	— 14	— 25	— 33	— 36
Net national product at factor cost = National income	17,664	17,496	18,964	21,407	22,222	21,027	21,388	24,262	25,951	25,112	28,150	20,559

Notes:—

1. The time reference of the estimate is April to March.
2. The estimates are tentative and subject to further improvements.

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TABLE V

Industrial Origin of National Product of Pakistan at Constant Prices: Author's Estimates,[1] 1949–50 to 1960–61

(Rs. million)

	1949–50	1950–1	1951–2	1952–3	1953–4	1954–5	1955–6	1956–7	1957–8	1958–9	1959–60	1960–1
1. National income at current prices (Table IV)	17,664	17,496	18,964	21,407	22,222	21,027	21,388	24,262	25,951	25,112	28,150	30,559
2. Price index[2]	100	95	103	113	110	103	106	113	121	117	125	131
3. National income at constant price	17,664	18,417	18,412	18,944	20,202	20,414	20,177	21,471	21,447	21,463	22,520	23,327
4 National income at constant prices (Table II)	17,665	18,416	18,410	18,943	20,199	20,415	20,184	21,474	21,451	21,472	22,528	23,329
5. Difference between estimates of items 3 and 4	− 1	+ 1	+ 2	+ 1	+ 3	− 1	− 7	− 3	− 4	− 9	− 8	− 2
6. National income at constant prices (Table I)	17,348	18,032	18,137	18,770	19,965	20,107	19,936	21,274	21,361	21,369	22,474	23,315
7. Percentage difference between estimates of items 3 and 6	+ 1·8	+ 2·1	+ 1·5	+ 0·9	+ 1·2	+ 0·2	+ 1·2	+ 0·9	+ 0·4	+ 0·4	+ 0·2	+ 0·1

[1] These estimates are tentative and are subject to further improvements.
[2] The price index used is the Cost of Living Index of industrial workers of five selected centres in Pakistan.