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MEASUREMENT OF REAL NATIONAL
INCOME IN PAKISTAN

by

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ABDUL GHAFOOR KHAN[‡]

1. INTRODUCTION

The official estimates of real national income of Pakistan by industrial origin for the years 1949/50 to 1960/61^{‡‡} are shown in the enclosed Table I. These have been computed by the Central Statistical Office. The estimates are representing 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 bench mark values by employment indicators or by using 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.

[‡]The author gratefully acknowledges the expert guidance of Dr. E.F. Szczepanik, Harvard University Adviser to Government of Pakistan planning Commission, in preparation of this paper.

^{‡‡}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.

of estimating crops yields is rather subjective in character and thus the reported production data contain an unknown margin of error.

Manufacturing

5. 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 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 value added data yielded by that Census were not utilized to develop estimates of large-scale manufacturing.

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

sector is underestimated. The degree of underestimation is being investigated.

7. There are no bench mark value added data available for small-scale industries and therefore the employment in small-scale 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 basis for valuation of the contribution of this sector for the year 1950/51. 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 increase in population. The estimates are not satisfactory and need to be improved on the basis of some firm bench marks becoming available from the national sample surveys conducted by the Central Statistical Office.

Construction

8. In the official estimates, the contribution of this sector has been included in the services sector. In my estimate, the income originating in the construction industry has been segregated from the estimates of services and shown separately. The basis of estimation are the employment data reported in the population Census 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 bench mark 1951 data by the rate of population growth. In view of the brisk developmental activity both in public and private sectors of the economy, the estimates based on changes in

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 under-estimation.

Electricity, gas, water and sanitary services

9. 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.S. 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 of its distribution in wholesale and retail trade.

Transport and communications

10. The estimates of transport other than railways have been obtained by extrapolating the bench mark value for 1950/51, 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 communications (posts, telegraphs, and telephones, 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 communications has been measured in real terms by deflating the amount of wages and salaries with the cost of living index.

Wholesale and retail trade

II. There has not yet been any survey of distributive trades in Pakistan and therefore no bench mark 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 1950/51. The bench mark value for 1950/51 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

12. In the 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 and this represents real output of this sector. A further improvement has been made in my estimates by adding the contribution by 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

13. The estimates of ownership of dwellings and other buildings have first been produced for 1950/51 on the basis of the number of houses (both dwellings and non-dwellings) reported in the 1951 population Census and the estimated net rent per house. The bench mark figures of 1950/51 have been extrapolated backward and forward by the rate of population growth, assuming that the number of houses has increased in proportion to 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

14. The official estimates of income originating in the public administration and defence are computed on the basis of annual wages and salaries, i.e. in terms of current value and are overestimated to the extent of price changes occurring 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 estimate the income from electricity, water and sanitary services has been segregated from public administration and defence and shown separately.

Services

15. 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 1950/51 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 my estimate presented in this paper the construction sector is shown separately.

Net factor income payments abroad

16. 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/ Payments, 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 under-estimation is being investigated.

III. DEFLATION OF CURRENT SERIES

17. 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 1953/54[‡], which are reproduced in Table III. These estimates were based on very scanty data and were later on 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.

18. 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 1960/61 and presented in Table IV. The new estimates of national income at current prices have been constructed partly by product and partly by 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 and dwellings and services have been derived by adjusting their real product shown in Tables II by price changes indicated by the cost of living index.

19. Subsequently, the aggregates of the current income series have been deflated under single operation by the cost of living index which is the only official price deflator available in the

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

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 for the year 1960/61 prepared by Mr. M.A.H. Khandkar of the Planning Commission² under the supervision of Dr. E.F. Szczepanik. These two estimates show only a very narrow difference.

20. 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 current prices.

21. 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 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 to construct first firm estimates of national income at current price and then to derive the real income estimates by applying a national income deflator.

² Khandkar, M.A.H., "A method of estimating national expenditure of Pakistan" a paper read at the CENTO Conference on National Income Accounting held at Murree (Pakistan from 7th to 17th May, 1962.

Industrial Origin of National Product of Pakistan at Constant Prices

1949/50 - 1960/61
(Price average of 1949/50 - 1952/53)

(Rs. Million)

	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61 ^b
Culture, forestry and fisheries and quarrying	10,696	11,072	10,850	11,239	11,955	11,858	11,335	12,224	12,099	11,819	12,578	13,051
Manufacturing	20	23	27	32	33	35	37	44	47	52	56	65
Construction (a)	1,216	1,298	1,396	1,525	1,781	1,958	2,219	2,392	2,491	2,603	2,801	2,918
Electricity, gas, water and sanitation	...	...	...	...	...	...	...	...	...	...	...	...
Services (a)	...	...	...	...	...	...	...	...	...	...	...	...
Transport and communications	442	504	513	519	534	538	565	584	611	646	685	701
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
Marine and insurance	43	51	58	60	62	71	83	92	99	112	117	128
Shipbuilding	1,031	1,045	1,059	1,080	1,101	1,123	1,145	1,167	1,190	1,214	1,239	1,264
Government 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
Others	1,494	1,524	1,554	1,565	1,617	1,648	1,681	1,714	1,748	1,783	1,818	1,853
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
Factor Income Payments abroad	-10	-9	-8	-14	...	-9	-26	-12	-8	-10	-18	-19
National Product at Factor Cost												
Personal 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.

The Time reference of the estimate is April to March.
The estimates for these sectors are included in the services sector.
Figures are provisional.

	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61
heries	11,006 21	11,392 23	11,156 27	11,157 32	12,303 33	12,196 35	11,653 37	12,578 44	12,447 47	12,155 52	12,944 56	13,455 65
anita-	1,216 71	1,298 72	1,396 73	1,525 75	1,781 77	1,958 78	2,219 80	2,392 81	2,491 83	2,603 85	2,801 87	2,918 88
	18	19	18	18	19	21	23	23	23	26	26	27
	442	514	507	492	512	531	551"	557	554	598	611	614
	1,606	1,671	1,654	1,725	1,857	1,867	1,832	1,987	1,973	1,951	2,080	2,161
	48	59	61	58	61	76	85	87	88	103	100	104
ence	1,031	1,045	1,059	1,080	1,101	1,123	1,145	1,167	1,190	1,214	1,239	1,264
	793	880	986	885	915	969	984	936	898	1,001	871	887
	1,423	1,452	1,481	1,510	1,540	1,570	1,601	1,633	1,665	1,698	1,731	1,765
r 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
road	10	-9	-8	-14	..	-9	-26	-11	-8	-14	-18	-19
r cost=	17,665	18,416	18,410	18,943	20,199	20,415	20,184	21,474	21,451	21,472	22,528	23,329

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

	1949/50	1950/51	1951/52	1952/53	1953/54
culture, forestry and fisheries.	10,288	10,323	11,178	10,847	10,470
g and quarrying	21	26	30	37	38
acturing	1,091	1,150	1,218	1,325	1,517
uction*	"...	...	...	...	...
ricity, gas, Water and sanitary	...	...	...	...	...
ces.	...	...	...	...	...
port and communications	442	504	513	529	536
sale and retail trade	1,655	1,669	1,804	1,772	1,745
ng and insurance	43	51	58	68	69
ship of dwellings	1,005	1,036	1,053	1,072	1,089
c administration and defence	808	858	1,048	1,032	1,052
ces	1,473	1,543	1,576	1,608	1,639
domestic Product at Factor Cost	16,826	17,160	18,478	18,290	18,155
actor Income Payments abroad	-11	-9	-9	-14	-...
ational Product at Factor Cost	16,815	17,151	18,469	18,276	18,155

Source: Central Statistical Office.
 The estimates for these sectors are included in the " Services sector".

Table IV

Industrial Origin of National Product of Pakistan at Current Prices
1949/50 - 1960/61

(Rs. Million)

1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61
11,006 21	10,822 26	11,491 30	13,059 37	13,533 38	12,562 36	12,352 39	14,213 50	15,061 57	14,221 61	16,180 70	17,626 85
1,216 71	1,233 68	1,437 75	1,723 85	1,960 85	2,017 79	2,352 85	2,703 92	3,014 100	3,045 99	3,501 109	3,823 115
18	18	19	20	21	22	24	26	28	30	32	35
442	488	522	556	563	547	584	630	670	700	764	814
1,606 48	1,587 55	1,704 63	1,949 66	2,043 68	1,923 78	1,942 90	2,245 99	2,387 107	2,283 120	2,600 125	2,831 136
1,031	933	1,091	1,220	1,211	1,157	1,214	1,319	1,440	1,420	1,549	1,656
793	836	1,016	1,000	1,006	998	1,043	1,058	1,086	1,171	1,089	1,162
1,423	1,379	1,525	1,706	1,694	1,617	1,697	1,845	2,015	1,987	2,164	2,312
17,675	17,505	18,973	21,421	22,222	21,036	21,422	24,280	25,965	25,137	28,183	30,595
-11	9	9	14	...	9	34	18	14	25	33	36
17,664	17,496	18,964	21,407	22,222	21,027	21,388	24,262	25,951	25,112	28,150	20,559

ference of the estimate is April to March.
es are tentative and subject to further improvements.

Table V.

Industrial Origin of National Product of Pakistan at Constant Prices*

1949/50 - 1960/61

(Rs. Million)

	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61
Income at Current Table IV) Index **	17,664 100	17,496 95	18,964 103	21,407 113	22,222 110	21,027 103	21,388 106	24,262 113	25,951 121	25,112 117	28,150 125	30,559 131
Income at Constant Income at Constant (Table II)	17,664	18,417	18,412	18,944	20,202	20,414	20,177	21,471	21,447	21,463	22,520	23,327
Income at Constant (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
Percentage difference between estimates 3 and 4	- 1	+1	+2	+1	+3	-1	-7	-3	-4	-9	-8	-2
Income at Constant (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
Percentage difference between estimates at items	+1.8	+2.1	+1.5	+0.9	+1.2	+0.2	+1.2	+0.9	+0.4	+0.4	+0.2	+0.1

* These estimates are tentative and are subject to further improvements.

** The price index used is the Cost of Living Index of industrial workers of five selected centres in Pakistan.