Chinese Real Output 1950-1970

by Derek T. Healey*

The most discouraging aspect of any attempt to examine the economic development of China is the lack of any long-term series of basic data. There are, of course, a number of studies [1, 2, 3, 4, 5] which include valuable statistics but until a systematic attempt is made to put all these together, to supplement and to modify them, we feel that we are looking at a confused picture. We cannot even see clearly where the gaps in our knowledge lie. (It is precisely for this reason that the construction of National and Social Accounts *despite* lack of data are so important - as Miss Peter Ady pointed out long since). This brief paper cannot claim to go far in the direction of coordinating all the available material on Chinese output but it makes an attempt to provide one useful series which, it is hoped, will reveal - at least roughly - the magnitude of China's development.

The Basis of the Tables

In Table 2A a number of the entries for grain and industrial output are underlined. These were obtained from McFarlane's paper [5] together with some additional figures on grain output kindly provided by him. These statistics provided the 'bench-marks' which, when coupled with some other rates of growth appearing in McFarlane's paper, enabled the construction of series of grain and industry.

The following items extracted from McFarlane's paper were used with the 'bench marks': -

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Grain:	1950-56:	"the growth rate in grain output...is thought to have been about 3 per cent".
	1957-68:	output rose by 2.2 per cent per annum.
	1957-70:	output rose by 2.5 per cent per annum.
Industry:	1952-59:	output rose by 20.6 per cent per annum.
	1965-69:	output rose by 10 per cent over the whole period.
	1957-69:	output rose by 4.4 per cent per annum.

We must note at this point that what we are able to calculate so far is (a) a *quantum* series of grain output and (b) a *value* series of industrial output. We can combine these directly only if we assume that there were no price changes for the industrial output; in other words, the industrial series represents also a *quantum* series. Some, in fact, *do* maintain that China has been able to develop without any inflation but this author finds that difficult to believe without detailed evidence. But, as a first step in the construction of the series, the existence of a zero price change has been accepted.

We see then from Table 2A that industrial output rose from Yuan 6.4 billion in 1950 to Yuan 41.8 billion in 1970, a rise of 553 per cent. This represents a cumulation rate of growth of 9.9 per cent per annum[1] which, if there was no inflation, could be considered the *real* growth rate.[2]

1. The rates of growth for various series are shown in Table 1.
2. C.f. Hsia [1] "In the period covered by the First Five-Year Plan (1953-57) mainland China's gross industrial value output expressed in 'constant 1952 prices' increased by 132.4 per cent. The average annual rate of increase is calculated to be 18.4 per cent" [p. 73] and "mainland China's net industrial output increased 124.8 per cent during the four years (1952-56)" [p. 75]. By referring to Table 2 in Hsia [1. p. 75] we can affirm that our figures of Industrial Output refer to the *net* concept. A comparison shows the following:

	Value of Net Output of Industry in Million Yuan New JMP at 1952 Prices (Hsia)	Present Study Yuan Billion
1952	8,659.7	9.3
1953	11,572.3	11.2
1956	19,540.6	19.8

The Weighting Problem

In an earlier version of this paper the grain index and the industry index were combined into a single index by giving a weight of 4 to grain and 1 to industry.

This weighting pattern, based on the fact that in India, agriculture is about four times as important as industry in GNP, resulted in the following per annum growth rates:

Grain plus industry (without allowance for price changes for industrial output)	4.9 per cent
Grain plus industry (with allowance for price changes for industrial output)	4.4 per cent
Grain plus industry per head (without allowance for price changes)	2.7 per cent
Grain plus industry per head (with allowance changes)	2.2 per cent

However, it has been pointed out (see sources note following Table 2A) that this weighting pattern considerably undervalues the importance of industry in the Chinese economy. Hence a recalculation was made based on a continually growing importance of industry in the aggregate over the twenty-year period. The aggregate index for grain plus industry is shown in Table 2A, column 7 and the growth rate works out at 7.1 per cent per annum.

If we can assume that the relative importance of services remained constant over the period, this would represent, too, the rate of growth of Net National Product. But we have been content not merely to make some 'guesstimate' of the rate of growth of N.N.P. but also to provide a series of annual N.N.P. values in constant prices.

Hsia [1. p. 74] makes the statement that "Mainland China's N.N.P. has been reported to be 61,130 million yuan new JMP for 1952 and 88,750 million yuan for 1956". Since the series for grain plus industry (which we assume to move like N.N.P.) is already in *quantum* terms (since we assumed no price changes for industry) it is now possible to provide a series of N.N.P. in terms of yuan at constant 1952 prices. This has been done in Table 2A, column 8. It shows that N.N.P. in constant 1952 prices rose from 54.1 billion yuan in 1950 to 211.8 billion yuan in 1970. On a per head basis, this works out at 97.7 yuan in 1950, rising to 282.4 yuan in 1970 (in constant 1952 prices).

Conversion to $ U.S.

The limitations of converting G.N.P. etc. directly from one currency to another through the medium of the exchange rate are well known, and what is ideally required is a purchasing-power parity rate or a Colin Clarkian 'Oriental Unit'.[1] For lack of a better measure, the quoted exchange rate between the yuan and the dollar has been used and the result shows that N.N.P. per head in constant 1952 prices rose from $ US 39 in 1950 to $ US 115 in 1970.[2] And, just for the record, the aggregate N.N.P. has been converted into $ U.S.

Change in Price Assumption

Doubts were expressed earlier about the possibility of development with *no* price inflation. It was therefore thought desirable to see what would be the result of making the assumption of a very moderate rise in the price level for industrial output, viz. a rise of only 1 per cent per annum.[3] The results are shown in Table 2B, and, in summary form, in Table 1. As might have been expected intuitively from the small price increase allowed, the results are not significantly different - the rate of increase of real N.N.P. per head, for instance, falls from 5.5 per cent per annum to 4.7 per cent per annum. And even this lower figure is appreciably better than that for many other developing countries. It is the author's opinion, however, that the results of Table 2B in which price rises are assumed are more realistic than those of 2A where unchanged prices are assumed.

The Graphs

The trends are brought out clearly in the graphs 1, 2 and 3. One of the most interesting features to observe is the sharp reduction in the rate of growth of industrial output about 1959.

1. Which, however, by its nature, cannot be used to make comparisons between countries inside the Asian 'rice group' and those outside.
2. C.f. the 1965 estimates of gross domestic product per head in 1965 in current prices for the following: East and South East Asia, $ US 100- Burma, $ US 60; Cambodia, $ US 120; Ceylon, $ US 137; Taiwan, $ US 200; India, $ US 92; Indonesia, $ US 85; S. Korea, $ US 93; Malaysia, $ US 272; Nepal, $ US 69; Pakistan, $ US 95; Philippines, $ US 237; Singapore, $ US 529; Thailand, $ US 113 [6., pp. 113, 114].
3. C.f. India's rate of price increase of 4.6 per cent per annum between 1952 and 1970.

It may be true, as Bruce McFarlane states [5. p. 1] that

> "Mao has made it very clear in his programmatic documents on planning for economic growth that the aim should not be to make a fetish out of maximizing the rate of increase of national product".

But 'fetish' or not, it is surely a good plan to attempt the construction of a record at least of what has been achieved. This has been the purpose of this contribution.

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REFERENCES

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5. McFarlane, Bruce — "Economic Policy and Economic Growth in Communist China", Institute for International Economic Studies, Stockholm, SEMINAR PAPER SERIES, April, 1971.
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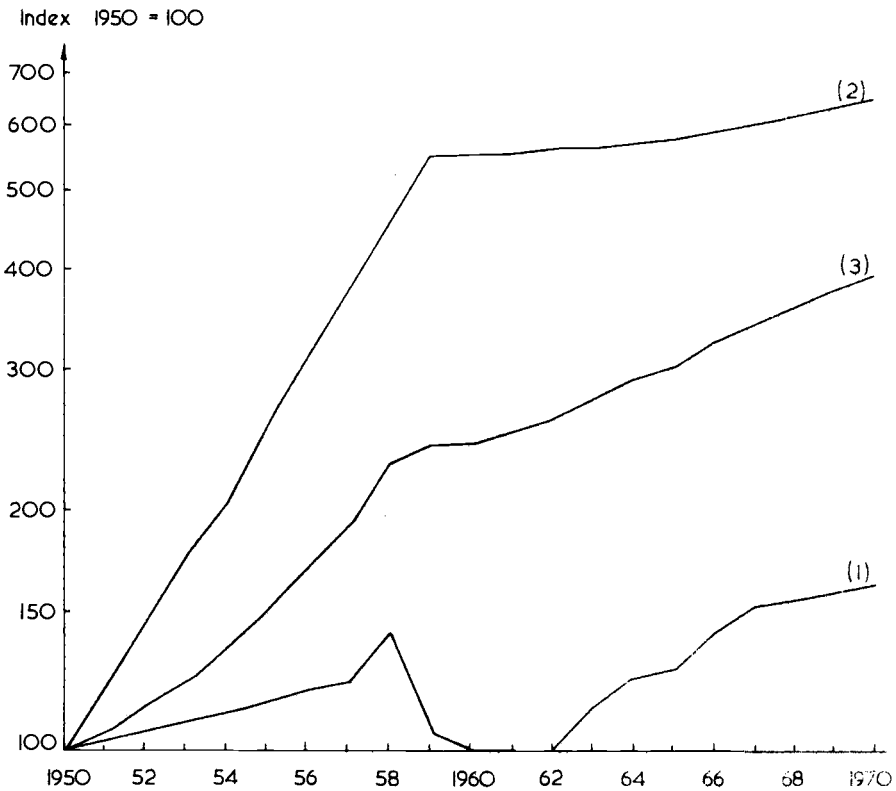
TABLE 1 C H I N A : Rates of Increase per Annum 1950-1970

	Per Cent Per Annum
Population	1.6
Grain output (quantum)	2.4
A. Assuming no price change for industry output	
Industrial output[1]	9.9
Weighted aggregate of grain plus industry (quantum)	7.1
N.N.P. in constant 1952 prices	
N.N.P. in constant 1952 prices per head	5.5
B. Assuming price change[2] for industry output	
Industrial output (quantum)	8.8
Weighted aggregate of grain plus industry (quantum)	6.3
N.N.P. in constant 1952 prices	
N.N.P. in constant 1952 prices per head	4.7

Source: Derived from Table 2

1. In value terms, which is equivalent to quantum if price change is zero.
2. An increase of 1 per cent per annum.

Chart 1 China : Output 1950 - 1970



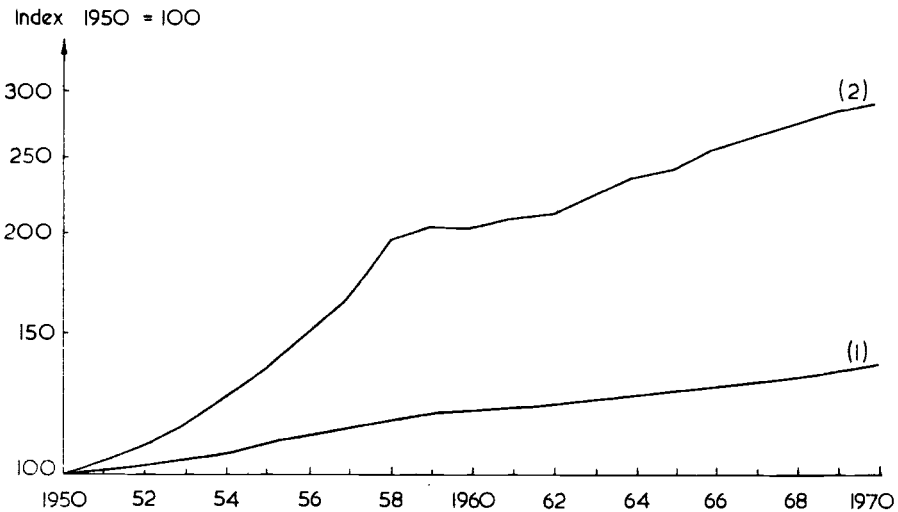
Source Table 2A Cols 2, 4 and 7

(1) Quantum of grain output

(2) Value of industrial output (equivalent to quantum of industrial output if zero price rise assumed).

(3) Weighted aggregate of grain plus industry output

Chart 2 China : Population and Net National Product Per Head 1950 - 1970

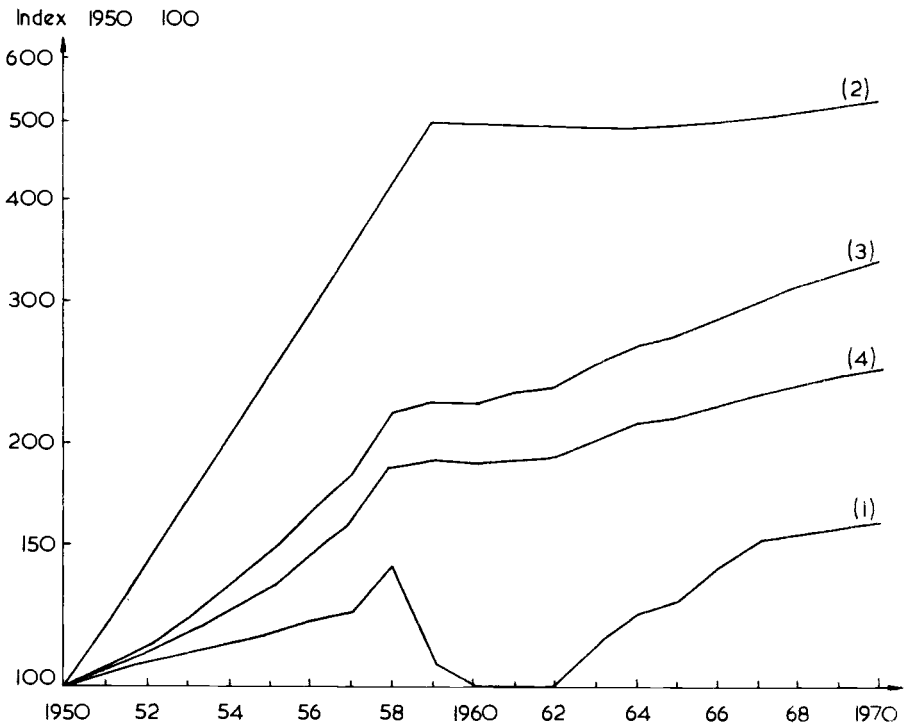


Source Table 2A Cols 10 and 13

(1) Population

(2) Net National Product in constant 1952 prices per head (assuming zero price rises)

Chart 3. China : Output and Net National Product Per Head 1950 - 1970



Source : Table 2A Col 2 ; Table 2B Cols 2, 3 and 8

(1) Quantum of grain output.

(2) Quantum of industrial output (i.e. value of industrial output deflated by assumed price increase).

(3) Quantum of weighted aggregate of grain plus industry output.

(4) Net national product in constant 1952 prices per head (allowing for deflated industrial output).

TABLE 2A C H I N A : OUTPUT, POPULATION AND OUTPUT PER HEAD 1950 - 1970.
(WITHOUT ALLOWANCE FOR PRICE CHANGES)

	GRAIN OUTPUT		INDUSTRIAL OUTPUT		Weights (Relative Importance in N.N.P.)		Weighted Aggregate of Grain Plus Industry (Quantum)	N.N.P. in Constant 1952 prices	Population (mid-year)		N.N.P. in Constant 1952 Prices per head			N.N.P. in Constant 1952 prices
	Million Metric Tons	1950 = 100	Yuan Billion	1950 = 100	"Grain" %	Industry %	1950 = 100	Total Yuan Million	Million	Index 1950 = 100	Yuan	$ U.S.	1950 = 100	Total $ U.S. Million
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1950	150	100.0	6.4	100.0	84	16	100	54 050	553	100	97.74	39.73	100.0	21 971.1
1951	155	103.3	7.6	118.8	83	17	105.9	57 238	561	101	102.03	41.48	104.4	23 267.4
1952	159	106.0	9.3	145.3	82	18	113.1	61 130	571	103	107.06	43.52	109.5	24 849.3
1953	164	109.3	11.2	175.0	80	20	122.4	66 157	583	105	113.48	46.13	116.1	26 892.7
1954	169	112.7	13.5	210.9	78	22	134.3	72 589	594	107	122.20	49.67	125.0	29 507.2
1955	174	116.0	16.4	256.3	77	23	148.3	80 155	607	110	132.05	53.68	135.1	32 583.2
1956	180	120.0	19.8	309.4	74	26	169.2	91 452	620	112	147.50	59.96	150.9	37 175.2
1957	185	123.3	24.0	375.0	74	26	188.7	101 991	632	114	161.38	65.60	165.1	41 459.5
1958	210	140.0	29.0	453.1	72	28	227.7	123 071	643	116	191.40	77.80	195.8	50 028.2
1959	160	106.7	35.2	550.0	70	30	239.7	129 557	650	118	199.32	81.02	203.9	52 664.8
1960	150	100.0	35.4	553.1	69	31	240.5	129 989	659	119	197.25	80.18	201.8	52 840.6
1961	150	100.0	35.7	557.8	67	33	251.1	135 718	669	121	202.87	82.47	207.6	55 169.5
1962	150	100.0	36.0	562.5	66	34	257.3	139 069	675	122	206.03	83.75	210.8	56 531.7
1963	170	113.3	36.1	564.1	64	36	275.6	148 960	683	124	218.10	88.66	223.1	60 552.4
1964	185	123.3	36.5	570.3	62	38	293.2	158 473	691	125	229.34	93.23	234.6	64 419.4
1965	190	126.7	37.0	578.1	61	39	302.7	163 608	700	127	233.73	95.01	239.1	66 506.6
1966	210	140.0	37.8	590.6	59	41	324.7	175 499	710	128	247.18	100.48	252.9	71 340.2
1967	228	152.0	38.7	604.7	58	42	342.1	184 903	720	130	256.81	104.39	262.7	75 163.2
1968	232	154.7	39.7	620.3	56	44	359.6	194 362	730	132	266.25	108.23	272.4	79 008.2
1969	236	157.3	40.7	635.9	54	46	377.5	204 037	740	134	275.73	112.08	282.1	82 941.0
1970	240	160.0	41.8	653.1	53	47	391.8	211 766	750	136	282.35	114.78	288.9	86 082.9

Sources and notes: Data underlined from Bruce McFarlane, "Economic Policy and Economic Growth in Communist China", Institute for International Economic Studies, Stockholm, Seminar Paper, April 1971, pp. 7, 8 and personally supplied by the author.

Population: 1950 - 1958 from J.E. Spencer, "Agriculture and Population in Relation to Economic Planning", *The Annals of the American Academy of Political and Social Science*, January 1959, p. 64 and Pi-Chao Chen, "The Political Economics of Population Growth: The Case of China", *World Politics*, Vol. XXIII, No.2, January 1971,p.248.

1968 and 1969 from I.P.P.F. *Family Planning in Five Continents*, April 1970, p.25 and July 1971, p.20.

Remaining years obtained through grephical interpolation and extrapolation. It is possible that the later figures entirely underestimate the position. The U.S. Information Service in Hong Kong estimates the 1966 figure of 786.4 million (the Chinese official figure for 1966 is "over 700 million") *(Statesman's Year Book* 1970 - 71, p.810). Allowing for a rate of increase of 2 per cent per annum, which is said to be the "official" estimation, this would give a figure of 851.2 million in 1970. It is interesting to note that Bruce McFarlane when he was in China recently was told that the population was "around 850 million". If this is anything like correct, it is clear that the Chinese are a long way from achieving the desired goal of a 1 per cent per annum rate of increase by 2000.

TABLE 2B C H I N A : PRICE INDEX, OUTPUT AND OUTPUT PER HEAD 1950 - 1970
(WITH ALLOWANCE FOR PRICE CHANGES)

	PRICE INDEX	INDUSTRIAL OUTPUT DEFLATED BY PRICE CHANGES (QUANTUM) INDEX	WEIGHTED AGGREGATE OF GRAIN PLUS INDUSTRY (QUANTUM)	N.N.P. IN CONSTANT 1952 PRICES				
				YUAN MILLION TOTAL	PER HEAD YUAN	$ US MILLION TOTAL	PER HEAD $ US	PER HEAD 1950=100
	(1)	1950=100 (2)	1950=100 (3)	(4)	(5)	(6)	(7)	(8)
1950	100.0	100.0	100.0	54 337.8	98.26	22 088.53	39.94	100
1951	101.0	117.2	105.7	57 435.0	102.38	23 347.56	41.62	104.2
1952	102.0	142.2	112.5	61 130.0	107.06	24 849.59	43.52	109.0
1953	103.0	170.3	121.5	66 020.4	113.24	26 837.56	46.03	115.2
1954	104.1	203.1	132.6	72 051.9	121.30	29 289.39	49.31	123.4
1955	105.1	243.8	145.4	79 007.1	130.16	32 116.70	52.91	132.5
1956	106.2	290.6	164.4	89 331.3	144.08	36 313.53	58.57	146.6
1957	107.2	350.0	182.2	99 003.4	156.65	40 245.28	63.68	159.4
1958	108.3	418.8	218.1	118 510.7	184.31	48 175.07	74.92	187.6
1959	109.4	503.1	225.6	122 586.0	188.59	49 831.70	76.66	191.9
1960	110.5	500.0	224.0	121 716.6	184.70	49 478.28	75.08	188.0
1961	111.6	500.0	232.0	126 063.6	188.44	51 245.36	76.60	191.8
1962	112.7	498.4	235.5	127 965.5	189.58	52 018.49	77.07	192.9
1963	113.8	495.3	250.8	136 279.1	199.53	55 398.00	81.11	203.1
1964	114.9	496.9	265.3	144 158.1	208.62	58 600.84	84.80	212.3
1965	116.1	498.4	271.7	147 635.7	210.91	60 014.50	85.74	214.6
1966	117.3	503.1	288.9	156 981.8	221.10	63 813.73	89.88	225.0
1967	118.4	510.9	302.7	164 480.5	228.45	66 861.98	92.87	232.5
1968	119.6	518.8	314.9	171 109.7	234.40	69 556.78	95.28	238.6
1969	120.8	526.6	327.2	177 793.2	240.26	72 273.65	97.67	244.5
1970	122.0	535.9	336.7	182 955.3	243.94	74 372.06	99.16	248.6

Sources: As for Table 2A

Price index for industrial output: Based on the assumption of a cumulative rate of increase of 1 per cent per annum.