

AGRICULTURAL CO-OPERATION IN BENGAL AND REST OF BRITISH INDIA (1918-19 to 1938-39)

BY TARINIPURUSAD GHOSE AND HARISCHANDRA SINHA
Statistical Laboratory, Calcutta.

INTRODUCTORY

To Bengal belongs the credit of initiating the co-operative movement long before it had taken actual shape in the rest of India. The names of two Bengalee pioneers come to mind,—those of S. J. Ambika Charan Ukil and Rai Parbati Shankar Chaudhuri. It is true that the societies started by the former were not co-operative in the strict sense of the term, but there can be perceived in them the rudiments of co-operative principles. The grain banks started by the latter were at first called *Lakshmi Odhas*, i.e., granaries provided over by the Hindu Godhows of Plenty, but the name was subsequently changed to *Dharna Odhas*, i.e., religious granaries in order not to wound the susceptibilities of non-Hindus. The plan put forward at first was to secure contributions of grain after a bumper harvest and store it up for distribution in a lean year not only among contributors but also among other villagers who were, however, to pay a somewhat higher rate of interest on the amounts borrowed. It is pleasing to recall that the first grain bank started by Rai Parbati Shankar Chaudhuri at Joyzanj in the district of Dinajpur as early as in 1892 continued its useful career as an unregistered society till December, 1914, after which it was registered in the usual way. Even if we leave this out and consider only co-operative societies in the proper sense of the term, the earliest institution was started at the village Kusumora (P.O. Lalpur in the district of Birbhum) on July 12, 1902. About forty years have elapsed since then and it is time a study was made about the progress and development of the co-operative movement. It is true that there have been quite a number of such periodical reviews at the series of Conferences of Registrars of Co-operative Societies of the different provinces of British India and of some of the Indian States, but these were mainly concerned with administrative problems. There have been also deeper and more incisive studies, e.g. *Maclagan Committee on Co-operation in India* (1917) and Prof. J. P. Niyogi's *The Co-operative Movement in Bengal*. But it is felt by the authors that there is scope for a fresh study on statistical lines. In particular, the authors desire to compare the standard reached in Bengal with that in the rest of British India, not only on broad lines with regard to the movement in general, but also in somewhat greater detail in the case of agricultural societies, which form the backbone of the system, in order that some light may be thrown on the obscurities hiding the strength and weakness of such societies in Bengal as compared with the rest of British India. It is hoped, however, to undertake similar studies in future with regard to other components of the system such as non-agricultural co-operative societies, central banks etc.

INDIAN STATES OMITTED

2. It will be noticed that Indian States have been omitted throughout, and that for two reasons. Firstly because different States began to report at different times and secondly because different standards have been reached by different States. For instance, during the year 1934-35, the number of societies per 1,00,000 inhabitants was 105.1 in Orissa and only 22.3 in Hyderabad, although the number of societies was nearly the same viz., 3,992 and 3,610 respectively. It is true that wide variations are observed also in some of the provinces of British India such as Coorg and Ajmer Marwar which record very high per capita figures for number of societies, but the former had only 300 societies and the latter only 721 societies out of a total of 1,04,307 societies for the whole of British India during 1934-35.

DOES BRITISH INDIA AFFORD A SATISFACTORY STANDARD

3. We must confess that even if we leave out Indian States and consider only British India, we do not have a fully satisfactory standard for the purpose of comparison. In the first place, there are wide differences in the progress of co-operation even among the major provinces with not less than 10 million population, as compiled in Table I from *Statistical Statements Relating to the Co-operative Movement in India during the year 1938-39*.

4. In the second place, all provinces are not equally productive, as will appear from Table I col. 5 giving the money value of principal crops in 1933-34, compiled from the *Review of the Trade of India in*

1931-33. This disparity is not, however, due to varying population in the different provinces, a fact apparent from the last column of the Table, compiled from the *Statistical Statements Relating to the Co-operative Movement in India during the year 1933-31*.

TABLE 1. PROGRESS OF CO-OPERATION AND VALUE OF CROPS AND POPULATION IN DIFFERENT PROVINCES

province	1933-39			1933-34	
	societies per 1,00,000 inhabitants	members of primary societies per 1,000 inhabitants	working capital per head of population (Rs.)	value of principal crops (Rs. Lakhs)	population (Millions)
(1)	(2)	(3)	(4)	(5)	(6)
Madras	27.8	20.0	4.6	83.17	46.7
Bombay	25.9	30.0	8.2	80.32	21.0
Bengal	37.8	17.7	3.8	95.50	50.1
U. P.	20.7	5.7	1.3	55.30	37.7
U. P.	21.1	10.2	0.8	85.70	48.4
Punjab	92.8	35.1	0.5	40.10	23.8
C.P. & Berar	28.5	5.6	3.2	30.33	15.6

Figures for Bihar & Orissa.

5. Thus it is clear that even British India does not afford a satisfactory standard. An alternative procedure is to compare Bengal with other provinces in succession and to see to what extent she is in a better or in a worse position. But this would be ruled out, because the results would be vitiated by the difference in the economic levels of the respective provinces. We have therefore thought it advisable to compare Bengal with the rest of British India as a whole, composed as it is of productive as well as unproductive provinces. It must be remembered, however, that as a result of such comparison Bengal would tend to appear in too favourable a light, for the all-India standard must necessarily be dragged down by large economically backward areas. This fact should always be borne in mind in interpreting the results of the present statistical analysis. In some cases, the corresponding figures for the two Presidencies other than Bengal, viz., Bombay and Madras have been added in order to facilitate mutual comparison. It will be seen that we have not considered the Punjab, because she is, on all hands, co-operatively the most progressive area.

SOURCES OF DATA

6. The data are all computed from the official publication *Statements showing progress of the Co-operative Movement in India*, re-styled *Statistical Statements Relating to the Co-operative Movement, in India since 1927-28*. The statistics were considerably modified following the recommendation of the *Maulgiri Committee on Co-operation in 1915*. It has therefore been thought advisable to omit the previous years for which the figures are not on the same basis as subsequently. Again, although individual members of Central and Provincial Banks, Banking Unions and Guaranteeing Unions were being included in the total of figures, they have been omitted since 1917-18, in order to avoid double counting, for it is assumed that these have already figured once as members of an agricultural or non-agricultural primary society. For these and other reasons, the data have been considered from 1918-19 onwards till 1933-36, the latest year for which the figures are available at present. With effect from April 1, 1937, Burma has been separated from British India and in order to maintain continuity, Burma figures have been omitted throughout. Thus the figures for Br. India from 1918-19 to 1936-37 quoted in the present paper refer to British India proper excluding Burma, and will not therefore agree with the corresponding figures published in the official *Statistical Statements*, although there will be agreement from 1937-38 onwards.

ANOMALIES IN DATA

7. In spite of these expedients, all anomalies in the data could not be eliminated. To start with, different provinces make up their annual reports on co-operation on different dates: Assam: 31st March; Ajmer-Merwar, Bengal, Bombay, Central Provinces and Berar, Coorg, Madras, Orissa, United Provinces: 30th June; Hyderabad Administered Area, 7th July; Delhi, Punjab, North-West Frontier Province: 31st July; Bihar: 31st December.

8. It is likewise clear that the majority of the provinces, whether numerically, or from the point of view of number of societies, or of membership, or of total working capital make up their reports as on-

AGRICULTURAL CO-OPERATION

30th June, on which the general agricultural year of India ends and which has therefore been taken as the closing date in the present paper. It is hoped, however, that this will not affect the final results, which are based on year-to-year comparisons and not on individual annual figures.

9. Secondly, with effect from 1937-38 particulars relating to land mortgages banks have been shown separately in a new subsidiary Statement H-1, and not included as before in the General Statements A, B and C. Unfortunately, the figures for Bengal are published in such a form that they cannot be incorporated into the General Statements A, B and C, so as to maintain continuity with the period prior to 1937-38. Even on reference to the Registrar of Co-operative Societies, Bengal, the desired information could not be obtained, for the principle of making up the table had been changed. We were therefore reluctantly compelled to omit the details of the working capital of agricultural co-operative societies for 1937-38 and 1938-39. But to maintain uniformity we found it necessary to add the figures relating to the number of societies, the number of members and the total working capital for 1937-38 and 1938-39 for Land Mortgage Banks to those for agricultural societies. There are two misprints in the *Statistical Statements for 1926-27 and 1931-32*, which have been corrected by us. "Other Funds" have been shown separately since 1931-32 in the *Statistical Statements*. But in order to maintain continuity, they have been included in the "Reserve Fund" throughout.

CORRECTED DATA

10. The finally adjusted figures as compiled from the *Statistical Statements* are given in Table 2 for Bengal and Table 3 for the rest of British India. In the last column of each of the tables, the average of the monthly index number of wholesale prices in Calcutta from July to June each year has been added. It will be seen that during the period under review there was considerable fluctuation in the price level, on account of the post-war boom of 1919-20 and the crash thereafter, the Great Depression of 1929-30 and the subsequent recovery and finally the boom at the out break of the present war. The figures for working capital and of their main constituents have therefore to be interpreted in the light of this variation in the price level, for which the index numbers have been inserted.

GENERAL FEATURES

11. The figures quoted above, whether for agricultural societies or for non-agricultural societies, indicate almost uninterrupted progress. But if they are properly scrutinised, temporary declines will be noticed in the case of agricultural societies, although not in the case of non-agricultural societies. Thus on reference to column (2) of Table 2, it will be seen that the number of agricultural societies in Bengal began to decline from 1932-33, which was arrested as late as in 1936-37. If the corresponding series for the rest of British India, as quoted in column (2) of Table 3, are looked into, it will be found that there was a set-back in 1931-32 followed by a recovery with effect from 1934-35. With regard to the number of members of agricultural societies the decline lasted from 1931-32 to 1937-38 in Bengal and from 1931-32 to 1933-34 in the rest of British India, as will appear from column (4) in Tables 2 and 3 each.

DEFLATED WORKING CAPITAL

12. Such temporary set-backs, however, are not found in the case of working capital either for Bengal or for the rest of British India. But if allowance is made for variation in the price level, by dividing the value figure for each year by the corresponding index number, and multiplying the quotient by 100 so as to get the appropriate deflated value, the following results are obtained as given in Table 4. On reference to columns (2), (3), (6) and (7) it will be seen that there were temporary set-backs and revivals from 1933-34 onwards both in Bengal and outside in the case of agricultural societies. The considerable increase recorded for 1938-39 for Madras (column 7, last line) is accounted for by the inclusion of land mortgage banks. The working capital of Madras Land Mortgage Banks rose from Rs. 136 lakhs in 1937-38 to Rs. 412 lakhs in 1938-39. If allowance is made for variation in the price level, the increase was from nearly Rs. 161 lakhs to Rs. 425 lakhs. In the case of non-agricultural societies, however, there is an uninterrupted progress throughout with the exception of Bombay for 1925-26. But the rates of increase are not identical.

13. From the above it is clear that although the figures for Bengal are broadly similar to those for the rest of British India, there are certain points of difference. A more intensive study on statistical lines is therefore called for in order to scrutinise to what extent the figures for Bengal differ from those elsewhere. It is a statistical commonplace to say that the respective rates of progress may be conveniently studied with the help of the relative trends. In the case of cumulating data of the nature of co-operative statistics

TABLE 2. STATISTICS OF CO-OPERATION IN BENGAL

Year (July to June)	number of societies (in thousands)		number of members (in thousands)		working capital (in lakhs of rupees)		components of working capital of agricultural societies (in lakhs of rupees)					Calcutta index number of sale prices (15)	Year (July to June)		
	agricul- tural	non- agricul- tural	agricul- tural	non- agricul- tural	agricul- tural	non- agricul- tural	reserves		loans & deposits		from prov. & central banks			from govt.	
							share capital	reserve fund	from members	from non- members					from society
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1918-19	3.82	0.58	157.76	85.09	63.35	76.51	1.38	14.50	5.62	4.23	0.84	65.05	0.55	165	1918-19
1919-20	3.96	0.56	157.10	80.06	111.12	47.40	2.30	18.40	6.14	6.94	0.40	80.11	0.21	205	1919-20
—21	5.85	0.44	171.83	90.17	125.30	63.38	3.82	17.19	0.59	0.90	0.03	93.54	0.13	188	—21
—22	6.15	0.45	180.78	98.72	128.78	73.93	6.40	20.05	0.01	0.87	0.05	98.27	0.27	160	—22
—23	6.11	0.46	179.83	97.43	128.78	73.93	6.40	20.05	0.01	0.87	0.05	98.27	0.27	160	—23
—24	6.41	0.40	224.82	91.01	188.54	100.88	11.50	27.71	8.39	10.02	1.20	129.32	0.27	170	—24
—25	10.20	0.75	208.71	101.86	222.79	125.51	16.34	33.04	10.08	11.42	0.82	150.08	0.41	168	—25
—26	11.81	1.00	216.86	109.83	297.44	156.34	26.99	38.99	13.76	12.44	0.82	180.44	0.41	154	—26
—27	13.95	1.23	279.24	129.60	338.54	177.04	31.92	49.72	15.76	15.72	0.85	231.55	0.41	149	—27
—28	16.43	1.52	441.21	169.63	406.26	207.83	30.35	67.24	15.77	15.07	0.83	270.53	0.40	147	—28
—29	17.07	1.73	476.01	192.98	470.15	243.43	40.00	69.08	17.06	16.82	1.04	315.07	0.44	143	—29
—30	20.41	1.91	512.83	193.71	525.48	270.88	38.50	83.44	19.71	16.01	0.88	370.62	0.42	132	—30
—31	21.46	2.03	532.59	224.90	661.23	312.63	58.71	103.00	23.37	16.37	1.12	358.18	0.42	103	—31
—32	21.40	2.12	529.44	229.45	574.55	338.00	60.00	122.24	21.46	18.02	1.14	354.01	0.38	94	—32
—33	21.31	2.18	525.44	247.71	595.03	370.70	61.91	140.00	21.34	18.83	1.08	318.48	0.39	88	—33
—34	21.22	2.20	518.92	262.37	602.55	425.36	62.15	165.35	21.21	18.80	1.10	331.30	0.37	80	—34
—35	21.12	2.10	515.93	267.87	600.11	407.25	62.30	173.00	20.10	18.02	2.35	334.21	0.30	69	—35
—36	21.11	2.28	506.01	260.46	615.21	462.60	61.31	185.10	21.58	15.70	2.44	328.07	0.36	61	—36
—37	21.26	2.43	507.31	260.71	618.43	540.50	60.07	101.82	20.60	13.00	2.46	324.24	0.36	60	—37
—38	21.50	2.60	498.44	251.50	614.54	574.55	60.00	110.47	21.50	11.00	2.46	324.24	0.36	59	—38
—39	21.55	2.69	499.48	252.83	620.97	603.93	60.00	109.97	21.55	11.00	2.46	324.24	0.36	57	—39

AGRICULTURAL CO-OPERATION

TABLE 3. STATISTICS OF CO-OPERATION IN THE REST OF BRITISH INDIA : EXCLUDING BENGAL

(Year July to June)	number of societies (in thousands)		number of members (in thousands)		working capital (in lakhs of rupees)		capital & reserve		loans & deposits (in lakhs of rupees)				Calcutta index number of whole- sale prices	Year (July to June)	
	agricul- tural	non- agricul- tural	agricul- tural	non- agricul- tural	agricul- tural	non- agricul- tural	share capital	reserve fund	from members	from non- members		from prov. & central banks			from govt.
										agricul- tural	non- agricul- tural				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1918-19	16.87	1.30	891.00	172.29	541.93	132.29	77.85	74.72	28.57	40.03	5.81	301.08	2.80	185	1918-19
1919-20	17.81	1.35	915.00	177.90	575.00	137.90	85.32	87.81	47.14	46.93	6.91	316.25	2.85	205	1919-20
1920-21	28.87	2.23	986.52	255.01	804.84	219.16	93.16	102.09	60.70	50.43	9.15	400.73	9.57	198	1920-21
1921-22	28.29	2.53	1127.78	301.88	825.23	298.31	101.44	117.96	64.01	58.77	7.37	501.73	10.36	189	1921-22
1922-23	34.51	2.72	1195.15	327.23	1028.01	357.98	106.07	134.16	70.75	65.86	4.93	640.20	9.84	172	1922-23
1923-24	31.37	3.12	1250.12	361.03	1137.43	417.46	115.02	155.02	84.02	66.17	6.48	725.07	7.86	170	1923-24
1924-25	41.62	3.73	1474.15	407.12	1300.80	490.13	137.97	170.83	102.11	70.24	8.08	872.02	9.55	168	1924-25
1925-26	43.03	4.11	1608.93	478.74	1610.33	585.86	160.13	208.68	110.32	76.03	9.16	1027.10	18.71	154	1925-26
1926-27	49.56	6.30	1795.50	530.87	1898.74	683.03	187.91	241.46	114.22	87.52	6.31	1246.08	15.00	146	1926-27
1927-28	51.85	5.93	1940.90	595.78	2107.41	793.60	215.84	280.75	135.78	105.85	12.58	1300.50	10.20	147	1927-28
1928-29	64.05	6.27	2030.21	631.03	2305.56	850.43	238.70	321.58	120.80	106.91	19.03	1566.20	13.00	143	1928-29
1929-30	65.42	6.43	2102.70	684.76	2478.46	1012.08	250.14	359.93	133.80	112.00	10.01	1587.63	13.2	132	1929-30
1930-31	65.87	6.50	2121.50	713.97	2552.41	1078.30	274.58	414.02	124.11	118.76	20.75	1574.00	15.49	102	1930-31
1931-32	65.50	6.50	2121.50	713.97	2552.41	1078.30	274.58	414.02	124.11	118.76	20.75	1574.00	15.49	102	1931-32
1932-33	65.06	6.63	2016.74	759.28	2397.76	1292.25	277.93	480.03	123.75	116.64	18.86	1328.12	12.49	68	1932-33
1933-34	64.62	6.78	1984.40	830.85	2334.38	1274.82	270.13	540.07	120.41	106.94	10.83	1261.37	9.03	89	1933-34
1934-35	65.67	7.07	2005.63	868.58	2340.60	1378.51	244.22	579.00	119.40	110.06	19.18	1256.32	9.37	81	1934-35
1935-36	66.06	7.63	2058.19	958.07	2385.47	1400.61	282.26	610.51	166.53	111.50	17.73	1249.69	7.42	81	1935-36
1936-37	68.75	8.31	2164.62	967.04	2399.99	1508.77	265.02	627.88	162.50	111.00	17.00	1249.40	6.33	86	1936-37
1937-38	69.17	8.45	2277.83	1041.07	2625.74	1680.43								100	1937-38
1938-39	63.16	9.02	2370.20	1099.00	2886.63	1746.34								97	1938-39

TABLE 4. DEFLATED VALUE OF WORKING CAPITAL (in lakhs of rupees)

Year	agricultural society		non-agricultural society		agricultural society		non-agricultural society	
	Bengal	rest. of Br. India	Bengal	rest. of Br. India	Bombay	Madras	Bombay	Madras
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1918-19	49.63	291.36	19.47	71.12	44.93	66.46	37.49	25.96
-20	54.21	319.12	24.25	80.27	55.65	77.95	41.16	31.08
-21	68.23	428.10	33.71	110.57	73.24	96.80	58.27	38.56
-22	77.10	512.35	41.07	160.17	84.06	126.21	82.73	48.78
-23	90.90	694.74	52.65	206.92	101.73	156.39	108.84	62.29
-24	110.91	889.84	62.28	245.67	116.25	188.74	117.90	77.31
-25	132.41	815.36	74.71	291.75	148.89	217.70	134.51	98.55
-26	173.53	1045.67	101.82	380.43	204.30	261.58	172.07	125.57
-27	231.74	1306.51	121.26	467.83	248.07	313.15	204.32	155.29
-28	277.72	1433.61	141.38	530.52	252.12	398.18	236.23	174.04
-29	328.78	1963.19	170.23	643.60	258.04	439.99	271.50	209.15
-30	418.54	1877.62	290.76	766.73	310.66	512.96	330.99	228.25
-31	544.88	2478.67	303.82	1046.80	426.22	649.62	472.36	321.76
-32	615.48	2901.64	390.43	1193.43	469.12	630.64	552.72	319.38
-33	672.70	2980.63	428.13	1366.19	481.78	618.78	648.26	290.22
-34	668.68	2624.90	477.04	1422.38	462.40	664.22	698.08	391.80
-35	684.40	2030.18	525.00	1548.80	454.43	614.73	714.82	415.84
-36	676.06	2621.40	552.50	1647.92	367.50	642.31	678.32	430.87
-37	644.20	2409.05	562.80	1685.30	351.44	633.41	679.49	433.07
-38	616.41	2623.74	574.25	1689.43	362.89	671.32	688.89	444.13
-39	646.37	2769.62	622.61	1841.69	377.36	1013.49	736.17	488.82

quoted in Tables 2 and 3, a Gompertz or Logistic curve immediately suggests itself for studying the law of growth. As Mr. R. B. Prescott⁶ points out, such a curve is quite appropriate when there are an initial period of experimentation, a subsequent period of growth into social fabric, a third stage during which this rate of growth is successively accelerated, becomes stationary and retarded, and final stage when there is no further growth,—in other words, a period of economic equilibrium, provided of course further expansion in population, income etc., is stopped. So far as our present data are concerned, we may tentatively conclude that they are in the second and third stages, outgrowing the early experimental years on the one hand and not reaching the final equilibrium period on the other. How far this is true will appear from the Table 5 below, which gives details about the progress of co-operation in relation to population during the first

TABLE 5. PROGRESS OF CO-OPERATION IN RELATION TO POPULATION

area	1918-1919				1928-1929			
	no. of societies per 1,00,000 inhabitants	no. of members of primary societies per 1,000 inhabitant	amount of working capital per head of population (Rs.)	deflated value of working capital per head of population (Rs.)	no. of societies per 1,00,000 inhabitants	no. of members of primary societies per 1,000 inhabitants	amount of working capital per head of population (Rs.)	deflated value of working capital per head of population (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Br. India	13.2	4.9	0.7	0.4	32.9	16.5	3.4	3.5
Ex-Bengal	9.5	3.8	0.5	0.2	67.8	17.7	3.7	3.9
Bengal	11.2	6.8	1.1	0.6	25.9	30.0	8.2	8.4
Bombay	8.9	6.9	0.8	0.4	27.6	20.9	4.6	4.8
Madras								

and the last years of the period under investigation, in Bengal and elsewhere. On reference to columns (2) and (6), it will be seen that the number of societies per 1,00,000 inhabitants have risen from 13.2 in 1918-19 to 32.9 in 1928-29 in British India exclusive of Bengal. The number of members of primary societies per 1,000 inhabitants has increased from 4.9 to 16.5 as shown in columns (3) and (7). The position in

AGRICULTURAL CO-OPERATION

different Presidencies is not, however, identical. In Bengal in particular the number of societies has risen more steeply than elsewhere. In any case, it is quite clear that we are yet at a great distance from final "saturation point", either in Bengal or elsewhere although some progress has undoubtedly been achieved.

TRENDS FOR BENGAL AND REST OF BRITISH INDIA

14. We thus come to the conclusion that the trends for the period under review may be regarded as approximately linear, provided we treat all data logarithmically,—for number of societies, for number of members, and for working capital, both in the case of agricultural and non-agricultural societies, as given in columns (2) to (7) in Table 2 for Bengal and in Table 3 for the rest of British India, all the required deflated values for working capital being given in Table 4. The results obtained are given in Table 6, y , being the smoothed value of the variable concerned in each case, and t being the time measured in years from the middle of the series viz., 1928-29. Thus the annual rate of growth of the number of agricultural societies in Bengal works out at 0.039 whereas the corresponding figure for the rest of British India is found to be 0.020. It may be argued that this observed difference is not significant in the sense that such variation may easily arise from sampling fluctuations. To test whether this is so or not we apply Fisher's t -test, the results being given in Table 7. It will be noted that barring the case of working capital of non-agricultural societies, both ordinary and deflated, all the other rates of growth are found to be significantly higher in Bengal.

TABLE 6. RATES OF PROGRESS OF CO-OPERATION IN BENGAL AND THE REST OF BRITISH INDIA (1918-19 to 1938-39)

no.	trends for	Bengal	rest of British India	value of 't'
1	No of agricultural Societies.	$\log y = 4.128705 + 0.036538 t$	$\log y = 4.451871 + 0.020315 t$	1.42*
2	No of non-agricultural Societies.	$\log y = 3.089000 + 0.051829 t$	$\log y = 3.079052 + 0.037410 t$	3.00*
3	No of members of agricultural Societies.	$\log y = 5.847652 + 0.031370 t$	$\log y = 6.215390 + 0.022032 t$	2.12*
4	No of members of non-agricultural Societies.	$\log y = 5.177748 + 0.045570 t$	$\log y = 5.733976 + 0.030589 t$	2.71*
5	Total working capital of agricultural Societies.	$\log y = 7.827205 + 0.044553 t$	$\log y = 8.224243 + 0.031287 t$	2.44*
6	Total working capital of non-agricultural Societies.	$\log y = 7.307310 + 0.039773 t$	$\log y = 7.840210 + 0.033064 t$	1.73
7	Deflated working Capital of agricultural Societies.	$\log y = 5.414971 + 0.064417 t$	$\log y = 6.112010 + 0.051751 t$	2.08*
8	Deflated working Capital of Non-agricultural Societies.	$\log y = 4.880171 + 0.073912 t$	$\log y = 5.733970 + 0.072932 t$	0.08

Degrees of freedom 38; value of "t" at five per cent level = 2.02. Results significant at five per cent level are marked with asterisks. The tentative conclusion for such significant values is that the rate of growth for Bengal is higher than that for the rest of British India.

NUMBER OF MEMBERS PER SOCIETY

15. The question now is, has the increase in membership kept pace with the increase in the number of societies, both agricultural and non-agricultural? What is the position in Bengal compared with the rest of British India? The answers to these questions are to be found in Table 7. Column (2) giving the number of members per agricultural society in Bengal is obtained on dividing column (4) by column (2) of Table 2. Column (3) giving the corresponding figure for non-agricultural societies is similarly obtained on dividing column (5) by column (3) of Table 3. Columns (4) and (5) are similarly calculated from the corresponding figures for the rest of British India in Table 3. It will be seen that in Bengal the number of members per society has gone down both in the case of agricultural and non-agricultural societies, whereas in the rest of British India, only the number of members per non-agricultural society has decreased but the corresponding figure for agricultural societies has steadily gone up. Low membership means smaller societies for which the overhead expenses must necessarily be higher. There is therefore a possibility that in the case of agricultural societies, quality has been sacrificed for quantity in the case of Bengal as compared with the rest of British India. But in the case of non-agricultural societies the position in Bengal seems to be not unsatisfactory as compared with the rest of British India. In order to judge the extent of the disparity between the two more precisely, columns (6) and (7) have been inserted in Table 7, in which the figure for Bengal is expressed as a percentage of the corresponding figure for the rest of British India. Thus if the

figures in columns (6) and (7) are below 100, Bengal's position is worse than that of the rest of British India, whereas if the figure is above 100, Bengal's position is better to that extent. Column (6) shows that from the point of view of membership, the condition of agricultural societies has steadily deteriorated as compared with the rest of British India but with regard to non-agricultural societies the position is not so bad, as will appear from a study of column (7), although the relatively favourable position of 1923-24 has all but passed away. The position of Bengal vis-a-vis that of Bombay and Madras is shown in columns (2), (3) and (9) to (11). On a study of columns (2), (8) and (10), it will be seen that agricultural societies have much fewer members in Bengal than in Bombay or Madras. The same conclusion is also apparent in the case of non-agricultural societies from columns (3), (9) and (11). It will also be seen that the extent of the superiority over the British India standard in the case of Bengal is being consistently slumped down, whereas in the cases of Bombay and Madras, this superiority is being enhanced.

TABLE 7. NUMBER OF MEMBERS PER SOCIETY

year	Bengal		Rest of British India		disparity index between the two		Bombay		Madras	
	agri-cultural	non-agri-cultural	agri-cultural	non-agri-cultural	agri-cultural (100(2)/(4))	non-agri-cultural (100(3)/(5))	agri-cultural	non-agri-cultural	agri-cultural	non-agri-cultural
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1918-19	24.3	137.8	34.7	132.7	99	104	71.3	212.4	65.6	152.7
—20	31.6	140.8	34.1	129.6	93	109	74.8	191.1	64.8	150.3
—21	29.4	137.4	34.2	114.7	86	120	75.3	177.4	53.4	143.2
—22	29.4	151.7	34.9	110.1	84	127	75.6	199.9	63.0	143.8
—23	27.9	155.4	34.5	120.1	91	129	72.3	211.2	63.7	140.9
—24	27.2	152.4	35.3	115.6	77	132	72.3	212.8	64.7	136.8
—25	26.5	138.4	35.6	109.2	74	135	71.9	215.8	53.8	135.8
—26	27.2	125.8	33.7	101.0	70	124	70.1	248.1	63.9	141.2
—27	27.2	104.9	36.4	99.1	73	106	70.0	249.1	53.5	142.2
—28	26.9	105.7	37.0	99.0	72	106	75.8	248.2	53.3	146.3
—29	26.5	111.4	37.7	100.8	71	111	74.1	255.2	63.4	148.5
—30	25.1	102.2	37.0	100.6	66	96	71.0	263.7	64.6	157.5
—31	24.9	111.0	38.0	109.7	60	101	69.4	265.8	63.7	169.3
—32	24.6	115.8	37.2	111.3	66	102	66.6	272.7	63.8	174.4
—33	24.5	113.4	36.6	114.1	67	99	65.7	263.8	62.4	163.4
—34	24.2	119.2	36.1	118.6	67	101	65.2	299.9	61.0	196.7
—35	24.3	122.5	36.0	122.8	68	100	63.6	340.4	50.3	199.8
—36	24.0	125.8	36.1	117.7	67	107	67.1	331.1	51.0	202.1
—37	23.0	107.4	36.8	116.4	65	62	67.3	331.8	52.2	200.0
—38	23.4	112.4	37.9	116.3	62	97	65.6	352.1	54.8	193.4
—39	21.8	111.4	40.8	114.3	52	98	64.8	345.9	58.8	192.0

WORKING CAPITAL PER SOCIETY

16. Let us now consider the matter not from the point of view of membership but of working capital per society. The necessary figures are given in Table 8 compiled in the same way as Table 7. On a scrutiny of columns (6) and (7), we come to the same conclusion as before viz., that Bengal agricultural societies have fared worse than those in the rest of British India, but in the case of non-agricultural societies, the standard is about the same throughout British India. The hopelessly inferior position of agricultural societies in Bengal as compared with that in Bombay and Madras can be easily seen from columns (2), (9) and (10). On a study of columns (3) and (9) it will be seen that even in the case of non-agricultural societies, Bengal has much poorer working capital than Bombay. On reference to column (11) it will appear that even so far as Madras is concerned, although Bengal began with greater working capital per society in 1918-19, she had consistently less working capital since 1926-27.

WORKING CAPITAL PER MEMBER

17. It may be argued that in the case of Bengal agricultural societies, both membership and working capital have gone down as compared with the rest of British India, but it does not also mean that working

AGRICULTURAL CO-OPERATION

TABLE 8. WORKING CAPITAL PER SOCIETY (In thousands of rupees)

year	Bengal		rest of Br. India		disparity index between the two		Bombay		Madras	
	agri-cultural society	non-agri-cultural society	agri-cultural society Rs.	non-agri-cultural society Rs.	agri-cultural society 1923 (4)	non-agri-cultural society 1923 (5)	agri-cultural society	non-agri-cultural society	agri-cultural society	non-agri-cultural society
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1918-19	2.35	13.82	2.71	10.19	87	136	4.81	22.25	4.61	10.34
-20	2.23	13.39	2.64	10.14	85	131	5.26	21.20	3.79	9.94
-21	2.19	14.47	2.79	9.92	79	147	5.70	22.59	3.56	9.02
-22	2.26	10.32	2.98	11.34	79	143	5.82	26.54	3.61	10.26
-23	2.17	17.12	2.98	13.14	73	130	6.13	32.01	3.76	11.14
-24	2.18	17.56	3.10	13.27	71	131	6.48	33.15	3.95	11.28
-25	2.18	16.90	3.39	13.15	66	128	7.40	34.93	3.98	12.62
-26	2.30	13.15	3.56	12.43	85	122	8.14	39.49	4.04	13.85
-27	2.42	13.33	3.85	12.74	82	105	8.16	33.61	4.28	15.10
-28	2.49	13.87	4.06	13.37	81	102	8.36	43.10	4.76	16.06
-29	2.62	14.05	4.24	14.00	82	96	8.08	50.03	4.88	16.03
-30	2.70	14.48	4.47	15.75	69	92	8.58	52.58	5.17	19.07
-31	2.61	15.45	4.67	16.58	57	93	9.19	55.48	5.22	21.17
-32	2.69	16.10	4.40	17.10	61	94	9.11	57.80	4.72	21.75
-33	2.77	17.25	4.30	18.07	65	96	8.80	61.82	4.55	23.90
-34	2.80	19.33	4.25	18.80	66	103	8.65	67.53	4.34	24.37
-35	2.88	21.37	4.21	19.49	69	110	8.55	75.10	4.20	25.83
-36	2.91	22.06	4.10	19.65	70	112	8.32	75.00	5.00	26.73
-37	2.91	19.10	4.08	19.25	71	99	8.36	73.21	5.40	28.00
-38	2.90	20.07	4.36	18.77	67	107	9.00	75.21	6.04	27.32
-39	2.26	20.21	4.25	18.54	64	109	9.04	78.30	8.53	26.77

capital per member is worse in Bengal than outside as can be seen from Table 9. But it should be noted that here, as elsewhere, the position in Bengal is definitely inferior to that in Bombay and Madras, particularly for agricultural societies.

TABLE 9. WORKING CAPITAL PER MEMBER

year (July to June)	Bengal		rest of British India		disparity index between the two		Bombay		Madras	
	agri-cultural society Rs.	non-agri-cultural society Rs.	agri-cultural society Rs.	non-agri-cultural society Rs.	agri-cultural society	non-agri-cultural society	agri-cultural society Rs.	non-agri-cultural society Rs.	agri-cultural society Rs.	non-agri-cultural society Rs.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1918-19	68.6	109.3	78.2	76.8	88	121	67.5	104.7	72.2	68.0
-20	70.7	94.4	77.3	78.2	92	121	70.8	110.9	69.1	66.1
-21	74.0	105.3	81.5	85.6	92	123	75.7	127.3	66.0	63.1
-22	76.8	107.6	81.8	95.6	94	123	77.0	132.8	68.2	70.4
-23	77.9	110.2	86.4	109.4	90	101	84.0	156.3	70.0	76.4
-24	80.2	115.2	87.7	115.7	91	96	119.3	165.8	70.7	82.4
-25	83.0	123.2	93.0	150.4	89	102	103.0	161.8	71.4	82.0
-26	84.4	120.4	90.7	122.3	85	99	110.2	150.2	74.3	69.1
-27	89.1	127.1	105.0	128.7	84	99	121.1	175.1	81.8	105.4
-28	92.4	120.4	108.1	133.8	86	97	110.2	181.9	88.2	109.8
-29	95.7	125.1	112.5	145.7	88	87	109.0	191.0	91.1	121.3
-30	107.7	141.7	118.0	147.8	91	96	119.3	195.4	94.9	121.1
-31	108.0	130.2	120.4	161.2	81	92	132.5	204.7	93.6	125.0
-32	109.4	141.4	118.3	163.6	93	92	136.8	212.1	87.8	124.7
-33	112.1	152.1	117.6	158.4	96	90	133.9	216.3	86.7	128.9
-34	116.6	162.1	117.7	156.0	98	102	132.8	206.5	87.0	123.9
-35	116.7	174.6	116.8	156.7	102	110	131.5	216.8	93.7	129.2
-36	121.4	135.3	116.0	167.0	105	105	124.0	226.6	99.8	132.3
-37	121.7	177.9	111.0	165.3	110	108	124.1	220.7	105.3	140.0
-38	123.7	178.6	115.2	161.4	107	111	137.2	213.6	110.3	141.2
-39	104.8	181.5	104.3	162.6	100	112	130.6	228.5	145.7	130.3

WORKING CAPITAL OF AGRICULTURAL SOCIETIES

18. That some difference exists in the case of Bengal agricultural societies is an undoubted fact. What is the reason for this? Some light may be thrown on the matter by a proper scrutiny of the different elements of the working capital viz., (a) Share capital, (b) Reserve Fund, (c) Members' loans and deposits, (d) Non-members' loans and deposits, (e) Societies', Provincial and Central Banks' loans and deposits, and (f) Government loans and deposits as shown in columns (8) to (14) in Table 2 for Bengal and in Table 3 for the rest of British India. Most of these series record increases but their respective rates cannot be easily compared. Moreover they are all affected by the fluctuation in the price level shown in column (12) of each of the Tables 2 and 3. To overcome these difficulties, each of the above components has been expressed as percentages of the total working capital in Table 10. Thus column (2) of this table for percentage of share capital to total working capital in Bengal is obtained by expressing column (8) in Table 2 as a percentage of column (6) in the same table. Column (3) of Table 10 is similarly obtained from the corresponding figures in Table 3 for the rest of British India. The disparity index showing the relationship between Bengal and the rest of British India is obtained on dividing column (2) for the former by column (3) for the latter and multiplying the quotient by 100. The series of columns detailing the percentage of other components to total working capital have been similarly obtained.

PROPORTION OF SHARE CAPITAL TO TOTAL WORKING CAPITAL

19. On reference to columns (2) and (3) of Table 10, it will be seen that agricultural societies in Bengal have proportionately much less share capital than in the rest of British India. The position is made clearer in column (4) which shows that Bengal had proportionately one-tenth of the share capital as compared with the rest of British India in the first year of the period under review viz., 1918-19. The position steadily improved till 1928-29 and 1929-30 when parity was reached, since when there has been a set back. The corresponding graphs will be found in Chart (1).

PROPORTION OF RESERVE FUND TO TOTAL WORKING CAPITAL

20. So far as reserve fund is concerned, Bengal's proportion is throughout higher than in the rest of British India as will be evident on comparing the figures in columns (5) and (6) in Table 10. It will, however, be improper to draw the facile conclusion from this that Bengal agricultural societies are stronger than those in the rest of British India. For, reserve funds show a steep rise after the onset of the Great Depression in Bengal as well as elsewhere and therefore they cannot indicate strength. Rather they presumably include items set aside for writing off bad and doubtful debts. This point will be further considered later on. The mutual position in Bengal and outside is illustrated in Chart (2).

PROPORTION OF MEMBERS' AND NON-MEMBERS' LOANS AND DEPOSITS TO TOTAL WORKING CAPITAL

21. Bengal's proportion is somewhat lower than in the rest of British India, but there is a substantial parallelism. The necessary figures are available in columns (8) to (10) for Members and in columns (11) to (13) for Non-members, the relative graphs being shown in Chart (3) and (4).

PROPORTION OF SOCIETIES' AND PROVINCIAL AND CENTRAL BANKS' LOANS AND DEPOSITS TO TOTAL WORKING CAPITAL

22. These loans and deposits form the bulk of the working capital and should therefore be closely scrutinised. It is somewhat curious that the higher financing bodies should curtail their accumulation in times of difficulty, as will appear from the steady decline in the proportion whether in Bengal or outside from the beginning of the Great Depression. There is since then substantial parallelism between the two as will appear from Chart (5).

PROPORTION OF OVERDUE LOANS TO TOTAL LOANS GRANTED BY AGRICULTURAL SOCIETIES

23. It has been stated above that probably the reserve funds of agricultural co-operative societies contain provision for bad and doubtful debts and their increase does not therefore necessarily indicate strength. An independent criterion has therefore to be devised for estimating the character of loans granted by such societies. The necessary data available in Table 11, columns (2), (3), (4) and (6) have been extracted from *Statistical Statements*, subject to a few adjustments in Bombay and U. P. figures. Column (4) shows the percentage between columns (2) and (3) that is to say between overdue loans and total loans for Bengal. Column (7) gives the corresponding proportion for the rest of British India. If these two are mutually compared, it will be evident that the burden of overdue loans is a staggering one in Bengal rising to as much as 84.8% of the total in 1936-37. The position throughout has been worse than in the rest of British India and is almost desperate near the end of the period under review as will be evident from Chart (6). The corresponding figures for Bombay and Madras are shown in columns (8) and (9).

AGRICULTURAL CO-OPERATION

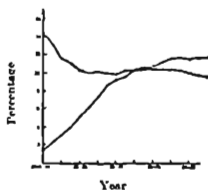


CHART (1). PERCENTAGE OF SHARE CAPITAL TO WORKING CAPITAL.

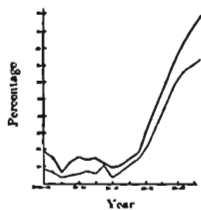


CHART (2). PERCENTAGE OF RESERVE FUND TO TOTAL WORKING CAPITAL.

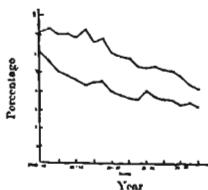


CHART (3). PERCENTAGE OF MEMBERS' LOANS AND DEPOSITS TO TOTAL WORKING CAPITAL.

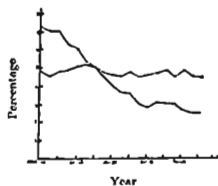


CHART (4). PERCENTAGE OF NON-MEMBERS' LOANS AND DEPOSITS TO TOTAL WORKING CAPITAL.

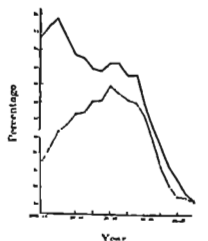


CHART (5). PERCENTAGE OF SOCIETIES' PROVINCIAL AND CENTRAL BANKS' LOANS AND DEPOSITS TO TOTAL WORKING CAPITAL.

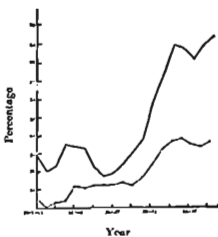


CHART (6). PERCENTAGE OF OVERDUE LOANS TO TOTAL LOANS.

Bengal.....
Rest of India.....

TABLE 10. ANALYSIS OF WORKING CAPITAL OF AGRICULTURAL SOCIETIES.

year (July to June)	percentage of share capital to total working capital		percentage of reserve fund to working capital		percentage of members' total deposits to total working capital		percentage of non-members' total deposits to total working capital		percentage of societies' re- served capital/fund to total working capital		year (July to June)					
	Bengal	rest of British India	Bengal	rest of British India	Bengal	rest of British India	Bengal	rest of British India	Bengal	rest of British India						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1918-19	1.29	14.36	10	15.80	15.79	115	6.15	7.12	80	4.91	7.39	60	71.49	26.81	129	1018-10
1919-20	2.07	10.84	10	15.80	15.79	115	6.15	7.32	71	4.91	7.39	85	71.49	26.81	129	1019-20
20	2.06	11.57	20	13.40	12.69	106	5.34	7.05	73	4.73	7.01	67	73.45	60.49	122	20
21	2.93	11.00	26	14.43	12.70	112	4.06	7.01	71	4.93	6.37	78	71.49	61.71	116	21
22	2.11	10.21	61	15.51	14.64	116	4.75	7.31	68	5.35	6.72	85	69.25	65.91	110	22
23	6.13	9.99	61	14.71	13.59	119	4.45	7.31	61	4.93	6.37	85	69.25	65.91	110	23
24	7.23	10.07	73	14.83	12.13	113	4.52	6.72	67	5.13	5.13	100	68.00	64.25	106	24
25	8.64	9.84	67	14.29	12.97	102	4.52	6.85	66	4.84	4.72	90	67.45	64.35	105	25
26	9.28	9.90	64	13.61	12.72	106	4.07	6.02	68	4.93	4.60	86	68.00	66.00	104	26
27	10.34	10.25	64	14.02	12.52	105	3.66	6.97	65	3.89	4.65	81	68.08	65.14	103	27
28	10.46	10.50	101	15.18	14.93	104	3.57	5.40	66	3.01	4.52	67	67.58	64.04	105	28
29	10.46	10.26	67	14.20	16.22	113	4.16	6.55	79	3.02	4.65	63	64.42	62.40	102	29
30	10.46	11.30	63	21.13	18.29	115	3.71	6.20	70	3.22	4.76	64	61.39	68.71	103	30
31	10.46	11.51	60	23.65	20.60	114	3.61	6.53	60	3.14	4.93	65	60.04	66.80	104	31
32	10.46	11.51	60	23.65	20.60	114	3.61	6.53	60	3.14	4.93	65	60.04	66.80	104	32
33	10.46	11.51	60	23.65	20.60	114	3.61	6.53	60	3.14	4.93	65	60.04	66.80	104	33
34	10.46	11.51	60	23.65	20.60	114	3.61	6.53	60	3.14	4.93	65	60.04	66.80	104	34
35	10.46	11.51	60	23.65	20.60	114	3.61	6.53	60	3.14	4.93	65	60.04	66.80	104	35
36	9.97	11.63	62	20.60	26.50	118	3.16	4.47	77	2.58	4.37	61	62.87	62.70	101	36
37	9.70	11.63	62	21.50	25.10	120	3.35	4.38	74	2.57	4.33	60	62.83	62.70	100	37

AGRICULTURAL CO-OPERATION

TABLE 11. ANALYSIS OF LOANS GRANTED TO INDIVIDUALS BY AGRICULTURAL SOCIETIES

Year (July to June)	Bengal			rest of British India			Bombay	Madras
	total loans to individuals	of which overdue	percentage of overdue loans to total loans	total loans to individuals	of which overdue	percentage of overdue loans to total loans		
	Rs. lakhs	Rs. lakhs	100(3)/(2)	Rs. lakhs	Rs. lakhs	100(6)/(5)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1918-19	69-51	22-62	32-5	455-81	41-56	13-5	7-7	15-0
-20	85-34	22-08	25-9	551-97	59-96	10-8	8-4	11-8
-21	100-96	27-73	27-5	690-56	81-41	12-2	13-4	18-4
-22	104-81	40-05	37-5	792-87	99-84	12-4	13-5	19-2
-23	121-45	44-72	36-8	887-55	175-90	19-8	20-0	21-4
-24	148-47	51-74	34-9	965-76	191-70	19-3	19-7	21-7
-25	173-61	49-28	28-4	1,223-95	243-06	19-8	17-8	24-5
-26	211-72	61-13	24-1	1,594-39	281-51	20-1	16-3	26-9
-27	265-37	67-55	25-4	1,640-46	302-77	19-7	23-7	28-1
-28	314-37	92-50	29-4	1,817-63	346-75	21-0	33-4	28-9
-29	345-41	118-60	34-3	1,994-78	403-14	20-5	31-1	28-6
-30	405-65	160-37	39-7	2,144-16	491-81	23-1	30-7	30-1
-31	434-96	244-45	56-2	2,198-85	638-21	29-0	29-6	44-5
-32	436-11	296-46	68-0	2,068-66	749-08	36-2	41-7	53-4
-33	431-43	347-75	80-6	1,958-12	768-44	39-2	49-3	59-1
-34	427-46	341-04	79-8	1,885-23	745-55	39-6	46-7	60-3
-35	417-07	311-47	74-5	1,817-38	709-85	39-4	48-3	53-9
-36	406-52	327-76	80-7	1,850-90	676-26	36-5	54-5	46-8
-37	410-25	346-79	84-5	1,828-21	637-82	34-9	49-4	25-3

TABLE 12. ANALYSIS OF LOANS AND DEPOSITS FROM PROVINCIAL AND CENTRAL BANKS TO AGRICULTURAL SOCIETIES

Year (July to June)	Cahortia index numbers of wholesale prices	Bengal				rest of Br. India				deflated value of loans and deposits per society	
		no. of agricultural societies (in 000's)	loans and deposits from Provincial and Central Banks (Rs. lakhs)			no. of agricultural societies (in 000's)	loans and deposits from Provincial and Central Banks (Rs. lakhs)			Bombay	Madras
			actual value	deflated value	deflated value per society		actual value	deflated value	deflated value per society		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1918-19	186	3-02	65-08	31-97	832	10-97	301-04	162-35	813	1,604	1,663
-20	205	4-08	69-11	39-07	745	28-81	374-71	184-74	745	1,057	1,418
-21	188	5-85	63-54	40-76	851	28-87	490-73	255-71	856	1,351	1,448
-22	180	6-15	68-27	54-59	888	32-29	561-73	312-07	966	1,500	1,513
-23	173	7-21	108-25	62-57	888	34-51	640-29	370-11	1,072	1,602	1,663
-24	170	8-64	129-32	76-07	891	37-37	722-67	425-10	1,138	1,654	1,731
-25	168	10-20	150-68	80-69	879	41-51	873-02	510-60	1,256	2,081	1,744
-26	151	11-64	180-94	110-91	1,004	45-03	1,027-10	666-95	1,481	2,646	1,956
-27	149	13-05	231-65	158-60	1,137	49-26	1,246-68	853-89	1,733	3,037	2,276
-28	147	16-43	270-63	190-18	1,152	61-85	1,360-20	925-21	1,785	2,845	2,414
-29	143	17-07	315-67	220-75	1,220	64-65	1,456-50	1,018-53	1,861	2,623	2,516
-30	132	20-44	370-83	290-03	1,373	56-42	1,667-63	1,167-60	2,143	3,180	2,887
-31	103	21-46	358-18	347-75	1,620	55-81	1,874-90	1,259-63	2,740	4,281	3,610
-32	84	21-40	354-01	270-60	1,732	55-36	1,441-00	1,332-06	2,759	4,919	3,434
-33	88	21-34	348-48	308-00	1,855	65-06	1,324-12	1,508-23	2,741	4,860	3,392
-34	80	21-21	334-30	375-69	1,771	34-92	1,251-37	1,406-47	2,599	4,665	3,190
-35	89	21-12	334-21	375-81	1,778	55-67	1,226-32	1,377-86	2,475	4,496	3,314
-36	91	21-11	328-07	361-61	1,712	56-98	1,240-60	1,373-28	2,410	4,167	3,644
-37	96	21-56	324-24	337-75	1,849	56-78	1,240-40	1,301-40	2,215	4,031	3,739

PROPORTION OF LOANS AND DEPOSITS FROM PROVINCIAL AND CENTRAL BANKS
PER AGRICULTURAL SOCIETY

24. Reference has been made above to the stringent loan policy of higher financing institutions in times of crisis in the case of agricultural societies. Co-operative central banks are not "lenders in the last resort" like the commercial central banks of the money market; they are also lenders in the first resort. The former cannot therefore follow a liberal loan policy like the latter in times of difficulty. But the question is, have the higher financing institutions been more exacting in Bengal than elsewhere, leading to the deplorable position described above? For answering this question, reference has to be made to Table 12 columns (3), (4), (7) and (8). The other columns are self-explanatory. On comparing column (8) for Bengal with column (10) for the rest of British India, it will be seen that the latter have followed a more liberal loan policy than the former. The niggardly treatment in Bengal as compared with Bombay and Madras is apparent from columns (8), (11) and (12).

SUMMARY AND CONCLUSIONS

It will be convenient to sum up the main conclusions below:—

- (1) Data as published in the official *Statements Relating to the Co-operative Movement in India* require some adjustment before being used (paragraphs 6-8), the adjusted data being shown in Tables 2 and 3.
- (2) There is some difference in the rates of progress of agricultural and non-agricultural societies, whether in Bengal or in the rest of British India (paragraph 11).
- (3) It is only when the working capital is deflated by an appropriate index number of prices that this difference is revealed (paragraph 12).
- (4) Progress of co-operation in relation to population has been such that trends need not be computed by Gompertz or Logistic Curve (paragraph 13).
- (5) If logarithmic linear trends are fitted and the *t*-test applied, Bengal's rate of growth is higher than that of the rest of British India in the case of (a) number of societies, both agricultural and non-agricultural, (b) membership of both of these two types of societies, and (c) working capital, both ordinary and deflated, of agricultural societies, whereas in the case of working capital of non-agricultural societies, whether ordinary or deflated, the rate of growth in Bengal is the same as in the rest of British India (paragraph 14, Table 6).
- (6) Agricultural societies have fewer members in Bengal than in the rest of British India. In the case of membership of non-agricultural societies also, Bengal has failed to keep pace with Bombay and Madras (paragraph 15).
- (7) So far as working capital per society is concerned, Bengal's position is hopelessly inferior in the case of agricultural societies, and somewhat so in the case of non-agricultural societies (paragraph 16).
- (8) Even with respect to working capital per member, the position in Bengal is definitely inferior to that in Bombay and Madras, whether for agricultural or for non-agricultural societies (paragraph 17).
- (9) To secure comparable standards, the several components of the total working capital of agricultural societies have been expressed as percentages of the total (paragraph 18) leading to the following conclusions:—
 - (a) Bengal has proportionately low share capital (paragraph 19);
 - (b) but higher reserve fund, probably because reserves for bad and doubtful debts are also included in the reserve fund (paragraph 20);
 - (c) the proportion of loans and deposits from members and non-members is also somewhat lower in Bengal (paragraph 21);
 - (d) the proportion of loans and deposits from societies, Provincial and Central Banks is also different (paragraph 22).
- (10) The real nature of the reserve fund in Bengal is revealed by the staggering percentage of overdue loans to total loans, rising from 24.1% in 1925-26 to as much as 84.6% in 1936-37 (paragraph 23).
- (11) The higher financing institutions in Bengal have followed a more niggardly policy in the matter of helping the primary societies out of the crisis than in the rest of British India (paragraph 24).

AGRICULTURAL CO-OPERATION

REFERENCES

1. For a copy of the earliest balance sheet and report of this earliest co-operative society in Bengal see "Co-operation in Bengal" by H. Sinha in the *Vicra-Bharati Quarterly*, Vol. 8, parts 1 and 2, pp. 99-100.
2. All annual reports belonging to this series have been referred to as *Statistical Statements* in the paper, whether before 1927-28 or not.
3. In the *Statistical Statements* for 1926-27, p. 13, General Statement II, the total loan due by individuals to agricultural societies in Bombay during that year is shown as Rs. 2,18,70,325 whereas the amount of overdue loan (which must obviously be low) is shown as Rs. 5,12,95,110. As reference to the Registrar of Co-operative Societies, Bombay, did not bring any reply, the latter figure has been tentatively corrected to Rs. 51,29,511. The Registrar of Co-operative Societies, United Provinces, however, kindly corrected the figure for total loans due by individuals during 1931-32 as published in the *Statistical Statements*. As directed by him, Rs. 30,00,000 has been added to the published figure. See Prof. J. C. Sinha's *Indian Currency Problems during the past Decade*, p. 106n.

4. The All-India index number of wholesale prices published in the official publication *Index Numbers of Prices in India* (Base 1873=100) does not at all represent the present trend of wholesale prices in India. Moreover, only calendar year figures are available for the period prior to the publication of *Monthly Survey of Business Conditions in India* which started the monthly series. It is therefore impossible to calculate index numbers for co-operative years ending June 30 for earlier years.

The fact is that there are several wholesale markets in India, whose different wholesale prices are current, and are of varying importance, for which separate index numbers have to be computed. They cannot, however, be combined into an all-India one. We agree with Prof. J. C. Sinha in his view that the Calcutta index is the most representative for the reasons stated by him in his *Indian Currency Problems during the past Decade*, pp. 16-17. For a further discussion on this point see "The Ratio Question" by Drs. H. Sinha and J. C. Sinha in *Sankhya: The Indian Journal of Statistics*, Vol. 3, part 2, pp. 124-127, Mr. B. P. Adarkar's "Ratio Question—A Criticism" in *Sankhya: The Indian Journal of Statistics*, Vol. 3, part 4, pp. 374 and 375, and Drs. H. Sinha and J. C. Sinha's "The Ratio Question—A Reply" in *Sankhya: The Indian Journal of Statistics*, Vol. 3, part 4, pp. 394-395.

5. It should, however, be remembered that although the deflated values are shown up to the units place in this and in the following tables, the figures are generally correct only up to the hundreds place, on account of divisions and multiplications. They are, however, written in full to facilitate comparison with the raw unadjusted data.

6. "Law of Growth in forecasting Demand" by R. B. Prescott in the *Journal of the American Statistical Association*, December, 1922, pp. 471-479, Vol. XVIII.

7. The formula for comparing the slopes of the two regression equations is given in Mills' *Statistical Methods* (Revised Edition—1938), pp. 604-610.

If $y_1 = a_1 + b_1 x_1$ and $y_2 = a_2 + b_2 x_2$ be the two regression equations then $t = (b_1 - b_2) / (s_{e1} - s_{e2})$. Where s_{e1}, s_{e2} = the standard error of the difference between b_1 and b_2

$$= \sqrt{s_{e1}^2 / \sum x_1^2 + s_{e2}^2 / \sum x_2^2}$$

and S_{e1} = measure of the average scatter about the two lines of regression

$$= \{ \sum (y_1 - \hat{y}_1)^2 + \sum (y_2 - \hat{y}_2)^2 \} / (N_1 + N_2 - 4)$$

\hat{y}_1 , being the calculated value of y_1 .

\hat{y}_2 , " " " " " y_2

N_1 , " " " " " number of degrees of freedom of the first equation

N_2 , " " " " " number of degrees of freedom of the second equation.

Paper received: 1 December, 1941.