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Bank Credit, Output and Bank Deposits in West Bengal and Selected States

Pranab Kumar Das
Pradip Maiti

The purpose of this paper is three-fold. First, it analyses the movement of credit-deposit ratios of commercial banks in West Bengal from 1972-73 to 1993-94 and compares these ratios with those for a few selected states. Second, the authors examine to what extent credit advanced by banks has helped economic growth in the state, considering once again the comparable situation in some other states. Finally, the influence of income originating in a state on deposit mobilisation there is explored.

I Introduction

THE role of commercial banks in promoting economic development has always been a debatable proposition in India. The question has been raised particularly in the context of West Bengal where it is alleged that commercial banks show surprising reluctance to advance credit to units or individuals located in the state. To put it concretely, the so-called credit-deposit ratios (i.e. C-D ratios) of branches of commercial banks in West Bengal have remained at remarkably low levels in comparison with those observed in some economically more advanced states (Table 2).

But the allegation that the low credit-deposit ratio is because of a supply failure may not, however, be justified since there could be a number of reasons why C-D ratio of a bank might be low. The C-D ratio of a state may be high, for example, if the underdeveloped nature of the state keeps deposit mobilisation at a low level. Similarly, a low C-D ratio may only reflect the availability of other sources of credit, or more specifically, low demand for bank credit for productive purposes. A low C-D ratio may also result from the unwillingness on the part of the banks to advance loans in a state for the low creditworthiness of the entrepreneurs of that state.

The purpose of the present paper is three-fold. First, we seek to analyse the movement of (average) C-D ratios of commercial banks in West Bengal during the period from 1972-73 to 1993-94. We have confined our analysis to the post-nationalisation period. However, the movement of C-D ratios for West Bengal will also be compared with the same for a few selected states. This exercise is done in Section III while Section II investigates the implication and importance of this ratio in a state. States have been selected from all over India; some of the states are economically more advanced while some are backward. The states selected are as follows: Andhra Pradesh, Gujarat, Kerala,

Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. Secondly, we try to examine to what extent the credit advanced by commercial banks which are mainly short term in nature has helped economic growth in the state. Although our main focus is on the West Bengal economy, we try to carry out this exercise for a few other states as well in Section IV. Finally, Section V explores the influence of income originating in a state, i.e. net state domestic product (SDP) on deposit mobilisation of commercial banks in that state. Section VI makes concluding observations.

II Implications of C-D Ratios of Banks

Commercial banks generally give short-term credit to concerns to meet their working capital requirements. However, the type of data available on bank deposits and bank credit in India does not enable one to find out how much of the deposits mobilised by a bank or by all banks together in a state is advanced as credit to concerns located in that state. The credit advanced by a bank office located in one region of a state may well be utilised in another region of the same state or even in regions of other states. In other words, there may be inflow or outflow of credit from one state to another, but not revealed by the data sources.

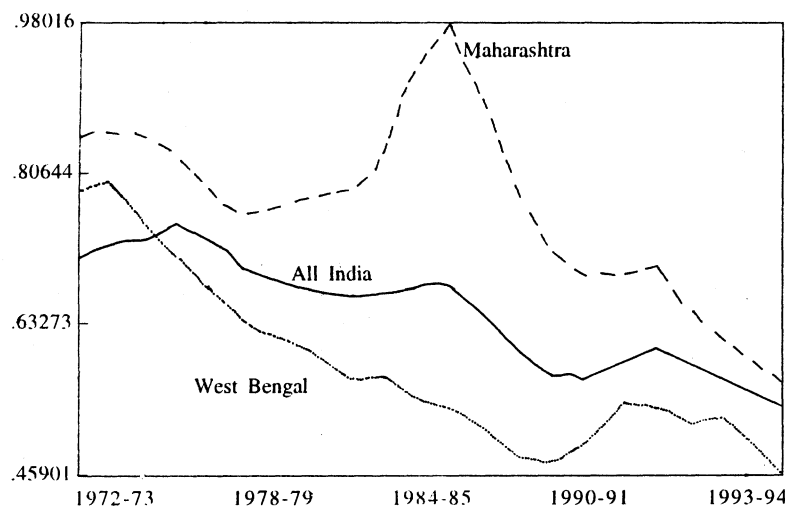
Not much literature is there on the extent of such credit migration in India. However, it is generally argued that as the centralised financing involves transaction cost, companies prefer to have finance made available at the place of utilisation and hence that the extent of migration of credit from its place of sanction to its place of utilisation is likely to diminish, as the financial infrastructure improves. We have in fact some data in support of this contention.

Tyagarajan and Saoji (1977) computed the extent of such credit migration for the year 1974 while Chatterjee, Bhattacharya and Gayen (1997) sought to estimate such figures for three years 1992, 1993 and 1994. Tyagarajan and Saoji (1979) estimated that the total outflow of credit was about 19 per cent of overall credit, but observed that credit migration was largely restricted to four major metropolitan cities of Bombay, Calcutta, Delhi and Madras. Chatterjee et al (1997) considered data given in part A of *Banking Statistics: Basic Statistical Returns* published by the Reserve Bank of India. The data relate to accounts with individual credit limits of over Rs 25,000. With the assumption that the economic activities of the small borrowers would be financed mainly by local fund while credit that migrates is likely to flow mainly into large accounts, they observed that the migration of credit in the major states had become mere uniform between 1974 and 1994. In Table 1, we

TABLE 1: OUTFLOW AND INFLOW OF BANK CREDIT FROM AND TO A STATE AS PERCENTAGE OF TOTAL BANK CREDIT - SELECTED STATES AND SELECTED YEARS

State	Percentage of Total Bank Credit Sanctioned in a State Migrating to Other States			Percentage of Total Bank Credit Utilised in a State Flowing in from Other States	
	1974	1992	1994	1992	1994
Andhra Pradesh	0.2	1.6	0.9	3.3	2.7
Gujarat	0.6	0.9	1.0	10.9	8.6
Kerala	0.4	1.4	0.7	3.1	1.5
Maharashtra	9.5	7.4	5.0	1.0	0.6
Orissa	0.1	0.9	0.3	6.3	5.0
Punjab	0.6	1.2	0.7	8.2	5.3
Tamil Nadu	3.5	6.6	1.3	2.3	1.9
Uttar Pradesh	0.2	0.9	0.9	10.5	11.5
West Bengal	11.8	5.9	5.5	1.5	1.3

FIGURE 1: AVERAGE C-D RATIO FOR WEST BENGAL, MAHARASHTRA AND ALL-INDIA (1972-73 TO 1993-94)



present their data for the years 1974, 1992 and 1994. We find that except for West Bengal (particularly in 1974) and Maharashtra, such credit migration was not proportionately significant. Chatterjee et al (1997) also computed the share of inflow of credit from other states in the total credit utilised in a state for some years in the 1990s. In Table 1, we also present such data for two years, 1992 and 1994. We find that except possibly for Gujarat and UP such shares were not very high.¹

We may thus conclude that so far as West Bengal and a few other states (se-

lected here) are concerned, whatever credit has been advanced by banks in a given state has mostly been utilised in that state or whatever amount of bank credit has been utilised in a given state has come mainly from credit sanctioned by banks in that state.²

III C-D Ratios in West Bengal: All-India and Selected States

It may be noted that earlier RBI used to publish figures of stocks of credit and deposits for two time points in a year, viz.

end of June and end of December. From 1990 onwards such figures are available only as at the end of March of a year. For the sake of comparability of C-D ratios across different years, we have estimated the end-of-March figures of stocks of credit and deposit for earlier years by taking a simple arithmetic mean of the end-of-June and the end-of-December figures of the corresponding stock (e.g. the amount of deposit at the end of March 1975 is estimated as the simple arithmetic mean of deposit at the end of December 1974 and that at the end of June 1975).

The average C-D ratios for all branches of commercial banks taken together in each selected state as well as in all-India are presented in Table 2 for all the years during the period under study. This table also gives average ratios over three sub-periods, viz, 1972-73 to 1979-80, 1980-81 to 1989-90 and 1990-91 to 1993-94. These ratios are shown in Figures 1-3 for West Bengal, Maharashtra, Tamil Nadu, Uttar Pradesh, Punjab, Orissa and all-India.

The behaviour of these ratios over time and across states reveals a number of interesting observations. First, over the period under study the C-D ratio displays unambiguously a downward trend for every state. Such declining tendency is quite sharp for some states, e.g. West Bengal and Kerala. Second, there is considerable variation in C-D ratios across

TABLE 2: AVERAGE C-D RATIOS OF ALL COMMERCIAL BANKS FOR SELECTED STATES AND ALL-INDIA (1972-73 TO 1993-94)

(Per cent)

Year	Andhra Pradesh	Gujarat	Kerala	Maharashtra	Orissa	Punjab	Tamil Nadu	Uttar Pradesh	West Bengal	All-India
1972-73	0.850	0.588	0.713	0.850	0.526	0.379	1.111	0.445	0.785	0.713
1973-74	0.840	0.611	0.708	0.855	0.549	0.429	1.072	0.486	0.797	0.726
1974-75	0.798	0.610	0.702	0.844	0.513	0.405	1.075	0.466	0.747	0.732
1975-76	0.756	0.592	0.677	0.827	0.515	0.84	1.079	0.708	0.751	0.751
1976-77	0.725	0.554	0.634	0.778	0.570	0.387	1.002	0.439	0.677	0.729
1977-78	0.705	0.532	0.628	0.756	0.608	0.400	0.922	0.458	0.637	0.698
1978-79	0.715	0.530	0.649	0.768	0.607	0.407	0.886	0.453	0.623	0.685
1979-80	0.725	0.544	0.689	0.782	0.622	0.417	0.923	0.447	0.605	0.673
1980-81	0.718	0.548	0.701	0.786	0.678	0.436	0.957	0.461	0.575	0.669
1981-82	0.697	0.53	0.685	0.832	0.748	0.436	0.942	0.463	0.580	0.673
1982-83	0.736	0.518	0.691	0.930	0.845	0.484	0.918	0.487	0.553	0.682
1983-84	0.760	0.518	0.680	0.980	0.856	0.602	0.876	0.475	0.546	0.685
1984-85	0.744	0.516	0.640	0.898	0.834	0.578	0.834	0.445	0.522	0.651
1985-86	0.753	0.525	0.637	0.785	0.848	0.462	0.855	0.418	0.486	0.609
1986-87	0.749	0.528	0.661	0.714	0.889	0.417	0.900	0.384	0.484	0.582
1987-88	0.759	0.528	0.657	0.693	0.962	0.411	0.941	0.38	0.508	0.583
1988-89	0.792	0.552	0.639	0.695	0.941	0.427	0.964	0.393	0.553	0.601
1989-90	0.801	0.573	0.609	0.710	0.786	0.446	0.966	0.426	0.547	0.614
1990-91	0.800	0.548	0.550	0.656	0.691	0.438	0.927	0.436	0.529	0.596
1991-92	0.798	0.527	0.488	0.623	0.679	0.422	0.875	0.419	0.536	0.583
1992-93	0.747	0.493	0.451	0.598	0.633	0.406	0.842	0.392	0.498	0.564
1993-94	0.707	0.460	0.440	0.564	0.601	0.396	0.825	0.372	0.459	0.543
Average for the sub-period										
1972-73 to 1981-82	0.753	0.564	0.679	0.807	0.594	0.408	0.997	0.456	0.673	0.705
	(0.056)	(0.033)	(0.031)	(0.037)	(0.076)	(0.021)	(0.081)	(0.014)	(0.082)	(0.029)
1982-83 to 1989-90	0.762	0.532	0.652	0.801	0.870	0.478	0.906	0.426	0.525	0.626
	(0.023)	(0.02)	(0.026)	(0.118)	(0.058)	(0.073)	(0.049)	(0.041)	(0.029)	(0.041)
1990-91 to 1993-94	0.763	0.507	0.482	0.610	0.651	0.416	0.867	0.405	0.505	0.571
	(0.023)	(0.02)	(0.026)	(0.118)	(0.058)	(0.073)	(0.049)	(0.041)	(0.029)	(0.041)
Average for the entire period	0.758	0.542	0.633	0.769	0.705	0.435	0.94	0.436	0.589	0.652
	(0.043)	(0.166)	(0.08)	(0.107)	(0.144)	(0.056)	(0.083)	(0.034)	(0.098)	(0.062)

Note: Figures in parentheses give the standard deviations of the C-D ratios for the corresponding period.

FIGURE 2: AVERAGE C-D RATIO FOR TAMIL NADU, UP AND ALL-INDIA (1972-73 TO 1993-94)

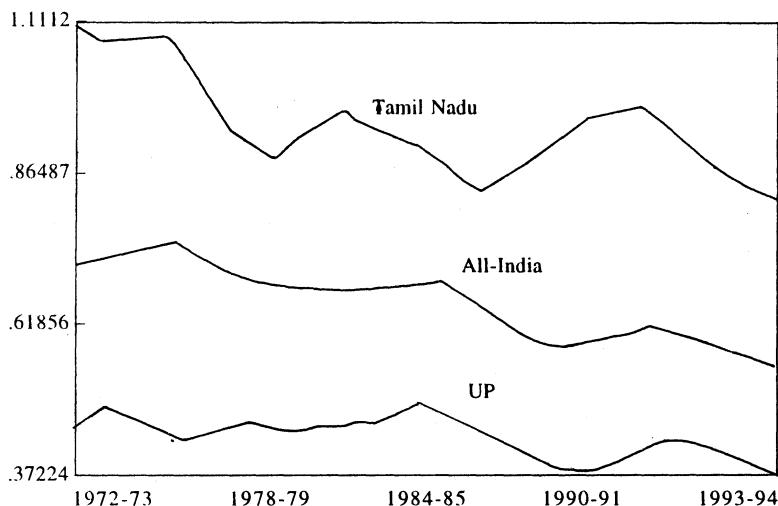
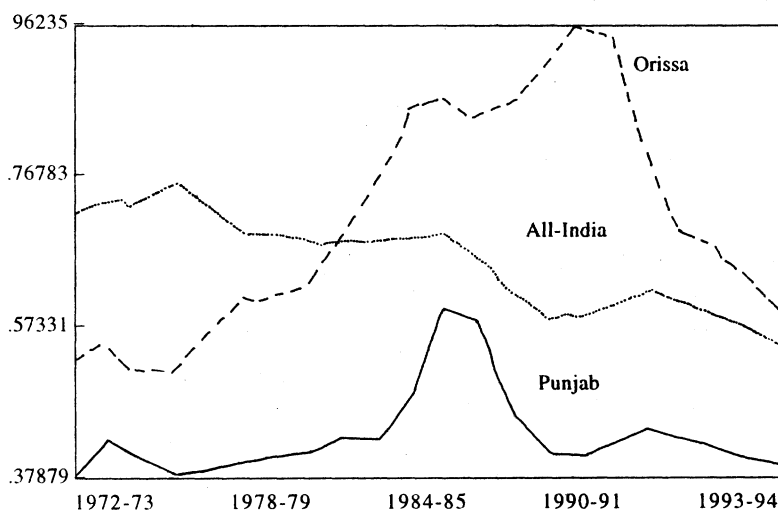


FIGURE 3: AVERAGE C-D RATIO FOR ORISSA, PUNJAB AND ALL-INDIA (1972-73 TO 1993-94)



states. For instance, the C-D ratio for West Bengal has remained at a lower level than that for all-India since the second half of the 1970s while that for Maharashtra or Tamil Nadu is found to be much above the all-India average throughout the period (Table 2 and Figure 1). Again, the C-D ratio for Gujarat or Uttar Pradesh is found to have remained not only below the all-India average, but at a low level also throughout the entire period. Third, there is considerable variation in C-D ratios across the different regions of a state. For each state the RBI publishes figures of credits and deposits by population size and considers for this purpose three such regions of a state, viz, rural, semi-urban and urban/metropolitan areas. The population groupwise average C-D ratios for all the nine states considered here and all-India are given in Table 3. In general, the C-D ratios are highest for the urban/metropolitan area and lowest for the semi-urban area. All the population groupwise average C-D ratios of West Bengal are

lower than the corresponding ratios for all-India. The population groupwise C-D ratios for West Bengal and all-India for the period 1972-73 to 1993-94 are shown in Figures 4 and 5. As is evident from the figures C-D ratio for semi-urban areas of both West Bengal and all-India had more or less remained stable while that for the rural areas first show a rising and then a falling tendency. The C-D ratio for urban/metropolitan areas of West Bengal and all-India show a downward trend throughout the period. These observations are in general true for the other states too.

IV Effect of Bank Credit on Production of a State

The literature on development economics emphasises the role of money and credit in a way significantly different from that usually observed in developed countries. The most important difference, it is argued, arises due to the difference in the operation of the transmission mechanism

between the real and financial sectors in these economies. The financial sector, or to be more specific, the organised part of the financial sector (which is the most important part of the financial sector in an LDC like India) is directly or indirectly controlled by the government – directly through the operation of the public sector banks and non-banking financial institutions and indirectly through the different stipulations of the central bank. The policy of the central bank that is supposed to affect the financial sector most is the one relating to the rates of interest on banks' deposits as well as their lending which are completely administered in these economies. Even if there is no central bank regulation on the deposit or lending rates of banks as is the case in this new era of financial liberalisation in many LDCs including India, these rates fail to be market clearing, owing to the presence of various kinds of imperfection in the credit market as discussed in Stiglitz and Weiss 1981 and others. As a result, the rate of interest can hardly be considered as the variable which adjusts to equilibrate the demand for loans with the supply of loans. This then gives rise to either excess demand for credit or excess supply [see e.g. Blinder 1987; Blinder and Stiglitz 1983; Rakshit 1982, 1987, 1989; Taylor 1983]. In these studies it is, however, argued that because of the relatively low level of interest rate prevailing in developing economies there is a generalised excess demand for credit and hence, that it is through the allocation of credit that the financial sector affects

TABLE 3: POPULATION GROUPWISE AVERAGE C-D RATIOS FOR EACH OF THE SELECTED STATES AND ALL-INDIA (1972-73 TO 1993-94)

State	Rural	Semi- Urban/Metro-urban	politan
Andhra Pradesh	1.0530 (0.15024)	0.6851 (0.0434)	0.7124 (0.0681)
Gujarat	0.4379 (0.1030)	0.4395 (0.0478)	0.6289 (0.1155)
Kerala	0.6250 (0.0787)	0.4844 (0.0619)	0.9024 (0.1188)
Maharashtra	0.7339 (0.0579)	0.5080 (0.0455)	0.5714 (0.1215)
Orissa	0.9045 (0.3309)	0.6169 (0.0845)	0.6494 (0.1238)
Punjab	0.3531 (0.0977)	0.4253 (0.1037)	0.4876 (0.0461)
Tamil Nadu	0.9710 (0.0973)	0.7056 (0.0581)	1.0223 (0.0920)
Uttar Pradesh	0.4701 (0.0582)	0.4266 (0.0388)	0.4216 (0.0422)
West Bengal	0.3740 (0.1130)	0.2330 (0.0297)	0.6641 (0.1214)
All-India	0.5813 (0.0549)	0.4811 (0.0346)	0.7187 (0.0910)

Note: Figures in parentheses are the standard deviations of the corresponding C-D ratios for the entire period.

FIGURE 4: POPULATION GROUPWISE AVERAGE C-D RATIO FOR WEST BENGAL (1972-73 TO 1993-94)

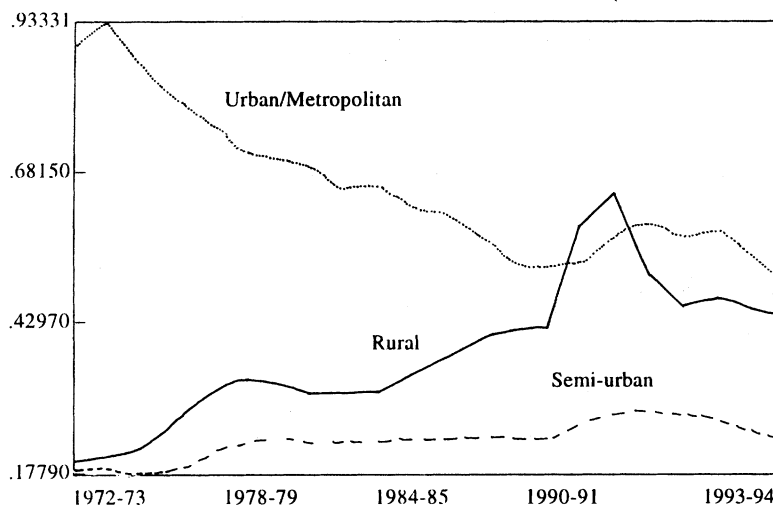
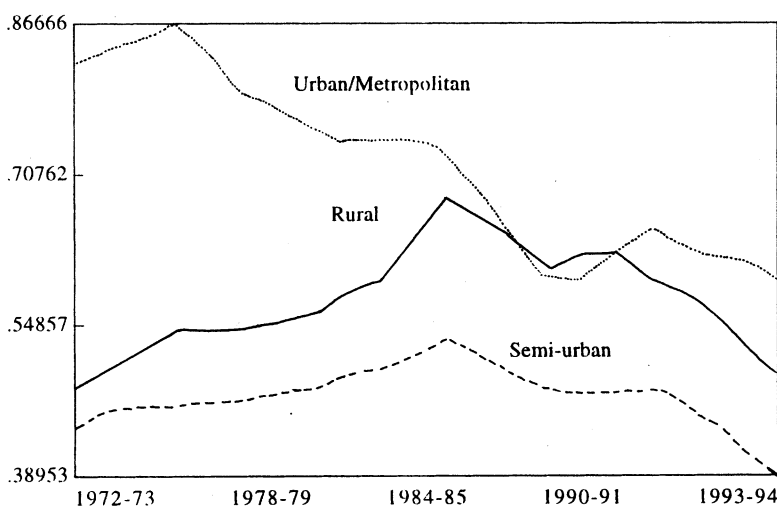


FIGURE 5: POPULATION GROUPWISE AVERAGE C-D RATIO FOR ALL-INDIA (1972-73 TO 1993-94)



the real sector of an economy.

There are two uses of credit – (i) credit requirement for working capital and (ii) credit requirement for investment in fixed capital [Das 1995, 1997]. The former is often called the short-term requirement of credit and the latter, the long-term requirement. In the formal credit markets in India it is mainly the commercial banks which advance such short-term loans to the producers. And in the LDC literature it is the availability of such short-term loans which is generally treated as a factor constraining total production.

Let us then pose the central question as follows: to what extent has the volume of bank credit utilised in a state helped to finance productive activities in the area, i.e., to generate state domestic product? There is a crucial relation between credit for working capital and current production in less developed countries and particularly in countries like India where credit is supposed to be a constraining factor. In agriculture which accounts for a large share

of domestic product of any state, the use of various inputs (e.g., hired labour, fertiliser, pesticides, etc) is crucially dependent on the availability of the required amount of credit to the farmer at the right time. Producing units in the other sectors too have to depend heavily on outside credit for meeting their working capital requirements. In such cases the output of a producing unit may be less than the profit-maximising or capacity output and be determined by the amount of credit obtained by the firm [Rakshit 1987]. One may thus postulate:

$$Y = Y(C) \quad \dots(1)$$

where the dependent variable is the aggregate output of a state, and the explanatory variable is the (real value of) credit/loan available in the state for production purposes.³ If the ratio of output price index to input price index remains stable over time, then the relation can be expressed in terms of the same variables at current prices. Therefore, let Y stand for SDP of a state at current prices in a year and C

for the average stock of bank credit utilised by that state in that year. It may be noted that in a credit-constrained situation neither the rate of interest nor the output price would have any effect on the volume of output and, as we have observed earlier, credit-constrained situation is supposed to be the most likely situation in various states in India.

The relation (1) postulates that output (a flow variable) depends on the amount of production loan (a stock variable). Agriculture is characterised by mainly a point-input-point-output production process and hence the credit which is required to finance the cost of variable inputs is to be made available/advanced at the beginning. In manufacturing sector where a flow-input-flow-output production process predominates, the working capital to be held may approximate the value of stock of inventories and money balances required for monitoring the flow of output at a given level [Rakshit 1987:14].

In our empirical exercise we shall take C to be the amount of credit flowing from the organised market, in particular the commercial banks. One may ask: why are self-financing and the amount of credit from the unorganised credit market (presumably at an interest rate higher than that charged by banks) not included in the total credit available to the producing units? The obvious reason is that we have data on neither the amount of own fund utilised nor that of credit flowing from the unorganised market. However, one may presume that the larger the volume of bank credit available, other things remaining unchanged, larger would be the stock of variable inputs which could be maintained by the producers and hence the larger would be its flow of output.⁴

Let us now turn to the results of our empirical exercises. Two observations are to be made at the beginning. The first one relates to the data on credit used (C). Since C should be the average holding of bank credit by the producers in a year, we have estimated such average holding by taking a simple arithmetic mean of the two corresponding end-of-March figures of stock of bank credit.⁵ (It is only the latter which are published by the RBI). The second observation is regarding the empirical counterpart of the relation (1) which is defined in terms of the real variables, i.e., the volume of inputs purchased with the amount of credit obtained and real output. It is, however, very difficult, if not impossible, to get statewise indices of prices of goods produced or of inputs used. Of course, the ratio of output prices to input prices is likely to remain stable

throughout for each state,⁶ in which case the relation (1) may be expressed in terms of nominal values of variables also. That is what we have considered in our empirical exercises in which we have used SDP (or NDP) at current prices for Y and nominal credit for C.

We first considered a linear regression of SDP of a state in a year on the average stock of bank credit advanced in that state in that year.⁷ The results were highly satisfactory – for each state \bar{R}^2 was very high, estimated coefficients were significant and DW-statistic was satisfactory. However, the correlation between two absolute values of time series variables may be misleading. We, therefore, turned to the linear regression of the first difference of SDP of a state (i.e. $\Delta Y = Y - Y_{-1}$) on the first difference of bank credit advanced in that state (i.e. $\Delta C = C - C_{-1}$). The regression results are reported in Table 4 for each state as well as all-India.

To summarise the results given in Table 4 we note, first of all, that in all the equations the values of \bar{R}^2 are reasonably good considering the fact that these are the results for the first differences. The coefficient of ΔC is positive and highly significant in each case. Second, the estimated coefficient of ΔC shows some (but not much) variation across the states. In most cases the coefficient assumes a value around 3. Third, we have tried regression equations (involving first differences of the variables) both with intercept and without intercept. In general, the results are better in the latter case and we have reported only these results in Table 4. Fourth, an examination of the scatter diagram between year-to-year changes in SDP and bank credit (i.e. Δ SDP and ΔC) for each state seems to indicate some kind of structural break in the relation in 1991, presumably owing to the economic liberalisation and structural adjustment programmes adopted since that year. We, therefore, introduced an intercept dummy D to capture this effect; the value of D is taken to be 1 for each year from 1991 to 1994 and 0 otherwise. The introduction of this dummy improves the results considerably. For some states (like Maharashtra, Tamil Nadu, etc) the value of \bar{R}^2 is pretty high, exceeding even 0.8. The values of DW statistic are also satisfactory in most cases and, of course, the coefficient of (first difference of) credit is significant in all cases.

We thus find that there are reasons to believe that the amount of bank credit advanced in a state had exerted a significant effect on the output produced in that state. Such relationship held in most of the

TABLE 4: ESTIMATED LINEAR REGRESSION OF CHANGE IN SDP (NDP) ON CHANGE IN BANK CREDIT (WITHOUT/WITH DUMMY), SELECTED STATES AND ALL-INDIA

State	Estimated Coefficient of		\bar{R}^2	D-W
	Change in Credit	Intercept Dummy(D)		
Andhra Pradesh	3.69 (5.51)		0.30	1.74
	2.37 (3.43)	349591.7 (3.18)	0.52	2.30
Gujarat	3.91 (5.59)		0.30	1.62
	2.85 (3.95)	230716.4 (2.75)	0.47	2.16
Kerala	2.88 (9.68)		0.61	1.65
	2.15 (6.82)	89687.0 (3.51)	0.75	2.55
Maharashtra	1.88 (5.65)			
	1.02 (3.03)	759363.9 (3.88)	0.55	1.13
Orissa	4.83 (4.74)		0.19	1.83
	4.01 (2.65)	89999.1 (2.65)	0.38	2.97
Punjab	3.80 (6.60)		0.31	1.10
	2.52 (5.17)	185485.3 (4.66)	0.66	2.16
Tamil Nadu	2.29 (8.34)		0.52	0.89
	1.55 (7.48)	295701.8 (5.94)	0.82	1.92
Uttar Pradesh	5.13 (7.98)		0.41	1.28
	3.80 (8.14)	406524.5 (5.66)	0.77	2.17
West Bengal	2.80 (5.84)		0.10	1.02
	1.94 (4.47)	283211.3 (3.83)	0.46	1.46
All-India	3.38 (10.51)		0.63	1.12
	2.48 (7.95)	3144606.0 (4.34)	0.80	1.41

Note: The figures in parentheses are the t-ratios of the corresponding coefficients.

TABLE 5: ESTIMATED LINEAR REGRESSION OF FLOW OF BANK DEPOSITS ON SDP (AT CURRENT PRICES), TIME AND DUMMY

State	Estimated Coefficient of				\bar{R}^2	D-W
	Intercept	SDP	Time	DI		
Andhra Pradesh	14346.5	0.041			0.825	1.77
	(1.67)	(9.77)				
Gujarat	10716.4	0.045		-23718.9	0.823	2.25
	(1.12)	(7.54)		(-0.9)		
Kerala	-18939.3	0.015	6172.6		0.895	2.37
	(-1.69)	(1.96)	(3.70)			
Maharashtra	-19328.8	0.012	6546.8	10639.0	0.890	2.13
	(-1.68)	(1.12)	(3.47)	(0.46)		
Orissa	4836.0	0.063			0.807	1.29
	(0.43)	(9.21)				
Punjab	-10101.8	0.081		-80107.0	0.853	2.07
	(-0.88)	(9.03)		(-2.62)		
Tamil Nadu	-19669.9	0.035	5137.2		0.830	1.42
	(-1.17)	(2.13)	(1.89)			
Uttar Pradesh	-15094.2	0.070	1499.1	-68529.7	0.846	1.99
	(-0.93)	(2.69)	(0.44)	(-1.68)		
West Bengal	-14998.7	0.123			0.850	1.69
	(-1.53)	(10.67)				
Andhra Pradesh	-19558.8	0.133		-24428.8	0.857	1.88
	(-1.74)	(8.0)		(-0.85)		
Gujarat	-14990.4	0.123	-1.85		0.841	1.69
	(-0.98)	(4.07)	(-0.0007)			
Kerala	-14016.8	0.156	-1658.1	-34943.5	0.841	1.99
	(-0.97)	(3.49)	(-0.55)	(-0.99)		
Maharashtra	886.921	0.112			0.667	0.997
	(0.01)	(6.42)				
Orissa	-111455.2	0.172		-681717.8	0.821	2.00
	(-1.98)	(8.90)		(-4.15)		
Punjab	-135261.4	0.058	24657.9		0.690	0.990
	(-1.22)	(1.47)	(1.52)			
Tamil Nadu	-75499.1	0.197	-8503.2	-74834.3	0.814	1.91
	(-0.86)	(4.00)	(-0.55)	(-3.61)		
Uttar Pradesh	427.05	0.033			0.767	0.990
	(0.15)	(8.18)				
West Bengal	-3181.1	0.043		-20205.2	0.842	2.49
	(-1.22)	(9.47)		(-3.17)		
Andhra Pradesh	-6736.8	0.009	1727.0		0.814	1.14
	(-1.72)	(0.90)	(2.40)			
Gujarat	-6213.9	0.028	918.44	-15854.2	0.847	2.22
	(-1.74)	(2.20)	(1.23)	(-2.20)		
Kerala	11945.7	0.063			0.812	1.26
	(1.52)	(9.35)				
Maharashtra	3838.9	0.076		-45221.2	0.839	2.21
	(0.46)	(8.45)		(-2.05)		
Orissa	-16645.0	0.017	5929.7		0.891	1.93
	(-1.75)	(1.29)	(3.86)			
Punjab	-16241.8	0.021	5591.8	-6841.0	0.886	2.07
	(-1.65)	(1.05)	(2.88)	(-0.33)		

(Contd)

TABLE 5: ESTIMATED LINEAR REGRESSION OF FLOW OF BANK DEPOSITS ON SDP (AT CURRENT PRICES), TIME AND DUMMY (Contd)

State	Estimated Coefficient of				\bar{R}^2	D-W
	Intercept	SDP	Time	D1		
Tamil Nadu	11098.4	0.060			0.708	1.09
	(0.68)	(7.04)				
	-11403.4	0.084		-137507.4	0.810	2.31
	(-0.77)	(8.43)		(-3.34)		
Uttar Pradesh	-30798.0	0.024	7983.4		0.749	1.18
	(-1.20)	(1.19)	(2.02)			
	-20897.4	0.071	2286.5	-12285.3	0.802	2.18
	(-0.90)	(2.69)	(0.54)	(-2.41)		
West Bengal	16581.1	0.048			0.813	1.62
	(1.01)	(9.39)				
	642.27	0.057		-92465.4	0.846	2.22
	(0.04)	(9.13)		(-2.25)		
All-India	-40397.3	0.009	13079.9		0.885	1.68
	(-1.97)	(0.80)	(3.57)			
	-38482.2	0.019	11093.3	-39094.5	0.884	2.15
	(-1.86)	(1.23)	(2.63)	(-0.95)		
All-India	7107.3	0.071			0.829	1.92
	(0.47)	(9.91)				
	-2224.9	0.079		-51217.7	0.835	2.54
	(-0.14)	(8.29)		(-1.29)		
All-India	-22860.6	0.037	7389.6		0.849	2.05
	(-1.07)	(1.88)	(1.87)			
	-22313.9	0.045	1309.1	-21048.5	0.842	2.29
	(-1.02)	(1.68)	(1.36)	(-0.47)		
All-India	35661.6	0.065			0.836	1.30
	(0.20)	(10.15)				
	-178198.5	0.080		-1215713.0	0.875	2.42
	(-1.0)	(10.10)		(-2.63)		
All-India	-404857.6	0.034	94942.9		0.861	1.45
	(-1.51)	(2.13)	(2.11)			
	-345003.1	0.061	46591.8	-935044.1	0.874	2.23
	(-1.34)	(2.75)	(0.90)	(-1.67)		

Note: Figures in the parentheses are the corresponding t-ratios.

TABLE 6: ESTIMATED REGRESSION OF CHANGE IN THE FLOW OF BANK DEPOSITS ON CHANGE IN SDP (AT CURRENT PRICES) AND DUMMY

State	Intercept	Change in SDP	D1	\bar{R}^2	D-W
Andhra Pradesh	17404.5	-0.048		0.17	1.86
	(2.36)	(-2.19)			
Gujarat	17545.3	-0.053	9096.0	0.13	1.71
	(2.33)	(-2.11)	(0.43)		
Kerala		0.109	-109137.6	0.54	2.00
		(4.0)	(-4.88)		
Maharashtra		0.079		0.04	1.26
		(1.17)			
Orissa		0.185	-74891.8	0.35	2.31
		(2.88)	(-8.75)		
Punjab		-0.041		0.01	0.87
		(-0.65)			
Tamil Nadu		0.241	-733436.6	0.80	2.29
		(5.64)	(-8.75)		
Uttar Pradesh		0.020	-10406.9	0.12	2.39
		(1.29)	(-2.03)		
West Bengal		0.043	-31385.9	0.015	2.43
		(1.13)	(-1.56)		
All-India	17806.3	-0.061		0.07	1.35
	(1.22)	(-1.16)			
All-India		0.083	-128870.9	0.46	2.31
		(2.38)	(-4.19)		
All-India	24079.2	-0.045		0.019	1.83
	(1.56)	(-1.17)			
All-India	21849.8	-0.025	-38661.5	0.031	2.24
	(1.41)	(-0.61)	(-1.11)		
All-India	30648.6	-0.104		0.087	1.74
	(1.84)	(-1.68)			
All-India	28479.2	-0.083	-22911.4	0.05	1.99
	(1.63)	(-1.11)	(-0.54)		
All-India		0.067	-1189039.0	0.253	2.45
		(2.00)	(-2.95)		

Note: Figures in the parentheses are the t-ratios of the corresponding coefficients.

states considered here and certainly at the all-India level.

V Relation between SDP and a State's Incremental Bank Deposit

Bank deposits are held mostly by households and are closely related to their saving behaviour. Presumably, the single most important determinant of savings is income. It may be noted that the saving behaviour of an individual involves two types of decisions. First, what would be one's total volume of savings in a given period? Second, what are the alternative assets in the form of which one would keep one's savings, particularly financial savings. The bank deposits are a leading form of such financial assets. We consider here total bank deposits, i.e., the sum of demand and time deposits. A part of this total is obviously held for transactions purposes. But another part may be treated as savings. The holding of both types of deposits will primarily depend on one's income. However, the holding of bank deposits, particularly time deposits, may also depend on other factors, viz., the relative rates of return on alternative financial assets. One such relevant rate of return is that on post office deposit. However, rates of interest on bank deposits and post office deposits were both administered in India at least up to the early 1990s and further, the relative rates of return on these two types of deposits had remained quite stable over the years. In our empirical exercises we have failed to find any effect of relative rates of interest on holding of bank deposits and the explanation may be found in the observed stability⁸ in the relative rates of return on alternative financial assets.

Coming now to an analysis of our empirical results we note, first of all, that the linear regression of flow of bank deposit (ΔD)⁹ on SDP and time (as a second regressor) yielded very good results for each state (and also for all-India). In all cases \bar{R}^2 was extremely high and SDP was highly significant. DW-statistic was around 2 in most cases signifying absence of autocorrelation. However, the coefficient of time was not significant except in the case of a couple of states. We also considered another set of regression which additionally included an intercept dummy D1. An examination of the scatter diagram reveals that there is some structural change in the scatter since 1992-93 onwards.¹⁰ So the dummy in this case is defined as 1 for 1992-93 and 1993-94 and 0 otherwise. In some cases introduction of D1 improves the results.

We next considered linear regression of the first difference of ΔD on the first

difference of SDP for each state. Here the regression results are not very good (Table 6). For a few states like AP, UP, West Bengal, etc. the results are pretty bad. For other states the coefficient of SDP is significant and the DW statistic shows absence of auto-correlation. However, the overall explanation is not very satisfactory. Presumably, SDP may not be a very good indicator of disposable income of the residents of a state as migration of income earners across states is very common. Two more results are to be mentioned. First, the coefficient of SDP varied from 0.3 to 0.6 for all states considered here (except for Kerala). Second, the value of R^2 is very high for Kerala.

VI Concluding Observations

We started our discussion with an analysis of intertemporal and atemporal variation in C-D ratios of commercial banks in different states in India during the period from 1972-73 through 1993-94. Two observations stand out clearly. First, the C-D ratio displays a downward trend for every state. Second, there is considerable variation in C-D ratios not only across the different states but across the different regions of a given state as well. Considering West Bengal in particular, its C-D ratio has remained below the all-India average except in the first few years of the 1970s. However, West Bengal cannot be singled out in this regard, as this particular feature is shared by UP, Gujarat and even Punjab. To summarise the other results of our study we find quantities of bank credit to have positive and significant effects in most states. (In one or two states the results are not satisfactory in terms of all the usual econometric criteria). Since these results were obtained through regression exercises, one may argue that without some causality tests in addition, they do not conclusively establish the existence of a causal link from the regressor(s) to the regressand. We submit that these are only preliminary findings which point to the likely constraints on production imposed by the availability of bank credit in various states. The implication is that had a state been advanced a larger amount of bank credit, its total production would have been higher. Of course, a fully satisfactory analysis of the issue would also require the setting up of a small simultaneous equations model in which not only the effect of credit on production, but the impact of a state's production on its demand for credit is to be taken into account in addition.

We conclude our discussion by noting one more observation. We have consid-

ered here a relation between aggregate production and aggregate bank credit advanced in a state. Obviously, bank credit will affect outputs of different sectors (e.g. agriculture, manufacturing, etc) differently, depending on the extent of requirement of outside credit in these sectors and the stringency of the terms and conditions on which they can get non-bank credit. In other words, the output-credit relation at the aggregate level is bound to be a non-linear relation, given that the same relation at the sectoral level can hardly be of identical nature. The ideal solution would, of course, be to examine this relation at the sectoral level. However, such a detailed exercise has not been attempted here.

Notes

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- 1 It may be mentioned that such shares of inflow of credit were quite high for some states like Assam and Haryana. See Chatterjee et al (1997).
- 2 Chatterjee et al (1997) also computed what may be called 'mobility indices', to measure the extent of interstate credit migration. Such index was calculated on the basis of a (square) matrix $P = (p_{ij})$ showing credit migration across states and/or a (square) matrix $Q = (q_{ij})$ giving interstate inflow of credit where p_{ij} is the proportion of credit sanctioned in the i -th state that has been utilised in the j -th state and q_{ij} is the proportion of credit utilised in a state that has been advanced by banks in the j -th state. Using the index proposed by Shorrocks (1978), they computed Shorrocks' index of migration of credit which was observed to have come down from 0.076 in 1976 to 0.059 in 1992 and further to 0.038 in 1994.
- 3 We ignore the sectoral distribution of the aggregate output here.
- 4 It may be pointed out that the aggregate production function such as (1) presumes an unchanged sectoral distribution of output at a given set of relative prices. Otherwise, a given amount of credit may correspond to different levels of aggregate output.
- 5 Thus C for the year 1974 is the average of figures of bank credit as on the end-of-March, 1974 and 1975.
- 6 We have some indirect evidence for such stability at the all-India level. The annual issues of National Accounts Statistics published by CSO, Government of India give figures of GDP deflator and deflator for changes in stocks. The estimated correlation coefficient between these two series for the period under consideration is as high as 0.97.

- 7 The regression equations reported in this study are estimated by the OLS method.
- 8 The correlation coefficient between the rate of interest on bank deposits and that on the small savings is estimated to be 0.9.
- 9 D is defined to be the (nominal) amount of additional deposits mobilised by commercial banks in a state in a year. Thus, if D_{1974} and D_{1975} are the amounts of deposits as on end of March 1974 and 1975 respectively, the flow of bank deposits during the financial year 1974-75 is given by

$$D = D_{1975} - D_{1974}$$
- 10 It may be noted that so far as the mobilisation of bank deposits was concerned, the effects of liberalisation started to be felt only since 1992. The financial market witnessed introduction of many alternative modes of saving instruments. Further rates of return on bank deposits as well as other saving instruments were made free. Thus there had been a clear change of regime.

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The word 'professors' may be read as 'professionals' in line 2, para 2, page 2864 of *EPW*, Vol XXXIII, No 45 of November 7-13, 1998.