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OCCASIONAL

PAPERS



RESERVE BANK OF INDIA
OCCASIONAL PAPERS

Vol. 3 No. 2 December 1982

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Published by Meenakshi Tyagarajan for the Reserve Bank of India and printed
by her at Prinrite, Fort, Bombay-400 023.
Editor : Meenakshi Tyagarajan.

STRUCTURAL TRANSFORMATION IN THE DEPLOYMENT OF CREDIT : SOME IMPLICATIONS

N. A. Mujumdar*

Introduction

Those who have been witnesses to the growth of banking in India during the last thirteen years or so, that is, during the post-nationalisation period, do not seem to adequately appreciate the dramatic changes which have been brought about in the profile of Indian banking.¹ A significant structural transformation in the sectoral distribution of commercial bank credit is perhaps the most outstanding feature of such a change. In a way, the Indian experience may be regarded as unique for three reasons. First, for the Indian pattern of banking development, there were no models to copy from or practices to emulate. Credit planning, in the broad sense of planned allocation of credit, has emerged as a strategic instrument for guiding both fixed and working capital allocation among sectors broadly in alignment with the Plan priorities. Second, the role of banks has been widened to such an extent that it has transcended the conventional concept of mere "financial intermediation".

In fact banking has been converted into an instrument for economic and social development. Banks are called upon to assume and have assumed, a variety of tasks which in the pre-nationalisation period, may not have been regarded as the legitimate responsibility of a credit institution. Third, this transformation in credit deployment has been brought about by conscious policy decisions. The switch away from the magic of market mechanism guided by the criterion of maximisation of profit to dirigiste financing has been an important contributory factor in bringing about such a dramatic change. The purpose of this brief paper is to indicate the significance of these changes, the innovative methods used to bring them about, and some of their policy implications. The comments offered here are intended to serve as the basis for further discussion.

II. Sectoral Distribution of Credit: The Dramatic Change

The share of large and medium industries in the total commercial bank credit which was around 61 per cent in March 1968 declined

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1. For other aspects of change, see Mujumdar, N. A. "Changing Profile of Banking", *The Economic Times*, 11th April 1981.

significantly to about 38 per cent in June 1982. Simultaneously, the share of priority sectors which include agriculture and small-scale industries rose from 11 per cent to 36.0 per cent during the period (Table I).

Table 1: Sectoral Distribution of Bank Credit

(Rs. Crores)

	Outstanding as on last Friday of			
	March 1968	June 1969	June 1978	June 1982
Priority Sectors	325 (10.6)	505 (14.0)	4334 (27.2)	10683 (35.9)
Medium and Large Industries	1857 (60.6)	N.A.	6249 (39.2)	11192 (37.6)

Note: Figures in brackets indicate percentage to total gross bank credit.

Data on sectoral deployment of gross bank credit are given in Statement I. Industry-wise deployment of gross bank credit is shown in Statement II. Of the total outstanding credit to the industrial sector (including small, medium and large scale), engineering (25.3 per cent), chemicals (11.3 per cent), cotton textiles (7.9 per cent) and iron and steel (6.2 per cent) industries accounted for about 50 per cent of such credit.

Scheduled commercial banks' advances to priority sector rose sharply from Rs. 505 crores in June 1969 to Rs. 10683 crores in June 1982. The ratio of priority sector advances to gross bank credit rose from 14.0 per cent in June 1969 to 35.9 per cent in June 1982. According to the new target, banks are now expected to lend 40 per cent of their advances to the priority sectors by March, 1985. Available data on distribution of outstanding priority sector advances of scheduled commercial banks according to sectors are presented in Statement III.

Such a large increase in the share of priority sector is also fairly well distributed as is reflected in the number of borrowal accounts: this number rose from merely 2.6 lakhs in June 1969 to as large as 129.8 lakhs in December 1980.

This almost revolutionary swing in sectoral distribution of credit, should, in a way, be regarded as a correction of a historical distortion. The share of agriculture, forestry and logging, fishing, etc. in national income (at 1970-71 prices) has declined over the years from

61.4 per cent in 1949-50 to 49.5 per cent in 1971-72 and subsequently to 42.5 per cent in 1980-81. Thus, despite diversification of the economy, agricultural sector continues to account for a considerable proportion of the national income.

The Rural Credit Survey, 1954, quoted with approval the following observations of Indian Central Banking Enquiry Committee which in a way sum up the role that commercial banks played historically in financing agriculture : "We have already remarked that the joint-stock banks play little direct part and the Imperial Bank much less, in the supply of credit to the agriculturists. These banks do not look upon agricultural finance as part of their general business. Banks, however, do finance agriculture indirectly by financing merchants who give advances to the small village dealers; and some banks lend direct on the pledge of produce and valuables and on mortgage. This indirect financing by intermediaries is, however, costly, as a price not always reasonable has to be paid for it. A few banks lend to landholders and to the more substantial cultivators."² In an economy where agriculture continues to contribute about 42 per cent of total national income, it is only appropriate therefore that commercial banks should ensure that a reasonable part of its resources flow to the agricultural sector. The post-nationalisation policy therefore sought to correct this bias against agriculture and other priority sectors. Again, agriculture plays a critical role in the economy in influencing the overall rate of growth of the economy and industrial growth — it provides the raw materials — as also the behaviour of prices — the weightage of foodgrains in wholesale prices is quite high. Furthermore, in addition to small-scale industry which has grown, a new range of categories of borrowers — small transport operators, retail trade, technicians and professionals, village artisans, small and marginal farmers have been receiving preferential treatment in respect of lending.

In view of the provisions of credit for public sector food procurement and priority sectors, some reduction in the relative share of credit to the large and medium industrial sector is only to be expected.

Differential Rate of Interest (DRI) Scheme*

At this stage, reference may also be made to yet another innovative scheme of lending. According to the guidelines given under

². The Indian Central Banking Enquiry Committee, 1931, Majority Report, p. 191, quoted by Report of the Committee of Direction, All-India Rural Credit Survey, Vol. II, 1954.

* The description of DRI scheme here is illustrative and not exhaustive.

the Differential Rate of Interest Scheme, banks should lend, under the Scheme, a minimum of 1 per cent of their aggregate loans and advances. The categories of persons eligible for the benefits of the Scheme are those with a family income from all sources not exceeding Rs. 3000 per annum in urban and semi-urban areas or Rs. 2000 per annum in rural areas. These should also be persons who have no tangible securities of any worth to offer or cannot produce securities/guarantees of a well-to-do party. Furthermore, the size of their land holding should not exceed one acre in the case of irrigated land and 2.5 acres in case of unirrigated land. In order to ensure that weaker sections of the rural areas derive maximum benefit under the Scheme and the bulk of the advances are not pre-empted by urban/metropolitan areas, banks operating this Scheme are required to ensure that not less than two-thirds of their advances under the Scheme are routed through their rural and semi-urban branches. Furthermore, to ensure that persons belonging to the Scheduled Castes and Scheduled Tribes get their due share of benefits under the Scheme, not less than 40 per cent of bank credit under the Scheme should flow to the eligible borrowers belonging to the Scheduled Castes and Scheduled Tribes.

Data relating to public sector banks' advances under the DRI Scheme are presented in Statement IV. The number of borrowal accounts under the Scheme have increased sharply from 2,30,000 in December 1973 to 26,69,000 in June 1981. The amount of advances outstanding under the Scheme had increased from Rs. 10 crores in December 1973 to Rs. 225 crores in June 1981. DRI advances as a proportion of total advances had risen from 0.22 per cent in December 1973 to 1.03 per cent in June 1981.

III. The Underlying Rationale

Enlargement of the share of priority sectors in total credit has also to be seen in the overall perspective of promoting a broad-based growth process in the sense of encouraging decentralised and dispersed industrial development. Thus the preferential treatment accorded to agriculture, small-scale industry and other hitherto neglected sectors in the allocation of bank credit serves the cause of both growth and equity.

Looking at the phenomenon from another angle, there are other valid reasons why there should have taken place such a secular decline in the relative share in bank credit of the large and medium industry of the private sector. Over the years, the share of public sector in gross domestic product has increased significantly: for in-

stance, the share rose from 14.9 per cent in 1970-71 to 20.8 per cent in 1979-80. A significant increase in the share of the public sector in total credit is therefore only to be expected. This share rose from about 13 per cent in 1972 to nearly 26 per cent in 1980. (Table 2). A large part of this increase in public sector credit may be attributed to the sizeable increase in advances for the trading activities of the public sector. An outstanding example is the Food Corporation of India which requires credit for procurement of rice and wheat, and to a limited extent for import and distribution of fertilisers. It is interesting to point out that during most of the last 30 years, bank credit to private sector foodgrains trade never exceeded the level of Rs. 100 crores. In contrast, credit to public sector food procurement/distribution has averaged around Rs. 2200 crores in more recent years, constituting about 10 per cent of total commercial bank credit. This gives an idea of the dimensions of enlargement of public sector demand for credit. The Cotton Corporation of India and the Jute Corporation of India also perform somewhat similar functions of procuring and distributing the commodity concerned, although their operations partake the characteristics of a commercial nature. Among other Corporations, mention may be made of the State Trading Corporation and the Minerals and Metals Trading Corporation.

Corporate Sector's Finances

To complete the picture of the structural transformation in the sectoral distribution of commercial bank credit, it is necessary to bear in mind an important characteristic feature of the private corporate sector's finances. The public sector banks inherited a system which was characterised by over-dependence of the corporate sector—particularly the large business and industrial houses — on the banking system. Historically, this may have been due to the influence, direct or indirect, which some of the large business houses wielded on banks. Public sector banks had therefore to devise measures designed to reduce, in a phased manner, such excessive dependence on bank credit. Application of the Tandon Committee³ norms, or more recently Chore Committee⁴ norms, to the private corporate sector represents efforts in this direction.

The Tandon Committee and the Chore Committee norms for working capital requirements of the corporate sector are in fact

³. Reserve Bank of India — Report of the Study Group to Frame Guidelines for Follow-up of Bank Credit — (Chairman: Prakash Tandon), Bombay, 1975.

⁴. Reserve Bank of India — Report of the Working Group to Review the System of Cash Credit — (Chairman: K. B. Chore), Bombay, 1979.

Table 2: Distribution of outstanding credit* of scheduled commercial banks according to Organisation
(As on the last Friday of December)

	(Amount in lakhs of Rs.)					
	1972			1980		
	No. of Accounts	Credit limit	Amount outstanding	No. of Accounts	Credit limit	Amount outstanding
	1.	2.	3.	4.	5.	6.
I. Public Sector	3,031	165,894	67,504 (13.4)	6,787	778,148	522,087 (25.8)
II. Co-operative Sector	3,183	23,529	9,567 (1.9)	19,664	61,779	35,813 (1.8)
III. Private Sector	289,317	726,845	397,080 (78.6)	682,904	1877,719	1247,564 (61.7)
(a) Public & Private limited companies managed by Govt.	763	15,192	10,829 (2.1)	1,476	42,993	29,800 (1.5)
(b) Public & Private companies other than Govt. owned/ or managed companies and Corporations	37,630	444,588	254,187 (50.3)	61,795	1100,179	702,233 (34.7)
(c) Partnership, proprietary Concerns, Joint Families, Associations, Clubs, etc.	250,924	267,065	132,064 (26.2)	619,633	734,547	515,531 (25.5)
IV. Individuals & unclassified	121,036	53,935	30,985 (6.1)	618,923	260,402	216,634 (10.7)
Total	416,567	970,203	505,136 (100.0)	1328,278	2978,048	2022,098 (100.0)

Note: Figures in brackets indicate percentage to total.

* Relates to accounts with credit limit over Rs. 10,000.

Sources: (1) BSR Volume I, December 1972. (2) BSR Summary Results, December 1980.

designed to improve the financial viability of large and medium industries. The implementation of these proposals will lead to better financial and inventory management, better marketing and more intensive mobilization of long-term funds. In enunciating the basis for bank finance to industrial borrowers, the Tandon Committee argued that working capital requirements should be so defined as to prevent 'undue' holding of raw material stocks, finished goods or receivables; and for this purpose suggested certain 'norms' for differential interest groups. It has also supported the view that borrowers should generally operate on the basis of a current assets — current liabilities ratio of 1.25:1 and seek to improve this ratio gradually to 1.33:1. This meant, in effect, the borrowers should aim at financing upto 25 per cent of 'working capital' from their own or long-term sources of funds, other than bank credit. This has since been made a general requirement with well-merited exceptions on the recommendations of the Chore Committee. This has necessarily entailed some credit discipline and to quote Dr. Manmohan Singh, "...in the long run credit discipline is good for individual enterprises as well as for the healthy growth of Indian industry as a whole. Greater care in the use of bank credit can lead to important economies in the use of working capital and, therefore, in the capital-output ratio itself."⁵

Perhaps easy availability of bank credit had sapped, to some extent, the initiative of private enterprises to raise their own resources. Of course, the Indian entrepreneur need not be cast in the mould of the Schumpeterian hero but this aspect of gathering resources should not be totally lost sight of. Simultaneously with the application of the Chore Committee norms to private corporate entities, efforts are also under way to encourage particularly large industrial units to raise part of their resources through financial markets. Various non-banking instruments like convertible and non-convertible debentures and company deposits have been developed as part of deliberate policy. For instance, interest rates on company deposits and returns on debentures are more attractive than those on bank deposits of comparable maturity. More recent experience does show that there has been substantial enlargement in the resources flowing to the corporate sector through the capital market. For instance, direct mobilisation of capital by the private corporate sector during 1981-82 was quite significant: the amount of capital raised through equity, preference shares and debentures aggregated Rs. 388 crores in 1981-82, in sharp contrast to only Rs. 99 crores raised in the previous year. Furthermore, available data show that deposits

⁵. "Credit Policy of the Reserve Bank of India", Inaugural address by Governor, Reserve Bank of India, at the Seminar organised by Maharashtra Economic Development Council, Bombay, November 1982 (Mimeographed).

with non-banking companies rose sharply in recent years. For instance, such deposits increased by Rs. 574 crores or 28 per cent in 1978-79 and by Rs. 818 crores or 31 per cent in 1979-80. Incidentally, it may be added that such sources of funds are in a way the preserve of the large and medium industries, since small-scale industries cannot have access to such sources.

IV. Innovative Instruments Adopted

To bring about such a structural transformation in the sectoral distribution of bank credit, in the post-nationalisation period, certain innovative instruments were adopted. Primarily two national targets were set for banks: first, advances to priority sectors should reach a target of 33-1/3 per cent of outstanding credit by March 1979; and second, 60 per cent of the deposits mobilised from rural and semi-urban areas should be deployed in the respective areas.

Subsequently, the target of 33-1/3 per cent to be reached was raised to 40 per cent which should be reached by 1985. More interesting is the fact that within the 40 per cent aggregate target, the following sub-targets have been set: (i) 40 per cent of the **priority sector lending** should be earmarked for the agricultural sector; (ii) 50 per cent direct lending by commercial banks to agricultural and allied activities should be directed to small and marginal farmers and agricultural labourers by 1983; and (iii) 12.5 per cent of the total credit advanced to small-scale industries should be reserved for rural artisans, village craftsmen and cottage industries by 1985.⁶

In terms of the national target laid down by the Government of India, public sector banks were required to achieve by March 1979, a credit-deposit ratio of at least 60 per cent in respect of their rural and semi-urban branches separately. The private sector banks were subsequently asked to reach the target within a time-bound programme. For the banking system as a whole the all-India credit-

⁶. In the light of the recommendations of the Working Group on the Role of Banks in Implementation of New 20-Point Programme the Reserve Bank advised banks that they should ensure that direct finance extended to agriculture (including allied activities) should reach a level of at least 15 per cent of the total credit by March 1985 and at least 16 per cent of the total credit by March 1987. A broader concept of weaker sections (in the priority sector) comprising small and marginal farmers, landless labourers, tenant farmers and share croppers, artisans, village and cottage industries, IRDP beneficiaries, scheduled castes and scheduled tribes and DRI beneficiaries has been evolved. It is stipulated that advances to "weaker sections" should reach a level of 25 per cent of priority sector advances or 10 per cent of the total bank credit by end of March 1985.

deposit ratios for rural and semi-urban branches were 57.7 per cent and 49.1 per cent, respectively, as at the end of June 1981 which was a fractional improvement over the December 1980 ratios of 57.2 per cent and 48.9 per cent, respectively. The performance of private sector banks was better than that of public sector banks in this regard — 81.8 per cent against 55.1 per cent for rural offices and 53.0 per cent against 48.8 per cent for semi-urban offices at the end of June 1981.⁷

In a sense, the setting up of the sub-targets mentioned above reflects the policy response to what may be called "second generation problems" which have emerged even in respect of credit distribution among sub-sectors of priority sectors. Thus the techniques adopted have been going through an increasing degree of sophistication and the progress has been from highly aggregated magnitudes to increasingly disaggregated objectives with a view to meeting specific needs of particular groups — small farmers, agricultural labourers, artisans etc.

Supply-induced Credit Flow

Before concluding another analytical question needs to be posed: To what extent the enlargement of credit to the priority sectors could be regarded as supply-induced?

Obviously, the phenomenal branch expansion which took place in the post-nationalisation period, particularly in the rural and semi-urban areas was a dominant factor in facilitating the massive flow of credit to the priority sectors. Of the total of 30859 new branches opened since nationalisation of the 14 major banks (i.e. from July 19, 1969) upto June 1982 about 60 per cent were in unbanked centres. This factor taken together with the prescription of the two national targets for the banking system — the share of priority sectors and the credit-deposit ratio for rural and semi-urban areas, referred to earlier — would lead one to the conclusion that the supply factor had the impulse dominance! This is not to totally ignore the demand factors like the improved farm technology and the concomitant demand for credit but only to stress the overwhelming influence of supply factors.

The benefits of such flow of bank credit has to be assessed not merely in terms of larger availability of credit but also in terms of the attendant benefits of 'replacement credit' in the sense of the

⁷. Reserve Bank of India — Report on Trend and Progress of Banking in India — 1981-82; p. 32-33.

traditional money-lenders' credit being replaced by institutional credit. Since such non-institutional credit as was available in the past was unrelated to production requirements, was extended at usually high cost, its replacement by institutional credit could be regarded as part of the process of modernisation of agriculture and small and cottage industries.

V. Summary and Conclusions

At the outset, it was pointed out that those who have been witnesses to the growth of banking in India during the post-nationalisation period, do not seem to adequately appreciate the dramatic changes which have been brought about in the profile of Indian banking. A significant structural transformation in the sectoral distribution of commercial bank credit is perhaps the most outstanding feature of such a change. The purpose of this brief paper is to indicate the significance of the structural changes, the innovative methods used to bring them about, and some of their policy implications. The comments offered in this paper are intended to serve as the basis for further discussion.

The share of large and medium industries in the total commercial bank credit which was around 61 per cent in March, 1968 declined significantly to about 38 per cent in June 1982.

Scheduled commercial banks' advances to what are specified as priority sectors rose sharply from Rs. 505 crores in June 1969 to Rs. 10683 crores in June 1982. The ratio of priority sectors' advances to gross bank credit rose from 14.0 per cent in June 1969 to 35.9 per cent in June 1982. According to the new target set, banks are expected to lend 40 per cent of their advances to the priority sectors by March 1985. This almost revolutionary swing in sectoral distribution of credit, should, in a way, be regarded as a correction of a historical distortion.

Enlargement of the share of priority sectors in total credit has also to be seen in the overall perspective of promoting a broad-based growth process in the sense of encouraging decentralised and dispersed industrial development. Thus the preferential treatment accorded to agriculture, small-scale industries and other hitherto neglected sectors in the allocation of bank credit serves the twin objectives of both growth and equity.

Yet another aspect of the structural transformation is the credit to public sector: the share of public sector in total credit rose from about 13 per cent in 1972 to nearly 26 per cent in 1980. A large

part of this increase in public sector credit may be attributed to the sizeable increase in advances for the trading activities of the public sector.

The public sector banks inherited a system which has characterised by over-dependence of the corporate sector, particularly, the large business and industrial houses on the banking system. Historically, this may have been due to the influence, direct or indirect, which some of the large business houses wielded on banks. Public sector banks had therefore to devise measures designed to reduce, in a phased manner, such excessive dependence on bank credit.

To what extent the enlargement of credit to the priority sectors could be regarded as supply-induced? Obviously, the phenomenal branch expansion which took place in the post-nationalisation period, particularly in the rural and semi-urban areas was a dominant factor in facilitating the massive flow of credit to the priority sectors. This factor taken together with the prescription of the two national targets for the banking system — the share of priority sectors and the credit deposit ratio for rural and semi-urban areas — would lead one to the conclusion that the supply factor had the impulse dominance. This is not to totally ignore the demand factors like the improved farm technology and the concomitant demand for credit but only to stress the overwhelming influence of supply factors. Furthermore, larger availability of institutional credit, in replacement of traditional sources of credit in a way forms part of the process of modernisation of sectors like agriculture, small and cottage industries.

Statement I—Sectoral Deployment of Gross Bank Credit

(Rs. crores)

Item	Outstanding as on the Last Friday of June						
	1976	1977	1978	1979	1980	1981	1982
	1.	2.	3.	4.	5.	6.	7.
I. TOTAL GROSS BANK CREDIT (1+2)	11620 (100.0)	13607	15960	19343	21745	25888	29769 (100.0)
1) Public Food Procurement Credit	2185 (18.8)	2536	2525	2996	2410	2202	2824 (9.5)
2) Non-Food Gross Bank Credit (a+b+c+d)	9435 (81.2)	11071	13435	16347	19335	23686	26945 (90.5)
a) Priority Sector	2815 (24.2)	3486	4334	5677	6981	8966	10683 (35.9)*
i) Agriculture	1092 (9.4)	1381	1726	2288	2915	3783	4588 (15.4)
ii) Small Scale Industries	1222 (10.5)	1460	1756	2252	2715	3406	3921 (13.2)
iii) Other Priority Sectors	501 (4.3)	645	852	1137	1351	1777	2174 (7.3)
b) Industry (Medium & Large)	5039 (43.4)	5372	6249	7291	8238	9983	11192 (37.6)

Statement I — (Contd.)

	1.	2.	3.	4.	5.	6.	7.
c) Wholesale Trade (Other than food procurement)	809 (7.0)	1053	1424	1612	1835	2000	2152 (7.2)
i) Cotton Corporation of India	4 (0.1)	135	133	209	235	232	271 (0.9)
ii) Food Corporation of India (for Fertiliser)	—	75	253	222	226	313	454 (1.5)
iii) Jute Corporation of India	—	17	2	31	61	70	102 (0.3)
iv) Other Trade	805 (6.9)	826	1036	1150	1313	1385	1325 (4.5)
d) Other Sectors	772 (6.6)	1160	1428	1767	2281	2737	2918 (9.8)
II. Export Credit (Included under item 2)	977 (8.4)	1129	1142	1449	1622	1728	1735 (5.8)

Note: 1) Data relate to major banks which account for about 95 per cent of Gross Bank Credit.

2) Figures in brackets represent percentage to total gross bank credit.

3) The figures of total advances to the Priority Sectors shown in this statement are not comparable with those in Statement III.

Source: Reports on Currency & Finance, Reserve Bank of India.

* The ratio of Priority Sector to net bank credit (i.e. gross bank credit minus bills rediscounted with RBI, IDBI, and other institutions viz. GIC, LIC, etc.) works out to 37.2 per cent in June 1982. Participation Certificates are excluded from the figures of bank credit.

Statement II — Industry-wise Deployment of Gross Bank Credit

(Rs. crores)

Item	Outstanding as on Last Friday of June						
	1976	1977	1978	1979	1980	1981	1982
	1.	2.	3.	4.	5.	6.	7.
Industry (Total of Small, Medium & Large Scale)	6261 (100.0)	6832	8005	9543	10953	13389	15113 (100.0)
1. Coal	62 (1.0)	68	50	69	67	55	72 (0.5)
2. Iron & Steel	469 (7.5)	470	425	500	645	648	942 (6.2)
3. Other Metal & Metal Products	212 (3.4)	203	256	319	375	462	524 (3.5)
4. All Engineering	1676 (26.8)	1793	2057	2534	2965	3266	3831 (25.3)
5. Electricity	112 (1.8)	85	79	74	98	181	227 (1.5)
6. Cotton Textiles	684 (10.9)	826	915	959	1014	1174	1200 (7.9)
7. Jute Textiles	106 (1.7)	112	107	132	135	168	181 (1.2)
8. Other Textiles	257 (4.1)	312..	414..	492	585	723	842 (5.6)
9. Sugar	169 (2.7)	277	401	400	233	278	527 (3.5)
10. Tea	110 (1.8)	100	115	166	196	232	272 (1.8)

Statement II — (Contd.)

	1976	1977	1978	1979	1980	1981	1982
	1.	2.	3.	4.	5.	6.	7.
11. Vegetable Oils (Incl. Vanaspati)	80 (1.3)	85	104	150	141	188	208 (1.4)
12. Tobacco & Tobacco Products	70 (1.1)	92	111	110	122	138	146 (1.0)
13. Paper & Paper Products	135 (2.1)	137	169	212	244	298	360 (2.4)
14. Rubber & Rubber Products	116 (1.9)	144	151	188	222	264	275 (1.8)
15. Chemicals, Dyes, Paints etc. Of which Fertiliser	651 (10.4)	733	875	1034	1258	1529	1711 (11.3)
16. Cement	170 (0.9)	157	157	197	214	299	360 (1.0)
17. Leather & Leather Products	56 (1.4)	45	45	62	84	135	157 (1.5)
18. Construction	90 (1.0)	80	121	178	178	188	220 (1.0)
19. Petroleum	61 (1.0)	71	81	105	102	125	151 (2.0)
20. SAFAUNS*	—	—	—	13	378	687	299 (2.0)
	—	—	119	248	269	303	309 (2.0)
21. Residual	1145 (18.2)	1199	1380	1598	1642	2347	2659 (17.6)

* Ships Acquired From Abroad Under New Scheme.

Note : Figures in brackets represent percentage to credit to industry (Total)

Source : Reports on Currency & Finance — Reserve Bank of India.

TRANSFORMATION IN DEPLOYMENT OF CREDIT

Statement III — Scheduled Commercial Banks Advances to Priority Sectors

(Rs. in crores)

Sector	As on the last Friday of		
	June 1969 Amount Outstanding	Dec. 1976 Amount Outstanding	Dec. 1980 Amount Outstanding
	1.	2.	3.
1. Agriculture	188	1335	3573
Of which :	(37.2)	(39.3)	(42.9)
i) Direct Finance	54 (10.7)	1003 (29.6)	N.A.
ii) Indirect Finance	134 (26.5)	332 (9.7)	N.A.
2. Small Scale Sector	294 (58.2)	1719 (50.6)	3838 (46.1)
i) Road and Water Transport Operators	8 (1.6)	278 (8.2)	667 (8.0)
ii) Small Scale Industries	286 (56.6)	1421 (41.8)	3136 (37.7)
iii) Setting up of Industrial Estates	Neg.	20 (0.6)	35 (0.4)
3. Other Priority Sectors	23 (4.6)	341 (10.1)	916 (11.0)
Of which :			
i) Retail Trade and Small Business	N.A.	257 (7.6)	705 (8.5)
ii) Professional & Self Employed Persons	N.A.	78 (2.3)	198 (2.4)
iii) Education	N.A.	6 (0.2)	13 (0.1)
4. Total Priority Sector Advances (1+2+3)	505 (100.0)	3395 (100.0)	8327 (100.0)

Neg. Negligible.

N.A. Not available.

Note: Figures in brackets represent percentage to total priority sector advances.

Source: 1) Report on Currency and Finance—Reserve Bank of India.

2) Report on Trend & Progress of Banking in India 1981-82—Reserve Bank of India.

Statement IV — Public Sector Banks Advances Under the Differential Rate of Interest Scheme

As at the end of December	No. of Borrowal Accounts (In thousand)	Amount Outstanding (Rs. crores)	Percentage of DRI Advances to total advances of the previous year
	1.	2.	3.
1972	26	0.87	0.02
1973	230	10.06	0.22
1974	313	13.35	0.23
1975	465	20.99	0.31
1976	1005	47.24	0.56
1977	1392	67.99	0.61
1978	1620	90.00	0.74
1979	2076	139.80	0.98
1980	2510	193.56	1.00
1981*	2669	225.17	1.03

* Provisional and as at the end of June 1981.

Source : Report on Currency & Finance 1981-82 Vol. I — Reserve Bank of India.

INCOME AND ASSOCIATED CHARACTERISTICS OF HIGH-SALARIED EMPLOYEES IN THE INDIAN PRIVATE CORPORATE SECTOR, 1975-76

P. K. Pani and Kripa Shanker*

Introduction

The Government notification dated the 30th October 1973 requires companies to give, in their profit and loss accounts, information about the number and remuneration of the employees drawing remuneration of Rs. 36,000 or more per annum if employed throughout the financial year or Rs. 3,000 or more per month, if employed for part of the financial year.† Remuneration for this purpose includes salary, perquisites calculated in accordance with the provisions of the Income-Tax Act, company's contribution to provident fund and other funds. Two notifications, dated 31st January 1975 and 18th June 1976 further call for specified particulars, such as name, age, qualifications, designation, nature of employment, experience and remuneration, of each of these employees to be published by the companies in their annual audited accounts.

This study endeavours to analyse the salary structure of above class, for employees of the 1650 selected non-financial, non-Government medium and large public limited companies, for the year 1975-76.¹ Besides presenting the relationship between the remuneration paid to the employees and the company characteristics, such as, size, "monopoly"/"non-monopoly", "Indian"/"foreign", type of activity, the study examines the remuneration received in relation to the employee's experience, educational qualification, skills acquired and/or functional nature of job performed.

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† These are designated as "high-salaried employees" in the subsequent discussions.

¹. For an earlier study on this topic, see Divatia, V. V. and Kripa Shanker, "Distribution of Company Employees Drawing Remuneration of Rs. 3,000 or more per Month-Medium and Large Public Limited Companies, 1974-75", Reserve Bank of India Bulletin, June 1977.

In addition to four main industry-groups the results are analysed for ten selected industries.* While the main industry groups are: 'agriculture and allied activities' (covering mostly plantations), 'mining and quarrying', 'manufacturing' and 'others' (such as 'construction', 'electricity generation and supply', 'hotels, restaurants and eating houses', 'shipping', 'trading' and 'transport other than railways', etc.), the selected industries are: (1) tea plantations, (2) cotton textiles, (3) motor vehicles, (4) electrical machinery, apparatus, appliances, etc., (5) machinery (other than transport and electrical), (6) medicines and pharmaceutical preparations, (7) other basic industrial chemicals (i.e., chemical products other than 'basic industrial chemicals' and 'medicines and pharmaceutical preparations'), (8) paper and paper products, (9) trading and (10) shipping. It may be noted, industries (2) to (8) belong to 'Processing and manufacturing' class while (9) and (10) to the 'others'. The ten industries accounted for a major share of the number of 'high-salaried' employees and of the amount of remuneration paid to such employees in the selected 1650 companies. The selected 1650 companies, in turn, accounted for a little over three-fourths of the paid-up capital of all the non-financial, non-Government public limited companies of the Indian private corporate sector.

The first part of the study gives a general description of the extent of employment and amount of remuneration paid, by various groups of companies for this class of employees, while the second part analyses the earnings profiles of employees by educational standards.

PART — I

A — COMPANY CHARACTERISTICS V/S NUMBER OF 'HIGH-SALARIED' EMPLOYEES

About 76 per cent of the selected 1650 companies, had on their payroll high-salaried employees, as defined above, either for part of the year or for full year (Table 1).

The proportion of companies having high-salaried employees was highest for 'manufacturing' group (79.2 per cent) and lowest for the 'agriculture and allied activities' group (50.9 per cent). Barring 'cotton

* While the results of the ten selected industries are broadly discussed in the paper, no data on the same are presented for the sake of compactness. However, these data can be made available on specific request. Basic data such as the number of companies, their paid-up capital, etc., in regard to various selected industries/industry-groups, are available in the study on the 'Finances of Medium and Large Public Limited Companies, 1975-76', published in the September 1977 issue of the Reserve Bank of India Bulletin.

Table 1: Percentage of companies having high-salaried employees

Main industry-group	(Per cent)				
	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies
	1.	2.	3.	4.	5.
Agriculture and allied activities	50.6	60.0	50.9	93.8	46.5
Mining and quarrying	72.7	50.0	69.2	80.0	62.5
Manufacturing	75.0	95.5	79.2	91.1	74.1
Other activities	61.1	93.8	63.8	83.3	53.8
All industries	70.0	94.4	74.3	90.0	68.1

textiles', 85 to 90 per cent of the selected companies among the 'manufacturing' group had 'high-salaried' employees on their pay rolls. In 'tea plantations', 'cotton textiles' and 'trading', the proportions varied between half to two-thirds.

A very high percentage of 'monopoly'² companies reported employment of high-salaried persons. This feature was observed for all the main industry-groups and also for the selected industries. All the 'monopoly' companies in the 'medicines and pharmaceutical preparations' and 'paper and paper products' reported having such employees. Similarly, a higher proportion of 'foreign'³ companies had such employees on their pay rolls as compared to 'Indian' companies; the exception was the main group 'mining and quarrying'. All the 'foreign' companies under 'tea plantations', 'cotton textiles', 'electrical machinery, apparatus, appliances, etc.', 'other basic industrial chemicals', 'paper and paper products' and 'shipping' reported having high-salaried employees on their pay rolls.

Size of companies and employment of high-salaried personnel

The results (Table 2) indicate that companies which reported having high-salaried employees were much larger in size (in terms

². Monopoly companies cover (i) undertakings registered under Section 26(2) of the Monopolies and Restrictive Trade Practices (MRTP) Act, 1969; (ii) single large undertakings having total net assets of Rs. 20 crores or above, and registered under MRTP Act, 1969, and (iii) single dominant undertakings as defined in MRTP Act, 1969.

³. Foreign companies cover (i) subsidiaries of companies registered abroad; (ii) companies in which 40 per cent or more of the share capital is held outside India in any one country; and (iii) companies in which 25 per cent or more of the share capital is held by a company registered abroad or its nominee.

Table 2: Average paid-up capital per company according to type of company (Rs. in lakhs)

Main industry-group	Companies having high-salaried employees					Companies not having high-salaried employees				
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies
Agriculture and allied activities	34.1	275.3	42.2	85.2	33.5	10.3	11.0	10.3	8.0	10.3
Mining and quarrying	54.9	*	359.9	*	61.8	10.7	30.0	15.5	30.0	10.7
Manufacturing	135.0	225.7	157.9	298.1	83.4	24.3	27.0	24.4	38.4	22.4
Other activities	124.2	132.3	125.2	224.3	47.3	21.3	*	21.8	29.0	20.5
All industries	124.0	230.6	147.7	285.0	75.3	20.8	26.9	21.0	35.4	19.3

* The figures are quite high because of inclusion of one big-sized company.

of paid-up capital) than those which did not employ them. This is so for all industrial groups.

The average paid-up capital per company with high-salaried employees, was generally higher for 'foreign' companies and 'monopoly' companies than the paid-up capital of their counter-parts viz., 'Indian' companies and 'non-monopoly' companies for various selected industries. The exceptions to this pattern were, 'motor vehicles', 'machinery (other than transport and electrical)' and 'shipping' industries among 'Indian' and 'foreign' companies.

Part/full time employment of high-salaried personnel/size of companies

Out of the 1650 selected companies, 1226 reported employing high-salaried employees, either for full year and/or for part of the year. Among these, 39 companies had such employees for part of the year only and another 103 companies reported only consolidated information about them (Table 3).

Table 3: Distribution of 1226 companies according to availability of information
(Number of companies)

Category of company	Paid-up capital ranges (in lakhs of Rs.)						Total
	5-25	25-50	50-100	100-200	200-500	500 and above	
	1.	2.	3.	4.	5.	6.	
Companies having high-salaried employees for full and part of the year and providing detailed employee-wise data	268	229	232	162	130	63	1084
Companies having high-salaried employees for part of the year only and providing detailed employee-wise data	20	11	6	2	—	—	39
Companies having high-salaried employees but providing only consolidated data about them	17	18	25	18	14	11	103
Total	305	258	263	182	144	74	1226

The two-way distribution of the remaining 1084 companies by size and number of high-salaried employees is given in Table 4. Half the companies, had less than 5 high-salaried people. Another

one-third of the companies employed between 5 to 14 high-salaried employees. At the other end about 4 percent of companies employed 75 or more such personnel.

Table 4: Distribution of 1084 companies by paid-up capital and number of high-salaried employees

Number of high-salaried employees	(Number of companies)						
	Paid-up capital ranges (in lakhs of Rs.)						Total
	5-25	25-50	50-100	100-200	200-500	500 & above	
	1.	2.	3.	4.	5.	6.	7.
Less than 5	225	161	90	21	9	—	506
5-14	38	61	107	67	35	2	310
15-24	4	6	24	38	26	4	102
25-49	1	—	11	29	41	11	93
50-74	—	1	—	6	10	10	27
75-99	—	—	—	1	1	7	9
100 and above	—	—	—	—	8	29	37
Total	268	229	232	162	130	63	1084

There is a strong positive correlation between the number of high-salaried employees and the paid-up capital of the company, both at the level of industry-groups and individual industries.

Distribution of high-salaried employees by industry-groups/industries

Distribution of 1084 companies which employed high-salaried personnel, either for full year or both for full and part of the year, is presented in Table 5.

Table 5: Percentage distribution of 1084 companies according to industry-groups and number of high-salaried employees

	(Per cent)								
	Number of high-salaried employees								
Main industry-group	Less than 5	5-14	15-24	25-49	50-74	75-99	100 & above	Total	Average No. of employees per company
	1.	2.	3.	4.	5.	6.	7.	8.	9.
Agriculture and allied activities	79.8	15.2	—	3.8	—	—	1.2	100.0	5.2
Mining and quarrying	57.1	42.9	—	—	—	—	—	100.0	3.4
Manufacturing	43.7	29.9	10.5	9.4	2.5	0.9	3.1	100.0	14.4
Other activities	46.1	27.0	7.8	6.1	4.3	0.9	7.8	100.0	23.0
All industries	46.7	28.6	9.4	8.6	2.5	0.8	3.4	100.0	14.6

At all-industry level, 75 per cent of the companies having high-salaried employees reported employing 14 or less such employees.

High-salaried persons per company were relatively numerous in 'shipping', 'motor vehicles', 'medicines and pharmaceutical preparations' and 'other basic industrial chemicals'. In the remaining six selected industries, 70 per cent or more of the companies employed upto a maximum of 14 such personnel. Companies employing 100 or more high-salaried people were of big sizes (having paid-up capital of Rs. 2 crores or above) and those employing 14 or less such employees were generally of medium sizes, with paid-up capital of Rs. 50 lakhs or less.

B — REMUNERATION OF HIGH-SALARIED EMPLOYEES

Estimates of number and remuneration of high-salaried employees in the corporate sector

The number of high-salaried personnel employed throughout the year, in the selected public limited companies worked out to 18,521. In addition there were 3076 employees with monthly remuneration of Rs. 3,000 or more, employed for part of the year. The total number of high-salaried personnel employed by the 1226 out of 1650 selected public limited companies, thus worked out to 21,597. Total gross remuneration paid to these employees amounted to Rs. 108.44 crores, of which Rs. 98.38 crores related to those employed for full year.

It is estimated that the non-financial non-Government public limited companies in India, had on their payrolls in 1975-76, about 34,000 high-salaried employees (both employed for full year and part of the year) who received gross remuneration of over Rs. 171 crores (Table 6).

Columns (1), (3) and (4) of table 6 in respect of all the paid-up capital size-groups except the first (less than Rs. 5 lakhs), are derived from the results of the study on the finances of medium and large public limited companies for the year 1975-76. The number of companies in various size-groups (column 2) is derived by making use of the information on total number of non-Government, non-financial public limited companies as given in the report of the Department of Company Affairs, Government of India⁴ and the Census

⁴. Government of India, Research and Statistics Division, Department of Company Affairs, Ministry of Law, Justice and Company Affairs, 'Alphabetical list of Joint Stock Companies in India—Registrations and Liquidations, 1978-79', August, 1980, New Delhi.

Table 6: Estimated number and remuneration of high-salaried employees — All non-financial, non-Government public limited companies, 1975-76

Paid-up capital ranges (in lakhs of Rs.)	Average paid-up capital per company (Rs. in lakhs)	No. of all non-financial, non-Govt. Public Ltd. companies	No. of high-salaried employees per company†	Remuneration per employee† (Rs. 000's)	Estimated total	
					No. of employees†	Remuneration † (Rs. 000's)
	1.	2.	3.	4.	5.	6.
Less than 5	2.5	3305	0.20	50.09	679	3,40,11
5—25	13.8	2015	1.42	48.72	2861	13,93,88
25—50	35.4	831	2.70	50.59	2244	11,35,24
50—100	69.9	593	7.54	51.22	4471	22,90,05
100—200	135.0	295	16.77	51.47	4947	25,46,22
200—500	315.0	239	33.49	51.90	8004	41,54,08
500 and above	1054.6	83	130.05	48.82	10794	52,69,63
Total	—	7361			34000	1,71,29,21

† Relate to high-salaried employees employed either for full year or part of the year.

publication of the Reserve Bank⁵. In view of the highly skewed nature of the distribution of the companies both in terms of their size and the number of high-salaried employees the estimated number of such employees (full year and part of the year) per company and their average annual remuneration, for the companies in less than Rs. 5 lakhs of paid-up capital, were derived from double log relations between these variables obtained by fitting them to the data on companies with paid-up capital above Rs. 5 lakhs (six observations)

$$(i) \log N = -1.1116^* + 1.0064^* \log x$$

$$\text{Standard error} \quad (0.0985) \quad (0.0464)$$

$$R^2 = 0.9925$$

$$(ii) \log E = 1.6990^* + 0.0018 \log x$$

$$\text{Standard error} \quad (0.0186) \quad (0.0088)$$

$$R^2 = 0.0106$$

Where :

N = Average number of high-salaried employees per company

E = Average annual remuneration per high-salaried employee, and

x = Average paid-up capital per company for various size-groups

* indicates significant at 5% level.

⁵ Reserve Bank of India, 'Census of Public Limited Companies in India, 1971-72', January 1980.

An interesting result of the second relation is that the average remuneration per employee is of the order of Rs. 50,000 and does not vary much with the size of the company. As pointed out earlier, gross remuneration included taxable value of perquisites, etc., in addition to salary and wages. Information on net remuneration received by the high-salaried employees was not uniformly available in the accounts of all the selected companies and wherever available, their presentation, also differed. As such, it was not possible to study the net remuneration received by such employees. However, on the basis of examination of accounts of some of the companies, net remuneration was found to approximate to 64 per cent of the gross remuneration.

Share of remuneration of high-salaried employees in the wage-bill

The share of remuneration of high-salaried employees (both employed for full year and part of the year) in the wage-bill of all the employees is presented in Table 7 by main industry-groups, separately for 1226 companies having such employees and for all the 1650 selected companies. It would have been interesting if the proportion of such employees to total of all employees in the companies is also analysed but data on the total number of employees are not available in the published accounts of the companies.

Table 7: Share of remuneration of high-salaried employees in the wage-bill

Main industry-group	Percentage share	
	Companies having high-salaried employees	All selected companies
	1.	2.
Agriculture and allied activities	4.2	3.4
Mining and quarrying	3.3	3.2
Manufacturing	5.1	4.9
Other activities	12.2	11.6
All industries	5.5	5.3

The wage-bill was taken to include salaries, wages, bonus, provident fund contribution, employees' welfare expenses and managerial remuneration. The share of remuneration of high-salaried employees in the wage-bill of all the employees was highest in 'shipping'. This is understandable as all categories of employees in merchant vessels are paid large salaries to compensate for long period of monotonous and strenuous off-shore duties on ships on

sail and absence from homeland. The share was also high in the case of 'other basic industrial chemicals', 'medicines and pharmaceutical preparations', 'trading' and 'electrical machinery, apparatus, appliances etc'. Out of the remaining industries 'machinery (other than transport and electrical)' and 'paper and paper products' showed slightly higher shares than the all-industry average. On the other hand, the share was the lowest for 'cotton textiles' (2 per cent).

Average annual remuneration per high-salaried employee

For all industries taken together, the average annual remuneration of a high-salaried person employed throughout the year was Rs. 53,100, the highest and lowest remuneration being in the industry-groups 'agriculture and allied activities' and 'other activities' respectively (Table 8).

Table 8: Average annual remuneration of high-salaried employees of 1187 companies according to type of company

(Rs. in 000's)

Main industry-group	Type of company				
	Indian companies	Foreign companies	All companies	Mono-poly companies	Non-mono-poly companies
	1.	2.	3.	4.	5.
Agriculture and allied activities	58.0	55.1	56.9	56.6	56.9
Mining and quarrying	56.5	48.0	50.7	58.8	49.5
Manufacturing	52.1	56.0	53.9	53.9	53.8
Other activities	47.2	57.1	49.0	48.9	49.6
All industries	51.1	56.0	53.1	53.0	53.5

At all-industry level, the average remuneration was higher in the case of 'foreign' companies as compared to 'Indian' companies. This feature was also found to hold good for six of the ten selected industries. However, between the 'monopoly' and 'non-monopoly' companies, the differences in the average remuneration were marginal. The 'foreign' companies in the 'motor vehicles' industry, paid on an average basis, the highest remuneration (Rs. 65,200) to their high-salaried employees. While 'foreign' companies in all the industries except 'cotton textiles' and 'medicines and pharmaceutical preparations' paid on an average, a remuneration of Rs. 55,000 or more per annum, in the case of 'Indian' companies this privilege was

enjoyed by employees of 'tea plantations', 'other basic industrial chemicals' and 'paper and paper products' only. For all companies taken together, employees in 'tea plantations', 'other basic industrial chemicals' and 'paper and paper products' industries received, on an average, relatively higher remuneration than in other industries.

The remuneration of company executives employed for the full year by the paid-up capital sizes of the 1084 companies which gave employee-wise data is presented in Table 9.

Table 9: Average annual remuneration of high-salaried employees according to paid-up capital of 1084 companies

(Rs. in 000's)

Main industry-group	Paid-up capital ranges (in lakhs of Rs.)						Total
	5-25	25-50	50-100	100-200	200-500	500 & above	
	1.	2.	3.	4.	5.	6.	
Agriculture and allied activities	49.7	59.2	60.2	55.7	63.8	55.7	56.8
Mining and quarrying	45.0	68.5	55.0	—	—	—	54.0
Manufacturing	49.9	54.0	54.5	54.9	56.8	53.2	54.4
Other activities	49.2	59.0	55.8	55.4	46.7	50.2	50.2
All industries	49.7	54.6	54.8	55.0	54.8	52.8	53.7

— indicates no high-salaried employee.

The average annual remuneration per high-salaried employee, after an initial jump of Rs. 5,000 per annum for companies with less than Rs. 25 lakhs paid-up capital to the next class, showed marginal variations in the subsequent groups. The limited variation in the average remuneration per employee among industrial groups of various sizes does not, however, imply that the skewness in the distribution of earnings of the employees of this class is small either for particular company or overall as discussed below.

Share of number and remuneration of high-salaried employees by remuneration ranges

As remarked earlier, out of the 18,521 high-salaried employees employed for the whole year in 1187 companies, detailed information is available only in respect of 14,244 employees pertaining to 1084 companies. The distribution of the number and remuneration of the employees for which complete information was available is presented in Table 10, according to various remuneration ranges.

It was observed that at all-industries level, irrespective of the class of companies, more than one-fourth of employees belonged

Table 10: Percentage distribution of number and remuneration of high-salaried employees according to remuneration ranges and type of company

Annual remuneration (Rs. in 000's)	(Per cent)									
	Indian companies		Foreign companies		All companies		Monopoly companies		Non-monopoly companies	
	No. of employees	Remuneration	No. of employees	Remuneration	No. of employees	Remuneration	No. of employees	Remuneration	No. of employees	Remuneration
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
36— 42	29.5	20.8	27.5	18.3	28.7	19.7	29.5	20.3	26.8	18.3
42— 48	21.3	17.3	18.6	14.3	20.2	16.0	20.0	15.9	20.5	16.2
48— 54	14.0	12.9	13.3	11.6	13.7	12.3	13.4	12.1	14.4	12.8
54— 60	9.7	10.0	9.5	9.3	9.6	9.6	9.3	9.4	10.3	10.3
60— 72	10.9	12.9	12.9	14.4	11.8	13.6	11.6	13.4	12.0	13.9
72— 84	6.5	9.2	6.5	8.7	6.5	9.0	6.6	9.0	6.5	8.9
84— 96	2.8	4.6	3.9	6.0	3.3	5.2	3.4	5.4	3.0	4.8
96—108	1.9	3.5	2.6	4.5	2.2	4.0	2.2	4.0	2.1	3.8
108—120	1.0	2.1	1.2	2.4	1.1	2.2	1.1	2.2	1.2	2.3
120 and above	2.2	2.8	3.8	10.6	2.9	8.4	2.8	8.3	3.1	8.6
All ranges	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
i) Total No. of employees	8146		6098		14244		4248		9996	
ii) Total remuneration (Rs. in lakhs)		4458		3545		8003		2396		5607

HIGH SALARIED EMPLOYEES

to the remuneration range of Rs. 36,000 to Rs. 42,000. The proportion declined, rather steadily, with the increase in the remuneration ranges. The exception to this trend was the range of Rs. 60,000 to Rs. 72,000. In the highest remuneration range (Rs. 1,20,000 and above), the percentage of employees suddenly jumped in comparison to the immediate lower remuneration range. A dividing line in the remuneration pattern is the range Rs. 54,000 to Rs. 60,000. Upto this range, the percentage share in total remuneration was lower than the share in total number of employees. The lowest three remuneration ranges taken together accounted for 48 per cent of remuneration and 63 per cent of total number of employees. On the other hand, about 6 per cent of the top executives (in the last three ranges), shared among themselves about 15 per cent of the total remuneration of all high-salaried employees. A similar pattern in percentage shares was observed for individual class of companies. For 'foreign' companies, employees in the top three remuneration ranges constituted about 8 per cent of all the high-salaried employees but had around 18 per cent of total remuneration. The analysis for the main industry-groups and selected industries, also show considerable inequality in the income of even the high-salaried employees of the companies.

PART — II

Disparities in earnings of employees is explained in terms of numerous factors like varying levels of skills, abilities of individuals, opportunities that come across employees, institutional phenomena, besides luck-discrimination. Statistical theories on the other hand suggest that the whole structure of earnings can be interpreted in the framework of a stochastic process of income receipts over time period. In the sixties, seminal studies made by economists in U.S.A. brought in a re-interpretation of the income inequality as being a result of supply and demand for human capital. They focussed the attention on investment in human capital in the schooling and post-schooling periods, the latter in the form of training and "learning" in the course of job performance.

Individual investment in the acquisition of particular skills either during the "schooling" period or through self-improvement in the post schooling period is derived from employers' demand for human capital. It is thus related to the marginal rate of return on such capital apart from the non-economic attributes like the tastes and preferences of individuals themselves. Earnings could then be expressed as the return on cumulated investment (in human capital)*.

* For details on the interpretation of "human capital model" see Jacob Mincer, "Schooling, Experience and Earnings", NBER (1974).

The rate of return varies with the nature and extent of skills depending on the supply and demand for the same. Different skills require different periods of schooling/training. The more elongated the period for acquisition of a skill, the more is the income forgone initially, assuming ofcourse that the working life of an individual does not vary for skills or is extended for certain type of skills. The rate of return on investment in such skills would be higher because the demand for them is relatively high due to higher marginal revenue on employment of such type of human capital or because their supply is relatively low. The latter could be either due to ability requirements of individua's or due to the limited opportunities available to them to acquire such skills. The volume of funds made available for training and imparting specified skills and other forms of creation of human capital depends on the interest costs and other financing opportunities in the case of a private entrepreneur. The size of investments required may inhibit individual entrepreneurs undertaking such investments in the absence of specific return to himself. Government investment in specific training programs might be related to the prelaid priorities based on social rates of return.

Investment during early ages in the form of initial schooling gives only a partial idea of total investment of an individual towards the acquisition of various skills. Studies in U.S.A. indicate that post-schooling investment is an important element and differs among individuals as the years of job experience increases. There are, however, difficulties in measuring and quantifying the cumulated investment of the latter category.

The increase in salaries of employees with age is thought to reflect the prevalence of institutional arrangements such as seniority provisions in employment practices. It is also interpreted as the inherent effect of biopsychological individual development i.e. maturation at young ages and decline at old ages. In professional and technical jobs it is doubtful that seniority, per se, would account for all the differentials in earnings, ignoring productivity growth resulting job experience. When the period of schooling (initial investment in human capital) is far removed during the course of the career path of an individual, the secular progress of knowledge makes older education and skill vintages obsolescent as age increases. Without further investment in human capital, productivity growth would cease if not decline following impaired learning capacity and decline in physical abilities. The growth of earnings in later stages of employment cannot therefore be fully explained as fully either an age or a seniority phenomenon. On the other hand, given a level of education, the earnings profile of an individual can be viewed as a result

of increase in productivity (on greater accumulated investments) following the acquisition of larger (investment) experience both due to a learning process and additional job training in existing and new lines of activity. In this description, experience in a job implies not only utilization of existing knowledge in the performance of a particular function (which yields a return on 'schooling' investment) but also acquisition of new knowledge (post-schooling investment and an addition to existing human capital) which yields a higher return (earnings) subsequently. This process of post-schooling investment need not be strictly monotonic but is conditioned by the following aspects.

Unlike "schooling investment", which is concentrated at specific ages and is characterised by absence of earnings, post-schooling investment is staggered over working life, not all at once. It declines continuously as benefit from it declines with the shortening of the pay off period and as the marginal cost of acquisition, increases with advancing age and decreasing learning ability. Since, unlike investment in schooling, the magnitude of post-schooling investment is not observed, it is only reflected in the earnings data. To make it amenable for empirical work, some assumptions are made on the time path of such investments. Assuming, the rate of return on post-schooling investment is same at all time points, the earnings profile of individual can be formulated as

$$Y_j = Y_s + r \sum_{i=0}^{j-1} C_i - C_j$$

Y_s = annual earnings of an individual with s years of schooling

Y_j = annual net earnings of an individual in the year j — net being denoted as gross earnings minus post-schooling investment C_j in the year j .

C_j = resources spent by an individual in furthering his job skills and related information in the form of training, leisure foregone, part time work, job search, etc.

r = Assumed constant rate of return on investment

Using the following additional assumptions

$$i) \quad C_t = C_0 - \frac{C_0 t}{T} \quad \text{or} \quad C_t = C_0 e^{-\beta t}$$

$$ii) \quad K_t = K_0 - \frac{K_0 t}{T} \quad \text{or} \quad K_t = K_0 e^{-\beta t}$$

With $E_t = Y_t + C_t$ = gross earning and $K_t = \frac{C_t}{E_t}$

Where,

T is the period of post-schooling investment
t is a time subscript.

We derive approximate gross earnings profiles of employees under alternate assumptions as*

$$\ln E_t = \ln E_s + rk_0 t - \frac{rk_0}{2T} t^2 \quad (1)$$

$$\ln E_t = \ln E_s + \frac{rk_0}{\beta} (1 - e^{-\beta t}) \quad (2)$$

The relation between schooling investment and gross earning can further be postulated as $\log E_s = E_0 + r_s S$ with E_0 as the earning in the absence of schooling, r_s is the rate of return on schooling investment, S is the number of years of schooling.

A distribution of remuneration of high-salaried employees by educational achievements is given prior to estimation of the returns to schooling and post schooling investments through econometric methods†.

High-salaried employees and educational qualifications

The distribution of high-salaried persons, employed for the whole year, shows that undergraduates constituted a significant proportion of high-salaried employees in all the industries. In 'tea plantations', a fourth of high-salaried personnel were undergraduates. The high-salaried undergraduates were also numerous in 'paper and paper products' and 'trading' industries. The proportion of 'graduates' varied from 6 per cent in the case of 'shipping' to 29 per cent in the case of 'tea plantations'. The proportion of graduates was also high in 'medicines and pharmaceutical preparations', 'paper and paper products' and in 'trading'. 'Engineering degree/diploma' holders constituted the largest segment of high-salaried personnel. The proportion of engineers (graduates and diploma holders) was high in the case of 'shipping', 'motor vehicles' and 'machinery (other than transport and electrical)' industries. In the case of 'shipping', engineers and related technical personnel formed the highest (around 76 per cent) proportion. High-salaried employees who did not possess either of the above qualifications constituted a relatively minor proportion. As can be expected, the remuneration drawn by the employees was found to be positively associated with the levels of their educational skills.

* For a derivation of these and other related results vide Jacob Mincer cited above.

† See Appendix.

Earnings profiles of high-salaried employees

Aggregates of earnings per employee as obtained from a cross-section data for the year, are used in working out the 'earnings profiles' presented later.* Since in the case of small samples, a few extreme cases of very low or very high earnings are likely to vitiate the general picture, the data have been adjusted for these for the purpose of this analysis. Further, to enable a broad but a significant comparison of earnings between qualified executives with different types of background, a grouping of educational qualifications into three classes; viz., (i) technical education (graduate/postgraduate/doctorate in engineering, etc.), (ii) service job education (management/accountancy/legal degree, etc.) and (iii) general education (under graduate/graduate and postgraduate) is made. A higher level of disaggregation would imply less number of observations in each class and consequently lower precision associated with the results.

Classifying the executives by their educational qualifications, we find that doctorates in engineering and science who would have spent a number of years in specialized education/acquisition of sophisticated skills, etc., and for whom the volume of investment would have been larger, receive an average annual remuneration higher than that of other personnel except those with management degrees (Table 11). Engineering degree holders who work mostly on-the-production-line have, however, comparatively low annual earnings.

Average annual earnings of accountants and lawyers are lower than that of management degree holders. The latter have a low starting emoluments, but their progress in the career path is quite fast. They overtake their counterparts around 12/15th year of their service and at the time of near retirement their salaries (including perquisites) exceed that of accountants/lawyers by 35/40 per cent and that of doctorate in engineering and science by 3 and 13 per cent, respectively. The last column of the table No. 11 gives relative aggregate (undiscounted) remuneration received by company executives of various qualifications over the entire span of their service career, with that of undergraduates placed at a base level 1.0.

* As stated earlier, an important qualification to investment interpretation of earnings profiles is to be examined here. The distribution of investment over life cycle cannot be obtained from a cross sectional profile of individuals who differ by age. It is necessary for this purpose to have a cohort (same set of individuals with same age) and different schooling and post schooling investments and analyse their earnings over working life. This would eliminate biopsychological differences. However, as Jacob Mincer showed that the pattern of cohort and cross sectional profiles do not differ in pattern except with increasing spread of education there could be a shift in the average earnings (vide OP Cit. pages 76-82).

Table 11: Average annual remuneration classified by educational qualifications — 1975-76

(Rs. 000's)

Educational qualifications	Average annual remuneration					Average annual growth rate in remuneration (All companies) % per annum	Relative earnings over service span of 30* years (all companies)
	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. General							
Education	52.8	54.2	53.4	52.7	55.0	0.82	1.0637
(a) Under-graduate	52.4	48.6	50.8	48.9	55.4	0.84	1.0000
(b) Graduate	52.9	55.4	54.0	53.9	54.2	0.76	1.0837
(c) Post-Graduate	53.6	59.1	56.1	55.6	57.0	1.48	1.0876
II. Technical							
Education	50.6	57.9	53.2	52.9	54.3	1.20	1.0961
(a) Doctorate in Science	62.9	63.0	63.0	64.2	60.8	2.18	1.2120
(b) Engineering Degree/Diploma	49.7	56.3	51.9	51.5	53.2	1.06	1.0749
(c) Postgraduate/Doctorate in Engineering	53.9	60.0	56.5	56.6	56.2	2.92	1.1878
(d) Combination of more than one qualifications	54.1	63.8	58.2	58.8	56.7	1.70	1.1571
III. Business							
Administration	51.9	59.6	55.5	55.0	56.6	1.88	1.0905
(a) Management Degree/Diploma	55.7	60.4	58.1	56.5	61.3	2.76	1.1766
(b) Accountancy Degree/Diploma	48.9	60.9	55.2	55.3	54.9	1.72	1.1050
(c) Legal Degree	52.4	57.1	54.1	53.7	55.2	1.26	1.0587
All Classes	51.6	57.0	53.7	53.2	55.0	1.06	1.0808

* Total undiscounted earnings over the 30 years span of the individual under each category with similar earnings of undergraduates in 'general education' as base point i.e. 1.0 for all companies.

HIGH SALARIED EMPLOYEES

Table 12 gives executives' remuneration by the functional nature of the job. We find that top management receives the highest emoluments. The average earnings of other service personnel in-charge of the financial affairs of the company and of marketing of output, like accountants, lawyers, marketing-staff exceed those of technical personnel who work on production line.

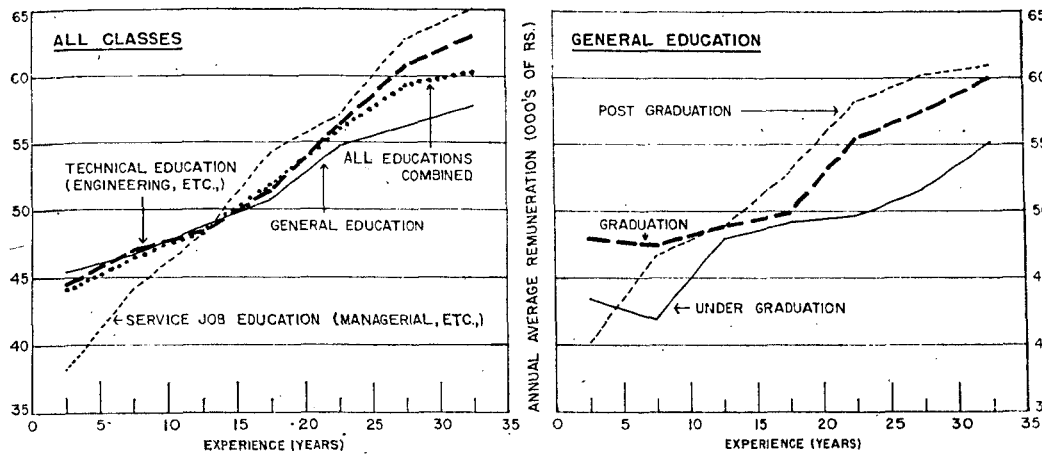
Table 12: Average annual remuneration by functional nature of job — 1975-76.

Nature of Job	(Rs. 000's)				
	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies
	1.	2.	3.	4.	5.
1. Top Management	70.0	88.2	74.9	81.8	67.7
2. Finance	45.5	54.3	49.7	49.4	50.4
3. Personal/legal administration	47.4	54.6	50.6	50.6	50.9
4. Marketing	47.3	55.4	51.9	52.1	51.4
5. Technical	46.1	51.7	48.4	48.0	49.5
6. Research/Development & Training	45.6	54.7	50.5	50.7	49.8
7. Others	49.2	47.8	48.9	49.1	47.3
8. All Classes	51.6	57.0	53.7	53.2	55.0

It may be mentioned that the top management and the general class of managers may include engineering/science doctorates etc. There is thus a mix-up of educational qualifications with the functional nature of job performed. The charts show the earnings profiles of the high-salaried personnel. They conform broadly to the theory of demand and supply for such personnel outlined in the beginning of this section.

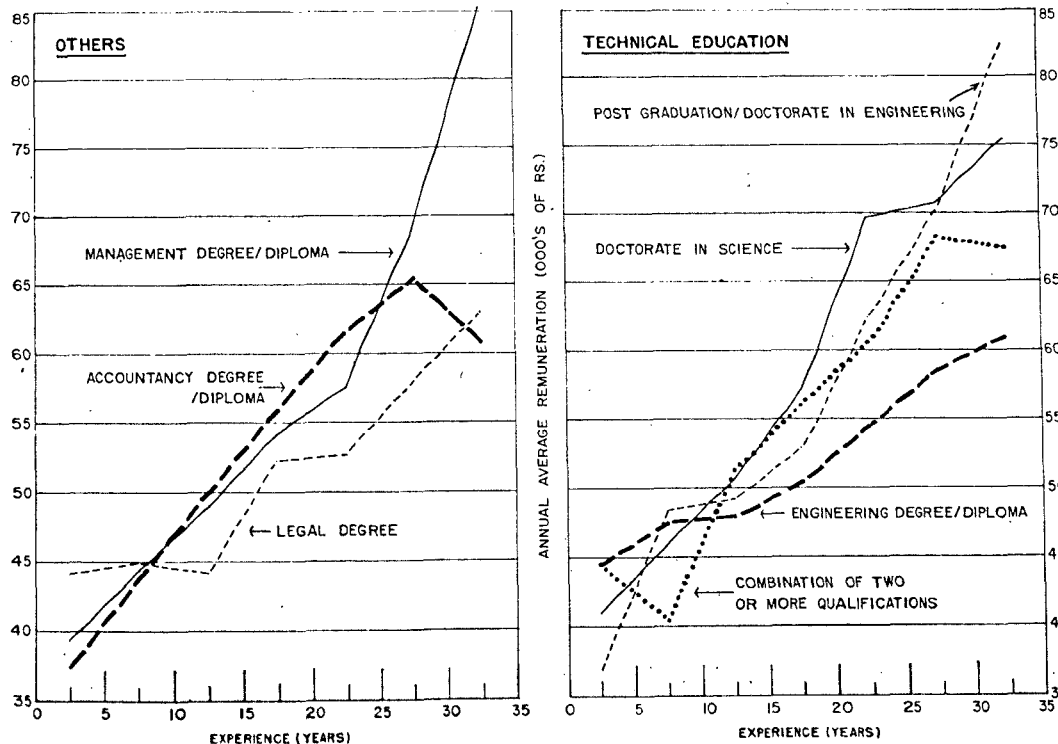
With a view to bringing out some of the additional features of the earnings profiles of the company executives into sharper focus, an attempt is made to estimate the rates of return on their schooling and post schooling investments through regression analysis using the relationship between earnings and schooling tenure and experience in years as postulated earlier. The cross sectional regression analysis on individual earnings was carried out for broad categories of companies and for some of the important industries under each of these broad categories with a view to highlighting the inter-industry differences. Thus the investment in schooling is quantified by the number of years of schooling and post schooling investment is measured as the experience in years.

1: ALL COMPANIES

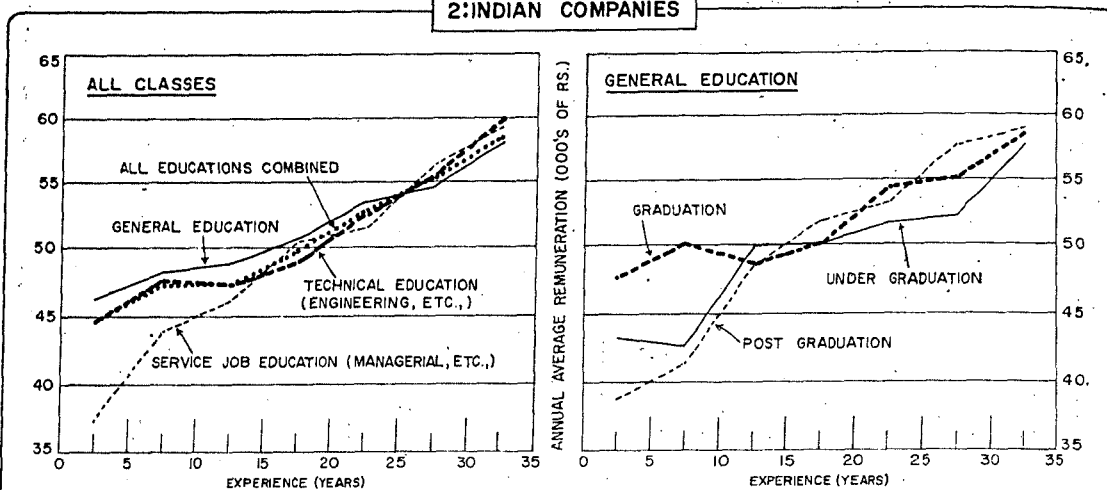


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

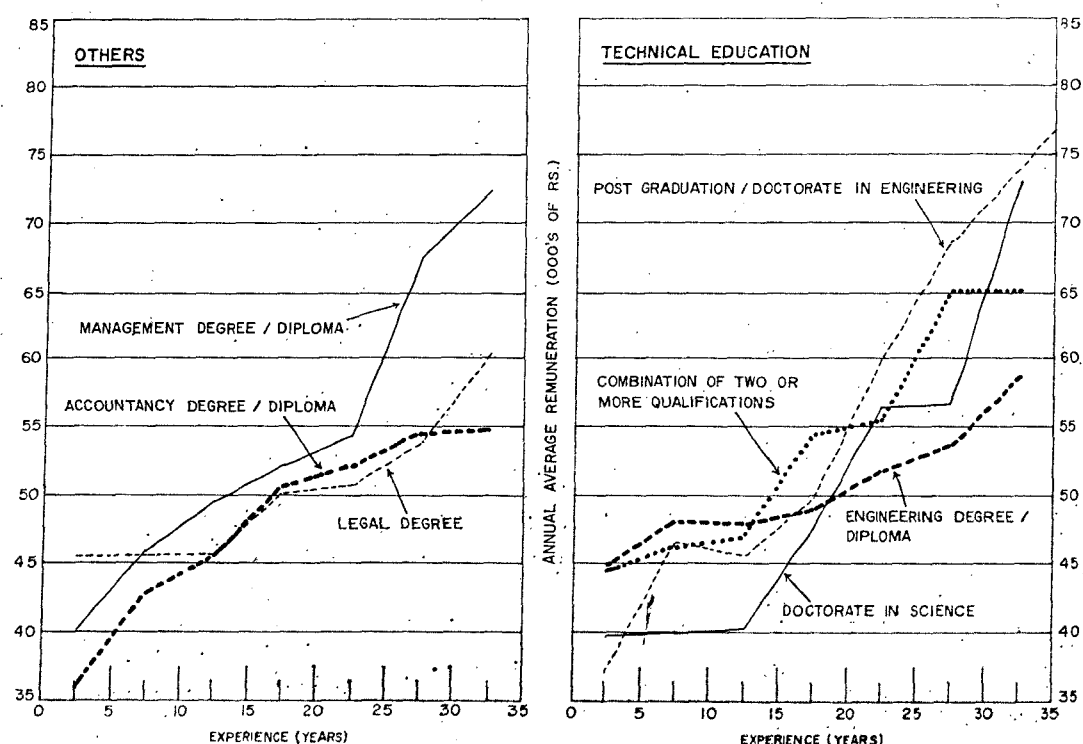


2: INDIAN COMPANIES

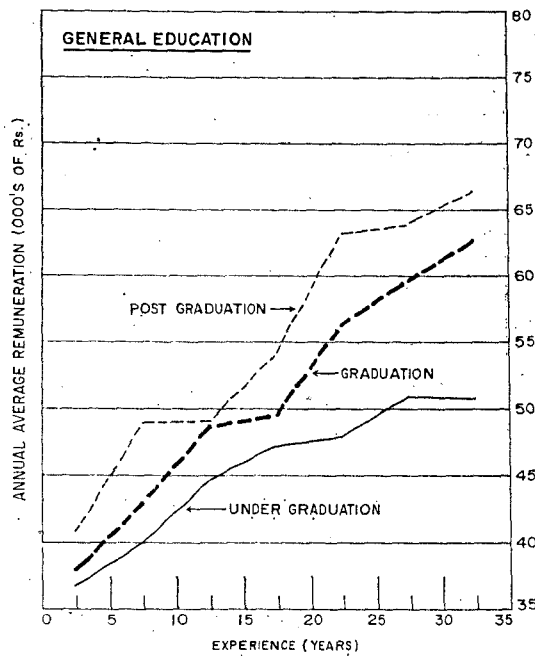
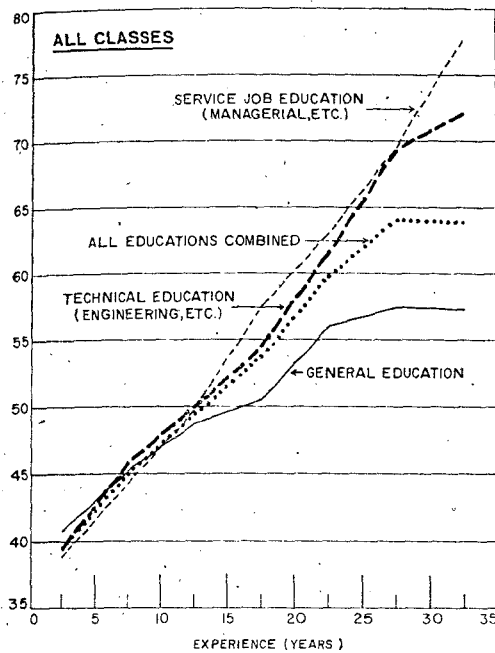


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

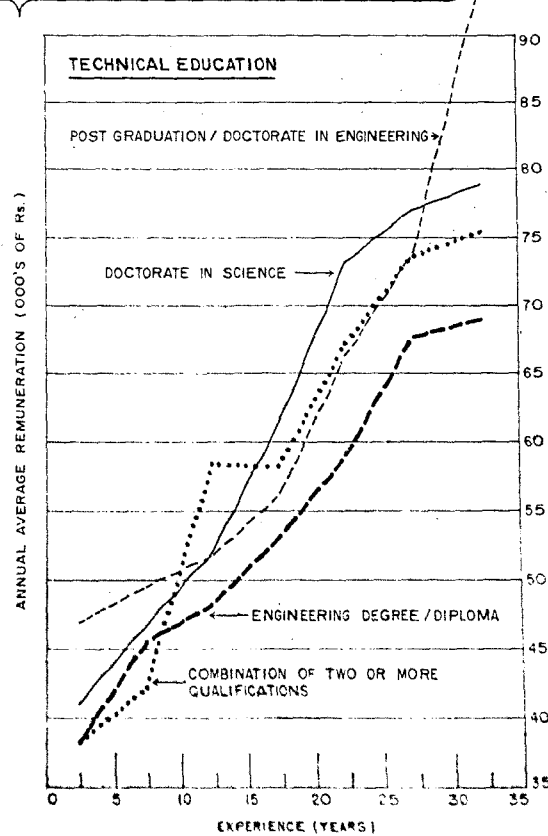
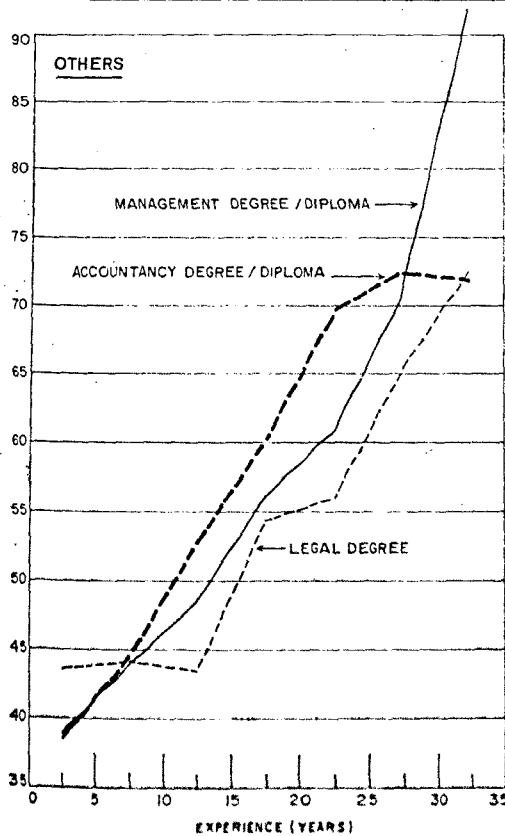


3: FOREIGN COMPANIES

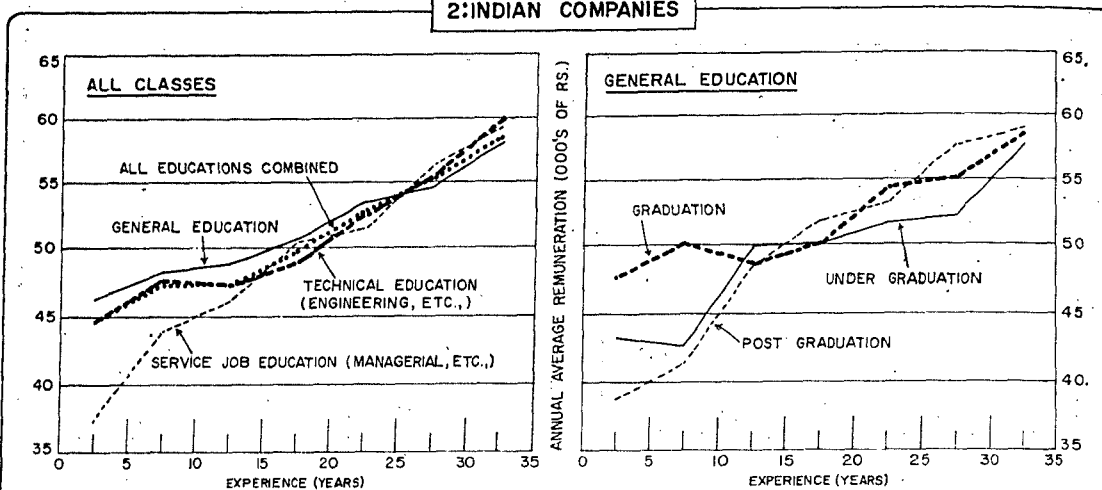


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

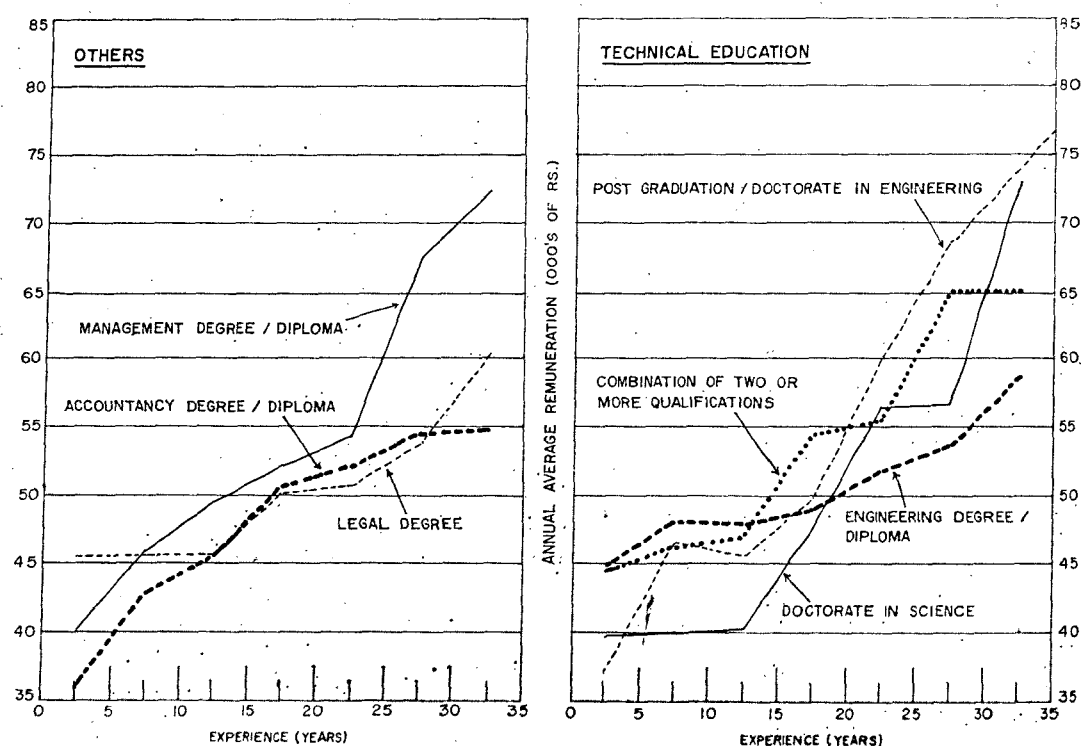


2: INDIAN COMPANIES

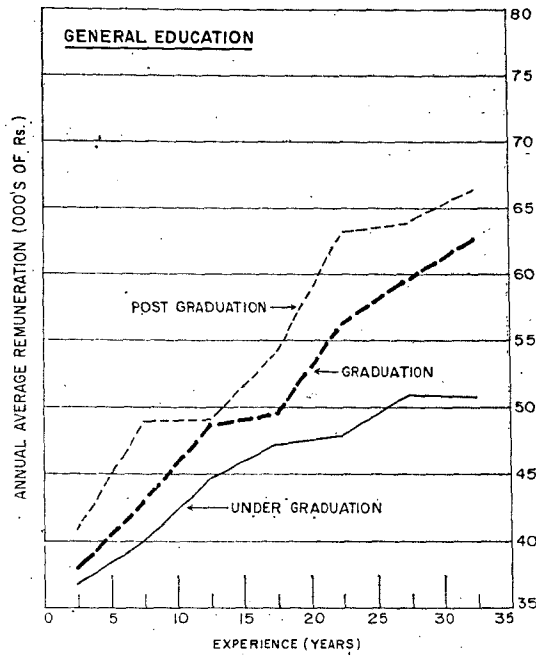
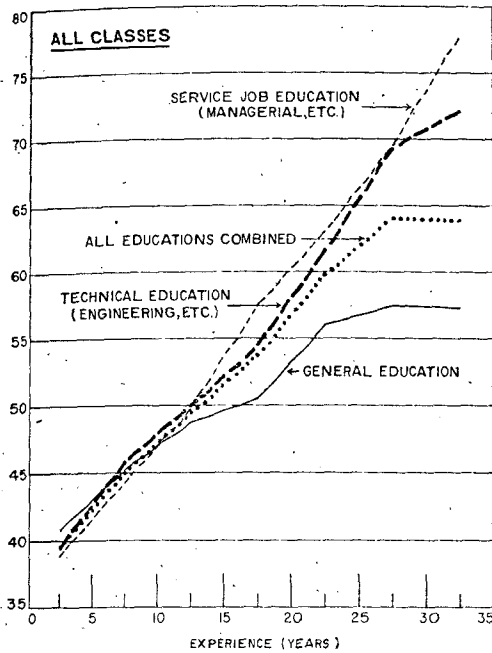


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

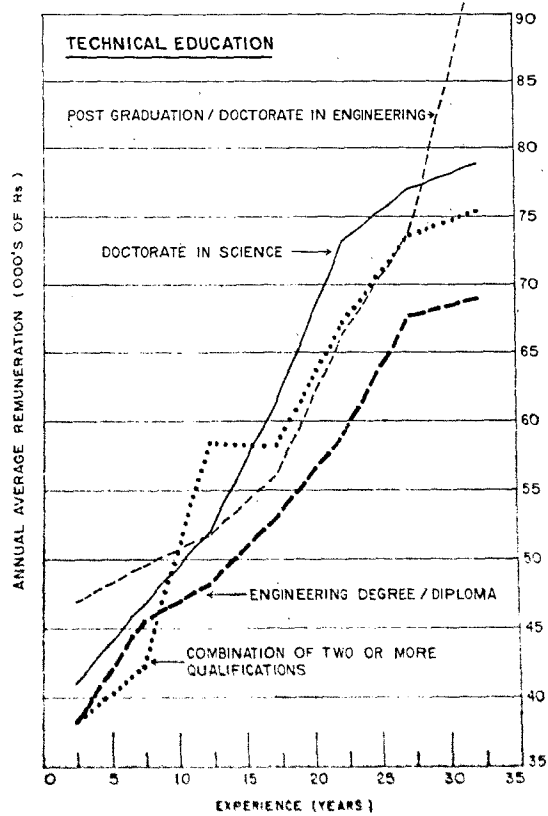
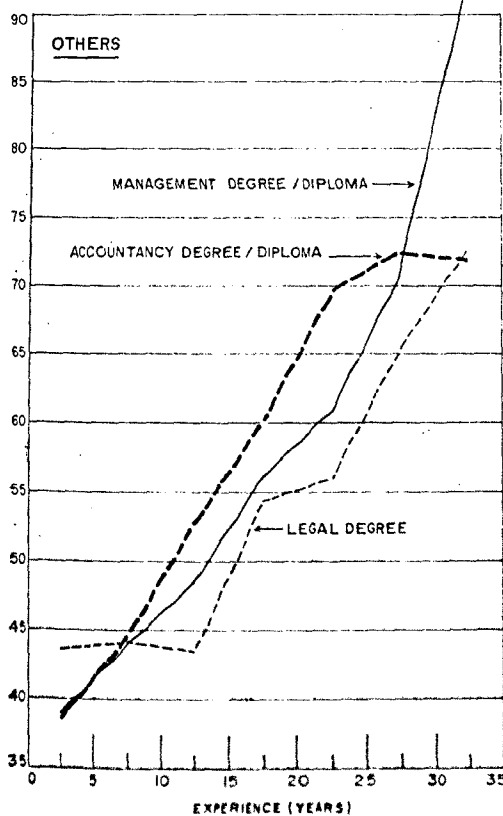


3: FOREIGN COMPANIES

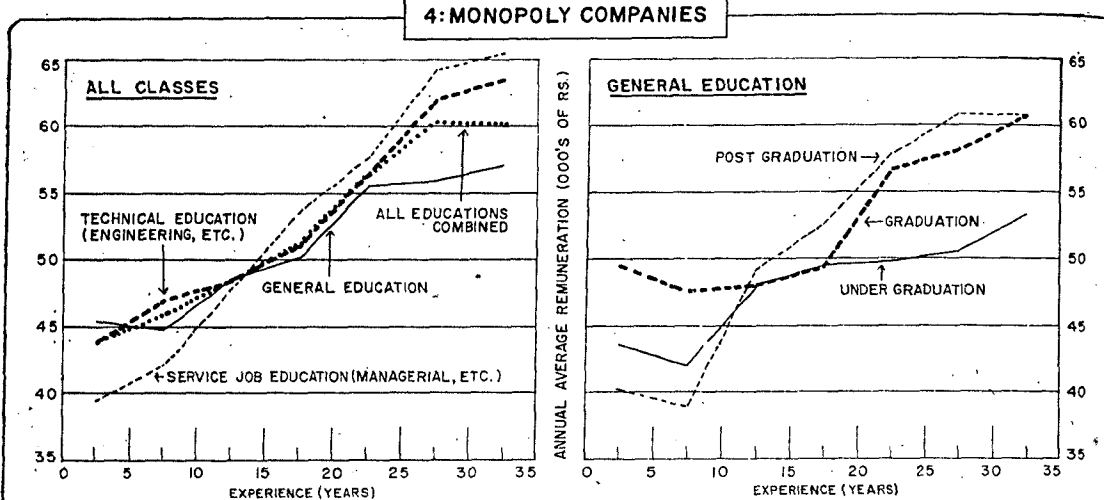


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

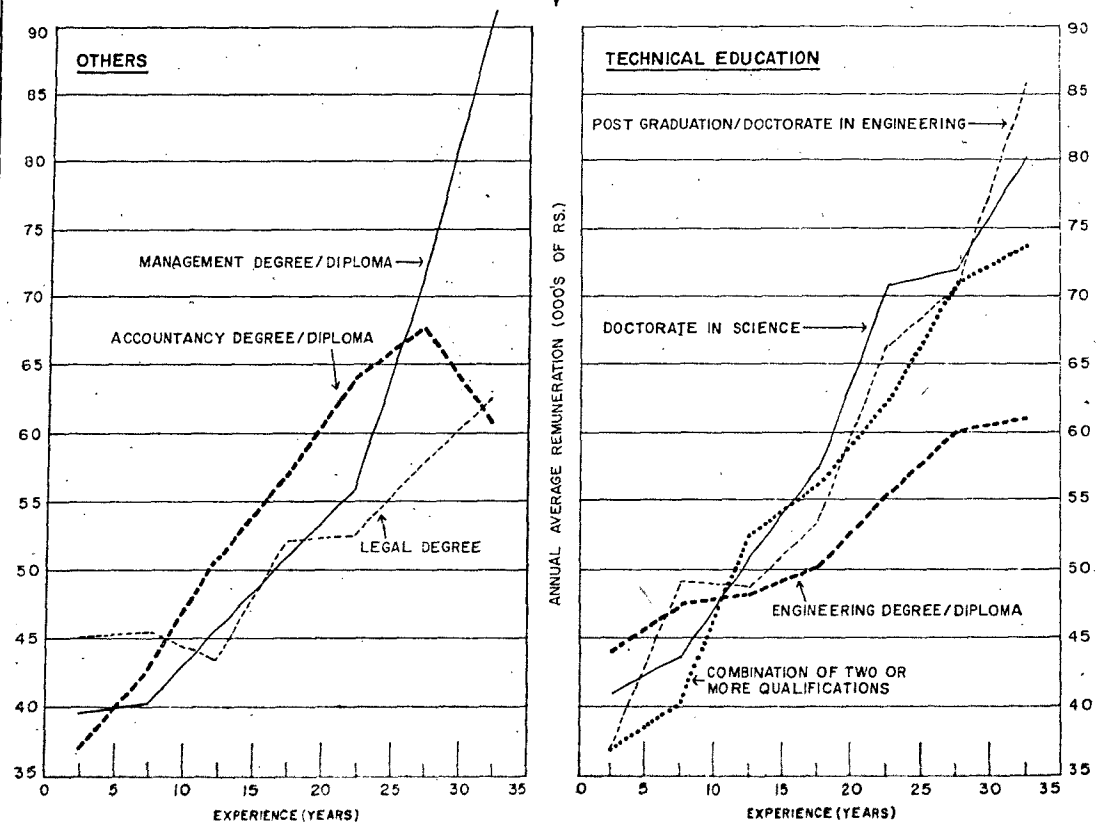


4: MONOPOLY COMPANIES

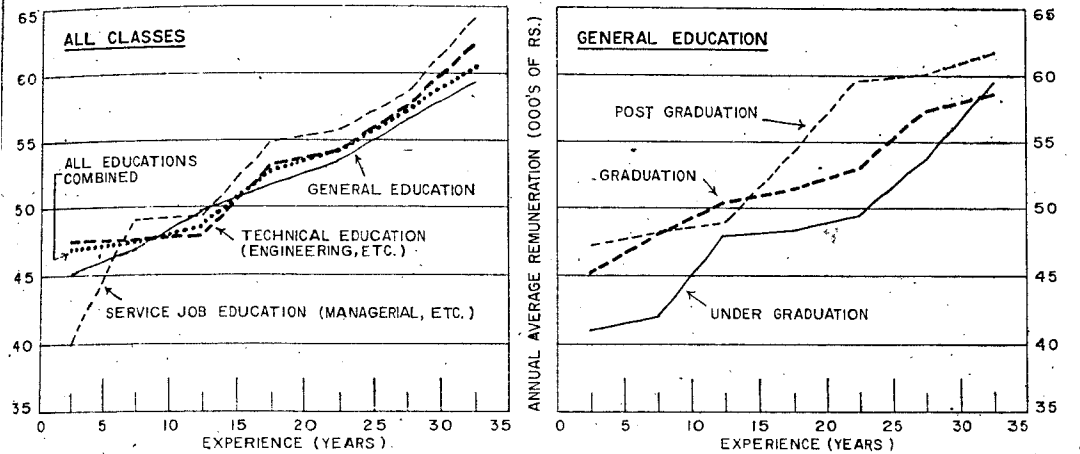


EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)

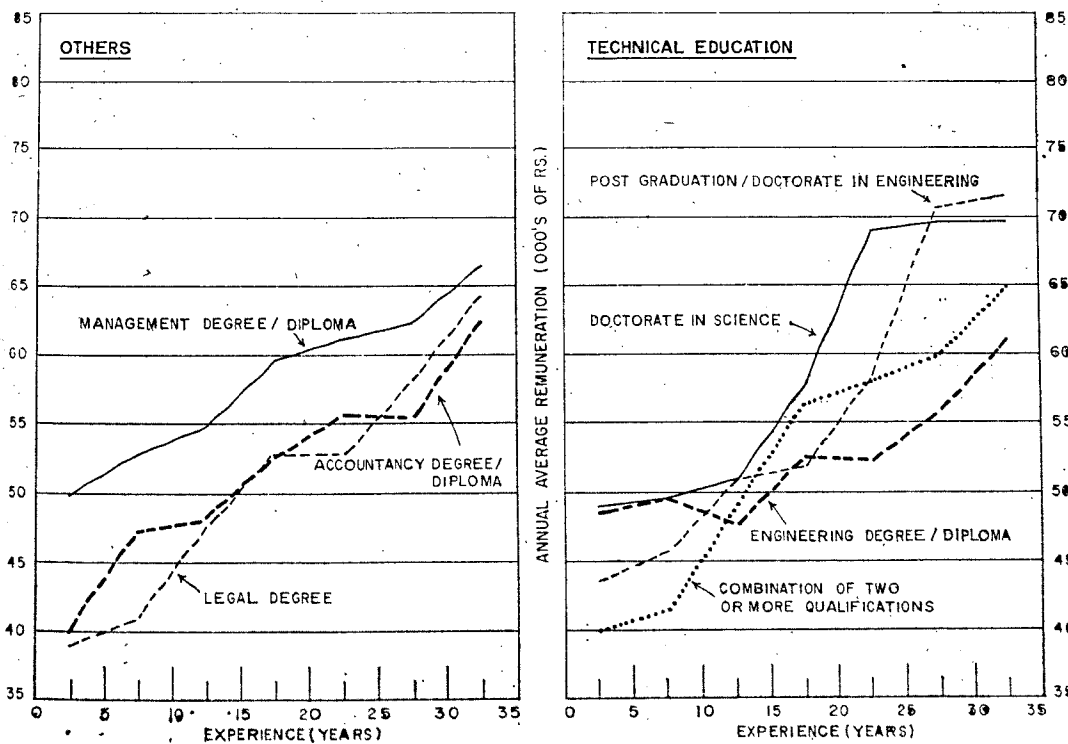


5: NON-MONOPOLY COMPANIES



EXPERIENCE PROFILES OF EARNINGS OF HIGH-SALARIED EMPLOYEES BY TYPE OF COMPANIES

(Annual average earnings of high-salaried employees classified by years of working experience for various indicated educational attainment groups)



An important limitation is to be borne in mind while making a comparison of the results of this study with those of the study of Jacob Mincer referred to above. The present study relates to that segment of employees whose educational level exceeds atleast 12 years of schooling and whose remuneration level was higher than Rs. 3000/- per month. The constituents of the sample, thus form the upper strata of the population where the minimum education is the matric stage and minimum earning is thirty five times per capita income of the country. Mincer's study relates to the earning distribution that covers the entire population where education level of workmen could range between zero to above 17 years of schooling. At lower education level the return to investment in schooling could be higher and it may taper off as this level becomes higher. Similarly there could be negative interaction effect between earnings and composite value of education and experience. Thus at higher level of education, the same level of experience may fetch lower returns. As such the overall rates of returns calculated in the two studies are not comparable. Detailed discussion on the estimational aspects of the regression equations, rates of return, etc. is given in the Appendix.

The rate of return on post schooling investment was in the range 0.9% to 1.1% per annum (worked out from semi-logarithmic equations) and was considerably lower than the return on schooling investment at about 2.4% (Table 13). The rate of return on post-schooling investment in the case of foreign companies (in the range of 1.2 to 1.5%) was comparatively higher than in the case of Indian companies (0.7 to 0.9%). Likewise the rate of return to schooling in the case of foreign companies was much higher at about 3.5% than that of Indian companies at about 1.4%. Similarly the rates of return on schooling and post-schooling investment in the case of monopoly companies were higher than respective rates of return in the case of non-monopoly companies. While the rate of return on post-schooling investment for monopoly companies was in the range of 0.9 to 1.2%, in the case of non-monopoly companies it was in the range of 0.9 to 1.0%. The rates of return to schooling in the case of the former was significantly higher at 2.8 per cent than that for the latter at 1.7%.

An attempt is also made to compare these rates of return for three broad categories of industries viz., (1) Traditional industries comprising cotton textiles, tea plantations, paper and paper products, (2) Technology oriented industries comprising electrical machinery, apparatus and appliances, basic industrial chemicals and machinery other than electrical and transport and (3) Others, comprising

Table 13: Rates of return on education & experience*

Equations	1970-71									
	Indian companies (7040)	Foreign companies (5511)	All companies (12551)	Monopoly companies (8800)	Non-monopoly companies (3751)					
	XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	
$\text{Log REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$	0.74	1.45	1.22	3.52	0.90	2.42	0.94	2.76	0.85	1.75
$-(0.01) \text{XEP}$										
$\text{Log REN} = a + b_1 e + b_2 \text{EDU} + b_3 \text{EDUD}$	0.90	1.43	1.52	3.52	1.12	2.42	1.15	2.76	1.04	1.73
$\text{REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$	1.18	1.94	2.68	3.77	1.63	2.79	1.75	3.23	1.42	1.94
$-(0.01) \text{XEP}$										
$\text{REN} = a + b_1 e + b_2 \text{EDU} + b_3 \text{EDUD}$	1.46	1.91	3.54	3.77	2.07	2.77	2.22	3.21	1.79	1.91

REN: Gross earnings; XEP: Experience in years; EDU: Education in years; EDUD: Dummy for type of educational qualification required. e: Base of natural logarithm.

* brackets relate to the number of observations.

Mincer's study for the U.S., the estimated rate of return on schooling investment varied from 14 per cent (12 years of schooling) to 19 per cent (12 years of schooling), the level of experience being zero. The rate of return on schooling was 2.6—2.9 per cent with value of Ko being presumed to be equal 1, (vide pages 92—94).

trading, motor vehicles and medicines and pharmaceutical preparations. The rates of return for these categories of industries are worked out as the simple average of the rates of return of the constituent industries and these are given in Statement B of the Appendix. The rates of return on education and experience for employees in technology oriented industries were generally higher than in traditional and 'other industries'. This feature was observed in respect of Indian, monopoly and non-monopoly companies. However, in case of foreign companies the rates of return on education and experience were distinctly higher for traditional industries than for technology oriented industries. Generally the rates of return observed in the case of 'other industries' were the lowest as amongst the industry categories considered except the non-monopoly group; under this group, the rate of return on post-schooling investment was the highest for 'technology oriented industries' while return to schooling was the highest in the case of 'other industries'.†

The relative earnings over the entire service-span of the high-salaried employees with different educational attainments are given in Table 14*.

The relative service-span earnings are found to be positively associated with the levels of specialised skills. The overall returns appear to be considerably different at the end of service careers. The net gains in the relative earnings of managers and related category of employees is more than 2.5 per cent over that of employees with general education; engineers and related technical personnel had marginally lesser advantage over 'graduates' etc. Both the absolute differences of annual average earnings by years of service experience and also the total earnings relatives for the entire service-span, showed that the employees of 'foreign' companies were in a better position as compared to similarly qualified personnel of the 'Indian' companies.

† Recent studies in U.S.A. show that experience earnings profiles differs from experience performance profiles of technical personnel over different age levels. This is inconsistent with a strictly human capital interpretation of experience earnings profiles. For an explanation of negative relation between the two see the article "Experience, Performance and Earnings" — Quarterly Journal of Economics, December 1980. Further the interpretation of rates of return to education — especially secondary and higher education — is still controversial. It is argued that educational qualifications are simply a "screening", service signalling an individual's productive qualities to an employer without actually enhancing them. Paul Taubman's work in this connection is significant.

* A better evaluation would be to obtain the total discounted value of earnings of employees each year for the entire service career. This would take into account the varying pattern of earnings of each category over the service span.

Table 14: Relative earnings profiles for various educational qualification groups of high-salaried employees by types of companies

Educational qualifications	Type of company				
	Indian companies	Foreign companies	All companies	Monopoly companies	Non-monopoly companies
	1.	2.	3.	4.	5.
1. Technical education (engineering, etc.) over All educations combined	1.0023	1.0458	1.0142	1.0172	1.0054
2. Service job education (managerial, etc.) over All educations combined	0.9692	1.0652	1.0090	1.0126	1.0095
3. General education over All educations combined	1.0141	0.9473	0.9842	0.9757	0.9853
4. Technical education (engineering, etc.) over Service job education (managerial, etc.)	1.0342	0.9818	1.0051	1.0046	0.9960
5. Technical education (engineering, etc.) over General education	0.9884	1.1040	1.0305	1.0425	1.0204
6. Service job education (managerial, etc.) over General education	0.9568	1.1245	1.0252	1.0378	1.0245

HIGH SALARIED EMPLOYEES

Likewise, 'monopoly' companies seemed to be paying better to their employees as compared to those employed in 'non-monopoly' companies. Among the various educational qualification categories persons having 'service job education (managerial, etc.)' had the highest growth rate in their remunerations; over the service-span this worked out to above 9 per cent as compared to the rate of 6 per cent for employees with 'technical education (engineering, etc.)' and of about 4 per cent for those having 'general education' (Table 15). At lower levels of aggregation also, significant differences were found in the growth rates of remuneration. For example, within the technical education group, employees who were postgraduates/doctorates in engineering had the highest growth rate of around 15 per cent in their remuneration.

Table 15: Quinquennial growth rates in remuneration of high-salaried employees of various educational qualification groups by service experience — All companies (Per cent)

Educational qualification group	Quinquennial growth rates with service experience of						Overall average
	5 years to 10 years over less than 5 years	10 years to 15 years over 5 years to 10 years	15 years to 20 years over 10 years to 15 years	20 years to 25 years over 15 years to 20 years	25 years to 30 years over 20 years to 25 years	30 years and above over 25 years to 30 years	
	1.	2.	3.	4.	5.	6.	7.
Technical education (engineering, etc.)	+6.1	+3.0	+6.4	+8.9	+8.4	+3.4	+6.0
Service job education (managerial, etc.)	+15.7	+9.3	+12.2	+5.4	+10.0	+3.7	+9.4
General education	+3.3	+4.1	+4.1	+8.1	+2.4	+2.8	+4.1
All educations combined	+5.4	+4.1	+6.8	+7.9	+6.1	+1.7	+5.3

High-salaried employees and nature of job

The average remuneration of high-salaried employees according to the functional nature of work performed was already indicated. The table 16 shows that the highest proportion of such employees

Table 16 : Percentage distribution of high-salaried employees classified by nature of job — type of company/industry-group
(Per cent)

Type of company/ industry group	Nature of job								Total
	Top management	Finance	Personal/legal administration	Marketing	Technical	Research/development/training	Others	Information not available	
	1.	2.	3.	4.	5.	6.	7.	8.	9.
Indian companies	20.1	7.0	9.5	10.1	34.2	3.3	15.4	0.3	100.0
Foreign companies	11.1	9.3	11.8	19.8	35.1	5.7	7.2	0.1	100.0
All companies	16.5	7.9	10.4	14.0	34.6	4.3	12.1	0.2	100.0
Monopoly companies	11.8	8.3	10.4	13.9	36.4	4.4	16.6	0.1	100.0
Non-monopoly companies	28.3	6.9	10.4	14.4	30.0	3.8	5.7	0.4	100.0
Agriculture and allied activities	26.2	6.1	23.2	17.4	10.3	2.2	14.2	0.5	100.0
Mining and quarrying	45.8	4.2	12.5	—	33.3	4.2	—	—	100.0
Manufacturing	17.4	8.1	10.4	14.8	37.9	4.9	6.0	0.2	100.0
Other activities	10.4	7.1	8.4	9.6	22.2	1.5	40.7	0.1	100.0

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was in charge of technical jobs relating to on-line production, quality control, and maintenance of equipment, etc. Personnel classified as 'top management' (with designations such as 'president', 'managing director', 'director' and 'general manager', etc., generally constituted 10 per cent to 25 per cent of the total high-salaried employees in various industries. The proportion of personnel in charge of 'marketing' and 'financial management' responsibilities ranked next.

High-salaried employees, service experience and age

An idea of the appointment and retirement policies adopted by the companies in regard to employees drawing annual remuneration of Rs. 36,000 or more, can be studied, to some extent, by an analysis of the distribution of such employees by their service experience and age (Table 17).

It was observed that almost in all the industries studied, there was a large proportion of high-salaried employees, with service experience of 15 years to 30 years. Further, a considerable percentage of the high-salaried personnel had put in 30 years or more of service. At the other end, employees with experience of less than 5 years accounted for less than one per cent of all the high-salaried personnel; the proportion of those with experience of 5 years to 10 years was also low (less than 6 percent), 'shipping' industry being the only exception. As can be expected, remuneration was found to be highly positively correlated with the service experience of the employees.

Summary and conclusions

The paper discusses the number and remuneration of high-salaried employees in their relation with the characteristics of the companies as well as educational and other background. A high-salaried employee is one who draws a remuneration (salary and value of perquisites calculated in accordance with the provisions of Income-Tax Act) of Rs. 3,000 or more per month if employed for part of the year and Rs. 36,000 or more per annum if employed throughout the year.

About three-fourths of the companies studied, employed high-salaried personnel (i.e. with the above salaries). The proportion of companies hiring such persons was more in 'foreign' and 'monopoly' companies as compared to 'Indian' and 'non-monopoly' companies. Companies with high-salaried employees on their payrolls were bigger in size (paid up capital basis) than the companies who do not have any high-salaried employee. The number of high-salaried employees was positively related to the size of the companies. About

Table 17: Percentage distribution of high-salaried employees classified by service experience — type of company/industry-group

(Per cent)

Type of company/ industry group	Service experience (years)								Total
	Less than 5	5-10	10-15	15-20	20-25	25-30	30 and above	Information not available	
	1.	2.	3.	4.	5.	6.	7.	8.	9.
Indian companies	1.4	4.6	10.1	18.3	20.0	15.0	18.6	12.1	100.0
Foreign companies	1.3	4.2	9.6	17.6	20.4	15.9	21.1	9.8	100.0
All companies	0.9	4.4	11.7	20.8	21.1	15.6	16.8	8.6	100.0
Monopoly companies	1.1	4.7	12.0	20.3	20.4	15.2	16.3	10.1	100.0
Non-monopoly companies	0.4	3.5	11.0	22.3	22.9	16.8	18.3	4.9	100.0
Agriculture and allied activities	0.7	5.1	15.2	24.9	20.0	14.9	16.4	2.7	100.0
Mining and quarrying	—	—	4.2	25.0	33.3	29.2	8.3	—	100.0
Manufacturing	0.3	3.2	11.7	22.6	22.9	16.1	17.6	5.5	100.0
Other activities	4.0	10.0	10.9	11.6	12.8	13.1	13.6	24.2	100.0

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75 per cent of the companies employing high-salaried personnel, had 14 or less such employees per company. A greater proportion of companies in 'shipping', 'motor vehicles' and 'medicines and pharmaceutical preparations' and 'other basic industrial chemicals' industries had relatively more high-salaried personnel.

The average annual gross remuneration per high-salaried personnel employed for the whole year worked out to Rs. 53,100. While the average remuneration was higher in 'foreign' companies as compared to 'Indian' companies, there was no significant difference in the same between 'monopoly' and 'non-monopoly' companies. The highest remuneration was paid by 'foreign' companies of 'motor vehicles' industry. 'Tea plantations', 'other basic industrial chemicals' and 'paper and paper products' under 'foreign' and 'Indian' companies, paid relatively better remuneration.

More than one-fourth of the employees studied, belonged to the annual remuneration range of Rs. 36,000 to Rs. 42,000. The proportion of the employees declined steadily with the increase in the remuneration-level excepting for the range Rs. 60,000 to Rs. 72,000 but rose at the highest range of remuneration (Rs. 120 thousands and above). A clear demarcating line appeared at the annual remuneration range of Rs. 54,000 to Rs. 60,000 in respect of share by number and remuneration. The employees upto this level were proportionately numerous compared to the share in remuneration. The inequalities in the remuneration received can be seen from the fact that while 63 per cent of the employees, falling in the lowest three remuneration ranges, accounted for about 48 per cent of the total remuneration, 6 per cent of the employees, who belonged to the highest three remuneration ranges, shared among themselves, as high as 15 per cent of the total remuneration.

Qualification-wise, while engineering degree or diploma holders accounted for the highest proportion of the employees, a significant proportion were also undergraduates or graduates. The "earnings profiles" of the high-salaried employees with different educational qualifications showed that work-experience and acquisition of sophisticated skills improved per annum earnings of employees in the later part of their careers. The relative earnings over the entire service period, brings out, the comparative advantage the better qualified executives have in terms of the total remuneration earned. Again employees of 'foreign' companies and 'monopoly' companies showed better 'earnings profiles' both in absolute and relative terms as compared to their counterparts in 'Indian' and 'non-monopoly' companies, respectively.

Employees in the 'top management' category, designated as 'president', 'chairman', 'managing director', 'director', etc., and their deputies constituted between 10 per cent to 25 per cent of all the high-salaried employees in various industries.

A majority of employees had service experience of 15 years to 30 years. However, employees who had put-in 30 years or more of service were about 17 per cent of total. On the other hand, employees with experience of less than 5 years, constituted a meagre one per cent. On the basis of available scanty information regarding age, it was found that more than 5 per cent of the high-salaried employees were aged 60 years or more.

The relationship between remuneration on one hand and educational qualifications and related skills and the service experience on the other, shows that an year of additional education in general gave a return of about 1 percent per annum while addition of an year of experience yielded 2.4 percent per annum. These returns have to be interpreted in the context that the sample of employees studied form the upper strata of the society with a minimum education at matric level and whose minimum annual remuneration is Rs. 36,000. It was found that the personnel in the category of 'top management' out-classed other categories in terms of high remuneration. No significant differences in the average annual remunerations of other types of personnel such as technical, finance, legal, administration, marketing, etc. were noticed. The type of education received by itself (general, technical, business management oriented) does not seem to add significantly to the annual remuneration so long as the years of schooling and experience remained the same.

APPENDIX

A note on estimational aspects of rates of return

In his pioneering work entitled "Schooling, Experience and Earnings" Jacob Mincer sought to throw some light on the relationship between schooling investments and earnings over the life cycle. The basic objective of his work as spelt out by him was "to gain some understanding of the observed distributions and structures of earnings from the information on the distribution of accumulated net investments in human capital among workers". The concept basic to this study was the human capital function by which the two distributions viz., that of earnings and net investments in human capital were related. The regression analysis attempted for the current study was carried mainly on the lines of the work of Jacob Mincer (Chapter 5 in particular) referred to above. A brief outline of the same is given in the following paragraphs.

In estimating the relevant earnings function, it is necessary that we have some idea of the form of experience function which in turn is dependent on the form of life cycle investment function. Though the economic theory of optimising behaviour implies that investment in human capital declines over the life cycle, say, after the initial stage, it does not, however, provide an indication about the form of investment function. Keeping the mathematical simplicity and statistical tractability in view, linear and log-linear experience functions of net investment (C_t) and time equivalent investment ratios (K_t) were formulated as follows :

$$1) \quad C_t = C_0 - \frac{C_0}{T} t$$

$$2) \quad C_t = C_0 e^{-\beta t}$$

$$3) \quad K_t = K_0 - \frac{K_0}{T} t$$

$$4) \quad K_t = K_0 e^{-\beta t}$$

where C_0 and K_0 are the instalment of investment and investment to earnings ratio during the initial period of experience $t=0$. T is the total period of positive net investment; e is the base of natural logarithms and β is a parameter indicating the rate of decline of investment. Taking the investment and earnings functions as continuous functions of time, the gross earnings function will be :

$$E_t = E_s + r_t \int_{j=0}^t C_j dj$$

where E_s : earnings obtainable after s years of schooling with no further investments, r_t : the rate of return to post schooling investment which is assumed to be equal in all periods t . The logarithmic version is :

$$\ln E_t = \ln E_s + r_t \int_0^t K_j dj$$

By substitution of the expressions for C_t and K_t into the arithmetical and logarithmic earnings functions, respectively, the earnings functions are transformed from functions depending on investment variables C_t or K_t which cannot be directly observed, into functions of years of experience.

After evaluating the integral and rearranging the terms, we have the following four gross earnings and gross log-earnings functions, which could be used for further empirical analysis.

i) assuming linear decline in net investments.

$$(a) E_t = E_s + rCo t - \frac{rCo}{2T} t^2$$

$$(b) \ln E_t = \ln E_s + rKot - \frac{rCo}{2T} t^2$$

(ii) assuming exponential decline in investments

$$(a) E_t = E_s + \frac{rCo}{\beta} - \frac{rCo}{\beta} e^{-\beta t}$$

$$(b) \ln E_t = \ln E_s + \frac{rKo}{\beta} - \frac{rKoe^{-\beta t}}{\beta}$$

($\ln$ = Logarithm to the base e)

Where t : years of experience

s : education in years.

Arguing that it was the changes in the net investments in human capital that produce the changes in earnings, Jacob Mincer used the net concept in most of the analysis. Keeping in view the limitations of the data of the present study, a few modifications in the forms of the equations have been incorporated. The regression analysis for the present study relates to gross earnings. With a view to segregating the influence of increased technical competence through the acquisition of higher sophisticated skills on the earnings, a dummy variable (S_d) was also introduced in the equations.

Taking $E_s = E_o + (r_s \bar{E}) S$

and $\ln E_s = \ln E_o + r_s S$

where r_s is the rate of return to schooling investment and E_o is the initial earnings. The four equations chosen for the present study are as given below:

$$\text{Equation 1: } \ln E_t = a' + r_s S + r_t K_o t + b.Sd$$

$$\text{Equation 2: } \ln E_t = a' + r_s S - \frac{r_t K_o}{\beta} e^{-\beta t} + b.Sd$$

$$\text{Equation 3: } E_t = a + \bar{E} r_s S + r_t C_o t + b.Sd$$

$$\text{Equation 4: } E_t = a + \bar{E} r_s S - \frac{r_t C_o}{\beta} e^{-\beta t} + b.Sd$$

Where; E_t : Gross earnings with t years of experience

S : education in years

Sd : dummy for type of educational qualification acquired

$\bar{E}$: average value of E_t

r_s : rate of return on s years schooling investment

r_t : rate of return on post-schooling investment.

The experience variable $e^{-\beta t}$ was iterated for different values of β ($=0.01, 0.2, 0.3, 0.4$ and 0.5). Keeping in view the explanatory power ($\bar{R}^2$) and the rates of return worked out from the equations, the value 0.01 was finally chosen for β .

In order to calculate the rates of return from these equations, we require information regarding C_o and K_o which is not available. To obviate this difficulty and to be on the conservative side, the value of K_o ($= \frac{C_o}{E_o}$) is assumed to be equal to 1. In other words the investments and the earnings in the initial year are assumed to be equal and are estimated from the equations. Further, as the study relates to high-salaried employees it is presumed that the minimum education of these employees to be at the under-graduate level, which is considered to be equivalent to the minimum of 12

years of schooling and for the education dummy variable, its average value is substituted. Thus the value E_o is computed as

$$E_o = a + (\bar{E}r_s) 12 + \bar{S}d.b$$

Thus the rate of return relating to pre-schooling investment in the semi-logarithmic equations is given by coefficient of the variable 'S'. However the rate of return relating to post-schooling investment is worked out from the coefficients of the variable $\frac{-\beta t}{e}$, which is

equal to $\frac{r_t K_o}{\beta}$. In the case of linear equations, the rate of return relating to schooling investment is obtained by dividing the coefficients of the variable 'S' by the average value of the remuneration. The rate of return on post schooling investment is obtained by dividing the coefficient of the variable 't' by value E_o , worked out as explained above. It may be pointed out that the semi-logarithmic equations are worked out taking logarithms to the base 10. However for working out the rates of return for these equations the values of coefficients are divided by 0.434295 ($=\log_{10} e$) for converting them to the natural logarithmic values.

The four regression equations explained above are presented for types of companies viz., (i) Indian companies, (ii) foreign companies, (iii) monopoly companies and (iv) non-monopoly companies in addition to all companies (Statement A). However only the rates of return worked out from these equations in respect of selected nine industries for each of the types of companies are presented with a view to bringing to the fore some of the inter-industry differences (Statement B).

Statement A: Regressions of gross earnings of the high-salaried employees on schooling and experience in years and the related rates of return according to types of companies

$$\text{EQUATION 1: } \log_{10} \text{REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$$

Types of companies	Dependent variable	Constant	EDU	XEP	EDUD	$\bar{R}^2$	Standard error of estimate	Mean			Rates of return (percent per annum)	
								Remuneration (Log ₁₀ REN)	Experience (XEP)	Qualification (EDU)	Experience	Qualification
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
All companies	Regression coefficient	1.4669	0.0105	0.0039	—0.0077							
	t-statistic	127.246	12.918	25.678	3.342	0.0589	0.12	1.71	21.59	16.50	0.90	2.42
	Elasticity	0.8573	0.1016	0.0498	—0.0087							
Indian companies	Regression coefficient	1.5462	0.0063	0.0032	—0.0077							
	t-statistic	100.783	5.721	16.849	2.448	0.0392	0.12	1.71	21.96	16.48	0.74	1.45
	Elasticity	0.9060	0.0613	0.0414	—0.0086							
Foreign companies	Regression coefficient	1.3651	0.0153	0.0053	—0.0071							
	t-statistic	78.265	12.827	20.824	2.071	0.1024	0.12	1.72	21.12	16.52	1.22	3.52
	Elasticity	0.7951	0.1477	0.0651	—0.0078							
Monopoly companies	Regression coefficient	1.4413	0.0120	0.0041	—0.0089							
	t-statistic	101.826	11.988	22.323	3.115	0.0653	0.12	1.71	21.37	16.55	0.94	2.76
	Elasticity	0.8427	0.1165	0.0508	—0.0100							
Non-monopoly companies	Regression coefficient	1.5186	0.0076	0.0037	—0.0056							
	t-statistic	76.453	5.426	12.772	1.411	0.0455	0.12	1.71	22.12	16.39	0.85	1.75
	Elasticity	0.8864	0.0726	0.0475	—0.0061							

Statement A (Continued) :

EQUATION 2: $\log_{10} \text{REN} = a + b_1 e^{-0.01 \text{XEP}} + b_2 \text{EDU} + b_3 \text{EDUD}$												
Types of companies	Dependent variable	Constant	-0.01 XEP e	EDU	EDUD	R ²	Standard error of estimate	Mean			Rates of return (Per cent per annum)	
								Remu- neration (Log ₁₀ REN)	Expe- rience (e - 0.01 XEP)	Qualifi- cation EDU)	Expe- rience	Qualifi- cation
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
All companies	Regression coefficient	1.9455	-0.4856	0.0105	-0.0077							
	t-statistic	121.878	25.731	12.844	3.316	0.0591	0.12	1.71	0.81	16.50	1.12	2.42
	Elasticity	1.1369	-0.2293	0.1009	-0.0086							
Indian companies	Regression coefficient	1.9338	-0.3918	0.0062	-0.0076							
	t-statistic	93.664	16.737	5.633	2.420	0.0388	0.12	1.71	0.81	16.48	0.90	1.43
	Elasticity	1.1331	-0.1849	0.0603	-0.0085							
Foreign companies	Regression coefficient	2.0109	-0.6580	0.0153	-0.0071							
	t-statistic	79.721	21.051	12.843	2.073	0.1024	0.12	1.72	0.81	16.52	1.52	3.52
	Elasticity	1.1712	-0.3110	0.1476	-0.0078							
Monopoly companies	Regression coefficient	1.9342	-0.5003	0.0120	-0.0088							
	t-statistic	102.071	22.440	11.941	3.096	0.0659	0.12	1.71	0.81	16.55	1.15	2.76
	Elasticity	1.1309	-0.2369	0.1159	-0.0099							
Non-monopoly companies	Regression coefficient	1.9643	-0.4518	0.0075	-0.0055							
	t-statistic	65.867	12.676	5.367	1.390	0.0448	0.12	1.71	0.80	16.39	1.04	1.73
	Elasticity	1.1465	-0.2119	0.0714	-0.0060							

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Statement A (Continued) :

$$\text{EQUATION 3: } \text{REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$$

Types of companies	Dependent variable	Constant	EDU	XEP	EDUD	R ²	Standard error of estimate	Mean			Rates of return (Per cent per annum)	
								Remuneration (REN)	Experience (XEP)	Qualification (EDU)	Experience	Qualification
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
All companies	Regression coefficient	18.9355	1.5054	0.5687	—1.1342							
	t-statistic	10.515	11.818	23.694	3.133	0.0502	19.00	53.88	21.59	16.50	1.63	2.79
	Elasticity	0.3514	0.4609	0.2279	—0.0403							
Indian companies	Regression coefficient	28.8933	1.0335	0.4549	—1.4164							
	t-statistic	11.804	5.842	14.933	2.834	0.0317	19.01	53.20	21.96	16.48	1.18	1.94
	Elasticity	0.5432	0.3202	0.1878	—0.0511							
Foreign companies	Regression coefficient	5.6146	2.0659	0.7770	—0.7342							
	t-statistic	2.112	11.331	20.068	1.411	0.0900	18.77	54.76	21.12	16.52	2.68	3.77
	Elasticity	0.1025	0.6234	0.2996	—0.0255							
Monopoly companies	Regression coefficient	15.2157	1.7380	0.5850	—1.3703							
	t-statistic	6.711	10.800	20.067	3.002	0.0529	19.57	53.83	21.37	16.55	1.75	3.23
	Elasticity	0.2827	0.5342	0.2322	—0.0491							
Non-monopoly companies	Regression coefficient	26.3214	1.0460	0.5350	—0.6886							
	t-statistic	9.067	5.141	12.704	1.185	0.0449	17.57	54.01	22.12	16.39	1.42	1.94
	Elasticity	0.4873	0.3174	0.2191	—0.0239							

Statement A (Concl'd.) :

$$\text{EQUATION 4: } \text{REN} = a + b_1 e^{-0.01 \text{ XEP}} + b_2 \text{EDU} + b_3 \text{EDUD}$$

Types of companies	Dependent variable	Constant	$-0.01 \lambda EP$	EDU	EDUD	R^2	Standard error of estimate	Mean			Rates of return (Per cent per annum)	
			e			Remune-ration (REN)		Expe-rience $-0.01 \lambda EP$ (e)	Qualifi-cation (EDU)	Expe-rience	Qualifi-cation	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
All companies	Regression coefficient	87.8149	—69.8457	1.4941	—1.1231							
	t-statistic	35.216	23.691	11.740	3.103	0.0502	19.00	53.88	0.81	16.50	2.07	2.77
	Elasticity	1.6297	—1.0474	0.4575	—0.0399							
Indian companies	Regression coefficient	83.6232	—55.2825	1.0183	—1.4034							
	t-statistic	25.384	14.800	5.759	2.807	0.0310	19.02	53.20	0.81	16.48	1.46	1.91
	Elasticity	1.5720	—0.8368	0.3155	—0.0507							
Foreign companies	Regression coefficient	100.3257	—96.4317	2.0629	—0.7310							
	t-statistic	26.089	20.236	11.331	1.405	0.0900	18.76	54.76	0.81	16.52	3.54	3.77
	Elasticity	1.8320	—1.4291	0.6225	—0.0254							
Monopoly companies	Regression coefficient	86.0785	—71.8631	1.7270	—1.3597							
	t-statistic	28.353	20.120	10.744	2.980	0.0531	19.57	53.83	0.81	16.55	2.22	3.21
	Elasticity	1.5991	—1.0812	0.5309	—0.0487							
Non-monopoly companies	Regression coefficient	91.0704	—65.6241	1.0336	—0.6763							
	t-statistic	20.895	12.599	5.082	1.164	0.0439	17.58	54.01	0.80	16.39	1.79	1.91
	Elasticity	1.6862	—0.9764	0.3136	—0.0235							

REN: Gross remuneration (Rs in '000s)
XEP: Experience in years (t)

EDU: Education in years (s)
EDUD: Dummy for type of educational qualification acquired (Sd)

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Statement B : Rates of return on schooling and post schooling investment estimated from four different regressions@ of gross earnings of high salaried employees according to industry/industry categories and types of company.

(Per cent per annum)

Industry/industry category	Indian companies								
	Number of obser- vations	Equation 1		Equation 2		Equation 3		Equation 4	
		XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU
		1.	2.	3.	4.	5.	6.	7.	8.
Industries :									
Tea plantations	171	1.47	1.06	1.79	0.97	2.59	1.11	3.23	1.01
Cotton textiles	835	0.57	0.85	0.71	0.85	0.75	0.34	0.96	0.33
Motor vehicles	473	0.69	1.17	0.88	1.17	1.12	1.51	1.44	1.52
Electrical machinery, apparatus and appliances, etc.	355	1.27	1.49	1.58	1.45	2.47	1.89	3.23	1.85
Machinery (other than transport and electrical)	663	1.59	3.18	1.98	3.13	4.47	3.73	6.01	3.67
Other basic industrial chemicals	267	0.66	4.17	0.82	4.17	0.49	8.64	0.61	8.63
Medicines and pharmaceutical preparations	111	0.31	1.17	0.37	1.13	0.47	1.46	0.55	1.43
Paper and paper products	318	1.08	2.56	1.35	2.53	2.02	2.75	2.60	2.72
Trading	238	0.83	2.62	1.03	2.60	1.69	3.87	2.17	3.83
Industry categories									
Traditional		1.04	1.49	1.28	1.45	1.79	1.40	2.26	1.35
Technology oriented		1.17	2.95	1.46	2.92	2.48	4.75	3.28	4.72
Others		0.61	1.65	0.76	1.63	1.09	2.28	1.39	2.26

Statement B (Continued) :

Industry/industry category	(Per cent per annum)								
	Foreign companies								
	Number of obser- vations	Equation 1		Equation 2		Equation 3		Equation 4	
		XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU
	10.	11.	12.	13.	14.	15.	16.	17.	18.
Industries :									
Tea plantations	137	0.92	4.01	1.17	4.08	1.66	3.45	2.25	3.55
Cotton textiles	37	3.62	4.05	4.38	3.78	*	*	*	*
Motor vehicles	195	1.80	3.66	2.18	3.62	4.20	3.85	5.22	3.76
Electrical machinery, apparatus and appliances, etc.	503	1.22	1.34	1.51	1.31	2.20	1.62	2.89	1.62
Machinery (other than transport and electrical)	447	1.57	2.86	1.94	2.86	3.91	3.03	5.26	3.01
Other basic industrial chemicals	634	1.43	4.97	1.75	5.00	3.50	5.20	4.69	5.22
Medicines and pharmaceutical preparations	712	0.85	3.34	1.05	3.34	1.75	3.43	2.21	3.41
Paper and paper products	32	1.09	4.97	2.32	4.97	10.57	5.76	17.00	5.76
Trading	235	1.11	2.00	1.38	2.03	2.15	2.56	2.86	2.59
Industry categories									
Traditional		2.14	4.34	2.62	4.28	6.12	4.61	9.62	4.65
Technology oriented		1.41	3.06	1.73	3.06	3.20	3.28	4.28	3.28
Others		1.25	3.00	1.54	3.00	2.70	3.28	3.43	3.25

HIGH SALARIED EMPLOYEES

Statement B (Continued) :

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Industry/industry categories	(Per cent per annum)								
	Number of observations	Monopoly companies							
		Equation 1		Equation 2		Equation 3		Equation 4	
		XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU
	19.	20.	21.	22.	23.	24.	25.	26.	27.
Industries :									
Tea plantations	176	0.87	4.79	1.08	4.77	1.57	4.04	2.02	4.04
Cotton textiles	524	1.04	0.46	1.30	0.46	*	*	*	*
Motor vehicles	624	0.81	1.75	1.00	1.75	1.21	2.11	1.51	2.09
Electrical machinery, apparatus and appliances, etc.	550	1.22	1.27	1.53	1.24	2.37	1.73	2.70	1.72
Machinery (other than transport and electrical)	711	1.57	3.02	1.95	2.99	4.15	3.56	5.61	3.52
Other basic industrial chemicals	790	1.15	4.88	1.43	4.90	2.41	6.46	3.21	6.49
Medicines and pharmaceutical preparations	320	0.60	3.32	0.73	3.32	1.08	3.53	1.35	3.52
Paper and paper products	241	1.38	2.33	1.78	2.35	2.88	2.49	4.10	2.51
Trading	377	0.83	2.35	1.06	2.37	1.71	3.29	2.27	3.32
Industry categories									
Traditional		1.10	2.53	1.39	2.53	2.22	3.27	3.06	3.28
Technology oriented		1.31	3.06	1.64	3.04	2.98	3.92	3.84	3.91
Others		0.75	2.48	0.93	2.48	1.33	2.98	1.71	2.98

Statement B (Concl.)

(Per cent per annum)

Industry/industry categories	Number of observations	Non-monopoly companies							
		Equation 1		Equation 2		Equation 3		Equation 4	
		XEP	EDU	XEP	EDU	XEP	EDU	XEP	EDU
	28.	29.	30.	31.	32.	33.	34.	35.	36.
Industries :									
Tea plantations	132	1.65	0.99	2.05	0.96	3.24	1.32	4.30	1.28
Cotton textiles	348	0.08	1.78	0.10	1.78	0.06	1.55	0.08	1.55
Motor vehicles	44	1.12	3.25	1.39	3.23	2.94	3.25	3.90	3.22
Electrical machinery, apparatus and appliances, etc.	308	1.18	1.81	1.45	1.79	2.24	2.00	2.89	1.97
Machinery (other than transport and electrical)	399	1.53	2.81	1.88	2.77	3.73	2.82	4.92	2.77
Other basic industrial chemicals	111	0.99	3.63	1.20	3.60	2.18	3.98	2.74	3.94
Medicines and pharmaceutical preparations	503	0.81	2.42	1.00	2.41	1.55	2.42	1.96	2.41
Paper and paper products	109	0.89	4.57	1.05	4.52	1.96	5.23	2.31	5.17
Trading	96	0.97	3.65	1.17	3.59	1.86	4.38	2.31	4.31
Industry categories									
Traditional		0.88	2.45	1.07	2.42	1.75	2.70	2.23	2.67
Technology oriented		1.23	2.75	1.51	2.72	2.72	2.94	3.52	2.90
Others		0.97	3.11	1.19	3.08	2.12	3.35	2.72	3.32

HIGH SALARIED EMPLOYEES

@Equation 1:— $\log \text{REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$ Equation 3:— $\text{REN} = a + b_1 \text{XEP} + b_2 \text{EDU} + b_3 \text{EDUD}$ Equation 2:— $\log \text{REN} = a + b_1 e^{-0.01 \text{XEP}} + b_2 \text{EDU} + b_3 \text{EDUD}$ Equation 4:— $\text{REN} = a + b_1 e^{-0.01 \text{XEP}} + b_2 \text{EDU} + b_3 \text{EDUD}$

REN: Gross earnings (Rs. in '000s); XEP: Experience in years (t); EDU: Education in years (s);

EDUD: Dummy for type of educational qualifications acquired (Sd).

e : Base of natural logarithm.

* : The rates of return are not worked out as the coefficients of the independent variables have wrong signs.

FINANCING THROUGH TRADE CREDIT : A REVIEW OF THE CORPORATE SECTOR

V. M. Sundar Raj*

Trade credit is the major source of short-term finance, apart from bank credit, available to business enterprises. The movements in trade credit are significant since the borrowing units can reduce the impact of restrictive credit policies by increasing their recourse to trade credit. When bank credit is restricted, the borrowers may attempt to improve their liquidity by increasing the volume of their purchases on credit terms and by stretching their trade creditors. The extent to which they succeed in this would depend, *inter alia*, on the relative bargaining strength of the buyers and sellers. Thus, the small suppliers to large manufacturing units may be compelled to increase their sales on credit terms and to allow a lengthening of the period of credit. The impact of restrictive credit policies could thus be shifted by the larger units to the smaller units. Trade credit is generally used, and particularly by the small firms, when bank credit is not available or when there are difficulties in providing adequate and acceptable security. Considerations other than the availability of bank credit could also influence the movements in trade credit. Thus, when there is a general shortage of capital, as in developing economies, it is not uncommon for trade credit to be used for financing expansion of business. Trade credit is also a method of sales promotion.

Most business enterprises are at the same time recipients as well as providers of trade credit. But, as the Radcliffe Committee had observed, it may not be correct to dismiss trade credit as an element in the monetary system on the grounds that what is owed and what is owing cancel one another out or that a business cannot manufacture credit but merely conveys to others credit that it has itself obtained from elsewhere. To quote the Radcliffe Committee, "All financial assets are simultaneously liabilities, but this does not make them any less important from the point of view of monetary authorities. An expansion in trade credit, for example, is unlikely to affect every sector of the economy in exactly the same way; some sectors find themselves net takers and others net givers of trade credit and the resulting change in relative liquidity may reinforce or thwart the policy of the authorities, especially if the two groups are not equally

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dependent on bank and other forms of credit".¹ The net position in trade credit would indicate the net flows of funds between different sectors of the economy through the mechanism of trade credit.

It should be recognised that, for the recipients, trade credit has some advantages over borrowings from banks. The suppliers generally may be more liberal than banks in the extension of credit since they are in business to sell goods and trade credit is usually viewed as an important sales tool. They would consider not only the profits on immediate transactions but also the income from future sales which are likely to come about because the customer is bound to the supplier by favourable credit relations. Another advantage of trade credit is its ready availability; it represents a continuous form of credit without any need for formal credit arrangements. For instance, the borrower does not have to arrange for documentation, offer collateral or adhere to a strict repayment schedule². On the other hand, financing through trade credit is usually more costly than borrowing from banks. To pay a monthly interest on outstanding trade credit or forgo equivalent or larger cash discounts for prompt payment would, in effect, mean a high rate per annum for short-term working capital.

Trade credit and short-term bank credit are not, however, unrelated. Bank credit is used for financing extension of trade credit. The Tandon Committee³ which had gone into this aspect had taken the view that a reasonable level of trade credit could be financed by banks. The Committee had observed, "There are three factors influencing the level of receivables viz., the normal credit in tune with the borrower's and the industry's market practices, deliberate elongation of credit, and slow billing/collection procedures. Theoretically speaking, there is no irreducible minimum in receivables as these can be brought even to zero. Receivables not in tune with the unit's and its industry's practices should not be financed by the banks". The Committee had suggested certain norms representing the maximum levels for receivables, in addition to the norms for inventories, for fifteen major industries. For the other industries, banks were to endeavour to observe the purpose and spirit behind the norms indicated by the Committee, while extending credit facilities.

1. Report of the Committee on the Working of the Monetary System (U.K.), 1959.

2. Van Horne, James C. — Financial Management and Policy, (Second Edition), 1971.

3. Report of the Study Group to Frame Guidelines for Follow up of Bank Credit (Tandon Committee), 1975.

In this article, an attempt is made to survey the use of trade credit by the corporate sector⁴ during the 'seventies. The data used are from the annual analysis of the balance sheets of public and private limited companies published in the Reserve Bank of India Bulletins. Balance-sheet data have their own limitations. Some of the items shown in the balance-sheet may not depict the true state of affairs since the firms may 'windowdress' to show reduced dependance on bank borrowings, and to indicate a better liquid position. It is also possible that the figures of sundry creditors and sundry debtors in the balance sheets may not indicate the true state of affairs. Nevertheless, balance-sheet data have to be used since they are the only source available. Balance-sheet data do not provide details about the sources of trade credit received nor about the sectors to which trade credit is provided by the corporate sector. Also, data are not available on the period-wise distribution of trade credit received and given. The data for medium and large public limited companies used here relate to 1650 companies upto 1975-76 and 1720 companies from 1975-76 to 1978-79. The data for private limited companies relate to 1001 companies upto 1975-76 and 1011 companies in the subsequent years.

Trends in Trade Credit Since 1970-71

Selected items of current liabilities and current assets of medium and large public limited companies are given in Statement I. The data reveal that the proportion of current assets financed through trade credit (sundry creditors) has increased significantly between 1970-71 and 1978-79. From 24.8 per cent of total current assets in 1970-71, sundry creditors increased to 31.1 per cent in 1978-79. Short-term bank credit showed a contrary trend declining from 32.0 per cent of total current assets in 1970-71 to 28.0 per cent in 1972-73. Subsequently, apart from 1973-74 and 1974-75 when the ratio was about 26 to 27 per cent, the ratio of short-term bank credit to total current assets remained around 28 per cent. Thus, sundry creditors, which were lower than short-term bank borrowings in 1970-71, exceeded short-term bank credit by 1978-79. Sundry creditors as proportion of inventories rose from 44.5 per cent in 1970-71 to 56.6 per cent in 1978-79.

Trade credit provided by these companies, however, showed a different trend. Sundry debtors, as proportion of total sales, declined from 13.5 per cent in 1970-71 to 11.3 per cent in 1974-75; in the subsequent years, the proportion was around 12.0 to 12.5 per cent.

⁴ For an earlier review of the use of trade credit, see 'Trade Credits — Their Significance in the Finances of Indian Companies' by Mythreyi Raman, Reserve Bank of India Bulletin, July 1963.

Within the current assets, sundry debtors declined from 23.5 per cent of total current assets in 1970-71 to 20.3 per cent in 1974-75 but rose gradually again to 24.1 per cent in 1978-79.

In the case of medium and large private limited companies also, the use of trade credit as a source for financing current assets has shown a substantial increase in the 'seventies. The main items of current liabilities and current assets of medium and large private limited companies are presented in Statement II. The data reveal that sundry creditors as proportion of total current assets rose steadily from 27.0 per cent in 1970-71 to 32.7 per cent in 1977-78 and stood at 31.8 per cent in 1978-79. Short-term bank credit as proportion of total current assets, however, remained unchanged at about 30 per cent from 1970-71 to 1976-77, declining to 27 per cent in the subsequent years. Sundry debtors, as proportion of sales, showed gradual decline from 12.2 per cent in 1970-71 to 11.5 per cent in 1978-79.

Relationship of Trade Credit to other Variables

Trade credit received and trade credit given arise out of different activities. Trade credit received originates from purchases of raw material, stores etc. and serves as a source of finance while trade credit provided is essentially a method to facilitate sales. Table 1, gives the annual variations in trade credit, inventories, sales etc.

Table 1 : Annual Increases in Trade Credit, Inventories and Sales of Medium and Large Public Limited Companies

	(Percentages)					
	Short-term Bank Borrowings	Sundry Creditors	Sundry Debtors	Inventories	Total Current Assets	Sales
1650 Cos.						
1971-72	+ 5.9	+10.3	+ 8.6	+13.1	+10.6	+12.1
1972-73	— 3.4	+ 8.6	+ 3.2	+ 5.8	+ 5.7	+11.0
1973-74	+11.0	+18.5	+ 6.2	+15.3	+15.7	+ 8.8
1974-75	+21.1	+31.2	+20.4	+28.6	+22.8	+26.2
1975-76	+16.6	+ 9.9	+19.8	+ 4.5	+ 8.1	+11.5
1720 Cos.						
1976-77	+ 7.4	+ 9.2	+17.7	+ 0.7	+ 6.6	+12.6
1977-78	+ 7.2	+13.2	+ 9.2	+ 6.3	+ 8.1	+ 9.7
1978-79	+12.8	+16.6	+ 8.0	+15.3	+11.7	+ 9.4

The data show that there is no relation between the movements in sundry creditors and in sundry debtors. Broadly, the movements in sundry creditors appear to reflect the change in inventories and

the trend in sundry debtors appear to be influenced by the movements in sales. However, these are not the only influence on trade credit received and given. Other factors such as the rate of growth and financial resources of the units also affect the trends in trade credit. It is interesting to note that from 1972-73, sundry creditors have been increasing at a faster pace than inventories.

Reasons for the increasing recourse to Sundry Creditors

The reasons for the increasing resort to trade credit by the Corporate Sector for financing current assets require to be examined. Table 2 gives the shares of short-term bank credit and sundry creditors in the financing of total current assets as well as the current ratio of medium and large public and private limited companies.

Table 2: Short-term Bank Credit and Sundry Creditors as percent of Current Assets and Current Ratio

	Public Limited Companies			Private Limited Companies		
	Short-term Bank Credit to Current Assets	Sundry Creditors to Current Assets	Current Ratio	Short-term Bank Credit to Current Assets	Sundry Creditors to Current Assets	Current Ratio
1970-71	32.0	24.8	1.28	30.0	27.0	1.11
1971-72	30.7	24.7	1.30	29.8	27.2	1.10
1972-73	28.0	25.4	1.32	29.3	27.3	1.11
1973-74	26.8	26.0	1.32	29.9	27.6	1.14
1974-75	26.4	27.8	1.31	29.3	28.7	1.14
1975-76	28.2	27.8	1.27	30.1	30.6	1.11
1976-77	28.4	28.6	1.24	30.1	31.0	1.08
1977-78	27.8	29.7	1.23	27.1	32.6	1.08
1978-79	28.1	31.1	1.21	27.5	31.8	1.09

In the case of medium and large public limited companies, the data show that during the three years 1970-71 to 1972-73 sundry creditors as per cent of current assets remained more or less unchanged at about 25 per cent while the current ratio improved from 1.28 to 1.32. Presumably reflecting the trend in the current ratio, short-term bank credit, as proportion of current assets, declined from 32.0 per cent in 1970-71 to 28.0 per cent in 1972-73. Between 1972-73 and 1978-79, the current ratio deteriorated steadily from 1.32 to 1.21. During this period, short-term bank credit as proportion of current assets remained at about 28 per cent barring 1973-74 and 1974-75 when the ratio was lower at 26—27 per cent. Sundry creditors, as proportion of total current assets, however increased continuously

from 25.4 per cent in 1972-73 to 31.1 per cent in 1978-79. The increase in financing through trade credit, accompanied by a deterioration of the current ratio since 1972-73, appears to indicate that, for public limited companies as a whole, the increased recourse to trade credit reflected largely the need to finance expansion in business in the context of a shortage in long-term funds i.e., owned funds and term borrowings.

The figures above relating to medium and large private limited companies show a somewhat different picture. Sundry creditors, as proportion of current assets, showed only modest increases in the years, 1970-71 to 1973-74; but in 1974-75 the proportion increased to 28.7 per cent from 27.6 per cent in the preceding year. The current ratio did not show any change while bank credit as percent of current assets declined from 29.9 to 29.3. Subsequently, current ratio deteriorated from 1.14 in 1974-75 to 1.08 in 1976-77, bank credit as proportion of current assets rose from 29.3 per cent to 30.1 per cent and sundry creditors from 28.7 per cent to 31.0 per cent. In 1977-78, while the current ratio did not show any change over the preceding year, bank credit as percent of current assets declined from 30.1 to 27.1 while trade credit increased from 31.0 to 32.6. In the case of private limited companies, as a whole, trade credit appears to have been used to offset short-falls in long-term funds as well as in bank credit.

Trends in the Period of Trade Credit

The period of trade credit would differ according to the prevailing business practices in the different markets and may change over the years according to the liquidity position of the suppliers and recipients. The balance sheets do not, however, provide information on the period-wise distribution of trade credit received and given. The commonly used method to assess the changes in the period of trade credit is to work out their velocity by relating sundry creditors to the purchases of raw materials, stores and spares and, sundry debtors to sales. The assumption here is that most of the purchases and sales would be on credit terms. The table below gives such data worked out on the basis of the average figures of sundry creditors and sundry debtors at the beginning and end of each year. The average rate of turnover of trade credit is expressed here in terms of the equivalent number of days for which the credit was outstanding; in other words, the figures are arrived at by dividing the number of days in a year by the average rate of turnover. Admittedly, this is not a very precise method of arriving at the average period of trade credit; the figures given below, therefore, may be

taken only as broad indicators of the trend in the period of trade credit.

Table 3: Turnover of Trade Credit

(Number of days)

	Public Limited Companies		Private Limited Companies	
	Sundry Creditors	Sundry Debtors	Sundry Creditors	Sundry Debtors
1971-72	80	45	60	42
1972-73	81	43	62	42
1973-74	83	41	59	40
1974-75	79	37	59	37
1975-76	90	40	68	40
1976-77	84	42	65	38
1977-78	84	43	67	38
1978-79	85	42	71	40

There has been a small increase during the period in the number of days for which credit became available to public limited companies, from 80-81 days in early 'seventies to around 84-85 days towards the end of the decade. In the case of private limited companies, there was a more noticeable increase in the period from 60 days to about 70 days. In the case of sundry debtors, however, there has been a small decline in the period in the case of both public limited and private limited companies.

Net Trade Credit

Net trade credit as indicated by the ratio of sundry debtors to sundry creditors would show the net inflow to or outflow from the corporate sector of funds through this channel. The data reveal that the companies, as a whole, both public limited and private limited, receive more trade credit than what they provide and that the net inflow of funds from other parts of the economy to the corporate sector, through this source has increased between 1970-71 and 1978-79. In the case of medium and large public limited companies, sundry debtors as percent of sundry creditors declined from 94.8 in 1970-71 to 77.6 in 1978-79. (*Vide* Statement I). In the case of medium and large private limited companies, ratio of sundry debtors to sundry creditors was 99.1 per cent in 1970-71 and 80.1 per cent in 1978-79 (*Vide* Statement II).

Available data indicate that even within small-scale industries and wholesale trade, corporate units are net recipients of trade credit,

unlike unincorporated units. The Reserve Bank's Survey of Small-Scale Industrial Units (1977-78) assisted by banks showed that the ratio of sundry debtors to sundry creditors was only 98.6 per cent for small-scale units organised as private limited companies as against 111.4 per cent in the case of proprietary units and 123.5 per cent in the case of partnerships. Similarly, according to Reserve Bank's Survey of Wholesale Traders assisted by banks conducted in 1979-80, sundry debtors as per cent of sundry creditors was only 81.7 for wholesale traders organised as private limited companies as against 113.1 for proprietary units and 129.6 for partnership units.

Sector-wise break up of sundry creditors and sundry debtors of the corporate sector is not available. It is, however, known that the corporate sector usually would have large amounts to be realised from the Government Departments and agencies for the goods supplied while it may not have much payables to Government sector excepting for items like electricity dues. So far as transactions with the external sector are concerned, it appears that direct exports of the corporate sector made on credit terms and included under sundry debtors generally may be higher than imports on credit terms. If this is correct, the net inflow of funds to the corporate sector through trade credit may be largely from the unincorporated sector and the net draft on the resources of the unincorporated sector by the corporate sector may be more than what is indicated by the data given here.

The increasing net flow of funds through trade credit to the corporate sector from the unincorporated sector has to be viewed in the context of the parallel or black markets and unorganised markets in money and credit existing in the country. The Reserve Bank's Surveys have indicated a greater resort to non-institutional sources for their credit requirements by the small-scale industrial units and wholesale traders than medium and large public limited companies. Thus, non-institutional borrowings as proportion of total borrowings (including deposits) was 37 per cent (in 1976-77) for small-scale industries assisted by banks and as much as 63 per cent for wholesale traders assisted by banks (in 1978-79) compared with 26 per cent (in 1978-79) for medium and large public limited companies. In the case of unassisted units, their entire borrowings would be obviously from non-institutional sources. Thus, the net flows of funds from the unincorporated sector to the corporate sector through trade credit may represent partly funds from the unorganised/parallel money markets. It would thus appear that trade credit is a channel through which the corporate sector has indirect access to unorganised/parallel money markets.

Industry-wise Position

Within the corporate sector, wide differences are observed among the industries in the use of trade credit. Information on sundry creditors and sundry debtors relating to fifteen industries is given in Table 4.

While corporate sector, as a whole, receives more trade credit than it provides, there are industries which are net givers of trade credit such as electrical machinery etc., ferrous and non-ferrous metal products, medicines and pharmaceuticals and paints and varnishes.

Among these fifteen industries, sundry creditors financed as much 60 per cent of the current assets in jute industry and 48 per cent in cement industry while for tobacco industry and medicines and pharmaceutical products the proportion was only about 24 per cent in 1978-79. In some industries, trade credit is a more important source of short-term finance than bank credit while in others, the reliance on bank credit is more pronounced. Illustratively, for cement industry, sundry creditors accounted for 47.5 per cent of the current assets in 1978-79 and bank credit only 10.8 per cent and for jute industry the corresponding proportions were 59.9 per cent and 48.3 per cent, respectively. On the other hand, for sugar industry sundry creditors formed only 31.9 per cent while bank credit formed 51.1 per cent of total current assets and for paper and paper products the similar ratios were 29.8 per cent and 41.3 per cent, respectively.

Resort to trade credit as a source of finance has shown a substantial increase in the case of tobacco, cotton textiles, jute textiles and cement between 1970-71 and 1978-79. In fact, the net inflow of funds through trade credit to these industries has increased noticeably over the years; thus, sundry debtors as per cent of sundry creditors declined from 95 in 1970-71 to 56 in 1978-79 in the case of tobacco industry, from 93 to 61 for cotton textiles, from 54 to 29 for jute textiles and from 93 to 38 for cement.

Sundry debtors as proportion of sales show wide differences, ranging from 4.2 per cent in the case of edible vegetable and hydrogenated oils to 20.0 per cent in the case of paints and varnishes. The proportion has declined between 1970-71 and 1978-79 in the case of most of these industries. The exceptions were edible vegetable and hydrogenated oils (increasing from 2.4 per cent to 4.2 per cent), tobacco (5.7 per cent to 8.4 per cent), foundry and engineering workshops (13.6 per cent to 14.0 per cent), and paper and paper products (7.4 per cent to 8.9 per cent).

Table 4: Trade Credit of Medium and Large Public Limited Companies — Fifteen Industries

	Short-term Bank credit as per cent of current assets		Sundry creditors as per cent of current assets		Sundry debtors as per cent of sales		Sundry debtors as per cent of sundry creditors	
	1970-71	1978-79	1970-71	1978-79	1970-71	1978-79	1970-71	1978-79
1. Edible vegetable & hydrogenated oils	36.9	25.8	24.5	31.0	2.5	4.2	58.1	58.1
2. Sugar	57.5	51.1	21.9	31.9	4.8	4.4	22.5	16.3
3. Tobacco	24.7	29.1	11.1	24.5	5.7	8.4	95.0	56.1
4. Cotton textiles	40.6	39.1	23.8	34.8	10.6	8.6	92.5	61.1
5. Jute textiles	51.2	48.3	34.2	59.9	8.6	7.9	53.7	28.7
6. Transport equipment	34.0	28.3	27.7	28.5	14.5	11.7	86.6	78.8
7. Electrical machinery etc	36.5	26.3	25.0	29.0	23.9	18.7	141.0	112.8
8. Foundry and Engineering work shops	35.9	31.0	23.9	26.8	13.6	14.0	102.1	93.2
9. Ferrous & non-ferrous metal products	27.3	38.6	19.9	26.4	14.8	14.1	128.1	100.5
10. Chemical fertilisers	N.A.	6.7	N.A.	29.8	N.A.	14.9	N.A.	87.9
11. Medicines & pharmaceutical preparations	19.8	19.9	23.0	24.2	14.0	11.6	109.9	101.8
12. Dyes & Dyestuffs	N.A.	25.9	N.A.	30.6	N.A.	17.0	N.A.	101.8
13. Paints, varnishes etc.	N.A.	25.2	N.A.	30.2	N.A.	20.0	N.A.	122.1
14. Cement	24.0	10.8	27.9	47.5	14.6	9.1	93.2	38.4
15. Paper and Paper Products	26.1	41.3	24.3	29.8	7.4	8.9	65.2	58.2

Summary and Conclusions

Since trade credit is an important form of short-term finance available to business enterprises, an attempt has been made in this article to review the use of trade credit by the corporate sector in the 'seventies.

An increasing proportion of the current assets of the corporate sector is being financed through trade credit since 1972-73 and currently it is a more important source of short-term finance than bank credit. Sundry creditors financed 31 per cent of the current assets of the medium and large public limited companies in 1978-79 as compared with 26 per cent in 1972-73. Similarly, sundry creditors accounted for 32 per cent of the current assets of medium and large private limited companies in 1978-79 compared with 27 per cent in 1972-73. Short-term bank credit had a smaller role as a source of finance, accounting for only 28 per cent of the current assets of public limited companies and 27 per cent in the case of private limited companies in 1978-79. Trade credit given by the corporate sector, viewed in relation to total sales, did not show any significant change between 1970-71 and 1978-79.

The volume of trade credit would depend on various factors such as the rate of growth, financial resources, volume of sales, size of inventories etc. But broadly, the changes in sundry creditors seem to reflect the movements in inventories and the changes in sundry debtors appear to be influenced by the changes in sales. In the case of public limited companies, the increase in the use of trade credit as a source of finance since 1972-73 was accompanied by a deterioration in the current ratio, bank credit as proportion of total current assets remaining more or less unchanged. Thus, taking the public limited companies, as a whole, the increasing use of trade credit appears to be largely to compensate the shortage of long-term funds i.e., owned funds and term borrowings. In the case of private limited companies, it would appear from the data that the increasing use of trade credit reflected partly the inadequacy of long-term funds and partly a short-fall in bank credit. Some lengthening of the average period of trade credit received by the corporate sector is also observed. The data thus appear to indicate that the corporate sector was able to shift a part of the impact of restrictive credit policies to other parts of the economy.

The net trade credit received or given would indicate the inflow to or outflow of funds from the corporate sector through the channel of trade credit. Sundry debtors as proportion of sundry creditors

declined from 95 per cent in 1970-71 to 78 per cent in 1978-79 in the case of the public limited companies and from 99 per cent in 1970-71 to 80 per cent in 1978-79 in the case of private limited companies. Thus, there has been an increasing net draft on the resources of other sectors by the corporate sector through trade credit. It would appear that the net inflow of funds to the corporate sector through trade credit has been largely from the unincorporated sector. Since the unincorporated sector depends on non-institutional sources for funds to a substantial extent, trade credit appears to be a channel through which the corporate sector has indirect access to unorganised/parallel money markets.

The growth in the use of trade credit as a source of finance by itself need not cause undue concern. In the developed countries, trade credit is the most important source of short-term finance and as our economy advances, the use of trade credit would also increase. But if increasing resort to trade credit is for compensating short-falls in bank credit and tends to reduce the impact of restrictive credit policies, the trends in trade credit may have to be watched closely. And there seems to be evidence to suggest that trade credit has been used to offset the shortfalls in bank credit. While it is true that "trade and industry cannot generate additional net credit out of the dealings of one business with another" (Radcliffe Committee), the large unorganised/parallel money markets in the country could sustain a substantial increase in trade credit when institutional credit is restricted. Increased resort to trade credit by the corporate sector when institutional credit is restricted would mean not only that the policies may not have the full desired effects but also that a part of the impact is shifted by the corporate sector to other sectors where it was not perhaps intended by the monetary authorities and to sectors which are least able to bear the effects of restrictive credit policies.

It is perhaps possible to restrict to some extent the use of trade credit as a source of finance, if the methods of lending indicated by the Tandon Committee are properly applied. Following the report of the Chore Committee,⁵ quarterly operating limits for large borrowers are presumably based on the quarterly statements furnished by them. But in the case of the other companies, while credit limits may be fixed on the basis of Tandon Committee's methods of lending, thus taking into account sundry debtors and sundry creditors also, it appears that drawing limits are fixed by the banks in most cases

⁵ Report of the Working Group to Review the System of Cash Credit (Chore Committee), 1979.

on the basis of stocks and sundry debtors without taking into account sundry creditors. Banks should be required to fix drawing limits taking into account sundry creditors also.

Although sundry debtors of the corporate sector, as proportion of sales, have not increased during the last few years, there is a need to regulate the extension of trade credit. The Tandon Committee had recommended norms for inventories and receivables for certain industries and in the case of other industries, banks were to keep in view the purpose and spirit behind the norms while extending credit facilities. In the case of sundry debtors, however, the Committee's statement that "Receivables not in tune with the unit's and its industry's practices should not be financed by banks" is not clear enough to serve as a guideline to banks. Actually, banks should be required to go by the general practices in a particular industry, and where a unit is extending trade credit on a larger scale than the prevailing practice in an industry, banks should be advised to scrutinise the credit proposal carefully. But, if a bank is financing only one or two units in a particular industry, it may not have information on the current practices in that industry. Also, it appears that banks do not usually compare the credit proposals of the different units even within the same industry. In this context, if the extension of trade credit is to be regulated, a general advice may not suffice; norms may have to be indicated for the industries for which norms have not been stipulated so far.

Lastly, there is a need to collect data on sector-wise break-up of sundry creditors and sundry debtors to have a clearer picture of the flows of funds between different sectors of the economy through this channel.

Statement I—Selected Items of Assets and Liabilities of Medium and Large Public Limited Companies (Rs. Crores)

	Short term bank borrowings	Sundry creditors	Sundry debtors	Inventories	Total current assets*	(1) as per cent of (4)	(2) as per cent of (4)	Sundry debtors as per cent of sales	Inventories as per cent of sales	(3) as per cent of (2)	Short term bank borrowings as per cent of inventories plus Sundry debtors minus Sundry creditors
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1650 Cos											
1970-71	1269 (32.0)	983 (24.8)	932 (23.5)	2221 (55.8)	3961	57.4	44.5	13.5	32.0	94.8	58.8
1971-72	1344 (30.7)	1084 (24.7)	1012 (23.1)	2500 (57.1)	4382	53.8	43.4	13.1	32.3	93.4	55.3
1972-73	1295 (28.0)	1177 (25.4)	1044 (22.5)	2645 (57.1)	4633	49.0	44.5	12.1	30.8	88.7	51.6
1973-74	1438 (26.8)	1395 (26.0)	1109 (20.7)	3051 (56.9)	5361	47.1	45.7	11.9	32.6	79.5	52.0
1974-75	1741 (26.4)	1831 (27.8)	1335 (20.3)	3923 (59.6)	6586	44.4	46.7	11.3	33.2	72.9	50.8
1975-76	2030 (28.5)	2012 (28.3)	1599 (22.5)	4099 (57.6)	7117	49.5	49.1	12.1	31.1	79.4	55.1
1720 Cos.											
1975-76	1949 (28.2)	1925 (27.8)	1552 (22.5)	3969 (57.4)	6913	49.1	48.5	12.0	30.6	80.6	54.2
1976-77	2093 (28.4)	2103 (28.6)	1827 (24.8)	3996 (54.2)	7366	52.4	52.6	12.5	27.4	86.9	56.3
1977-78	2221 (27.8)	2377 (29.7)	1991 (24.9)	4249 (53.2)	7993	51.7	55.3	12.4	26.9	83.8	56.8
1978-79	2505 (28.1)	2773 (31.1)	2151 (24.1)	4901 (54.9)	8927	51.1	56.6	12.1	27.6	77.6	58.5

* Comprise (1) inventories (2) loans and advances and other debtor balance (3) quoted investments (4) cash and bank balances and (5) advance income tax in excess of tax provision.

Note: Figures in brackets are percentages to total current assets.

Source: Financial Statistics of Joint Stock Companies in India 1970-71 to 1974-75 (Reserve Bank of India, 1977) and Reserve Bank of India Bulletins, September 1977, May 1980 and November 1981.

that is likely to reverse itself,⁴ and iii) Transitory shocks involving an abnormally large error occurring for no apparent reason.

The Indian system of Budget forecasting is an evolutionary system under which the Budget Estimates, in time, evolve into the Revised Estimates which in turn, in a refined form, reappear as 'Actuals' (accounts). While the Central Government is in the practice of presenting supplementary demands for grants/interim budgets, in a sense, its influence on the error pattern is very similar to that of a budget proposal. To that extent, the budget estimates need to be adjusted. Two types of errors are, therefore, identified as: i) The Actual Estimation Gap (AEG) as the difference between the Accounts and Budget Estimates, and ii) The Revised Forecast Error (RFE) — the difference between the Accounts and Revised Estimates.

Thus, while the Actual Estimation Gap shows the actual deviation of the forecast from the true values, the Revised Forecast Error highlights the reality of the revision in estimates.

These are calculated for (i) Total Receipts (Revenue receipts + Capital receipts), (ii) Total Expenditure (Revenue expenditure + Capital disbursements), (iii) Revenue receipts, (iv) Revenue expenditure, (v) Capital receipts and (vi) Capital disbursements (aggregate and disaggregative components).

While easy availability of data was the main consideration for the choice of time period for the study, the ultimate selection of the data base fell on the most recent decade — 1970-71 to 1979-80. This analysis is based on data from the articles on Finances of the Government of India, published regularly in the Reserve Bank of India Bulletin. However, it is necessary to note that on the current expenditure side, in 1974-75 the category "Grants to States and Union Territories" was apportioned between developmental and non-developmental expenditures. Further, the items making up these two categories were also changed. These changes have not only reduced the degree of comparability of the data, in a time series sense, but have also reduced the number of detailed categories for which forecasting errors could be examined.

And finally, due to lack of sufficient details, it has not been possible to make adjustments for all the supplementary demands for grants made during this period. While this inability may have intro-

4. In an interesting possibility, at times, such a disturbance could also generate a cumulative effect which would act so as to compound the 'error' term over time. The result is that under such a situation, instead of a reverse shift, the error would continue to increase under its influence.

Statement II — Selected Items of Assets and Liabilities of Medium and Large Private Limited Companies (Rs. Crores)

	Short term bank borrowings	Sundry creditors	Sundry debtors	Inventories	Total current assets*	(1) as per cent of (4)	(2) as per cent of (4)	Sundry debtors as per cent of sales	Inventories as per cent of sales	(3) as per cent of (2)	Short term bank borrowings as per cent of inventories plus Sundry debtors minus Sundry creditors
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1001 Cos.											
1970-71	167 (30.0)	150 (27.0)	149 (26.8)	271 (48.7)	556	61.6	55.3	12.2	22.3	99.1	61.9
1971-72	182 (29.8)	166 (27.2)	163 (26.7)	299 (49.0)	610	60.9	55.5	12.3	22.6	98.6	61.4
1972-73	195 (29.3)	179 (27.3)	173 (26.4)	317 (48.4)	655	61.5	56.4	12.0	22.0	96.5	62.8
1973-74	230 (29.9)	212 (27.6)	194 (25.3)	376 (49.0)	768	61.1	56.3	11.7	22.7	91.4	64.2
1974-75	256 (29.3)	251 (28.7)	209 (23.9)	447 (51.1)	875	57.7	56.0	10.6	22.6	83.5	63.5
1975-76	265 (29.4)	265 (29.4)	233 (25.9)	445 (49.4)	900	59.7	59.6	11.6	22.2	87.8	64.6
1011 Cos.											
1975-76	233 (30.1)	237 (30.6)	198 (25.6)	383 (49.5)	774	60.9	61.7	11.5	22.2	83.6	67.7
1976-77	251 (30.1)	260 (31.0)	221 (26.4)	406 (48.4)	838	62.0	64.0	11.2	20.5	85.2	68.4
1977-78	261 (27.1)	314 (32.6)	253 (26.3)	471 (49.0)	962	55.4	66.6	11.3	21.1	80.5	63.7
1978-79	300 (27.5)	346 (31.8)	277 (25.4)	540 (49.6)	1089	55.5	64.1	11.5	22.5	80.1	63.8

* Comprise (1) inventories (2) loans and advances and other debtor balances (3) quoted investments (4) cash and bank balances and (5) advance income tax in excess of tax provision.

Note: Figures in brackets are percentages to total current assets.

Sources: Financial Statistics of Joint Stock Companies in India, 1970-71 to 1974-75 (Reserve Bank of India, 1977) and Reserve Bank of India Bulletins May 1978, May 1981 and May 1982.

THE GOVERNMENT OF INDIA'S BUDGET ESTIMATION : AN ANALYSIS OF THE ERROR COMPONENTS

Tapas Kumar Chakrabarty and Wilson Varghese*

I. Introduction

The projection of Government expenditures and receipts in the budget is one important aid in the analysis of the underlying assumptions and policy shifts adopted in the process of planned economic development. In this respect, the various expenditure targets set by the budget could be viewed as an interim planning device and also as a spending cap that may be needed to force trade-offs among the budget's competing objectives. Thus, the variations between actual revenues and expenditures and the estimated magnitudes given at the time the budget is presented, could be indicative of the non-attainment or non-optimisation of the set objectives.¹ As Prest puts it, "... the general principle that no Government can hope to execute its economic policies successfully, if its budgetary forecasting is widely inaccurate seems clear enough."²

As a base to planning, budget forecasts play a significant role of portraying a relatively clear picture of the effect of past policies and activities, as also, a reasonably clear idea of the future priorities. In this respect, it is essential that the forecasts be not only nearer to the 'realised' actual, but also, be reliable in terms of their capability to approximate the 'actuals'. Further, because the future course of the economy is critically important to many current economic decisions, it would be desirable to be able to assess the likelihood area or the magnitude of the impact of alternative policy regimes.

The annual budget of the Government of India is primarily framed to ensure spending in accordance with parliamentary authorisation. It presents estimates of ministry-wise demands for Grants

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¹ Also see, Asher, M. G.: "Accuracy of Budgetary Forecasts of Central Government, 1967-68 to 1975-76", *Economic and Political Weekly*, Vol. XIII, No. 8, (Feb. 25, 1978), pp. 423—432.

² Prest, A. R.: *Public Finance in Developing Countries*, Weidenfeld and Nicholson, London, (1975), p. 139.

and separate items of expenditure into revenue account and capital account. The revenue and expenditure estimates of the coming budget-year are indications of the probable budgetary impact on the economy. The extent to which the budget achieves the desired impact on the economy depends, among other things, on the quality of forecasting of revenue and expenditure. 'Errors' or deviations from accounts in economic forecasts are always likely and more so in a particularly complex, developing and not well integrated economy. However, efforts should be made to minimise the size of such 'errors'. The present study attempts to examine these 'errors' in budgetary forecasts of the Government of India. The study is organised into four sections. After this introductory section, Section II deals with the coverage and scope of the study. This is followed by an enumeration of the quantifiable results emanating from the study in Section III. And finally, Section IV is devoted to a recapitulation of the main observations made in this paper.

II. Coverage and Scope

Is it possible to indicate which forecast is the best? Strictly speaking the answer is clearly no. The future is inherently uncertain. Thus there is no certain basis for knowing the accuracy of forecasts. In this respect, a model based on historical experience alone may at times be an unreliable guide to forecasting the future. But, to the extent that the future is likely to resemble the past, the previous performances may provide the best clues about how accurate current forecasts are likely to be. For the same reason, forecasts will widely diverge from the 'actuals' in case of any sharp break from previous historical experience. Forecasting ability cannot be measured absolutely by the magnitude of 'errors' because the degree of uncertainty varies over time. 'Small' errors, relative to historical experience, are often a poor measure of forecasting skill in periods when all other forecasters are even closer to the mark. 'Large' errors, for that matter, are not a sign of incompetence in periods when all other forecasts are even worse. Ideally, forecasting ability must be judged comparatively, not absolutely. A potentially valuable, but often neglected, source of information for improving forecasts is a forecaster's own recent errors.³ There are at least three different types of errors — each with different implications for modifying future forecasts. They are, i) Permanent shifts which occur, for example, when some important elements have been omitted from the estimation process, ii) Reverse shifts where the error can be traced to a disturbance

³. For supporting evidence, see, Stephen K. McNees: "The 'Rationality' of Economic Forecasts," *American Economic Review*, (May, 1978), pp. 301-305.

that is likely to reverse itself,⁴ and iii) Transitory shocks involving an abnormally large error occurring for no apparent reason.

The Indian system of Budget forecasting is an evolutionary system under which the Budget Estimates, in time, evolve into the Revised Estimates which in turn, in a refined form, reappear as 'Actuals' (accounts). While the Central Government is in the practice of presenting supplementary demands for grants/interim budgets, in a sense, its influence on the error pattern is very similar to that of a budget proposal. To that extent, the budget estimates need to be adjusted. Two types of errors are, therefore, identified as: i) The Actual Estimation Gap (AEG) as the difference between the Accounts and Budget Estimates, and ii) The Revised Forecast Error (RFE) — the difference between the Accounts and Revised Estimates.

Thus, while the Actual Estimation Gap shows the actual deviation of the forecast from the true values, the Revised Forecast Error highlights the reality of the revision in estimates.

These are calculated for (i) Total Receipts (Revenue receipts + Capital receipts), (ii) Total Expenditure (Revenue expenditure + Capital disbursements), (iii) Revenue receipts, (iv) Revenue expenditure, (v) Capital receipts and (vi) Capital disbursements (aggregate and disaggregative components).

While easy availability of data was the main consideration for the choice of time period for the study, the ultimate selection of the data base fell on the most recent decade — 1970-71 to 1979-80. This analysis is based on data from the articles on Finances of the Government of India, published regularly in the Reserve Bank of India Bulletin. However, it is necessary to note that on the current expenditure side, in 1974-75 the category "Grants to States and Union Territories" was apportioned between developmental and non-developmental expenditures. Further, the items making up these two categories were also changed. These changes have not only reduced the degree of comparability of the data, in a time series sense, but have also reduced the number of detailed categories for which forecasting errors could be examined.

And finally, due to lack of sufficient details, it has not been possible to make adjustments for all the supplementary demands for grants made during this period. While this inability may have intro-

⁴. In an interesting possibility, at times, such a disturbance could also generate a cumulative effect which would act so as to compound the 'error' term over time. The result is that under such a situation, instead of a reverse shift, the error would continue to increase under its influence.

duced an upward bias to the forecasting errors mainly because of its influence on either the revised estimates or definitely the accounts, the broad pattern of the errors indicated by the analysis contained in this paper is unlikely to have been affected by the above.

III. Empirical Results

i) Total Receipts and Total Expenditures

As a first step to the analysis, we begin with the forecasting of Total Receipts (Revenue+Capital), and Total Expenditures (Revenue+Capital). In the case of total receipts, the budget estimation demonstrated significant fluctuations to both the sides from an over-estimation of Rs. 1265 crores in the Revised Forecast Error (RFE) to an under-estimation of Rs. 5442 crores in the Actual Estimation Gap (AEG) (Statement I). However, the bias was marked more towards under-estimation. In relation to gross error, the Actual Estimation Gap amounted to Rs. 6729 crores while the Revised Forecast Error indicated Rs. 1470 crores as the gross error. The mean gross error in AEG as percentage of Accounts was 6.3 while the same as percentage of Accounts in RFE was 1.3. It may be observed that the annual variations in errors, both in absolute and percentage terms, with respect to the two types of errors, did not show any specific trend. In AEG, error as percentage of Accounts varied from 13.5 to 0.9 and in RFE from 3.6 to 0.3 during 1970-71 to 1979-80. However, it does indicate that the magnitude of errors in Revised Forecast Error was less compared to the Actual Estimation Gap, but these were generally over-estimates of the Accounts. In relation to Total Expenditure too (Statement II), the experience was not much different. Here again, the tendency was more pronounced towards under-estimation as in the case of Actual Estimation Gap. The under-estimation in AEG worked out to Rs. 6904 crores, but RFE showed Rs. 2133 crores as over-estimation. The magnitude of gross error varied from Rs. 8181 crores in AEG to Rs. 2253 crores in RFE. The magnitude of mean gross error as percentage of Accounts in Actual Estimation Gap was 7.7 while the same in RFE was only 1.6. The annual fluctuation in errors revealed the same pattern as in the forecasting of total receipts. In AEG, error as percentage of Accounts ranged from 14.1 to 0.7 and RFE from 3.7 to 0.1.

It may be noticed from Statements I and II that, particularly during 1971-72 and 1975-76, both the total receipts and expenditures were under-estimated to a larger extent in Actual Estimation Gap. The under-

**Statement I—Actual Estimation Gap and Revised Forecast Error:
Total Receipts (Revenue+Capital)**

Years	Accounts	Budget Estimates	Actual Estimation Gap	Actual Estimation Gap as % of Accounts	Revised Estimates	Revised Forecast Error	Revised Forecast Error as % of Accounts
	Rupees Crores				Rupees Crores		
1970-71	5892	5573	+319	5.4	5923	—31	0.5
1971-72	7057	6245	+812	11.5	7152	—95	1.3
1972-73	7552	7077	+475	6.3	7737	—185	2.4
1973-74	8719	8355	+364	4.2	8585	—134	1.5
1974-75	9855	9238	+617	6.3	9977	—120	1.2
1975-76	12772	11044	+1728	13.5	12702	+70	0.5
1976-77	14326	13366	+960	6.7	14407	—81	0.6
1977-78	15381	16296	—915	5.9	15938	—557	3.6
1978-79	18178	18011	+167	0.9	18238	—60	0.3
1979-80	17465	17837	—372	2.1	17330	+135	0.8
Gross	—	—	6729	—	—	1470	—
Total under (+)/ over-estimation (—)	—	—	+5442	—	—	—1265	—
Mean gross	—	—	673	6.3	—	147	1.3

- Notes : 1. Actual Estimation Gap= Accounts — Budget Estimates, Revised Forecast Error = Accounts — Revised Estimates
 2. Gross error is the sum total of all errors, not considering the signs (+/—), and the Mean gross is the arithmetic average of errors for the period of observation.
 3. Period: 1970-71 to 1979-80.

ERROR COMPONENT IN BUDGET ESTIMATES

Statement II—Actual Estimation Gap, and Revised Forecast Error:
Total Expenditure (Revenue+Capital)

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RESERVE BANK OF INDIA OCCASIONAL PAPERS

Years	Accounts	Budget Esti- mates	Actual Estima- tion Gap	Actual Estima- tion Gap as % of Accounts	Revised Estima- tes	Revised Fore- cast Error	Revised Fore- cast Error as % of Accounts
	Rupees Crores				Rupees Crores		
1970-71	6102	5785	+317	5.1	6161	—59	1.0
1971-72	7522	6471	+1051	14.0	7523	—1	0.1
1972-73	8422	7313	+1109	13.2	8302	+120	1.4
1973-74	9047	8445	+602	6.7	9235	—188	2.1
1974-75	10575	9364	+1211	11.5	10602	—27	0.3
1975-76	13139	11291	+1848	14.1	13191	—52	0.4
1976-77	14457	13827	+630	4.6	14832	—375	2.6
1977-78	16313	16911	—598	3.7	16912	—599	3.7
1978-79	19684	19548	+136	0.7	20383	—699	3.6
1979-80	19898	19219	+679	3.4	20031	—133	0.7
Gross	—	—	8181	—	—	2253	—
Total under (+)/ over-estimation (—)	—	—	+6904	—	—	—2133	—
Mean gross	—	—	818	7.7	—	225	1.6

estimation of receipts was the consequence of a variety of developments such as :

- (a) higher degree of buoyancy of the economy;
- (b) larger tax bases;
- (c) more collection due to improved efficiency of the tax collection machinery;
- (d) new resource mobilisation measures (like the scheme for Voluntary Disclosure of Income and Wealth, 1975);
- (e) higher than anticipated external assistance inflow to relief works; and
- (f) higher receipts from general services due to administrative and legislative measures under the 20-Point Economic Programmes, etc.

A large under-estimation in expenditure was attributed mainly to higher expenditure on (a) relief, (b) defence, (c) employees' emoluments, (d) the New Economic Programme, (e) capital support for public enterprises, and (f) central plan on account of escalation of cost of core sector projects.⁵

Finally, one common feature of the estimating pattern in relation to total receipts and expenditures is that the errors do not reveal a set trend in their behaviour over the years during the period of study. In this respect it may be pointed out that, in the case of Total Expenditures, the relative magnitude of under-estimates are higher than the under-estimation of Total Receipts. The result is, the overall deficit in accounts have gone up. The mean gross error as percentage of Accounts in AEG for Total Receipts is 6.3 while the same for Total Expenditure is 7.7. The performance of the overall budgetary deficit has also indicated an under-estimation of Rs. 3193 crores in AEG and Rs. 1715 crores of over-estimation in RFE, while the mean gross error of deficit accounted for Rs. 356 crores in AEG and Rs. 221 crores in RFE during 1970-71 to 1979-80 (Statement V). The following paragraphs are addressed to the performance of forecasting errors at a much disaggregative level.

⁵. Articles on "Finances of the Government of India" Reserve Bank of India Bulletin, June 1971, May 1972, May 1975, and November 1976.

For some explanation for deviation of the Budget Estimates, please see:

- (1) Budget documents of the Government of India, various years,
- (2) Asher, Mukul G.: *op. cit.*, and
- (3) Sarma, Y. S. R.: "Government Deficit, Money Supply and Inflation in India", Reserve Bank of India Occasional Papers, Vol. 3, No. 1, (June, 1982).

(ii) Revenue Receipts

Revenue receipts forming 56.7 per cent of the total receipts in 1970-71 gradually increased in prominence to 61.8 per cent in 1978-79. The estimation performance ought to be reviewed in relation to this prominence. Thus, in the case of Actual Estimation Gap, a general tendency to under-estimate could not but be noticed. A further disaggregation reveals the same pattern. In AEG (Statement III), the gross error in total revenue receipts amounted to Rs. 3744 crores (total under-estimation Rs. 3738 crores), while mean gross error accounted for Rs. 416 crores indicating 6.0 per cent of Accounts. In case of total tax revenue the gross error was Rs. 2759 crores while the same for non-tax revenue was Rs. 1507 crores. Total under-estimation was Rs. 2574 crores in tax revenue and Rs. 1425 crores in non-tax revenue. The mean gross error as percentage of accounts in the tax and non-tax revenue was 5.8 and 9.1 respectively.

The Revised Forecast Error (Statement IV) has displayed a tendency, particularly towards under-estimation with respect to total revenue, but the magnitude of errors are however, low both in absolute and percentage terms. Total tax revenue has a mean gross error of Rs. 112 crores (1.8 per cent of Accounts) and the same in non-tax revenue was Rs. 64 crores (3.0 per cent of Accounts). In both AEG and RFE taxes on commodities and services, taxes on income and expenditure and interest receipts are relatively under-estimated.

(iii) Revenue Expenditure

Actual Estimation Gap in the case of revenue expenditure (Statement III) showed a pattern of under-estimation. Total expenditure showed an absolute gross error of Rs. 3294 crores (under-estimation of Rs. 2909 crores) with developmental and non-developmental expenditure accounting for Rs. 1080 crores (Rs. 840 crores under-estimated) and Rs. 2132 crores (Rs. 2004 crores under-estimated) respectively. Grants were under-estimated by Rs. 427 crores, while its gross error was Rs. 806 crores. Mean gross error of total revenue expenditure is Rs. 366 crores (6.1 per cent of Accounts). Non-developmental expenditure has a mean gross error of Rs. 237 crores (6.6 per cent of Accounts), while developmental expenditure has a mean gross error of Rs. 120 crores (9.8 per cent of Accounts). The mean gross error in grants is 90 crores (10.2 per cent of Accounts).

In contrast to the Actual Estimation Gap, Revised Forecast Error (Statement IV) shows a bias towards over-estimation. For total

expenditure, the gross error of Rs. 1039 crores (mean gross error of Rs. 115 crores accounting for 1.5 per cent of Accounts) is associated with an over-estimation of Rs. 885 crores. While consistent over-estimation of grants may be observed, developmental and non-developmental expenditures exhibit almost a balanced trend in terms of over and under-estimation over time.

(iv) Capital Receipts

Actual Estimation Gap in the case of Capital receipts (Statement III) shows a general tendency to under-estimate almost all disaggregative components. Total receipt shows an absolute gross error of Rs. 4251 crores (under-estimation of Rs. 2523 crores, mean gross error of Rs. 472 crores forming 11.3 per cent of Accounts). All other components, except external loans, are significantly under-estimated. The mean gross error in external loans is Rs. 277 crores (30.8 per cent of Accounts) and the same in internal market borrowings comes to Rs. 113 crores (13.7 per cent of Accounts). Revised Forecast Error (Statement IV) shows a tendency to over-estimate different receipt components. However, the magnitude of over-estimates in RFE is lower than the under-estimates in AEG as revealed by the mean gross errors in Capital Receipts. The mean gross error in total receipts is Rs. 209 crores (4.7 per cent of Accounts). External loans have a mean gross error of Rs. 128 crores (13.3 per cent of Accounts) and internal market borrowings a mean gross error of only Rs. 1 crore (0.1 per cent of Accounts). The mean gross error in small savings is Rs. 77 crores (16.8 per cent of Accounts).

(v) Capital Disbursements

In the case of Actual Estimation Gap (Statement III), there is a marked tendency towards under-estimation of capital disbursements. Total capital disbursements show an absolute gross error of Rs. 4320 crores against an under-estimation of Rs. 4052 crores. The mean gross error is Rs. 480 crores (or 11.6 per cent of Accounts). Total Capital Outlay has a mean gross error of Rs. 257 crores (15.9 per cent of Accounts). Loans and Advances has a mean gross error of Rs. 336 crores (12.4 per cent of Accounts). But the mean gross error for discharge of permanent debt is only Rs. 32 crores. (5.4 per cent of Accounts). In the case of Revised Forecast Error (Statement IV), magnitudes of errors are relatively low, but they are generally over-estimates of capital disbursements. In absolute terms, total capital disbursements are estimated with a gross error of Rs. 1348 crores (over-estimation of Rs. 1245 crores and a mean gross error of Rs. 150 crores accounting for 2.4 per cent of Accounts). Loans and advances are estimated with a mean gross

error of Rs. 108 crores (3.1 per cent of Accounts). Non-developmental capital outlay is estimated with a mean gross error of Rs. 9 crores (9.2 per cent of Accounts) while developmental outlay is associated with a mean gross error of Rs. 67 crores (5.1 per cent of Accounts).

IV. Conclusions

As noted at the outset, 'errors' in budget forecasting are inevitable in a complex and not well integrated economy. The goal should, however be, to try to minimise the size of these errors.

1. To sum up, the budget estimation of the Central Government during the period of study comes out as being widely off the mark. At a disaggregative level, both the revenue and expenditure components exhibit high forecasting errors. Total revenue and total expenditure (Capital+Revenue) at the aggregative level are estimated with similar types of error patterns. The Actual Estimation Gap reveals significant under-estimation of fiscal components. The Revised Forecast Error, in contrast, indicates an over-estimation of these components almost for every year during the period of study.

2. At the disaggregative level, total revenue receipts is significantly under-estimated as revealed by both AEG and RFE. The degree of errors in forecasting is relatively high in connection with the estimations of taxes on commodities and services, taxes on income and expenditure, and interest receipts. Regarding revenue expenditure, while the AEG reveals an under-estimation, the RFE shows an over-estimation of various revenue expenditure components. While grants and developmental revenue expenditures are relatively over-estimated in RFE, AEG shows a higher under-estimation of grants and developmental revenue expenditures.

3. Capital receipts in the case of AEG reveals a bias towards under-estimation of receipts, while the RFE shows a tendency to over-estimate receipts. External loans, small savings, and public and state provident funds are estimated with significant errors. Capital disbursements are under-estimated as indicated in Actual Estimation Gap. The Revised Forecast Error shows, on the whole, an over-estimation of capital disbursements. Non-developmental capital outlay also shows a high level of under-estimation in AEG, while RFE exhibits a swing to over-estimation.

4. The analysis of this paper indicates that both revenues and expenditures are under-estimated and the extent of the errors for expenditure is much greater. This could imply that, the actual

impact of the budget has generally been more expansionary than the envisaged impact. This implication is substantiated by the performance of the overall budgetary deficit which has exhibited an under-estimation of Rs. 3193 crores in AEG and Rs. 1715 crores of over-estimation in RFE.

5. A major conclusion that stands out is that, while revenues are under-estimated, expenditures too are, more often than not, under-estimated. To add to this, there is no specific tendency to establish any trend in the forecasting errors. It also implies that there is no reflection of these errors on the formulation of budgets. The inability to mark any specific direction in the pattern of error movement only denotes that each and every estimate is made, perhaps, not considering even the performance of these estimates in a historical sense.

6. A bias in the budgetary estimates may be due to poor quality of forecasting economic variables; a hedging policy against uncertainty; a deliberate policy to contain expenditure, etc. However, as indicated earlier, some of the forecasting errors could be traced to unforeseen factors such as natural calamities or a threat of war and, of course, legislative slippages. But many of these, we may reasonably presume, may have resulted from the constraints on the policy-makers to project rates of inflation and the historical relationship between the bases and national income or other macro-economic variables, correctly. Though successive budget estimates are being presented, the accomplishments so far, certainly leaves much to be desired in terms of reducing the wide forecasting errors. This may also suggest conducting a periodic and frequent review of forecasts made for the purpose of revising them in the light of newly received data. Further, in order to reduce these significant errors in the estimates, it is necessary that the forecasts should be linked to movements in those variables in the economy which may be considered exogenous.

Statement III — Actual Estimation Gap

	Absolute Gross Error	Absolute total under (+)/over-esti- mation (—)	Mean gross error	
			Absolute	As Percentage of Accounts
	Rupees Crores			
A. REVENUE RECEIPTS				
1. Total Revenue	3744	+3738	416	6.0
a) Total Tax Revenue	2759	+2574	307	5.8
Of which :				
i) Taxes on Income and Expenditure	1159	+1043	129	11.8
ii) Taxes on Commodities and Services	1894	+1758	210	4.8
b) Non-tax Revenue	1507	+1425	167	9.1
Of which :				
i) Interest Receipts	550	+ 330	61	6.5
ii) Other Non-tax Revenue	1318	+1223	146	31.5
B. CAPITAL RECEIPTS				
1. Total Receipts	4251	+2523	472	11.3
Of which :				
a) Internal Market Borrowings	1018	+985	113	13.7
b) External Loans	2494	+842	277	30.8
c) Small Savings	966	+833	107	24.4
d) Public and State Provident Funds	322	+230	36	19.5
e) Recovery of Loans and Advances	1953	+1407	217	14.2

Statement. III — (Contd.)

	Absolute Gross Error	Absolute total under (+)/over-esti- mation (—)	Mean gross error	
			Absolute	As Percentage of accounts
	Rupees Crores			
C. REVENUE EXPENDITURE				
1. Total Expenditure	3294	+2909	366	6.1
a) Development Expenditure	1080	+840	120	9.8
b) Non-developmental Expenditure	2132	+2004	237	6.6
c) Grants	806	+427	90	10.2
D. CAPITAL DISBURSEMENTS				
1. Total Capital Disbursements	4320	+4052	480	11.6
a) Capital Outlay	2310	+1776	257	15.9
i) Developmental Outlay	2189	+1604	243	18.4
ii) Non-developmental Outlay	928	+579	103	35.2
b) Loans and Advances	3022	+2777	336	12.4
c) Discharge of Permanent Debt	288	+145	32	5.4

Period : 1970 — 71 to 1978-79.

Statement IV — Revised Forecast Error

	Absolute Gross Error	Absolute total under (+)/ over-estima- tion (—)	Mean gross error	
			Absolute	As Percentage of Accounts
	Rupees Crores			
A. REVENUE RECEIPTS				
1. Total Revenue	648	+618	72	0.8
a) Total Tax Revenue	1012	+983	112	1.8
Of which :				
i) Taxes on Income and Expenditure	461	+336	51	3.9
ii) Taxes on Commodities and Services	705	+634	78	1.6
b) Non-tax Revenue	574	+151	64	3.0
Of which :				
i) Interest Receipts	494	+112	55	6.6
ii) Other Non-tax Revenue	334	+187	37	9.2
B. CAPITAL RECEIPTS				
1. Total Receipts	1879	—1697	209	4.7
Of which :				
a) Internal Market Borrowing	8	—4	1	0.1
b) External Loans	1155	—568	128	13.3
c) Small Savings	696	—49	77	16.8
d) Public and State Provident Funds	111	—17	12	7.7
e) Recovery of Loans and advances	790	—648	88	6.1

Statement IV — (Contd.)

	Absolute Gross Errors	Absolute total under (+)/over-esti- mation (—)	Mean gross error	
			Absolute	As Percentage of accounts
	Rupees Crores			
C. REVENUE EXPENDITURE				
1. Total Expenditure	1039	—885	115	1.5
a) Developmental Expenditure	612	—275	68	6.3
b) Non-developmental Expenditure	765	—330	85	2.1
c) Grants	902	—902	100	11.3
D. CAPITAL DISBURSEMENTS				
1. Total Capital Disbursements	1348	—1245	150	2.4
a) Capital Outlay	618	—406	69	4.3
i) Developmental Outlay	605	—445	67	5.1
ii) Non-developmental Outlay	174	—42	19	9.2
b) Loans and Advances	975	—934	108	3.1
c) Discharge of Permanent Debt	109	—82	12	2.1

Period: 1970-71 to 1978-79

ERROR COMPONENT IN BUDGET ESTIMATES

**Statement V—Overall Budgetary Deficit : Actual Estimation Gap (AEG)
and Revised Forecast Error (RFE)**

Years	AEG	RFE
	Rupees Crores	
1970-71	—2	—28
1971-72	+239	+94
1972-73	+634	+305
1973-74	+238	—322
1974-75	+594	+95
1975-76	+120	—122
1976-77	—330	—294
1977-78	+317	—42
1978-79	—31	—639
1979-80	+1051	—268
Gross	3556	2209
Total under (+)/ over-estimation (—)	+3193	—1715
Mean gross	356	221

DEMAND FOR INDIA'S EXPORTS AND IMPORTS : AN ECONOMETRIC ANALYSIS

K. Kameswara Rao*

In this study an attempt is made to identify the factors influencing the movements in India's exports and imports in the recent past. For this purpose demand functions have been constructed for exports as well as imports both at aggregate level as well as at selected individual group level based on the data covering the period 1968-69 to 1978-79. Scanning through the foreign trade statistics of India, it can be seen that except for two years, viz., 1972-73 and 1976-77, which showed small trade surpluses, India generally witnessed adverse balance of trade and the deficits are increasing. For example, during 1980-81, while the exports were of the order of Rs. 6711 crores, the imports amounted to Rs. 12,524 crores resulting in a trade deficit of Rs. 5813 crores. The deficit is estimated to be slightly lower at Rs. 5779 crores during 1981-82. During the last five years, i.e., from 1976-77 to 1981-82, while exports increased at an annual average rate of 8.0 per cent, imports registered an average increase of about 21.2 per cent. In this context, it may be mentioned that the bulk of the import bill was accounted for by crude oil and petroleum products and the amount could rise to higher levels to absorb considerable portion of our exports. This could squeeze the level of other essential imports unless additional inflow of foreign resources is assured by a higher rate of growth in exports.

The share of Indian exports in total world exports, which was already very meagre at 1 per cent in 1966-67, further came down to 0.5 per cent in 1979-80. Therefore rapid export growth is one of the key elements in India's adjustment to the balance of payments problem. It will therefore be useful in this context to identify the factors determining the demand for India's exports as well as imports.

The study is organised into three sections. Section 1, discusses the theoretical considerations and specification of individual functions. In Section 2, the results obtained from the empirical verification have been discussed. Finally, in Section 3, the main conclusions emerging from the study have been summarised.

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SECTION I

Theoretical considerations and specification of functions

The demand for the goods exported by a country or region to the rest of the world is the demand for imports of the rest of the world. The demand for exports varies depending on whether they are producers' or consumers' goods and whether they are or are not capital (durable) goods. The major factors that determine the volume of exports can be identified as (1) the world demand represented by the economic activity in the rest of the world/importing trade community/country, through national income, industrial production etc; (2) relative pressure of demand represented by domestic supply (domestic production) and demand; (3) relative export prices of the commodity vis-a-vis the export price of the competing countries; (4) export policies of the country, e.g., policy with respect to duty, subsidy, promotional activities and bilateral trade arrangements; and (5) import policies of importing countries like trade barriers, quota restrictions, etc. On the other hand, the factors affecting demand for imports are (1) general activity/demand variables represented by national income, industrial production etc., (2) import prices, (3) customs duties and other compensatory taxes and subsidies on the imports, (4) prices of domestic substitutes, (5) foreign supply factors like trade barriers, trade blocks, etc., (6) capacity to import represented by foreign exchange reserves and foreign aid, (7) Non-price elements that determine the competitiveness of importable good relative to its substitutes and components, import liberalisation, etc., and (8) any special conditions prevailing during the period covered by the study.

Specification of Export functions

Aggregate exports of India are sought to be explained by world demand, relative prices and export promotion incentives. Three alternative variables have been tried to represent world demand. They are (i) world gross domestic product, (ii) world industrial production and (iii) world exports excluding those of India's. Three alternative prices have been considered as competitors for Indian prices, viz., (i) world export prices, (ii) export prices of developing countries excluding those of oil producing countries and (iii) export prices of developing countries. Terms of trade is also tried as an alternative to relative price variable. Government have been giving a number of incentives to boost exports and to take their impact into consideration, an export promotion index (which is a simple index number based on Government spending on subsidies, etc.) is introduced as an explanatory variable.

Exports growth arose from expansion of a wide variety of non-traditional exports and a central feature of this growth is its highly volatile nature. This really poses a problem in constructing an export function by correctly identifying the factors influencing the movements of exports each year. In other words, if the exports are influenced by a different set of factors in varying intensities each year, no stable function can be constructed to track the export movements using time series data. The major commodity groups considered here are (i) Food, (ii) Chemicals, (iii) Machinery and transport equipment, and (iv) Miscellaneous manufactured articles. Generally speaking, the export demand is explained by world demand variables, relative prices, domestic and international constraints.

Specification of Import Functions

Two hypotheses are generally put forward towards an explanation of our import requirements : (i) imports are an excess demand over domestic availability, and (ii) imports are regulated by our capacity to meet the import bill based on export earnings, foreign aid inflows, etc. The latter hypothesis delinks economic factors like the demand or desire to import to the actual imports obtained. The most widely used specification of the import demand function is of the form :

$$M = f(p_m/p_d, Y/p_d)$$

Where M is the quantity of imports, p_m is the price level of imports, p_d is the price level of domestically produced goods and Y is the national income. The basic explanatory variables are suggested by the traditional theory of consumer demand. However, as mentioned in (ii) above, the aggregate imports might be determined by the capacity to import rather than the desire to import. To take this aspect into consideration, foreign exchange reserves and exports (deflated by import prices) are also taken into consideration.

Apart from aggregate imports, five major groups are covered in the present study. The five major groups are (i) Minerals, fuels and related materials, (ii) Manufactured goods, (iii) crude materials, inedible, except fuels, (iv) Machinery and Transport equipment, and (v) chemicals. "Beverage and Tobacco" group is omitted mainly due to its small role and the "miscellaneous" group due to its heterogeneity. Food imports are not taken up for analysis due to the fact that in recent years they have been negligible.

Generally speaking, the individual group imports are explained by the relevant domestic demand activity, relative prices and other special

factors like foreign aid, foreign exchange reserves, domestic supply, etc. The import prices considered are the 'effective prices' which include transport costs, import duties, subsidies and other taxes and these have been specially constructed.

Selected versions of the equations are presented in Appendix along with the list of variables. The equations are estimated using ordinary least squares method based on the annual observations covering the period 1968-69 to 1978-79. Only those equations which are considered to be satisfactory are presented here.

SECTION II

Results

A. Exports

The aggregate exports of India are well explained by world demand, relative prices and export promotion index. The alternatives of the first two variables gave reasonably satisfactory results. The estimated relations are as follows:—

$$1. X = 137.59965 + 0.75976 \text{ WGDP} + 0.10377 \text{ EXPI} - 46.63803 \frac{XP}{WXP}$$

t-statistic 2.485 2.952 6.722 2.736

Elasticity 0.543 0.181 — 0.761

R^2
 $R(\text{adj}) = 0.98$ D.W. = 1.80, S.E.E. = 4.06, Mean = 132.73

$$2. X = 64.03874 + 0.79735 \text{ WGDP} + 0.08941 \text{ EXPI} - 32.97001 \frac{XP}{XPDC}$$

t-statistic 2.107 3.195 6.327 2.704

Elasticity 0.570 0.156 — 0.208

R^2
 $R(\text{adj}) = 0.98$, D.W. = 2.51, S.E.E. = 4.09, Mean = 132.73

(For explanation of variables see Appendix)

It may be seen that Indian exports are well explained in the above equations. In this connection, it may be mentioned that alternative relative prices like, for example, export prices of India relative to export prices of developing countries other than oil exporting countries and terms of trade also gave satisfactory explanation. (Refer to Appendix). The elasticity of Indian exports with respect to world income is comparatively low varying between 0.54 and 0.57. When world export prices are considered as competitors for Indian exports,

the price elasticity is -0.76 . On the other hand, while the export prices of developing countries are considered for relative prices, the elasticity is very low at -0.21 which increased to -0.43 when oil exporting countries are excluded. Thus on the whole Indian exports are still price inelastic. Export promotion index has an elasticity of 0.16 to 0.18.

We may compare our results with those obtained in earlier studies. Table 1 gives comparative elasticities of various studies. Our results broadly agree with the elasticities obtained by Pani and to some extent by Agarwala which in turn supports the general belief that Indian exports are inelastic with respect to world income as well as the relative prices of Indian exports *vis-a-vis* those of her competitors. This has wide implications for the future growth of Indian exports. One implication is that India is a price taker in the world markets and hence in order to boost our export earnings, we have to export more in terms of quantity. Secondly, we should keep a price advantage to be competitive in the international markets and achieve a high growth rate in exports.

Table 1

Author	Years covered	Elasticity of demand for India's exports with respect to	
		World Income	Relative price
1.	2.	3.	4.
1. Murti and Sastry	1927-37	1.12	-0.78
2. Dutta	1951-60	2.66	
3. Agarwala	1948-61	0.35	-0.44
4. Pani	1951-52 to 1968-69	0.46*	-0.22
5. Ours	1968-69 to 1978-79	i) 0.54	-0.76
		ii) 0.57	-0.21

*World exports

The income (activity) and price elasticities of exports of other commodity groups obtained from the empirical investigation are given in Table 2.

From the table we can see that Indian exports are linked to world economic activity. While in the machinery and transport equipment group, exports are highly elastic with respect to relative prices, the same cannot be said in the case of others. Miscellaneous manufactured articles is a heterogeneous group. A significant

Table 2: Elasticities of Demand for India's Exports: 1968-69 to 1978-79

Industrial classification	Elasticity with respect to	
	Activity*	Relative price
1.	2.	3.
1. Machinery and Transport Equipment (Electric machinery, apparatus and appliances, non-electrical machinery and transport equipment)	2.39	—1.34
2. Chemicals (Dyeing, tanning and colouring materials, chemical elements, medicine, perfumes etc.)	2.31	—0.48
3. Miscellaneous manufactured articles (Readymade Garments, Footwear etc.)	1.37	—0.15
4. Food Group (tea, coffee, fish and fish preparations and other agricultural commodities)	1.39	—0.78

*World GDP

item in this group the exports of which have increased manifold in recent years is ready-made garments. Of late, these exports are facing opposition because of quota restrictions particularly from ECM countries. However, due to problems of measurability, its impact could not be studied. Despite these limitations, the exports of the group could be satisfactorily explained. Referring to the individual equations, it may be said that the explanatory power is quite good and can be relied upon. Considering all the groups, we may generally conclude that in the context of world-wide recession India's exports are likely to face rough weather. Nevertheless there is scope for increasing our exports of machinery and transport equipment and food items taking into account price advantage and overall export promotion efforts. Advantage can also be taken in exporting selected items in the miscellaneous group.

As a group, manufactured products account for the bulk of our exports. Most of the traditional items of exports like jute goods, leather products and cotton textiles are facing stiff competition and some of these, particularly jute goods, are showing downward trend. Considering the special problems faced by these commodities, it is felt that a separate treatment is required in the place of the highly aggregated export function. Two commodities/groups which have shown good increase over the years are metal products and precious stones and jewellery. Among them, the second category is of very recent origin. Exports of iron and steel items are sporadic as

and when an internal surplus arises. The international market can possibly absorb them.

B. Imports

Aggregate imports of India are sought to be explained in the traditional framework of activity variable and the relative price hypothesis and the estimated relationship is as follows:

$$M = -35.11312 + 0.0038 \text{ YR} - 37.71392 \frac{P^*M}{\text{DPM}} + 0.43581 M_{-1}$$

t-Statistic 1.457 4.996 2.847 2.020

Elasticity 1.366 - 0.457 0.425

R^2
R(adj)=0.79, D.W.=2.67, S.E.E.=7.84, Mean=105.18

(see Appendix for explanation of variables)

It can be seen from the equation that the relative price elasticity is -0.46 in the short run and -0.81 in the long run and that of income 1.37 and 2.40 respectively. Thus if the relative prices go up by one per cent the Indian imports are likely to go down by 0.8 per cent in the long run. While interpreting this result, it must be remembered that this will be true in the case of imports where domestic substitutes are available. On the other hand, where essential imports like crude oil and petroleum products are required perhaps price impact will be negligible at least in the short run. Economic activity as measured by real income is the major factor which determined the imports. In the alternatives tried, capacity to import as measured by earnings from exports and foreign exchange reserves are also found to influence the demand for imports. It is, however, observed from the results that the contribution of net foreign aid when used as an explanatory variable, is not statistically significant. Perhaps there may be other factors which may not be measurable like government regulatory steps, etc., which influence the movements of imports into India.

The income (activity) and price elasticities of the individual commodity groups are summarised in Table 3 given below.

Current and previous year's domestic production, level of foreign exchange reserves deflated by import prices and relative prices are the main determining factors in the case of import of crude materials. Foreign exchange reserves, which signify the capacity to import, have

Table 3: Elasticities of Demand for India's Imports 1968-69 to 1978-79

Industrial classification	Elasticity with respect to		
	Activity (domestic)	Relative price	Special factor
1. Minerals, fuels and related materials	S.T. 0.87 L.T. 2.69 (Industrial production)		0.33 1.00 (Foreign reserves)
2. Manufactured goods (Iron and Steel, non-ferrous metals, manufacture of metals etc.)	2.32 (capital formation)	-1.27	0.02 (net foreign aid)
3. Machinery and Transport equipment	S.T. 0.89 L.T. 1.88 (C.F.)	-1.11 -2.22	— —
4. Chemicals (Chemical elements and compounds, medicines, etc.)	0.63 (Chemical products output)	-0.20	—
5. Crude material (inedible) except fuels		-0.43	0.70 (Foreign reserves)

S.T.: Short term; L.T.: Long term; C.F.: Capital formation.

an important role in these imports. Domestic production proxy, though not statistically significant, has high elasticity. Domestic industrial production and foreign exchange reserves together with the level of imports in the previous year largely determine the imports of minerals fuel group. Thus the capacity to import again plays a role in determining the magnitude. In the equation tried with relative price as an explanatory variable, the results are not encouraging and the price elasticity is very low.

Imports of manufactured goods are fairly well explained by domestic economic activity represented by either real income or capital formation, foreign aid, domestic production and relative prices. Of course, the role of foreign aid, though with a correct sign, is statistically insignificant in determining these imports. It can be seen that domestic production has a negative impact and in the context of indigenous efforts to produce, it can be said that there is some success in import substitution efforts. Imports of machinery and transport equipment are explained by domestic capital formation and the relative prices and both are statistically significant. Foreign aid or foreign exchange reserves have not given the desired explana-

tion. The relationship established by the explanatory variables considered for determining imports of chemicals is found to be weak.

SECTION III

Conclusions

In this study an attempt is made to derive import and export relations in the traditional manner. In the context of a regime of import controls, the large Government share in the total import bill (accounting between 50-75 per cent in the various time periods) and the changing composition of imports, it is interesting to see that a satisfactory statistical explanation of the variations in the quantum of imports at the aggregate level and at the level of sub-groups of industries could be obtained for the period 1968-69 to 1978-79. A similar remark can be made in respect of export relations where nearly 98 per cent of the variation in the quantum of aggregate exports could be explained through means of three variables, viz., world gross domestic product in real terms, prices of Indian Exports vis-a-vis. those prevailing in the international markets and export subsidies.

Statistical relation for aggregate imports shows that the availability of foreign exchange earning was not a major constraint on the level of total imports realised during the period. Import regulations, though they could have changed the pattern of imports, have not restricted the total volume of imports that could be obtained as reflected in the demand for them through real imports. There is evidence to show that there is some success in the import substitution efforts. Aggregate imports into India have a high income elasticity while the demand elasticity for exports of Indian goods with respect to world income is quite low. Since on the export front income (or demand) elasticities differ for different industrial products, it seems more useful to concentrate our export promotion efforts in those areas where such elasticities are high. India should keep a price advantage to be competitive in the international markets and to achieve a high growth rate in exports. Further, the results have shown that export promotion incentives have the desired effect and can be used in a selective way.

APPENDIX

List of variables used in the study

I. Exports

1. X	: Aggregate exports	(Quantum index: 1968-69=100)
2. XFD	: Exports of food group	(-do-)
3. XCH	: Exports of chemicals	(-do-)
4. XMT	: Exports of Machinery and Transport Equipment	(-do-)
5. XMA	: Exports of Miscellaneous manufactured articles	(-do-)
6. XP	: Export prices of total exports	(unit value Index: 1968-69=100)
7. XPFD	: Export prices of food group	(-do-)
8. XPCH	: Export prices of chemicals	(-do-)
9. XPMT	: Export prices of Machinery and Transport Equipment	(-do-)
10. XPMMA	: Export prices of Miscellaneous manufactured articles	(-do-)
11. WGDGP	: World gross domestic product	(Index 1975=100)
12. WIDP	: World Industrial production	(Index 1970=100)
13. WXEI	: World exports excluding India	(Index 1975=100)
14. WXP	: World export prices	(Index 1975-76=100)
15. XPDC	: Export prices of developing countries	(Index 1972=100)
16. EPDC	: Export prices of developing countries excluding oil exporting countries	(-do-)
17. TOT	: Terms of Trade for India	(Index 1968-69=100)
18. EXPI	: Export promotion Index	(Index 1968-69=100)

II. Imports

1. M	: Aggregate Imports	(Quantum Index: 1968-69=100)
2. MMF	: Imports of Minerals, fuels and related materials	(-do-)
3. MMG	: Imports of Manufactured goods	(-do-)
4. MMT	: Imports of Machinery and Transport Equipment	(-do-)
5. MCH	: Imports of Chemicals	(-do-)

6. MCM	: Imports of Crude materials (inedible) except fuels	(	-do-	)
7. P*M	: Import prices	(	Effective unit value index 1968-69=100	)
8. P*MF	: Import prices of Minerals, fuels and related materials	(	-do-	)
9. P*MG	: Import prices of manufactured Goods	(	-do-	)
10. PMG	: Import prices of Manufactured Goods	(	Unit Value Index 1968-69=100	)
11. P*MT	: Import prices of Machinery and Transport Equipment	(	Effective unit value index 1968-69=100	)
12. P*CH	: Import prices of chemicals	(	-do-	)
13. PCM	: Import prices of crude materials (inedible) except fuels	(	Unit value index 1968-69=100	)
14. DPM	: Aggregate domestic prices	(	Wholesale price index 1970-71=100	)
15. DPMG	: Domestic prices of Manufactured goods	(	-do-	)
16. DPMT	: Domestic prices of Machinery and Transport Equipment	(	-do-	)
17. DPCH	: Domestic prices of chemicals	(	-do-	)
18. DPCM	: Domestic prices of crude materials	(	-do-	)
19. YR	: National Income at 1970-71 prices	(	Rs. in crores	)
20. INDP	: Industrial production	(	Index 1970=100	)
21. CFR	: Gross domestic fixed capital formation at 1970-71 prices	(	Rs. in crores	)
22. FR	: Foreign Exchange Reserves	(	Rs. in crores	)
23. NFA	: Net foreign aid	(	-do-	)
24. DUMY	: Dummy for 1974 oil price increase			
25. QGMG	: Domestic production of intermediate goods	(	Index 1970=100	)
26. QCBI	: Domestic production of chemical-based industries	(	-do-	)
27. ONF	: Domestic production of non-food grains (proxy for raw materials)	(	-do-	)

APPENDIX (Contd.)

India's Export Demand Functions: 1968-69 to 1978-79.

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											$\bar{R}^2$	D.W.	S.E.E.	Mean		
1. Aggregate Exports																
1.	X	=	29.91962	+	0.08462	EXPI	—	0.25037	TOT	+	1.13318	WGDP	0.98	2.39	3.74	132.73
	t. Statistic		1.700		6.574			3.181			6.899					
	Elasticity		—		0.148			0.183			0.810					
2.	X	=	67.13268	+	0.09845	EXPI	—	54.37727	XP/EPDC	+	1.05642	WGDP	0.95	1.56	5.48	132.73
	t. Statistic		0.840		4.320			0.982			3.213					
	Elasticity		—		0.172			0.432			0.755					
2. Machinery and Transport Equipment																
1.	XMT	=	— 9.46175	+	6.58974	WGDP	—	368.55727	XPMT/EPDC				0.94	1.23	33.50	259.27
	t. Statistic		0.052		6.056			3.793								
	Elasticity		—		2.410			1.373								
2.	Log XMT	=	— 1.97219	+	2.39187	Log WGDP	—	1.33995	Log XPMT/WXP				0.96	1.18	0.05	2.36
	t. Statistic		2.590		6.769			4.140								
3. Chemicals																
1.	Log XCH	=	— 2.27961	+	2.31020	Log WGDP	—	0.47529	Log XPCH/EPDC				0.96	2.23	0.03	2.30
	t. Statistic		5.618		11.049			2.007								
2.	XCH	=	— 72.12807	+	3.39397	WIDP	—	129.10907	XPCH/EPDC				0.92	1.30	21.22	212.45
	t-Statistic		0.668		7.850			1.713								
	Elasticity		—		1.891			0.551								

APPENDIX (Contd.)
India's Export Demand Functions: 1968-69 to 1978-79 (Contd.)

										$\bar{R}^2$	D.W.	S.E.E.	Mean
										R			
4. Miscellaneous Manufactured Articles													
1.	XMA	=	- 290.76767	+	4.95115 WGDP	+	0.75500 XMA ₋₁	-	25.92538 XPMA/WXP	0.94	2.43	53.56	342.91
	t-Statistic		0.552		1.123		3.115		0.240				
	Elasticity		—		1.369		0.627		— 0.148				
2.	XMA	=	.396.12986	+	3.86151 WXEI ₋₁	-	276.69672 XPMA/EPDC			0.95	2.46	48.97	342.91
	t-Statistic		2.118		8.454		1.570						
	Elasticity		—		0.612		— 0.767						
5. Food Group													
1.	XFD	=	191.47091	+	0.31589 WXEI	+	0.35564 XFD ₋₁	-	57.08624 XPFD/WXP	0.92	3.06	7.16	129.18
	t-Statistic		7.247		4.602		2.132		5.407				
	Elasticity		—		0.168		0.340		— 0.990				
2.	XFD	=	50.28062	+	1.88139 WGDP	-	44.77295 XPFD/WXP			0.84	1.73	9.59	129.18
	t-Statistic		1.553		7.432		3.293						
	Elasticity		—		1.388		— 0.777						

DEMAND FOR INDIA'S EXPORTS AND IMPORTS

APPENDIX (Contd.)
India's Import Demand Functions: 1968-69 to 1978-79

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RESERVE BANK OF INDIA OCCASIONAL PAPERS

						⁻² R	D.W.	S.E.E.	Mean
1. Aggregate Imports									
1.	M	=	-5.66629	-	34.25654 P*M/DPM	+	0.00415 YR		
	t-Statistic		0.251		2.216		4.646	0.71	1.67
	Elasticity		—		-0.415		1.469	9.22	105.18
2. Minerals Fuels and related materials									
1.	MMF	=	-91.87483	+	0.66520 MMF ₋₁	+	11.16072 FR	+	1.00642 INDP
							P*MF	0.81	2.90
	t-Statistic		0.889		3.370		2.801	0.789	46.02
	Elasticity		—		0.595		0.328	0.873	310.09
2.	MMF	=	-408.84404	+	0.53053 MMF ₋₁	+	1.27347 FR/P*MF	-	15.67433 DUMY
	t-Statistic		2.022		2.799		0.192	1.754	1.966
	Elasticity		—		0.474		0.037	- 0.257	2.064
3. Manufactured goods									
1.	MMG	=	-9.47260	-	152.80692 P*MG/DPMG	+	0.04612 CFR	+	1.58377 NFA/P*MG
	t-Statistic		0.128		2.273		3.681	0.510	0.54
	Elasticity		—		1.268		2.316	0.016	1.77
2.	MMG	=	82.97737	-	157.25620 QGMG	-	52.23144 PMG	+	0.00651 YR
							DPMG	+	3.49880 NFA
								PMG	0.92
	t-Statistic	=	1.072		3.464		0.758	2.491	0.996
	Elasticity		—		0.870		- 0.400	1.649	0.059

APPENDIX (Contd.)
India's Import Demand Functions: 1968-69 to 1978-79 (Contd.)

										R^2	D.W.	S.E.E.	Mean	
4. Machinery and Transport Equipment														
1.	MMT	=	63.69241	+	0.49732	MMT ₋₁ +	0.01080	CFR	—	85.92282 P*MT/DPMT	0.49	2.76	8.48	89.45
	t-statistic		2.487		1.098		3.189			3.338				
	Elasticity		—		0.506		0.893			— 1.111				
5. Chemicals														
1.	MCH	=	49.76061	—	12.93659	P*CH/DPCH	+	0.42124	QCB1		0.25	1.50	17.70	86.36
	t-Statistic		1.524		0.694			2.256						
	Elasticity		—		0.200			0.626						
6. Crude materials (inedible) except fuels														
1.	MCM	=	332.78771	+	5.92711	FR/PCM	—	45.03643	PCM	0.909790 NFA — 1.33487 ONF ₋₁	0.76	2.53	19.53	108.91
	t-Statistic		3.240		4.526			0.0977	$\frac{DPCM}{PCM}$	0.871				
	Elasticity		—		0.704			0.428	—	0.962				
										— 1.870				

NOTES AND COMMENTS

India's Export Statistics — An Attempt at Elaboration

Vidya Pitre*

The importance of reliable statistics in economic analysis need not be emphasised. The merit of an empirical investigation depends upon the logical relevance of underlying theory and the reliability of the data base. The primary object of this note is to examine and improve on the available data in respect of one area of the Indian economy, namely, that of its export trade. The purpose here is not one of interpretation but rather to make the data more useful for economic analysis.

This note is divided into three Sections. Section I contains a discussion of the salient features of export trade statistics. It also deals with the method and problems arising in the construction of time series of available data on exports on a comparable basis. Section II discusses the trends in the exports indices. The aspect of changes in the composition of exports is taken up in Section III.

SECTION I

Features of Export Statistics

The export trade data in India are collected and published by the Director General of Commercial Intelligence and Statistics (DGCI&S) of the Ministry of Commerce, Government of India. The value and quantity of exported articles are provided in detail. DGCI&S also compiles quantum and unit value indices of exports of all commodities and several important major commodity groups. These are published in the Reserve Bank's Report on Currency and Finance on an annual basis. However, there is no continuity in these indices mainly due to the changes in the base year from time to time. Over the period 1950-51 to 1979-80 the base year was changed about four times. Therefore, it is important to sort out and group the available material into meaningful empirical categories for a study of the long-term trends in exports. A continuous annual time series of quantum and unit value indices, adjusted for the discontinuities arising on account of such

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changes in the base year, is constructed for India's total exports for the period 1950-51 to 1979-80 in the present exercise.

Similar sets of continuous series for major commodity heads could be prepared only from 1958 onwards, since data at such detailed levels for the earlier years are not available. The methodology of construction of unit value and quantum index as adopted by DGCI&S and the adjustments for the discontinuities which we have attempted are discussed below.

Over the years, significant changes have occurred in the pattern of India's exports. Many commodities, particularly those under manufacturing items which were either non-existent or insignificant in the base year, have later appeared in the export statistics. To take account of such changes, the base period and commodity basket have been revised periodically. DGCI&S makes every attempt to ensure adequate coverage of exports while selecting items from the large number of exported items, for the commodity basket. For instance, the commodity basket as revised in 1968-69, consisted of 489 commodities selected out of about five thousand items. The selected commodities accounted for about 92 per cent of total exports in that year. The commodities for which either data on prices were not available or whose export values were insignificant were omitted from the commodity basket. DGCI&S constructs the unit value index (P_n) according to the Pasche's formula as given below :

$$P_n = \frac{\sum p_n q_n}{\sum p_o q_n}$$

Where p and q represent unit values and quantities of commodities respectively and the suffixes n and o denote the current and base years of comparison.

Since due to the difficulties mentioned above, several commodities are not included in the compilation of the index, necessary adjustments in the unit value index are made for the incomplete coverage. The assumption in such adjustment here is that the price changes for omitted items are of the same order as those shown by the included items. For the quantum index (Q_n) Laspayers index formula is used as given below

$$Q_n = \frac{\sum p_o q_n}{\sum p_o q_o}$$

However, in actual computation the quantum index is obtained through division of the value index by the corresponding adjusted unit

value index (P_n) as indicated below :

$$Q_n = \frac{1}{P_n} \frac{(V_n)}{(V_o)}$$

$$= \frac{1}{P_n} \frac{\sum P_n q_n}{\sum P_o q_o}$$

Where $p_n q_n = V_n$ i.e. value of exports in period n
 $p_o q_o = V_o$ i.e. value of exports in period o .

We have revised series of index number and it is linked with the old series through the application of the following formula

$$I_a = \frac{I_n \times I_x}{100}$$

Where I_a = revised index with old base for year a

I_n = Index with changed base in year a

I_x = Index with the old base for the x th year when base year was changed.

Using the above procedure, we obtain the quantum and the unit value indices with reference to base year 1957-58 for total exports and for major groups of commodities from 1958 onwards. We present these indices in Statements 5 and 6.

We note that the quantum indices are obtained through the division of value index by the adjusted unit value index, which would ensure that the product of the unit value and corresponding quantum index is consistent with the actual value index. In Statement 7, the estimated value and actual value indices are presented for total exports as well as for major commodity categories. This would enable proper assessment of the relative contributions of changes in quantum and unit values to the change in the total value of exports.

SECTION II

Trends in Exports

India's exports amounting to \$1602 million in 1951 increased to \$8242 million in 1980. But its share in the world exports has steadily declined from 2.4 per cent to 0.4 per cent during the same period. In rupee terms, exports totalled Rs. 601 crores in 1950-51 which increased to over Rs. 6000 crores in 1979-80. Taking the value for

1950-51 as 100, the value index of exports in rupee terms stood at 1017 in 1979-80. The dollar value index of exports with 1950=100, however, increased to 514 in 1980. This marked difference in the growth performance of exports is due to the depreciation of rupee value against the US dollar over the period. Further, the share of exports in India's national income varied around 4 to 7 per cent during this period as seen from Statement 3. It shows a rising trend from 1973 onwards. The same table gives the percentage ratio of India's exports to the import bill in order to get a broad idea about the balance of trade. We observe that the exports exceeded imports only once, in 1972, indicating a surplus on trade account. In all other years, the general feature was one of deficits on trade account. The important feature, therefore, is that inspite of a sharp increase in exports during seventies, the balance of trade remained adverse due to increase in the import bill.

We may now examine the trends in exports with reference to quantum, unit value and total value of exports. A cursory glance at Statement 4 shows that exports amounting to Rs. 601 crores in 1950-51 have expanded at a very slow rate in the first fifteen years. In fact the rate of increase was so marginal that one may tend to infer that exports remained almost stagnant during this period when the value index rose from 100 in 1950-51 to a meagre 135 in 1965-66. It was only in 1967 that a change for the better is observed. This growth gained further momentum in 1973.

The estimated value index obtained as a product of unit value and quantum indices for total exports for the period 1950-51 to 1979-80 is presented in Statement 4. There are very small differences when this is compared with the indices of actual value of total exports given in Statement 2. As such it becomes possible to assess broadly the relative contribution of growth in quantity and value to the increase in total value. We observe on one hand a marginal increase in the quantum of exports while on the other a declining trend in the unit value till 1965-66. The net result has been the general stagnancy in export earning of value of exports. The sharp increase in export earning in the following period appears to be mainly due to the steep increase in the unit value, though the volume index also shows an upward trend. The increase in the unit value of exports may be due to an increase in the prices and/or the depreciation of rupee in relation to the currency in which exports are invoiced. An in-depth analysis of external value of the rupee could throw more light on the importance of second factor. A sharp and sudden increase

in unit value index in 1967, for instance, can be explained with reference to devaluation of Indian rupee in 1966.

Having examined the trend in total exports, we proceed to study the respective trends for major groups of commodities. For this, we may take up volume, unit value indices for the period from 1958 to 1979-80 for major commodity heads as given in Statements 5 and 6. The estimated value indices for these are given in Statement 7. It is seen that the quantum index of total exports has risen from 100 in 1958-59 to 283 in 1979-80. The increase in the quantum exports under machinery, chemicals and manufactured goods appear to be sharp particularly toward the end of the period. Unit value index of total exports rose to 392 in 1979-80. The steepest rise is observed for minerals and lubricants that is caused by the steep rise in fuel prices. The growth in export value under machinery appears mainly due to increase in the quantum exports. For the growth in exports of chemicals and manufactured goods both price and volume seem to have made more or less equal contribution.

SECTION III

Pattern of Exports

We have undertaken further tabulation of India's value of exports for the various commodity groups, classified according to Indian Trade Classification (ITC). The attempt has been made to present the data on the lines of the Summary Tables on India's Exports by Sections, Divisions and Groups which appear in Monthly Statistics of Foreign Trade of India — an official publication of the Government of India. The data for the first decade from 1950-51 is taken from the study of Kishore H. Thanawala.¹ He regroups the trade data to correspond with Indian Trade Classification and as such is comparable with the data in official publications of the later years. This level of aggregation has been chosen essentially on grounds of ready availability of data.² Three digit level in trade classification is meaningful in economic analysis as it more or less corresponds with an industrial classification. This exercise provides as such a base from which changes in the pattern of India's exports can be examined. Percentage distribution of exports are given in Statements 8, 8.1 and 8.2 according to

¹. Thanawala, Kishore H. 'Statistics Relating to India's Foreign Trade 1948-49 to 1959-60, Bombay Popular Prakashan 1967.

². The level of aggregation in trade classification is identified by a numerical code. A section is given one digit number e.g. Food and live animals (0). Two digits and three digits codes are given to indicate a division and group respectively.

different levels of aggregation. As seen from Table 8 manufactured goods (6) remains the single largest section in total exports throughout the period. It accounted for more than half of total exports in 1950-51. Since 1955, its share has declined somewhat and remained steady around forty per cent in the following years. Textile yarn (65) accounts for the major portion of exports under manufactured goods. Two other sections namely, food and live animals and crude material retain their relative positions of second and third in total exports over the period. The percentage share of tea, the most important group under food, has declined steadily from 14 per cent in 1950-51 to 8 per cent in 1979-80. It is further observed that exports under beverages & tobacco, animals & vegetable oils and fats have lost their relative positions in favour of miscellaneous manufactured articles and machinery and transport equipment. Exports under these two sections account for about 10 per cent of total exports in 1979-80. Exports under clothing and road motor vehicles largely contributed to the increase in the relative share of miscellaneous manufactured items and machinery.

The discussion of the shifts in the structure of exports is confined to a broad level. The pattern over the years remains more or less same. Analysis at a more disaggregative level would perhaps indicate a different trend.

Statement I — India's Exports As Percentage Share of World Exports

Year	World Exports (US \$ million)	Indian Exports (US \$ million)	Indian Exports as percentage of world exports (col. 3 to col. 2)
1.	2.	3.	4.
1951	75000	1602	2.1
1952	72200	1243	1.7
1955	82800	1277	1.5
1961	134000	1429	1.1
1965	186400	1686	0.9
1970	311800	2026	0.6
1978	1297584	6415	0.5
1980	1868000	8242	0.4

Source : Yearbook of International Trade Statistics.

Statement II — India's Total Exports
(1957-58=100)

(Rs. Crores)

Years	Value	Index
1950-51	601	95
1951-52	733	115
1952-53	577	91
1953-54	531	84
1954-55	592	93
1955-56	609	96
1956-57	620	98
1957-58	635	100
1958-59	573	90
1959-60	639	101
1960-61	642	101
1961-62	661	104
1962-63	685	108
1963-64	793	125
1964-65	816	129
1965-66	806	127
1966-67	1094	172
1967-68	1199	189
1968-69	1358	214
1969-70	1413	223
1970-71	1535	242
1971-72	1608	253
1972-73	1971	310
1973-74	2523	397
1974-75	3329	524
1975-76	4043	637
1976-77	5146	810
1977-78	5404	851
1978-79	5726	902
1979-80	6459	1017

Statement III — India's Exports as Percentage of Imports and National Income
(1950-51 to 1979-80)

Year	Exports		Imports (Rs. Crores)	National Income	Value of Exports as percentage of	
	Value (Rs. Crores)	Index 1957-58= 100			Imports	National Income
1.	2.		3.	4.	5.	6.
1950-51	601	95	650	8720	92.5	6.9
1951-52	733	115	979	9052	74.9	8.1
1952-53	577	91	702	8840	82.2	6.5
1953-54	531	84	610	9499	87.0	5.6
1954-55	592	93	656	8635	90.2	6.9
1955-56	609	96	774	9133	78.7	6.7
1956-57	620	98	903	10570	68.7	5.9
1957-58	635	100	1036	10550	61.3	6.0
1958-59	573	90	904	11841	63.4	4.8
1959-60	639	101	957	12238	66.8	5.2
1960-61	642	101	1122	13263	57.2	4.8
1961-62	661	104	1092	13987	60.5	4.7
1962-63	685	108	1131	14795	60.6	4.6
1963-64	793	125	1223	16977	64.8	4.7
1964-65	816	129	1349	20001	60.5	4.1
1965-66	806	127	1409	20637	57.2	3.9
1966-67	1095	172	1902	23848	57.6	4.6
1967-68	1199	189	2008	28054	59.7	4.3
1968-69	1358	214	1909	28607	71.1	4.7
1969-70	1413	223	1582	31606	89.3	4.5
1970-71	1535	242	1634	34235	93.9	4.5
1971-72	1608	253	1825	36573	88.1	4.4
1972-73	1971	310	1867	40270	105.6	4.9
1973-74	2523	397	2955	50424	85.4	5.0
1974-75	3329	524	4519	59446	73.7	5.6
1975-76	4043	637	5265	62069	76.8	6.5
1976-77	5146	810	5074	67083	101.4	7.7
1977-78	5404	851	6025	75935	89.7	7.1
1978-79	5726	902	6814	80992	84.0	7.1
1979-80	6459	1017	8908	87253	72.5	7.4

Statement IV — Volume, Unit Value & Value Indices of India's Exports
(1950-51 to 1979-80)

(1957-58=100)

Year	Volume Index	Unit Value Index	Value Index*
1950-51	108	119	128
1951-52	98	164	161
1952-53	92	101	93
1953-54	92	100	92
1954-55	94	101	95
1955-56	105	107	112
1956-57	110	100	110
1957-58	100	100	100
1958-59	106	100	106
1959-60	101	110	111
1960-61	100	110	110
1961-62	104	110	114
1962-63	112	106	119
1963-64	126	105	132
1964-65	134	107	143
1965-66	124	113	140
1966-67	118	169	200
1967-68	122	169	206
1968-69	141	165	233
1969-70	142	171	243
1970-71	153	173	265
1971-72	154	176	271
1972-73	172	196	337
1973-74	180	238	428
1974-75	191	299	571
1975-76	211	323	681
1976-77	249	343	854
1977-78	241	385	928
1978-79	259	382	989
1979-80	286	382	1093

* Estimated

Statement V — Quantum Index of India's Exports
BASE — 1958 = 100

Years	Food	Beverages and Tobacco	Crude Materials inedibles except Fuels	Minerals Fuels and lubricants	Animals & Vegetable oils and Fats	Chemicals	Manufactured goods classified chiefly by materials	Machinery and Trans- port equipment	Miscellaneous Manufactured articles	General
	0	1.	2.	3.	4.	5.	6.	7.	8.	9.
1958-59										107
1959-60										101
1960-61	97	85	106	82	124	94	102	239	126	105
1961-62	109	82	111	66	86	87	105	263	115	100
1962-63	121	119	105	85	183	102	109	351	130	105
1963-64	122	122	142	96	272	94	121	358	168	112
1964-65	122	159	155	134	76	171	137	678	172	126
1965-66	113	119	150	96	40	171	122	845	187	135
1966-67	114	64	160	88	16	136	108	1266	177	124
1967-68	112	106	150	66	25	146	118	1394	218	119
1968-69	114	97	167	91	81	196	140	2956	279	122
1969-70	112	98	172	61	37	247	140	3168	360	142
1970-71	124	90	190	55	37	338	139	4024	374	143
1971-72	125	116	179	34	41	302	142	3491	424	153
1972-73	142	193	178	76	96	374	154	3782	533	154
1973-74	134	160	213	47	71	451	158	4557	701*	173
1974-75	153	152	215	30	86	463	142	9357	845	180
1975-76	180	153	215	37	116	421	166	7878	1015	192
1976-77	179	162	230	39	191	514	219	9042	1536	212
1977-78	145	163	182	34	58	609	237	9624	1568	251
1978-79	176	155	195	26	32	761	227	11781	1781	242
1979-80	263	152	242	20	73	878	197	13982	1933	260
										283

INDIA'S EXPORT STATISTICS

Statement VI—Unit Value Index of India's Exports
BASE: 1958 = 100

Years	Food	Beverages and Tobacco	Crude Materials inedible except Fuels	Minerals Fuels and lubricants	Animal & Vegetable oils and Fats	Chemi-	Manufactu- red goods classified chiefly by materials	Machinery and Trans- port equipment	Miscella- neous Manufac- tured articles	General
	0	1.	2.	3.	4	5.	6.	7.	8.	9.
1959	101	115	100	103	93	116	99	93	105	100
1960	110	107	102	99	100	158	111	89	112	109
1961	102	100	105	91	104	201	122	92	95	111
1960-61	106	114	103	93	96	172	118	91	109	110
1961-62	102	112	104	92	92	204	118	88	104	109
1962-63	101	97	103	84	91	175	114	74	101	106
1963-64	106	109	89	83	91	157	113	90	124	105
1964-65	111	100	87	98	119	130	116	76	126	107
1965-66	111	112	87	100	138	152	129	73	136	113
1966-67	167	147	125	170	217	262	209	73	193	169
1967-68	168	207	125	144	203	244	198	81	195	169
1968-69	166	214	123	137	178	273	197	87	197	166
1969-70	161	208	130	161	167	277	206	103	207	171
1970-71	173	222	128	238	231	243	202	110	240	173
1971-72	171	237	129	240	217	240	211	120	229	176
1972-73	192	203	138	439	319	243	240	131	251	196
1973-74	158	271	161	341	530	272	284	148	291	238
1974-75	345	331	194	707	480	504	371	132	336	299
1975-76	357	393	238	1007	362	481	366	190	362	322
1976-77	366	388	251	879	319	515	422	191	369	343
1977-78	549	442	257	870	518	462	420	205	387	385
1978-79	431	461	255	771	672	454	468	197	460	382
1979-80	334	467	267	1078	869	535	558	189	473	392

Statement VII — Sectionwise Value Indices of India's Exports (1958=100)

Group	Commodity/Year		1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
0. Food	A		103	111	121	130	134	125	183	188	189	180
	E		103	111	122	129	135	125	190	188	189	180
1. Beverages and Tobacco	A		97	92	119	138	158	138	138	218	207	205
	E		97	92	115	133	158	133	121	219	208	204
2. Crude Materials inedibles except Fuels	A		109	116	109	129	134	132	204	190	208	227
	E		109	115	109	126	135	130	200	187	205	224
3. Mineral Fuels and lubricants	A		77	61	65	101	127	90	131	94	125	98
	E		76	61	71	80	127	96	148	95	125	98
4. Animals & Vegetable oils and Fats	A		119	79	167	250	896	63	37	50	145	63
	E		119	79	167	243	90	55	35	51	144	62
5. Chemicals	A		162	177	178	156	221	220	336	356	536	686
	E		162	177	178	148	222	260	356	356	535	684
6. Manufactured goods classified chiefly by materials	A		120	123	124	142	150	155	224	233	275	287
	E		120	124	124	137	159	157	226	234	276	290
7. Machinery and Transport equipment	A		217	231	259	349	504	659	906	1126	2566	3256
	E		217	231	260	322	515	617	924	1128	2572	3263
8. Miscellaneous manufactured articles	A		137	120	132	213	214	244	324	424	549	745
	E		137	120	131	208	214	254	342	425	550	745
Total Exports	A		110	113	117	136	138	138	187	205	232	242
	E		110	114	119	132	144	140	201	206	236	245

A=Actual
E=Estimated

Statement VII — Sectionwise (Contd.)

Group	Commodity/Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
0. Food	A	215	215	271	346	527	644	676	797	757	841
	E	214	213	272	345	527	642	655	796	759	878
1. Beverages and Tobacco	A	200	277	393	436	505	604	632	723	718	710
	E	200	275	392	434	503	601	629	720	715	708
2. Crude Materials inedibles except Fuels	A	246	235	249	349	422	516	590	483	502	527
	E	243	231	246	343	417	512	577	468	497	646
3. Mineral Fuels and lubricants	A	130	82	330	158	211	368	341	288	201	219
	E	131	82	334	160	212	373	343	296	200	216
4. Animals & Vegetable oils and Fats	A	86	89	309	380	418	423	637	303	217	636
	E	85	89	306	376	413	420	609	300	215	634
5. Chemicals	A	823	726	913	1290	2345	2025	2695	2827	3479	4715
	E	821	725	909	1227	2334	2025	2647	2813	3455	4697
6. Manufactured goods classified chiefly by materials	A	281	301	371	450	527	608	965	998	1065	1093
	E	281	300	370	440	527	608	924	995	1062	1099
7. Machinery and Transport equipment	A	4418	4165	4900	6746	12378	15009	17516	19720	23244	26313
	E	4426	4189	4954	6744	12351	14968	17365	19729	23208	26426
8. Miscellaneous manufactured articles	A	898	969	1001	2040	2846	3666	5840	6063	8189	9134
		898	968	1332	2039	2839	3674	5668	6068	8182	9143
Total Exports	A	262	275	337	431	569	691	880	924	979	1089
	E	265	271	339	428	574	683	861	932	993	1109

A=Actual

E=Estimated

Statement VIII — Percentage Distribution of India's Exports (1950-51 to 1964-65)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
0.	Food and live animals	21.18	27.26	31.32	30.01	26.89	26.38	26.65	26.89	30.72	31.53	25.53	28.60	25.53	26.45
1.	Beverages and Tobacco	3.19	2.02	2.49	2.70	2.12	2.88	3.26	2.86	2.49	2.50	2.05	2.20	2.05	1.81
2.	Crude materials, inedible, except fuels	16.64	20.45	17.67	16.82	16.65	15.35	12.97	14.38	13.08	13.41	8.98	9.00	8.98	10.44
3.	Mineral fuels, lubricants and related materials	1.01	1.40	1.17	1.16	0.81	0.49	1.63	0.62	0.62	0.90	0.34	0.52	0.34	0.33
4.	Animal and Vegetable oils and fats	4.37	6.16	1.54	0.56	0.46	0.45	1.29	1.26	1.04	0.88	0.31	0.46	0.31	0.82
5.	Chemicals	1.03	1.18	1.13	1.43	2.36	2.01	3.32	2.30	3.14	2.28	2.70	2.53	2.69	3.26
6.	Manufactured goods	51.26	38.81	41.55	42.77	40.77	42.15	41.60	39.82	35.07	33.92	40.79	40.84	40.79	37.53
7.	Machinery and Transport equipments	0.09	0.22	0.58	1.30	4.88	4.52	4.30	4.63	6.38	6.49	6.92	6.25	6.93	7.00
8.	Miscellaneous manufactured articles	0.78	1.85	1.97	2.69	4.94	5.24	5.72	6.97	7.26	7.91	12.15	9.57	12.15	12.11
9.	Commodities not classified according to kind	0.45	0.71	0.57	0.46	0.29	0.34	0.25	0.27	0.20	0.19	0.23	0.23	0.23	0.25
	TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Statement VIII-1 — Divisionwise Percentage distribution of India's Exports (1950-51 to 1979-80)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
00	Live animals	0.00	0.00	0.02	0.01	—	—	—	—	—	0.01	0.06	0.15	0.08	0.05
01	Meat and meat preparations	0.00	0.09	0.15	0.06	0.20	0.08	0.17	0.28	0.15	0.26	0.36	0.47	0.61	0.65
02	Dairy products and eggs	0.00	0.00	0.07	—	0.01	0.01	0.02	—	—	—	0.03	0.03	0.01	0.03
03	Fish and fish preparations	0.42	0.65	0.73	0.82	1.99	2.65	2.75	3.32	1.96	3.19	3.59	3.19	3.92	3.90
04	Cereals and cereal preparations	0.00	1.10	0.01	0.25	0.72	0.46	3.93	0.40	0.76	0.49	0.38	1.18	2.22	3.23
05	Fruits and Vegetables	1.94	2.99	4.12	4.15	4.23	4.50	4.15	3.64	4.10	3.64	3.19	3.67	2.51	2.84
06	Sugar, Sugar preparations and honey	0.03	0.16	0.53	1.48	1.92	1.98	0.71	1.75	10.30	12.08	3.02	0.35	2.39	2.34
07	Coffee, tea, Cocoa, Spices and manufactures thereof	18.69	20.75	23.30	18.82	13.86	13.76	10.74	9.96	10.23	9.54	9.67	16.51	11.12	10.67
08	Feeding stuff for animals	0.00	1.36	2.38	4.44	3.84	2.81	4.04	7.27	3.13	2.45	5.16	2.95	2.56	2.63
09	Miscellaneous food preparations	0.10	0.16	0.01	0.01	0.12	0.13	0.14	0.09	0.09	0.17	0.08	0.12	0.11	0.11
11	Beverages	0.00	0.01	0.00	0.06	—	—	—	—	—	—	0.01	0.01	0.01	0.03
12	Tobacco and Tobacco manufactures	3.19	2.01	2.49	2.64	2.12	2.88	3.26	2.86	2.49	2.50	2.08	2.19	2.04	1.78
21	Hides, skins and furskins	1.63	1.11	1.58	1.23	0.24	0.04	0.04	0.00	0.01	—	0.02	0.01	0.01	0.01
22	Oilseeds, oilnuts	2.79	0.60	0.81	0.02	0.38	0.40	0.34	1.36	0.89	1.75	1.45	0.08	0.21	0.41
23	Crude rubber	0.03	0.00	0.00	—	—	—	—	0.06	0.03	—	0.15	0.14	0.01	—
24	Wood, lumbar and cork	0.13	0.36	0.40	0.24	0.38	0.44	0.48	0.69	0.29	0.33	0.39	0.30	0.26	0.19
25	Pulp and waste paper	0.11	0.19	0.00	—	0.06	0.01	—	—	—	—	0.01	—	—	—
26	Textile fibres and their waste	4.84	9.13	3.41	3.17	1.97	2.37	1.94	2.12	1.36	1.57	1.04	0.19	0.47	1.43
27	Crude fertilizers and crude minerals	2.06	1.81	2.04	1.83	1.45	1.34	1.20	0.86	1.01	0.80	0.84	0.88	0.91	0.95
28	Metalliferous ores and metalscrap	1.62	3.74	6.16	7.43	9.36	7.74	6.44	6.28	5.96	6.75	6.00	5.00	4.89	5.22

Statement VIII-1 (Contd.)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
29	Crude animal and vegetable materials	3.38	3.51	3.27	2.96	2.81	3.01	2.53	2.95	3.53	2.21	2.14	2.40	2.22	2.22
32	Coal, Coke and briquettes	0.61	0.74	0.53	0.36	0.26	0.06	0.16	0.12	0.21	0.42	0.29	0.23	0.10	0.04
33	Petroleum and petroleum products	0.40	0.66	0.64	0.80	0.55	0.43	1.47	0.50	0.41	0.46	0.37	0.29	0.24	0.29
41	Animal oils and fats	0.00	0.00	0.00	—	—	—	0.02	—	—	0.01	—	—	0.01	—
42	Fixed vegetable oils and fats	4.36	5.84	1.34	0.51	0.46	0.45	1.26	1.24	1.02	0.83	0.98	0.38	0.24	0.66
43	Animal and vegetable oils and fats processed	0.01	0.32	0.20	0.05	—	—	0.01	0.02	0.02	0.03	0.04	0.08	0.06	0.16
51	Chemical elements and compounds	0.14	0.18	0.13	0.28	0.51	0.46	0.39	0.58	0.82	0.61	0.63	0.50	0.59	0.49
52	Mineral tar and crude chemicals	0.00	0.01	0.02	0.07	0.07	0.01	—	0.01	0.09	0.16	—	—	—	—
53	Dyeing tanning and colouring materials	0.11	0.10	0.07	0.15	0.47	0.34	0.47	0.46	0.70	0.48	0.67	0.66	0.59	0.69
54	Medical and pharmaceutical products	0.27	0.29	0.16	0.35	0.55	0.55	0.52	0.60	0.68	0.57	0.47	0.58	0.99	1.37
55	Essential oils and perfumes	0.48	0.53	0.72	0.45	0.46	0.55	0.51	0.47	0.48	0.36	0.37	0.43	0.35	0.53
	materials: toilet, polishing and cleaning														
56	Fertilizers manufactured	0.03	0.05	0.00	—	—	—	0.03	—	—	—	—	—	—	—
57	Explosives and pyrotechnic products	0.00	0.00	0.00	—	0.01	0.01	0.01	0.02	0.02	0.01	0.03	0.03	0.04	0.02
58	Plastic materials	0.00	0.00	0.00	0.06	0.21	0.03	0.06	0.06	0.06	0.05	0.08	0.05	0.04	0.04
59	Chemical materials and Products	0.00	0.02	0.00	0.09	0.08	0.08	0.05	0.10	0.28	0.06	0.10	0.08	0.09	0.12
61	Leather, leather manufactures and dressed fur skins	4.48	3.90	3.95	3.55	4.71	5.80	8.92	6.95	4.39	5.12	5.30	4.62	5.72	7.60
62	Rubber manufactures	0.29	0.15	0.05	0.27	0.45	0.48	0.32	0.37	0.40	0.28	0.46	0.42	0.34	0.33

Statement VIII-1 (Contd.)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
63	Wood and cork manufactures	0.00	0.02	0.01	0.02	0.11	0.07	0.06	0.20	0.25	0.15	0.25	0.22	0.25	0.25
64	Paper, paper board and manufactures thereof	0.04	0.12	0.10	0.15	0.35	0.18	0.21	0.28	0.23	0.14	0.13	0.13	0.13	0.08
65	Textile yarn, fabrics	45.84	33.82	35.14	34.46	23.49	27.25	23.38	22.42	18.79	14.30	14.25	14.02	11.95	15.30
66	Non-metallic mineral manufactures	0.17	0.31	0.42	2.07	3.17	3.75	4.65	4.89	3.64	5.09	6.24	11.33	13.20	8.89
67	Iron and steel	0.21	0.17	1.54	1.57	5.90	2.60	2.13	2.45	2.62	2.98	7.79	5.22	3.88	1.65
68	Non-ferrous metal	0.21	0.26	0.04	0.11	0.78	0.51	0.42	0.67	2.69	4.79	3.58	1.58	1.85	0.24
69	Manufactures of metal	0.02	0.06	0.30	0.57	1.81	1.51	1.55	1.59	2.06	2.07	2.64	2.03	3.47	3.19
71	Machinery other than Electrical	0.07	0.10	0.29	0.59	1.83	1.54	1.50	1.87	2.72	2.74	2.38	2.56	3.37	2.95
72	Electrical machinery	0.00	0.07	0.18	0.60	1.04	1.19	1.19	1.14	1.71	1.63	1.57	1.52	1.38	1.35
73	Transport equipment	0.02	0.05	0.11	0.51	2.01	1.79	1.61	1.62	1.95	2.12	1.87	2.17	2.18	2.70
81	Sanitary, plumbing, heating and lighting fixtures and fittings	0.00	0.00	0.03	0.03	0.02	0.03	0.02	0.09	0.08	0.05	0.05	0.07	0.05	0.06
82	Furniture	0.02	0.05	0.04	0.03	0.04	0.04	0.03	0.07	0.08	0.08	0.09	0.10	0.09	0.07
83	Travel goods, handbags and similar articles	0.01	0.21	0.06	0.01	0.04	0.05	0.11	0.12	0.12	0.16	0.13	0.17	0.25	0.25
84	Clothing	0.16	0.07	0.13	0.80	1.97	2.24	2.86	3.85	4.12	5.10	6.54	6.14	8.04	7.81
85	Foot wear	0.13	0.26	0.49	0.65	0.74	0.75	0.65	0.54	0.62	0.56	0.60	0.45	0.47	0.53
86	Professional, Scientific and controlling instruments	0.08	0.26	0.33	0.23	0.48	0.42	0.44	0.32	0.31	0.32	0.26	0.33	0.38	0.47
89	Miscellaneous manufactured articles	0.38	1.00	0.90	0.94	1.65	1.69	1.61	1.98	1.93	1.64	1.96	2.31	2.87	2.92
91	Postal packages	0.39	0.60	0.36	0.29	0.11	0.17	0.13	0.12	0.09	0.10	0.10	0.11	0.14	0.18
93	Special transactions	0.00	0.00	0.09	0.12	0.07	0.07	0.04	0.07	0.05	0.04	0.03	0.08	0.07	0.07
94	Animals	0.06	0.11	0.12	0.05	0.06	0.07	0.06	0.05	0.04	0.04	0.04	0.03	0.01	—
95	Firearms of war and ammunition	0.00	0.00	0.00	—	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	—
96	Coin (other than gold) not being legal tender	0.00	0.00	0.00	—	0.02	—	—	0.01	—	—	—	—	—	—

Statement VIII-2 — Percentage Distribution of India's Exports (1950-51 to 1979-80)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
001	Live animals	0.00	0.00	0.01	0.01	—	—	—	—	—	0.01	0.06	0.15	0.08	0.05
011	Meat, fresh, chilled or frozen	0.00	0.00	0.05	0.05	0.19	0.08	0.17	0.28	0.15	0.26	0.36	0.47	0.61	0.63
012	Meat, dried, salted or smoked	0.00	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—
013	Meat in airtight containers	0.00	0.07	0.09	—	—	—	—	—	—	—	—	—	0.01	0.02
022	Milk and Cream	0.00	0.00	0.00	—	—	—	0.01	—	—	—	0.01	0.01	—	—
023	Butter	0.00	0.00	0.00	—	—	0.01	—	—	—	—	0.01	0.01	0.01	0.01
024	Cheese and Curd	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—
025	Eggs	0.00	0.00	0.06	—	—	—	—	—	—	—	0.02	0.01	—	0.01
031	Fish, fresh simply preserved	0.42	0.65	0.69	0.70	1.75	2.49	2.58	3.58	1.86	3.18	3.57	3.16	3.90	3.88
032	Fish in airtight containers	0.00	0.00	0.03	0.12	0.23	0.15	0.17	0.25	0.11	0.01	0.02	0.03	0.02	0.03
041	Wheat	0.00	0.00	0.00	—	—	—	3.49	0.01	—	0.03	0.01	0.82	1.16	0.89
042	Rice	0.00	1.02	0.00	0.03	0.32	0.12	0.19	0.27	0.65	0.33	0.12	0.21	0.68	2.01
043	Barley	0.00	0.00	0.00	—	—	—	—	—	—	—	0.07	0.02	—	0.10
044	Maize	0.00	0.01	0.00	—	—	—	—	—	—	0.01	—	—	—	—
045	Cereals (Other than above)	0.00	0.03	0.00	—	—	—	—	—	—	—	—	—	0.01	—
046	Meal and flour of wheat	0.00	0.01	0.00	—	0.05	0.02	0.01	—	—	—	—	—	—	—
047	Meal and flour of cereal	0.00	0.00	0.00	—	—	—	—	—	—	—	—	0.03	0.22	0.08
048	Cereal preparations	0.00	0.00	0.01	0.05	0.04	0.07	0.09	0.04	0.05	0.07	0.10	0.10	0.15	0.15
049	Pulses and flour thereof	0.00	—	—	0.15	0.28	0.23	0.13	0.08	0.05	0.06	0.05	—	—	—
051	Fruits, fresh and nuts	1.52	2.24	3.42	3.64	3.54	4.05	3.72	3.18	3.67	2.60	2.32	3.05	1.77	2.27
052	Dried fruits	0.15	0.06	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	—	—	—
053	Fruits, preserved	0.00	0.00	0.01	0.06	0.11	0.11	0.15	0.09	0.08	0.13	0.18	0.18	0.18	0.13
054	Vegetables, fresh, frozen	0.29	0.67	0.67	0.44	0.84	0.53	0.40	0.26	0.22	0.48	0.55	0.27	0.41	0.28
055	Vegetables, roots and tubers	0.00	0.03	0.14	—	—	—	—	0.08	0.09	0.10	0.11	0.17	0.16	0.16
061	Sugar and honey	0.03	0.16	0.52	1.47	1.90	1.97	0.70	1.73	10.30	12.08	3.01	0.35	2.38	2.33

Statement VIII-2 (Continued)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
062	Sugar confectionary and other sugar preparations	0.00	0.00	0.00	0.01	—	—	—	—	—	—	0.01	0.01	0.01	0.01
071	Coffee	0.23	0.25	1.14	1.61	1.63	1.41	1.68	1.86	2.14	1.76	2.29	3.56	2.53	2.56
072	Cocoa	0.00	—	0.00	—	—	—	—	—	—	—	—	0.01	0.02	0.01
073	Chocolate and other food preparation	0.00	—	0.00	0.01	0.02	0.02	0.02	0.04	0.02	0.01	0.01	0.03	0.02	—
074	Tea and mate	13.90	18.58	19.52	14.31	9.66	9.99	7.53	5.85	8.34	6.03	5.90	10.36	5.97	5.76
075	Spices	4.54	1.90	2.62	4.48	3.84	2.81	4.04	2.22	2.56	1.81	1.47	2.56	2.59	2.34
081	Feeding-stuff for animals	0.00	1.34	2.38	4.48	3.84	2.81	4.04	7.27	3.09	2.45	5.16	2.93	2.55	2.64
091	Margarine and shortening	0.00	—	—	—	—	—	—	—	—	—	—	0.03	0.01	—
099	Food preparations	0.10	0.14	0.01	0.01	0.12	0.13	0.14	0.09	0.09	0.17	0.08	0.10	0.11	0.11
111	Non-alcoholic beverages	0.00	—	0.00	0.06	—	—	—	—	—	—	—	—	—	—
112	Alcoholic beverages	0.00	0.01	0.00	—	—	—	—	—	—	—	0.01	0.01	0.01	0.03
121	Tobacco unmanufactured	2.43	1.81	2.30	2.44	2.04	2.70	3.12	2.76	2.44	2.37	1.94	2.11	1.94	1.60
122	Tobacco Manufactured	0.75	0.20	0.17	0.19	0.07	0.18	0.14	0.10	0.06	0.14	0.11	0.08	0.10	0.18
211	Hides and Skins	1.62	1.11	1.49	1.19	0.24	0.04	0.04	0.06	0.01	0.01	—	0.01	0.01	0.01
212	Fur skins undressed	0.00	—	0.08	0.03	—	—	—	—	—	—	0.01	0.01	—	—
221	Oil seeds, oil nuts	2.79	0.59	0.81	0.02	0.38	0.40	0.34	1.36	0.89	1.77	1.43	0.08	0.21	0.41
231	Crude rubber	0.03	0.00	0.00	—	—	—	—	0.05	0.03	—	0.15	0.14	0.01	0.01
241	Fuel wood and charcoal	0.00	—	0.00	—	—	—	—	—	—	—	0.01	0.02	—	—
242	Wood in the rough	0.13	0.36	0.38	0.23	0.36	0.44	0.48	0.69	0.27	0.32	0.33	0.24	0.24	0.18
243	Wood shaped or simply worked	0.00	—	0.00	—	—	—	—	0.01	0.01	0.02	0.04	0.05	0.02	0.01
244	Cork, raw and waste	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—
251	Pulp and Waste paper	0.11	0.19	0.00	—	0.06	0.01	—	—	—	—	0.01	—	—	—
261	Silk	0.02	0.04	0.06	0.05	0.03	0.02	0.04	0.10	0.01	0.03	0.03	0.03	0.06	0.02

Statement VIII-2 (Continued)

Code No.	Commodity Groups	1950- 51	1955- 56	1960- 61	1965- 66	1970- 71	1971- 72	1972- 73	1973- 74	1974- 75	1975- 76	1976- 77	1977- 78	1978- 79	1979- 80
262	Wool and other animal hair	1.35	1.80	1.22	0.91	0.33	0.27	0.35	0.34	0.27	0.13	0.16	0.03	0.02	0.02
263	Cotton	2.99	6.70	1.82	1.63	1.06	1.19	1.26	1.48	0.52	1.13	0.78	0.08	0.36	1.35
264	Jute	0.01	—	0.00	0.38	0.27	0.83	0.25	0.18	0.54	0.27	0.03	0.05	0.03	0.03
265	Vegetable fibres	0.45	0.57	0.24	0.07	0.03	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01
266	Synthetic and regenerated fabrics	0.00	—	0.02	—	—	—	—	—	—	—	—	—	—	—
267	Waste materials from textile fabrics	0.00	—	0.03	0.05	0.02	0.02	0.01	0.01	—	—	0.01	—	—	—
270	Crude minerals	1.92	1.76	2.00	1.83	1.45	1.34	1.20	0.86	1.01	0.80	0.84	0.87	0.90	0.95
271	Fertilizers, crude	0.13	0.05	0.03	—	—	—	—	—	—	—	—	—	—	—
281	Iron ore and concentrates	0.03	1.06	2.65	5.24	7.64	6.69	5.61	5.36	4.86	5.44	4.80	4.49	4.08	4.46
282	Iron and steel scrap	0.00	0.45	0.88	0.68	0.45	0.12	0.06	0.12	0.18	0.19	0.20	0.08	0.04	0.02
283	Ores and concentrates of non-ferrous base metals	1.63	2.21	2.60	1.46	1.13	0.90	0.75	0.79	0.91	1.12	0.99	0.43	0.76	0.68
284	Non-ferrous metal scrap	0.00	—	0.02	0.01	0.02	0.01	—	0.01	0.01	—	0.01	—	—	—
285	Silver and platinum ores	0.00	—	—	—	—	—	—	—	—	—	—	—	—	0.01
291	Crude animal materials	0.41	0.68	0.74	0.86	0.59	0.60	0.51	0.63	0.53	0.39	0.46	0.63	0.50	0.50
292	Crude vegetable materials	2.96	2.82	2.52	2.09	2.21	2.40	2.02	2.32	2.55	1.82	1.69	1.77	1.72	1.72
321	Coal Coke and briquettes	0.61	0.73	0.52	0.35	0.26	0.06	0.16	0.12	0.21	0.43	0.29	0.23	0.10	0.04
331	Petroleum, crude and partly refined	0.00	—	—	—	—	—	0.79	—	—	—	—	—	—	—
332	Petroleum products	0.39	0.66	0.64	0.80	0.55	0.43	0.67	0.49	0.41	0.48	0.37	0.29	0.24	0.29
341	Gas natural and manufactured	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—
351	Electric energy	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—
411	Animal oils and fats	0.00	0.00	0.00	—	—	—	0.02	—	—	0.01	—	—	0.01	0.01
421	Fixed vegetable oils and fats	4.36	5.84	1.34	0.50	0.45	0.45	1.26	1.24	1.02	0.85	0.98	0.39	0.24	0.65

Statement VIII-2 (Continued)

Code No.	Commodity Groups	1950-51	1955-56	1960-61	1965-66	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
431	Animal and vegetable oils and fats processed	0.01	0.31	0.19	0.05	—	—	0.01	0.02	0.02	0.04	0.04	0.08	0.67	0.16
512	Organic chemicals	0.12	0.16	0.10	0.12	0.21	0.21	0.14	0.21	0.24	0.19	0.23	0.19	0.27	0.23
513	Inorganic chemicals	0.01	0.01	0.02	0.15	0.29	0.24	0.24	0.26	0.33	0.20	0.18	0.10	0.11	0.08
514	Other inorganic chemicals	0.00	—	—	—	—	—	—	0.11	0.25	0.22	0.22	0.20	0.20	0.19
515	Radio active and associated material	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—
521	Mineral tar and crude chemicals from coal, petroleum and natural gas	0.00	0.00	0.01	0.06	0.07	0.01	—	0.01	0.09	0.16	—	—	—	—
532	Dying and tanning extracts	0.07	0.06	0.02	0.01	0.02	—	—	0.01	—	0.01	0.01	0.02	0.02	0.02
533	Pigments, paints, varnishes	0.02	0.02	0.04	0.09	0.29	0.18	0.23	0.13	0.28	0.21	0.18	0.20	0.19	0.23
534	Synthetic organic dyestuffs	0.00	0.00	0.00	0.04	0.15	0.15	0.23	0.32	0.42	0.27	0.48	0.44	0.38	0.44
541	Medical and pharmaceutical products	0.27	0.28	0.15	0.32	0.55	0.55	0.52	0.60	0.69	0.56	0.46	0.56	0.99	1.37
550	Cosmetics, soaps, cleaning polishing preparations	0.05	0.06	0.07	0.16	0.21	0.30	0.30	0.22	0.20	0.27	0.29	0.33	0.26	8.41
551	Essential oils, perfume and flavour materials	0.43	0.46	0.65	0.29	0.24	0.25	0.20	0.25	0.28	0.10	0.08	0.10	0.09	0.12
561	Fertilizers, manufactured	0.01	0.04	0.00	—	—	—	0.03	—	—	—	—	—	—	—
571	Explosives and pyrotechnic products	0.00	—	0.00	—	0.01	0.01	0.02	0.02	0.02	0.01	0.03	0.03	0.04	0.02
581	Plastic materials	0.00	—	—	0.06	0.20	0.03	0.05	0.06	0.06	0.03	0.08	0.05	0.04	0.05
599	Chemical materials and products	0.00	0.02	0.00	0.08	0.07	0.07	0.05	0.10	0.28	0.06	0.10	0.08	0.09	0.12
611	Leather	4.46	3.87	3.92	3.52	4.67	5.77	8.72	6.61	4.06	4.87	4.96	4.30	5.30	6.78
612	Manufactures of leather	0.01	0.02	0.01	0.02	0.04	0.04	0.06	0.11	0.12	0.07	0.17	0.35	0.40	0.81
613	Fur skins, tanned or dressed	0.00	—	—	—	—	—	8.15	8.11	0.22	0.18	0.17	0.87	0.02	0.02
621	Materials of rubber	0.00	—	0.01	0.01	0.02	0.02	0.01	0.03	0.01	0.01	0.02	0.02	0.02	0.02

Statement VIII-2 (Continued)

Code No.	Commodity Groups	1950- 51	1955- 56	1960- 61	1965- 66	1970- 71	1971- 72	1972- 73	1973- 74	1974- 75	1975- 76	1976- 77	1977- 78	1978- 79	1979- 80
686	Zinc	0.01	0.05	0.01	—	—	—	—	—	0.01	—	—	—	—	—
687	Tin	0.00	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—
688	Uranium and thorium	0.13	0.05	0.00	—	—	—	—	—	0.01	—	0.01	—	—	0.01
690	Manufactures of metal	0.01	0.06	0.29	0.55	1.81	1.51	1.53	1.55	2.06	2.07	2.64	3.03	3.47	3.19
710	Machinery other than electrical	0.07	0.09	0.23	0.30	1.15	0.88	0.80	1.01	1.50	1.62	1.27	1.24	1.58	1.51
711	Power generating machinery	0.00	—	0.04	0.18	0.35	0.35	0.46	0.52	0.80	0.74	0.68	0.93	1.26	0.95
712	Agricultural machinery and implements	0.00	—	0.00	—	0.03	0.02	0.03	0.05	0.08	0.09	0.05	0.06	0.10	0.04
714	Office machines	0.00	—	0.00	0.06	0.12	0.13	0.11	0.16	0.17	0.12	0.05	0.04	0.03	0.02
715	Metal working machinery	0.00	—	0.00	0.03	0.16	0.14	0.08	0.12	0.18	0.19	0.34	0.30	0.40	0.43
720	Electrical Machinery	0.00	0.07	0.18	0.39	1.04	1.19	1.19	1.14	1.71	1.63	1.67	1.51	1.38	1.35
731	Railway vehicles	0.00	0.00	0.00	—	0.18	0.44	0.20	0.26	0.30	0.35	0.23	0.12	0.12	0.38
732	Road motor vehicles	0.00	0.00	0.01	0.14	1.36	0.77	0.82	0.61	0.91	1.08	1.07	1.28	1.24	1.29
733	Road Vehicles other than motors	0.00	0.05	0.01	0.15	0.46	0.47	0.54	0.59	0.66	0.62	0.44	0.69	0.67	0.79
734	Aircrafts	0.00	—	0.07	0.01	0.01	0.11	0.01	0.01	0.02	0.01	0.01	—	—	0.01
735	Ships and boats	0.00	0.00	0.00	—	—	—	0.05	0.14	0.06	0.06	0.12	0.08	0.15	0.24
812	Sanitary, plumbing, heating and lighting fixtures	0.00	—	0.02	0.03	0.02	0.03	0.03	0.09	0.08	0.05	0.05	0.07	0.05	0.06
821	Furniture	0.01	0.04	0.04	0.03	0.04	0.04	0.04	0.07	0.08	0.07	0.09	0.10	0.09	0.07
831	Travel goods, hand bags and similar articles	0.00	0.20	0.05	0.01	0.04	0.06	0.12	0.12	0.12	0.16	0.13	0.17	0.25	0.25
841	Clothing	0.16	0.07	0.13	0.00	1.97	2.24	2.87	3.85	4.12	5.08	6.54	6.14	8.04	7.81
842	Fur clothing (Made of Fur skin)	—	—	0.00	—	—	—	—	—	—	0.01	0.01	—	—	—
851	Footwear	0.13	0.26	0.48	0.65	0.75	0.75	0.66	0.54	0.62	0.56	0.60	0.45	0.47	0.53

Statement VIII-2 (Continued)

Code No.	Commodity Groups	1950- 51	1955- 56	1960- 61	1965- 66	1970- 71	1971- 72	1972- 73	1973- 74	1974- 75	1975- 76	1976- 77	1977- 78	1978- 79	1979- 80
861	Scientific, medical, optical, controlling apparatus	0.08	0.25	0.01	0.02	0.09	0.11	0.17	0.09	0.10	0.12	0.10	0.09	0.10	0.24
862	Photographic and Cinematographic supplies	—	—	0.00	0.01	—	—	—	—	—	0.01	0.01	0.04	0.03	0.04
863	Developed Cinematographic films	—	—	0.30	0.20	0.38	0.32	0.28	0.22	0.20	0.19	0.15	0.20	0.22	0.19
864	Watches and clocks	—	—	—	—	—	—	—	0.01	0.01	0.01	0.01	0.01	0.03	0.01
891	Musical instruments	0.08	0.03	0.02	0.03	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.06	0.05	0.05
892	Printed matter	0.07	0.11	0.18	0.11	0.09	0.11	0.10	0.12	0.10	0.09	0.09	0.11	0.14	0.11
893	Articles of artificial plastic materials	—	—	—	0.55	1.20	1.26	1.21	0.15	0.17	0.14	0.23	0.23	0.19	0.16
894	Parabulators, toys, games and sporting goods	—	—	—	—	—	—	—	0.18	0.24	0.21	0.26	0.27	0.35	0.30
895	Office and stationery supplies	—	—	—	—	—	—	—	0.05	0.04	0.03	0.02	0.02	0.09	0.04
896	Works of art collector, pieces and antiques	—	—	—	—	—	—	—	1.15	0.03	0.87	0.05	1.28	1.69	1.80
897	Jewellery and gold-smith's silversmith's ware	0.00	0.18	0.13	0.09	0.15	0.15	0.12	0.18	0.24	0.17	0.18	0.26	0.28	0.38
899	Manufactured articles	0.23	0.67	0.56	0.29	0.11	0.12	0.13	0.10	0.08	0.10	0.09	0.09	0.09	0.08
911	Postal package not classified according to kind	0.38	0.59	0.35	0.12	0.07	0.07	0.05	0.12	0.09	0.10	0.10	0.11	0.14	0.18
931	Special transaction	—	—	0.09	0.05	0.06	0.07	0.06	0.07	0.05	0.04	0.03	0.08	0.07	0.07
941	Animals (including zoo animals, dogs and cats)	0.06	0.11	0.12	0.01	0.04	0.03	0.02	0.05	0.04	0.04	0.04	0.03	0.01	—
951	Firearms of war and ammunition	0.00	0.00	0.00	—	0.02	—	0.01	0.02	0.02	0.01	0.01	0.01	0.01	—
961	Coin (other than gold coins) not being legal tender	—	—	—	—	—	—	—	0.01	—	—	—	—	—	—

Note: The data are presented only in respect of selected benchmark years.
However, comparable data for missing years can be had on specific request addressed to author.

BOOK REVIEW

"Management Techniques of Bank Lending" — A. K. Chatterjee — Himalaya Publishing House—Rs. 125—750 pages.

According to the publishers this book has been written and designed for the 'professional banker and the student of banking'. The author is a professional banker with over sixteen years of executive experience in banking and bank training.

The book makes an attempt in three parts to cover all important aspects of bank lending (both short term and long term) to the commercial and industrial sector. In Part I, it deals with financial accounting and audit, classification of financial statements and the techniques of analysis and interpretation of such statements. In Part II, the concepts of working capital and long term capital and the lending techniques in respect of the financing of such requirements have been dealt with. In addition there is a separate chapter on SSI financing. Part III covers budgetary and cost control, management information system, legal aspects relating to creation of charge, documentation for bank lending and enforcement of security. Besides, post-sanction control, guarantees and sick units are also included in this part. On the whole the coverage has been good and the topics discussed are of considerable importance to the practising banker and the student of banking. By and large the author has been able to do justice to the subject matter; but a few instances of inaccuracies and a lack of co-hesion mar an otherwise good attempt.

Take for instance the first Part which tries to explain the basic concepts of financial accounting. An exhaustive illustration has been given to explain the preparation of Financial statements in the chapter on 'Financial Accounting'. Apart from some mistakes in ledger headings and accounting techniques, there are a few other material lapses like omissions of certain account heads in the ledger included in the opening journal entry as also omission of certain accounts like rent, bank loan etc. Another major item of omission in the illustration is that the cash book does not reflect receipts from debtors and payments to creditors. Fortunately, these amounts are equal or the trial balance would not have agreed. A case of compensating error: Similarly in the chapter No. 6 on 'funds flow analysis', the distinction between cash flow and funds flow could have been made clearer. The concept of cash/funds flow being a derivative analytical study of the basic financial statements is also not clearly brought out. Moreover, greater attention should have been paid to see that the illustra-

tions really bring out what has been explained in the theoretical expositions. As a matter of fact, how the sources and uses of funds given in the illustrations 1 and 2 in this chapter, constructed from variations in balance sheet figures, have been recast in the 'funds flow' statement should have been properly explained. The funds flow statement in the illustration of XYZ Co. Ltd. in the same chapter also does not seem to be correct. There is duplication of certain items like depreciation, dividends and taxes in the working and the flow of funds from term loans has not been included in the sources and uses of funds at all! Mistakes and omissions like the above while dealing with basic concepts can cause unnecessary confusion to the reader and undermine the utility of the book.

In Part II, the first chapter deals with the description of various types of assets and liabilities and the techniques of assessment of working capital. The system of assessment of working capital assessment explained here is based on the 'drawing power' method. In other words, the peak level holdings of current assets are estimated on the basis of projected level of holdings; margin stipulated is deducted and the balance amount (after adjustment of sundry creditors) is taken as the available 'Advance value' or 'Drawing Power' (are these terms to be at all treated as on par?) In another illustration, however, given in the same chapter, the 'advance value' (more correctly the 'Drawing Power') is no longer the eligible amount of finance. Here the eligible bank finance is arrived at by deducting the net working capital as at the end of the previous year from the value of projected current assets less sundry creditors (i.e. the working capital gap). Where projections have been made for the next year and current assets and sundry creditors are taken at the projected figures, what is the rationale in taking the net working capital as at the end of the previous year? As a matter of fact if the projected net working capital had been taken into account, the author could have come to the conclusion that he has arrived at, viz. that there was "no justification for raising additional current liabilities (including bank borrowings)" without the necessity of resorting to ambiguous clarifications. The confusion that is created by the analysis is on account of the fact that the author has not tried to differentiate between 'banker's margin' which banks charge on assets taken as security and the 'owner's contribution' represented by the surplus of long term resources over long term uses. Bank borrowings arrived at on the basis of the equation "current assets = current liabilities (excluding bank borrowings) + bank borrowings + owners' contribution" sets the limit for borrowings; the actual borrowings are determined by the value of charged assets

less stipulated bank margin and/or cash flow analysis. The whole treatment of the subject can give rise to a lot of unavoidable confusion to the reader.

The chapter on cash budget is too sketchy and hardly indicates its precise role in fixing periodical drawings within a predetermined overall limit. True, the cash flow technique is used by banks in fixing limits for certain seasonal industries; but as a rule the projected inventories and receivables build-up less available current liability and owner's contribution fix the overall limits and cash/funds flows are used for determining periodical need-based drawings. The chapter on the recommendations of the Tandon Committee/Chore Committee is again only an enumeration of the main recommendations. The recommendations of the Tandon and Chore Committee is again only an enumeration of the main recommendations. The recommendations of the Tandon and Chore Committees, which outline the basis for fixing limits and controlling drawings through the quarterly information system in the case of larger advances, are an integrated set of suggestions. No attempt has been made to discuss in detail the techniques adopted by the above Committees in fixing the limits and how they differ from the the system explained earlier in the book. The importance of fixing norms of inventory/receivable holdings and the mechanism of controlling actual drawings through the information system propounded by the Committees, are hardly discussed in the chapter, at least not in detail; mere enumeration of the main recommendations may be useful to a student appearing for an examination but can hardly be of any assistance to a professional banker.

The third part is on control and supervision. Unfortunately apart from defining the basic concepts, there has been no systematic attempt to expand the basic ideas underlying the various concepts. Instead, a stream of quotations from different authorities has been given apparently to give authenticity to certain statements. These, however, do not profit the reader much, as the basic concepts are either not explained or expressed very vaguely.

In the attempt to cram as much of techniques, practices and legal aspects in the book, the overall effort has become to some extent disjointed. Unfortunately this is a trend which is visible throughout the book, the exposition of techniques or the legal positions without linking up how they are connected with the main theme of the chapters. This shortcoming is obviously due to the fact (which the author, along with other things has indicated in bold

letter in the preface) that the book "encompasses broadly the new syllabus for the Associate (IIB) Examination in Practice & Law of Banking (II), Management Accountancy and the Certificate Examination in Industrial Finance". Even as a text book for IIB candidates, the book's usefulness could have been improved if it tried to develop the subject matter in a systematic manner, by not only defining the concepts but explaining them adequately and developing them progressively with a view to making the student understand the theme. A few printing and grammatical mistakes which raise their ugly heads at various places and a certain extent of repetition in some of the topics discussed could have been avoided with more care in editing. Despite these few limitations, which in a book of this type are perhaps unavoidable without utmost care, the book is nevertheless an useful addition to the literature on bank lending in as much as it brings in one volume, some of the more common techniques adopted by modern banks in credit assessment and control.

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