Economic Performance of a Large-Scale Ancillarry Industry in Tamil Nadu (Bimetal Bearings Limited) A Case Study

BY

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Introduction

I INTRODUCTION

Economic performance, economic grwoth and economic expansion have become the abiding interest if not the obsession of all modern societies. Without industrialisation economic development is almost impossible. Industrialisation implies the creation and growth of factories, mills, power plants, mines and so on. Industrialisation helps to raise national income, to remove unemployment and underemployment, to provide employment for the ever increasing population and it promotes agriculture. The importance of industrialisation in a developing country like India is well accepted. Singer (1958) in his numerical model scheme emphasised the purpose and objective of economic development is to effect structural change, a relative shrinkages of this agricultural and the expansion of industrial sector.

In India, the share of industrial sector to national income is steadily increasing. It is true that the industrial sector had increased faster than the agricultural sector but the proportion it forms to the total economy is still small.

Machine tool industry is of basic importance for the industrial development. All industries use machine tools in some form or at some stage either directly or indirectly. In 1973, the Government has included machine tool industry in the list of individuals which are of basic critical and strategic importance for the growth of the economy This industry has taken rapid strides in the post independence years and at present India ranks 18th among the producers of machine tools in the world. From an annual production of Rs 29 crores in 1980, the production increased to Rs 290 crores in 1984. Thus industry is playing an important ind role in providing infrastructural support for continuing industrial expansionin the country.

There are 149 units both in public and private sector engaged in the manufacture of machine tools. The Indian machines tools industry is able to meet substantial proportion of the country's internal demand for machine tools. The future of this industry is closely tied to the growth of industries in general and engineering industry in particular. The Seventh plan targets are based on an annual 5.5 percent GDP growth which would necessitate a

continuing growth of industrial output around 9 percent per annum - the corresponding growth for machine tools will be 15 percent.

There are at present thirteen manufacturers of bearings in the organised sector with a total investment of oever Rs 250 crores and employing over 12000 persons. The production in 1985 was about 50 million giving a capacity utilisation of 70 percent. The automobile sector absorbs around 60 percent of the Indian production of bearings. The association of Indian Automobile Manufacturers has indicated a requirement of about 30 million bearings in 1987, and the aggregate demand for all industries as 75 million.

Bimetal bearings in India had the advantage of clevite technology to introduce in the Indian market, a bimetallic alloy bearing composed of tin, lead and copper. This has been the first choice of the customers particularly in the track and tractor industries and over 80 percent of the country's requirements of the engine bearings are manufactured in this industry (Rao G. 1984)

According to Metha of Bearing Manufacturing Association of India, the bearing industry suffers from two major drawbacks high cost and varying quality. The present day machine tool market is shifting towards new generation of machine tools to match the changing world trends in metal working technology. So, the Government has established Central Machine Tool. Institute at Bangalore, Central Metal Forming Research Institute at Hyderabad as prime industry based research and development organisations in the field of metal working. As indicated by Worndron, technical advisor to KBBC, there are a number of technologies already in use in the developed countries which are still to make a lot of difference in productivity and cost. Obviously the Indian bearing dindustry has a long way to go before it can compete with the manufacturers in the developed countries.

The Indian Machine tools are making a significant countribution to country's export of engineering products. The Development Council for machine tool industry has envisaged growth in machine tool exports from the present level of

less than 10 percent of production to 20 percent in 1990. There is growing demand for general purpose machines from various countries. According to Bhoota, (1990) exports of engineering goods has been undergoing a significant change in its pattern, composition and direction. Simple consumer goods with which we started our export nearly two decades back are gradually giving place to nearly more sophisticated plant and machinery. One of the most dramatic development during the past two decades was the performance of exports of engineering goods. During this period the engineering goods sector became the country's top earners of foreign exchange (Srinivasa Raghavan, 1990).

According to a Report of the Commerce Research Bureau (1986) the machine tool industry is going through a crisis after over two decades of strong growth. The automobile industry, which is probably the largest user of machine tools is undergoing a seachange with new manufacturers entering the market and existing manufacturers diversifying and increasing production. Besides the absence

of economics of scale due to fragmentation of capacity, the main reason for the high cost is thehigh price of raw material which accounts for 60 to 65 percent of the selling price of a bearing.

The National Committee on Science and Technology has drawn up an emergency plan for the development of machine tool technology in the country as part of the strategy for economic self-reliance and accelerated technological build up. The plan envisages bridging the technological gap with advanced countries within 5 to 10 years.

It is in this context, the present study is undertaken to study the performance and problems of a large scale bearing industry in Tamilnadu. The general objectives of the study were to:

1. assess the structural features of the industry in terms of production, productivity, capacity utilisation and profitablity.
2. Estimate the growth in the value of production, sales, capital and labour employed.
3. Analyse the causal relationship between capital, labour employed and production.
4. Estimate the production function and
5. to find out the economic and operational feasibility of the industry.

The study specifically tested the hypothesis that the value of production has no relation to factor inputs, capital and labour.

The analysis relates to the details given in the Annual Reports and Balance Sheets of the Industry. The techniques used to analyse the performance of the industry assume the same economic forces continuing to behave in a similar pattern in future.

Review of Literature

a

II REVIEW OF LITERATURE

The literature relating to the study on the performance of a large scale ancillary industry ("Bimetal Bearings Ltd"), is reviewed under the following heads:

A. The engineering and machine tool industry in India- structural features.

B. Related studies.

A. The engineering and machine tool industry in India- structural features:

a. Engineering Industry:

i. Growth pattern:

A very wide range of various items of machinery and other engineering goods are now produced in the country. Broad groupings for the official annual survey of industries are

1. Machinery, Machine tools and parts
2. Electrical machinery, appearatus, appliances and parts
3. Transport equipment and parts
4. Metal products except(1) and(2) such as fabricated metal peoducts like barrels, drums, vaults, structurals, furniture, fixtures, etc.
5. Other manufacturing industries.

More fundamental is the transformation in the nature and pattern of engineering industries on which special attention came to be placed since the second plan under Mahalanobis model of development. The challenge at the time of the second plan in launching the heavy investment programme was to turn India from a country completely dependent on industrialised countries for most machinery and equipment and to establish domestic capacity for industrial machinery as much as possible.

The growth of engineering industries in India during 1950-79 is shown in table 2.1.

TABLE 2.1

GROWTH OF ENGINEERING INDUSTRIES

1950 - '79.

	1950 - '51	1978 - '79
Machinery	3.4	664.1
Electrical Machinery	20.2	574.6
Transport equipment	40.4	592.4
Metal products	35.6	229.7
Other manufactures	0.4	88.2
	105.0	2149 .0

There was all round increase in various fields of engineering goods. The growth rate was the highest for manufacture of industrial and electrical machinery, but it was equally impressive for the others though in smaller degree.

ii. Structural features of Engineering Industries:

The structural characteristics of the various groups of engineering industries in respect of capital, employment and output are brought together in table 2.2.

Industrial machinery production occupies the most predominant position among engineering industries in respect of number of factories (33%) of total employment (29%) and output (grose and net 30-31%). Transport equipment industries are the most capital intensive with 46% of total fixed capital and the tlargest wage earreer. These are closely followed by electrical machinery and appliances manufactures. Three groups together form the care of engineering industries accounting for 85 percent of net output with 90 percent of capital and 80 percent of employment in 60 percent factories compared to all industries engineering industries produced 22.5% of total net output of allindustries with 11.7 percent of total fixed capital and 18.0 percent of total employment in 21.7 percent of total factories.

iii Wages and Profit structurei

The pattern of sharing of net income as between wages and profits is well broughtin the table. The share of wages is about 65 percent of net income while the capital owners profits come to 35 percent. Profits are about 23 percent of fixed capital in engineering industries; these are more than 30 percent for machinery and other manufactures, but lowest for transport

equipment at 12.3 percent. These are generally well above the average for allindustrial products but somewhat on a lower level than that of chemical industries.

Some structural Ratios:

Some structural Ratios are like capital/output, net output/gross output, etc. are shown for the different groups of engineering industries in table 2.3

TABLE 2.3

STRUCTURAL RATIOS IN ENGINEERING INDUSTRIES

	Fixed capital value added	Fixed capital Gross output	Value added gross output	Input/ gross output	Average earnings per employe- Rs/year	Average% of profits Fixed capital	Average% of profits production capital
Machinery, machine tools and parts	0.96	0.26	0.27	0.71	8408	31.9	15.0
Electrical machinery ap a- atus, appliance and parts	0.93	0.23	0.24	0.73	9597	34.2	16.5
Transport equip- ment and parts	2.08	0.58	0.28	0.66	9454	12.3	8.4
Metal products	0.77	0.18	0.24	0.74	6615	26.3	12.4
Other manufa- ctures	0.93	0.24	0.26	0.71	6505	36.3	13.6
Total Engineering	1.24	0,32	0.26	0.71	8499	23.0	12.6
All Industries	2.40	0.52	0.22	0.75	6363	12.9	9.4

The fixed capital required per unit of net output is generally low (1.24) compared to the average for all industrial output (2.4) only for transport equipment which comprises railway rolling stock as well as commercial road vehicles it is more at 2.1. Average earnings per employee is Rs 3500/- per year against Rs 7500/- for chemicals and Rs 6300 for all industries.

The details of growth in production and capacity are given in table no 2.4.

iii. Problems and issues:

a. Capacity Production:

There are large areas of unutilised capa city that was created in the past at heavy expenditure of foreign exchange. Glaring examples are metallurgical machinery, mining machinery, cement and sugar machinery and diesel engines while under-capacity production is a normal feature of a capa capitalist or mixed economy, various constraints have been identified in most of these.

Two main problems facing engineering industries are high cost and inferior quality of products. Producers are conscious about these and have certainly attained such quality standards and cost levels as to enter successfully in many fields of exports in capital goods and consumer durables. In some parts of the country with concentration of engineering industries, availability of power is a constraint In other cases, a short supply of basic raw-materials like steel, pig-iron, aluminium and other non-ferous metals, coal, coke and diesel oil had affected production, its cost and timely delivery.

b) Technology

Improvement of technology and attainment of sophistication in production methods are perennial problems in a competitive market economy. This has been particularly acute in the modern world when national barriers are no longer the limits of a market. The rise of the modern leviathan, the corporate structure particulrly its post-war mutation, the transnational corporations, has also led to a tendency towards internationalising production. If Indian engineering industries are to compete in the export market, modernisation of production methods cannot be ignored atleast upto a certain extent. Even for meeting internal requirements, modernisation of techniques and machinery helps improve the quality and reduce the costs. But the employment aspect has to be kept in view.

The limits to which modernisation would be advisable for India depend on a variety of factors of which the foremost is the identification of the objectives of development. Against the background of such goals has to be set a balancing of costs and benefits of the alternatives that are available before the country-costs and benefits not only in

economic considerations only but on the other socio-political assessments like those on equity, culture, environment, ethics, and politics. There is not doubt that the current state of scientific and technological knowledge and the requisite technical experts available in the country can sustain a self-sufficient engineering industrial complex to meet the current needs of the country. Once an independent path is taken and traversed for sometime, R & D efforts would get a direction instead of being channelised on routine lines and would be able to lay the foundation for further growth, as it happend in Japan as is happening currently in china.

B. Machine Tool Industry:

a. Present status:

There are 149 units both in public sector and private sector engaged in the manufacture of machine tools. The installed capacity is estimated to be of the order of Rs. 390 crores.

Out of the additional capacities for which industrial licences/ registration / letters to intent have been issued, a capacity of Rs. 90 crores is likely to materialise. In addition, the small scale sector accounts for a production level of Rs. 60 crores per annum.

The development of Machine Tools Industry in India has been significant in the last two decades. The industry has grownup from the production level of Rs. 6 crores in 1970 to Rs. 290 crores in 1984. The industry is playing an important role in providing infrastructural support for continuing industrial expansion in the country.

b. Industrial Licensing Policy:

New Investment for machine tool manufactures in the organised sector do not have any policy constrains. The industry has been delicensed for MRTP companies for locations in centrally declared backward areas.

Machine Tools is one of the twenty seven industries which have recently been granted exemption from provisions of section 21 and 22 of MRTP act subject to condition that the item of manufacture should not be reserved for development in small scale Industries. This facility of exemption under the MRTP Act is available for period of five years from the data of the notification that is, 22nd May, 1985.

Import of large number of Machine Tools which are presently not manufactured indigenously is covered under Open General Licence is the current Import and Export Policy.

C. Production and consumption of Machine Tools in India:

TABLE 2.5

DETAILS OF PRODUCTION AND CONSUMPTION OF MACHINE TOOLS IN INDIA

1960 - 85.

(Rupees in Million)

Year	Production (a)	Imports (b)	Exports (c)	Consumption (a+b+c)	(a) as percentage of (a+b+c)
1960	58.6	209.4	-	268.0	21.9
1980	372.3	183.0	27.9	527.4	70.6
1974	834.4	294.6	71.2	1107.8	79.8
1975	1040.3	440.5	81.8	1399.0	74.4
1976	1168.5	444.9	169.2	1444.2	80.9
1977	1095.7	357.2	136.6	1316.3	83.2
1978	1210.5	400.0	205.0	1405.5	86.1
1979	1558.3	737.7	251.0	2097.0	74.3
1980	1859.5	1043.4	208.5	2699.6	68.9
1981	2342.2	1190.0(E)	232.5	3209.7	73.0
1982	2665.1	1200.0(E)	241.6	3629.7	73.6
1985	3000.0	1500.0(E)	250.0(E)	1.44	

Growth rate 1.4

E-Estimated.

[redacted]:

During this period the machine tools industry exhibited a robust rate of growth at 1.4 percent per annum. The demand for machine tools is a function of the growth of engineering industry which in turn depends upon the official policy relating to the creation of capacity in the different engineering industries.

The table reveals that consumption and production of machine tools are consistenely increasing at an average annual rate of 1.4 percent and 1.44 percent respectively. The domestic production to meet the total demand had increased from 21.9 percent to 73.6 percent.

d. Export of Machine Tools :

The details of export of machine tools from India to different regions are given in Table 2.6.

TABLE 2.6

REGION WISE EXPORTS OF MACHINE TOOLS

(Rupees in Million)

Regions	1977-78	1978-79	1979-80	1980-81
South east Asia	16.9	52.4	66.2	69.3
West Asia	25.4	18.5	20.3	19.4
North Central Africa	03.1	01.3	11.0	07.5
West Africa	0.10	01.9	03.7	03.3
U S A	15.7	19.4	31.1	24.8
Canada	04.2	04.3	13.1	10.9
Europe	46.8	57.6	57.6	55.0
Other regions	14.7	18.2	27.1	23.3
Total	136.6	209.5	245.0	242.1

The value of exports every year is not very high but the fact that the units have succeeded in making a dent in European, and South east Asian Markets, During this period the exports of machine tools had increased by 3.6 percent.

a. Structual features of Machine Tools Industry:

The structual characteristics of machine tools industry in respect of capital and rates of return to capital are brought together in Table 2.7.

A TABLE 2.7

SOME STRUCTURAL CHARACTERISTICS OF MACHINE TOOL INDUSTRY

1960 - 74.

(Rupees in thousands)

Year	Value added	Fixed Capital	Depreciation +wages/salaries/benefits *	Gross profit (1-3)	Rate of return to capital (4/2X100)
	(1)	(2)	(3)	(4)	(5)
1960	26186	49599	20748	5438	11.0
1961	37634	93060	30874	6760	7.3
1962	49149	122015	39132	10017	8.2
1963	64776	143033	49842	14934	10.4
1964	104625	185049	61042	43833	23.6
1965	112500	345137	86575	25925	7.5
1966	105256	402613	108700	-3444	-0.9
1967	90602	429663	119357	-28755	- 6.7
1968	75943	456707	130014	-54066	-11.8
1969	105377	480333	143950	-43573	- 8.9
1970	134306	525059	167336	-33030	- 6.3
1971	176339	544380	193645	-16816	- 3.1
1972	207415	521540	209123	-1708	- 0.3
1973	238000	493700	224600	13400	2.7
1974	346100	560700	270500	75600	13.5

* Does not include interest payments.

The table 2.7 clearly shows that for almost half the years under review the industry made negative profits. That this situation could happen is merely indicative of the high concentration of public ownership in the industry where losses could be subsidised by the taxpayer. But in terms of value added and capital accumulation the figures show a positive growth trend.

B. Related Studies:

A. Initial growth pains in the Development of the Indian Machine Tools Industry:

A study on the problems of the development of Machine Tool Industry in India was conducted by Mathews in 1984. The focus of the study was technical and operational efficiency of the industry, and the findings are given below. The time reference of the study was 1960-74.

i. The rate of growth of capital labour ratio was 2.4 percent in 1960 and 4.3 percent in 1974.

ii. The industry was seriously affected by recession during the last three years of the period under study.

iii. During the period of recession, the real cost of direct labour declined by 4.2 percent.

iv. The ratio of fixed capital to value added showed a stable pattern

v. The capital investment also declined by 8.7 percent during the recession period.

vi. During the period under study the capital productivity increased by 1.7 percent.

vii. One rupee of fixed capital was associated with 1.4 rupee of value added.

viii. The average capital productivity differed markedly from marginal average productivity.

ix. The total employment in the organised sector increased by 59.4 percent.

x. The growth rate of labour productivity was 11percent.

xi. The rate of return increased by 23. 6 percent.

b. Projection of occupational- Educational structure of manpower - A study of two Indian Public sector Industries - Machine Tools and Electrical Equipments

Prakash has conducted a study on the projection of manpower in two Indian public sector industries in 1971. The study covered two public sector undertakings- Hindustan Machine Tools and Praga tools. Employment and output figures were collected from the annual reports of the industries and from the annual reports of the Indian Machine Tools Manufacturer's Association. The period covered

in the study was between 1958-1971.

The estimated educational occupational pattern of manpower for four divisions, was 15.4 per cent, 0.07 percent, 0.00 percent, and 5.48 percent. (Labour coefficients have been used for projections) and 13.1 percent, 51.16 percent, 9.61 percent and 3.1 percent from productivity regression.

Two techniques were used to project the manpower.

i. Future level of employment for each sector and the sectoral employment among occupations.

ii. Employment by occupational group for each sector directly. The elasticity of employment as related to income, productivity of labour and requirement of manpower per unit of output were used to project the manpower.

c. Small scale Industry - A Trend Report- ICSSR Project:

Some of the important findings of the projects are:

i. There was a tendency among the units towards self sufficiency. Even the smallest metal using units had their own foundry although utilised for three months in a year.

ii. The amount of subcontracting practised by Bombay firms was on an extremely limited scale. This had resulted in the problem of capital equipment imbalances in the large Scale units.

iii. The growth of ancillary units was hampered by the failure of small units to meet orders in time, and to provide the desired quantities, meeting specifications asked for, raw material shortages and the presence of intermediaries between large and small firms.

M. The state of the Recession in Engineering Industry- Ashok Leyland and TELCO have studied the problems of the industries:

Some of the problems identified were :

i, In the case of TELCO stocks were 3500 vehicles perhaps a month's production, and in the case of Leyland it was 3000 trucks.

ii. The accumulation of stocks in both the companies have led to a decline in production by 20 percent in TELCOand 40 percent in Leyland.

iii. One of the causes for this recession was the hire purchase argeements, and the change in the current credit policy of the banking sector.

iv. Lay off of workers in diesel engine sector was another cause for the recession in engineering sector.

e. Problems and prospects of Ancillary and Parent Establishments in Mysore:

Lakshman has conducted a study on " problems and Prospects of Ancillary Parent Establishments in Mysore". The period covered under the study was 1965-1966. The survey covered sixty-five units from four districts- Bangalore, Belgaum, Chitradurga and Dharwar.

The sample units chosen were from

1. Automobile parts
2. Machine Tools
3. Electrical equpiments
4. Ferrous and Non-ferrous metals and
5. Agricultural implements and machine parts.

The information required was collected through an exhaustive questionnaire and by direct investigation. The sources of information were industrial estates, the records of Small Industries Service Institute and the annual reports of HMT Limited.

The problems identified in the study were:

1. Finance
2. Raw materials
3. Non-availability of well trained and skilled labour
4. Shortage of coal and coke and
5. Marketing.

Among these problems high cost of raw materials and lack of finance were the important problems of the sample units. (63 percent)

6. Parent- Ancillary relationship also confronted with many problems on account of cost differences of components between parent and small ancillary units, sub-standardised and poor quality output of ancillaries and the consequent lack of demand from parent units.

Methodology

III METHODOLOGY

The methodology adopted in the case study of a largescale ancillary industry in Tamil Nadu (Bimetal Bearings Ltd.) is described under the following heads:

A. Selection of the unit;

B. Sources of Data;

C. Techniques of analysis; and

D. Definition of terms.

A. Selection of the Unit:

Bimetal Bearings Ltd., is one of the large scale ancillary industries in India which was incorporated as a private limited company in 1961. Nearly 60 percent of the requirements of spareparts like bushings, engine bearings and thrust washers of the automobile and engineering industries, is met by this company. The recently announced credit squeeze policy of the Reserve Bank of India had led to a decline in the production of engineering industry in general and automobile industry in particular. There were labour unrest problems which also affected the performance of the Bimetal Bearings. Hence the industry is selected for indepth analysis.

B. Sources of Data:

The data related to the current study were collected from secondary sources, Information on the extentof prdduction, sales, income expenses and profit were collected from the publised balance sheets of the company for the period 1975 to 1985 from Binetal Bearing Ltd., the head office of which is beated in Coimbatore. The details of employment were collected from the attendance registers maintained in the office. General information on engineering, automobile and ancillary industries was collected from the following sources:

1. The Hindu-Industry Survey
2. Tamil Nadu An Economic Appraisal published by Finance Department, Government of Tamil Nadu, 1979 to 1985.
3. India- A reference manual - Government of India publication - 1980 to 1985.
4. Official Reports - SIMA, Coimbatore.

Journals and Magazines were also referred to

C. Techniques of Analysis:

Percentages of cost components to total cost, capital components to total capital, sales to production and profit to income were worked out. The methods used in the study for estimating the compound growth rates in the relevant variables were adopted from Kornai (1975).

a. For finding out the compound growth rates:

To find out the growth rates in capital and labour employed, value of production realised and the value of sales, a time -series exponential trend line of the form

$Z_t = Z_o e^{rt}$ was used.

Z_t = Variable

r = Compound growth rate

t = time

Z_o = Initial coefficient.

b. To find out the annual average growth rates:

To find out the annual average growth rates, the following formula was used.

$$\lambda = (X_t - X_o)\ ^1/_t$$

where

λ = average annual growth rate

X_t = the value of the variable in the last period.

X_o = the value of the variable in the initial period

t = n - 1 (n = total number of years).

c. For estimating the production function:

To find out the elasticieities of labour and capital to production and the returns to scale, an unrestricted Cobb-Douglas Production Function was fitted. This is given by:

$$Y = AK^{\alpha} L^{\beta}$$

Y = Value of production

K = Capital employed

L = Labour employed

α and β = Constants

A = Initial coefficient

D. Definition of terms:

i. Gross rate of return = $\frac{\text{Gross Income}}{\text{Gross Expenditure}}$

ii. Return on operating cost = $\frac{\text{Gross Income}}{\text{Operating cost}}$

iii. Capital productivity = $\frac{\text{Value of production}}{\text{Fixed capital}}$

iv. Labour productivity = $\frac{\text{Value of production}}{\text{Number of labourers}}$

v v. Capital output ratio = $\frac{\text{Fixed capital}}{\text{Value of production}}$

vi. Capital labour ratio = $\frac{\text{Fixed capital}}{\text{Number of labourers}}$

vii. Solvency Index = $\frac{\text{Current liabilities}}{\text{Current Assets}}$

viii. Liquidity Index = $\frac{\text{Capital Reserves}}{\text{Current liabilities}}$

ix. Capacity Utilisation = $\frac{\text{Working capacity}}{\text{Installed capacity}}$

The results of the analysis are discussed in the next chapter 'Results and Discussion'.

Results and Discussion

IV RESULTS AND DISCUSSION

The results of the analysis are presented and discussed under the following heads:

A. General Information;

B. Capital Structure;

C. Cost Structure;

D. Capacity Utilisation;

E. Production and Sales;

F. Employment;

G. Income/ Profit;

H. Efficiency Indices;

I. Determination of growth rates; and

J. Estimation of Production Function;

A. General Information:*

Bimetal Bearings Ltd. was incorporated as a private limited company, on 19th April, 1961, under company's act and was converted to public Limited Company, on 5th September 1961 by adoption of revised article of association. The company commenced business soon after incorporation and

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* Source: Unpublished Reports of the Industry.

commercial production commensed from March 1963. This has also licenced for the manufacture of bimetalic strip which is a raw material for the manufacture of thinwal engine bearings, bushings and thrust washers. The strip making facility was commisioned in 1963 with single sinter line.

The company's plants were located at HUZUR Jarden, Sembian, Madras City. The company implemented the expansion of 60 Lakh numbers capacity at its plant at Coimbatore and shifted 40 lakhs number capacity to HUZUR vide Central Government's approval on 31st November, 1981. The company is established itself as amost exceptional manufacture of clevite bearings, bushings and thrust washers by virtue of the technical knowhow which is assimilated from Imperial Clevite, technical collaboratives who are the largest manufactures of engine bearings in the world, and have led the rest in this field as manufactures of bearings with advanced bearing technology.

The company started with a capital of Rs.50 lakhs which was increased to Rs.85 lakhs with issue of bonus shares in the ratio 7:10. It had enjoyed monopoly power during the seventees and at present it is

reaching 60 percent of the total demand for some spare parts required by the large scale automobile industry. The decelaration of industrial development had not adversely affected this industry as it has a large replacement market in which the demand for its product is fairly inelastic.

B. Capital Structure:

The total capital employed by the industry consists of Fixed Capital and Working capital. The fixed capital includes investment on plant; machinery equipment, capital work in progress and vehicles . Working capital is the difference between current assets and current liabilities excluding provision for gratutity. The details of capital components of the industry are given in Table 4.1.

TABLE 4.1

DETAILS OF CAPTAL COMPONENTS

1975 - 35

Year	Working Capital	Nex Fixed capital	To tal capital
1975	9234116 (53.43)	8049440 (46.57)	17283556
1976	9495525 (49.14)	9827290 (50.86)	19322815
1977	12701764 (51.91)	11767092 (48.09)	24468856
1978	20150389 (50.95)	19399323 (49.05)	3955071
1979	20735967 (51.21)	19733359 (48.79)	40489326
1980	20692224 (49.82)	20839046 (50.18)	41531270
1981	23563452 (43.48)	30634954 (56.52)	54198406
1982	34802550 (40.25)	51666959 (59.75)	86469509
1983	44073362 (37.80)	72528488 (62.20)	116601850
1984	56318769 (39.68)	85625783 (60.32)	141944552
1985	59259849 (37.62)	98252475 (62.38)	157512324
Growth	(5.9)	(6.2)	(6.5)

Figures in paranthesis show percentages to row totals.

It is clear from the Table that there is a consistant increase in the fixed capital and a decline in working capital. In 1975, the percentage of fixed capital accounted for about 46 and since 1980, there is asubstantial increase. The modernisation plant expansion programmes, and the installation of new equipments are some of the reasons for this increase. The working capital on the other hand which accounted for about 54 percent had declined to 37 percent in 1985. Modernising the machinery and installation of new machines and equipments which are gene rally included in the current assets will be added to the fixed capital as and when they are completed. Hence this decline in working capital. The average annual growth rate of fixed capital is also on the higher side. (6,2 percent). The programmes of the industry is reflected by a substantial growth rate of total capital of 6.5 percent.

The details of fixed capital components are given in Table 4.2

It is evident from the Table that the percentage of capital investment on plant and machinery is high in all the years indicating the capital intensive nautre of the industry. It also reveals the retional allocation of capital on various heads, and the optimum use of land in the productive activity, as it is evidenced from the meagre percentage of capital employed on land.

The details of annual additions to capital (Investment, ΔC) are presented in the Table given below:

TABLE 4.3

DETAILS OF ADDITIONS TO CAPITAL STOCK
1975 -85.

Year	Additions during the years	Net Fixed Capital Rs.
1975	2175279 (27)	8049440
1976	2576596 (26)	9827290
1977	1919660 (16)	11767092
1978	10125130 (52)	19399323
1979	1234878 (6)	19753359
1980	415317 (2)	20339046
1981	695386 (2.3)	30634954
1982	30296836(59)	51666959
1983	14317326 (20)	72529493
1984	4073103 (5)	35625783
1985	33173710 (39)	93252475
Growth	(5.6)	(6.2)

Figures in parantheses show in percentages to row totals.

Increase in investment is the indicator of the acceleration of the growth of an industry. The overall average growth rate of investment by 5.6 percent clearly reflects the growth of the undustry The industrial sector had to meet depression towards the late seventees and that is reflected in the growth of this industry also as the percentage of investment during 1979-80 was very meagre. The high growth rate of investment also indicates the industry is ploughing back its profit by expanding its productive capacity.

The details of capital consumption allowance (Depreciation) are given in Table 4.4.

TABLE 4.4

DETAILS OF CAPITAL CONSUMPTION ALLOWANCE

Year	Depreciation	Gross fixed capital	Percentage of depreciation of GFC
1975	76,73,932	1,57,23,422	48.8
1976	87,31,352	1,83,05,003	48
1977	99,82,593	2,02,24,668	49
1978	1,09,87,246	3,03,14,766	36
1979	1,34,31,421	3,14,67,734	43
1980	1,49,52,483	3,18,03,395	47
1981	1,66,00,765	3,24,98,731	51
1982	1,92,11,359	6,27,37,997	30
1983	2,33,65,926	7,71,04,923	31
1984	2,93,10,285	8,10,58,033	36
1985	3,50,05,934	11,92,11,570	29

The table indicates a steady increase in capital consumption every year with the annual additions, to fixed capital. The percentage figures are higher during seventees than in the later years because ther would be less capital consumption in the case of more recent additions to capital stock than earlier additions.

C. Cost Structure:

The total cost of production consists of fixed cost and variable cost. The fixed cost includes the expenses incurred on fixed capital, which includes depreciation and the variable cost includes the material cost, operating cost and other administration and distribution costs. Investment allowance and development rebate allowance are not included in the cost of production. The cost component details are given in Table 4.5.

TABLE 4.5

DETAILS OF COST COMPONENTS -1975-85

Year	Operating cost	Fixed cost	Total cost
1975	1,82,92,867 (70.43)	76,78,982 (29.67)	2,59,71,849
1976	2,36,13,283 (72.89)	87,81,352 (27.11)	3,23,94,635
1977	2,68,15,902 (72.87)	99,82,593 (27.13)	3,67,98,495
1978	2,42,88,214 (68.85)	1,09,87,246 (31.15)	3,52,75,460
1979	2,74,41,367 (67.06)	1,34,81,421 (32.94)	4,09,22,788
1980	2,93,06,906 (66.22)	1,49,52,488 (33.78)	4,42,59,394
1981	4,65,02,855 (73.69)	1,66,00,765 (26.31)	6,31,03,620
1982	6,52,79,013 (77.29)	1,92,11,839 (22.71)	8,45,90,852
1983	6,13,43,489 (71.99)	2,38,65,926 (28.01)	8,52,09,425
1984	6,79,96,867 (69.87)	2,93,19,285 (30.13)	9,73,16,152
1985	9,03,44,746	3,50,05,934	12,53,50,680
Growth rate	(6.1)	(5.5)	(6.3)

* Figures in parantheses show percentages to row totals.

The analysis of Table 4.3 reveals the following facts:

1. There is no much variations in the percentages of fixed cost to total cost. During 1979-82, the Industry had undertaken modernisation and expansion programmes. So, there is an increase in the fixed cost percentages during this period.

2. The extent of variations in variable cost is also the same. The percentage of variable cost to total cost is 77 during 1982-83 as the industry appointed more workers during this period. So, the incresse is due to the high wage cost.

3. The percentages of variable cost are less during 1978, 1979, 1980 and in 1984 because of the labour unrest and the loss of man days and the resulting decline in the wage costs during this period.

4. The constancy in the percentages of variable and fixed costs indicate the effective administration of the industry and also the economic and operational viability of the industry.

D. Capacity Utilisation:

Capacity utilisation is one of the indicators of the efficient performance of an industry. Capacity utilisation is the percentage of working capacity to installed capacity. The output of the industry depends to a very great extent on the capacity utilisation. The capacity details are tabulated below;

TABLE 4.6

DETAILS OF CAPACITY UTILISATION 1975-'85

Year	Installed capacity	Working capacity	Capacity Utilisation
1975	60,00,000	61,55,008	102.6
1976	60,00,000	61,55,335	102.6
1977	30,00,000	67,09,730	223.7
1978	60,00,000	44,07,771	73.5
1979	60,00,000	47,60,404	79.3
1980	60,00,000	38,39,065	64,00
1981	60,00,000	65,40,030	109,0
1982	80,00,000	69,35,557	86.7
1983	80,00,000	66,33,205	82.9
1984	80,00,000	51,03,559	63.8
1985	1,00,00,000	84,28,652	84.3
Growth rate	4.6%	4.3%	-1.3%

The capacity utilisation is greater (more than 100percent) during 1975-77 and in 1981, In 1977, inspite of the labour unrest problems, the capacity utilisation is high due to the extra days of work in that year. In 1981, due to the expansion programme of the industry and also due to the extra days of work, the percentage of working capacity to installed capacity is high.

The capacity utilisation figures are on the lower side in 1980, and in 1984 due to the labour unrest problems and the resulted number of man days lost and the general power cut. In general, there is a decline of capacity utilisation by 1.3 percent The working capacity is increased by 4.3 percent which is lower than the increase in the percentage of installed capacity which is 4.6 percent. The capacity utilisation is illustrated in Figure I.

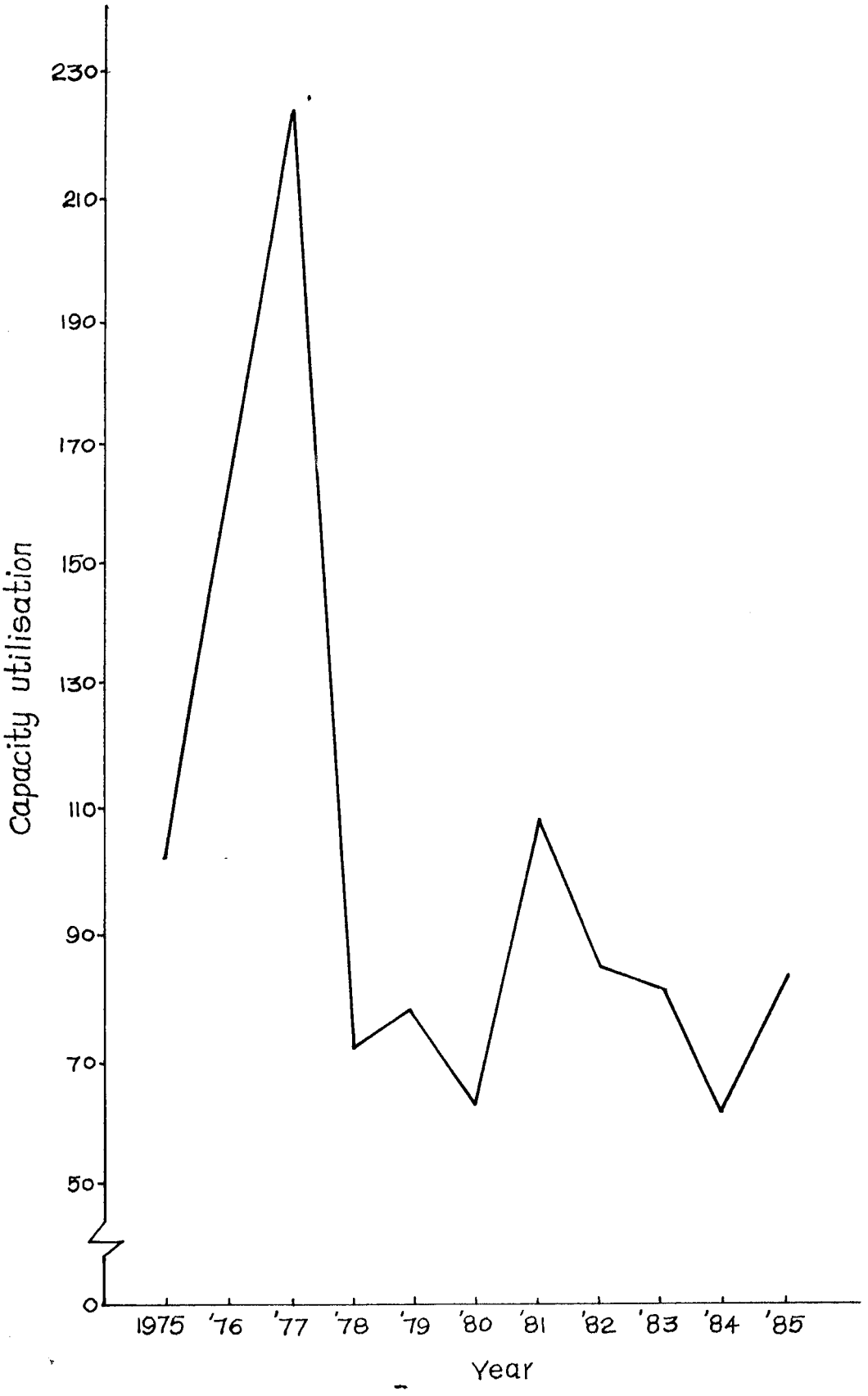

Figure. I CAPACITY UTILISATION OF THE INDUSTRY

B. Production and Sales:

The spare parts produced by Bimetal Bearings Ltd. are engine bearings, bushing and thrust washers. The details of aggregate quality and value of production and sales are given in Table 4.7 and 4.8.

TABLE 4.7

QUANTITY WISE PRODUCTION AND SALES

1975 -85

Year	Production	Sales	Sales as a percentage of production
1975	61,55,008	54,75,000	88.95
1976	61,55,835	60,66,638	98,55
1977	67,09,780	70,14,121	104.54
1978	44,07,771	50,84,951	115.36
1979	47,80,404	47.50,729	99.80
1980	38,39,065	39,80,406	103.68
1981	65,40,038	62.09,796	94.95
1982	69,35,557	70,38,948	101.49
1983	66,33,205	68,41,735	103.14
1984	51,03,358	50,52,072	98.99
1985	34,28,652	84,24,939	99.96
Growth rate	4.3%	4.4%	

The percentage of sales to production show that the inventory of finished products is very less except in 1975. During 1976 1977, 1981, 1982, the sales percentages were more than 100 percent indicating the release of accumulated stock during these years. This also reflects the efficient performance of the industry. The extent of variations are same in the value of production and sales. The average rate of growth of sales is 4.4 percent and it is 4.3 percent for prodution.

TABLE 4.8

VALUE WISE PRODUCTION AND SALES
1975 - 85

Year	Production	Sales	Sales as the percentage of production
1975	3,75,15,371	3,33,70,657	88.95
1976	3,97,73,335	3,91,97,027	98.55
1977	4,29,92,224	4,49,42,258	104.54
1978	3,68,73,623	4,25,83,637	115.36
1979	4,57,13,035	4,56,20,129	99.80
1980	4,32,61,348	4,48,54,081	103.68
1981	6,80,80,006	6,46,42,278	94.95
1982	9,77,71,083	9,92,28,594	101.49
1983	9,74,50,239	9,75,75,606	100.13
1984	7,99,76,964	7,91,70,136	98.99
1985	12,50,42,184	12,49,37,101	99.96
Growth rate	6.23%	6.3%	

F. Employment:

Bimetal Bearing is a capital intensive industry. The mill employes nearly 500 persons in all the three plants in Coimbatore, Hosur and Madras. During the period under study, the number of mandays lost, were compensated by extra days of work. The variations in production are mainly due to the labour unrest problems and the man days lost and extra days worked. These details are given in Table 4.9.

TABLE 4.9

DETAILS OF WORKERS, MAN DAYS LOST AND EXTRA DAYS WORKED

1975 - '85

Year	Number of Workers	No of mandays lost	No Of Extra man days worked
1975	354	--	--
1976	352	--	--
1977	355	5,325	11,360
1978	354	--	4,956
1979	350	--	7,000
1980	342	20,520	--
1981	340	--	5,440
1982	426	--	12,354
1983	420	--	7,980
1984	500	44,500	2,500
1985	431	--	11,063
Growth rate	1.6%		

The table reveals that there is no remarkable increase in the number of persons employed when compared to capital. During 1980 and 1984, the number of man days lost were more, but they were compensated by the extra number of working days. It is also reflected in the variations in the capacity utilisation of the industry.

E. Income/ Profit Analysis:

The major source of income to the industry is from the sales of the produce. Income from other sources include, income from investment, selling of assets, etc. The details of income from sales and other sources are given in Table 4.10.

TABLE 4.10

DETAILS OF INCOME - 1975-85

Year	Income from sales (Rs)	Income from other sources (Rs)	Total income (Rs)
1975	3,33,70,657 (84.80)	59,79,435 (15.20)	3,93,50,092
1976	3,91,97,027 (86.57)	60,82,211 (13.43)	4,52,79,238
1977	4,49,42,258 (88.44)	58,72,200 (11.56)	5.08,14,459
1978	4,25,38,637 (89.95)	47,55,361 (10.05)	4,72,93,998
1979	4,56,20,129 (89.59)	53,01,969 (10.41)	5,09,22,098
1980	4,48,54,081 (89.22)	54,17,492 (10.78)	5,02,71,573
1981	6,46,42.278 (87.88)	89,16,147 (12.12)	7,35,58,425
1982	9,92,28,594 (92.98)	74,95,175 (7.02)	10,67,23,769
1983	9,75,75,606 (95.24)	48,80,780 (4.76)	10,24,56,386
1984	7,91,70,136 (88.76)	1,00,29,359 (11.24)	8,91,99,495
1985	12,49,87,101 (92.62)	99,60,556 (7.38)	13,49,47,657

Figures in paranthesses show percentages to row totals.

The sales income constitutes a high percentage in the total income, nearly 90 percent in all the years. The percentages are greater in 1982 and 1983, as the expansion programme was undertaken by the industry which led to an increase in the production.

The big concerns like Tata and Birla were permitted by the government to give loans to private people to purchase automobile products and this also had led to an increase in sales of spare parts of the ancillary industries.

The details of gross profit, net profit and the tax amount paid are given in Table 4.11

TABLE 4.11

PROFIT AS GIVEN IN THE BALANCE SHEET

Year	Profit after tax	Tax amount	Gross profit
1975	38,24,217 (27.27)	1,02,00,000 (72.73)	1,40,24,217
1976	35,01,644 (28.59)	87,46,000 (71.41)	1,2247,644
1977	41,64,070 (31.63)	90,00,000 (68.37)	1,31,64,070
1978	45,96,337 (37.58)	76,33,000 (62.42)	1,22,29,337
1979	53,83,849 (40.23)	80,00,000 (59.77)	1,33,83,849
1980	62,93,194 (42.26)	86,00,000 (57.74)	1,48,93,194
1981	78,04,454 (38.96)	1,22,25,000 (61.04)	2,00,29,454
1982	1,80,62,092 (63.46)	1,04,00,000 (36.54)	2,84,62,092
1983	1,32,99,163 (60.87)	85,50,000 (39.13)	2,18,49,163
1984	76,21,417 (73.48)	27,50,000 (26.52)	1,03,71,417
1985	1,38,36,509 (87.37)	20,00,000 (12.63)	1,58,36,509
Growth rate	5%		4.2%

Figures in Parantheses show percentages to row totals.

It is clear from the tablem that there is a steady increase in the net profit of the industry. In the earlier years, the percentages of net profit are low and the tax percentages are high this may be due to the stringent tax policy of the Government towards the corporated sector. Since 1981, there is steady decline in the tax percentages. Government following a liberal tax policy with exemptions and concessions and these are reflected in the decline of tax percentages. In general, there is a remarkable increase in the gross profit and net profit both in absolute terms, percentages and average annual growth rates. The growth rate of net profit is 5 percent and that of gross profit is 4.2 percent.

4. Efficiency Indices:

Some indices can be used to find out how efficiently the resources are used in production activity. These indices will help to assess the economic and operational viality of the industry. Some efficiency indices are presented in Table 4.12.

TABLE 4.12

EFFICIENCY INDICES 1975 - 1985

Year	Capital Coefficient	Labour coefficient	Capital labour ratio	Operational feasibility coefficient	Capital Output ratio	Gross rate of return	Net rate of return
1975	4.6606	1,05,975.62	22,739.5	2.0503	0,2146	1.5151	0.1472
1976	4.0472	1,12,992.43	27,913.4	1.6944	0.2471	1.3977	0.1091
1977	3.6536	1,21,104.36	33,146.7	1.6052	0.2757	1.3309	0.1132
1978	1.9007	1,04,162.78	54,301.7	1.5132	0.5261	1.3407	0.1303
1979	2.3142	1,30,603.67	56,438.8	1.6659	0.4321	1.2443	0.1316
1980	2.0760	1,26,495.17	60,932.9	1.4761	0.4317	1.1353	0.1422
1981	2.2223	2.00,235.31	90,102.8	1.4640	0.4500	1.1657	0.1237
1982	1.3923	2.29,509.58	1,21,235.9	1.4955	0.5234	1.2616	0.2135
1983	1.3436	2.32,024.50	1,72,636.9	1.5036	0.7443	1.2024	0.1560
1984	0.9340	1,59,953.93	1,71,252.6	1.1762	1.0706	0.9166	0.0785
1985	1.2727	2,69.962.96	2,04,267.1	1.3241	0.7353	1.0766	0.1104

The analysis of Table 4.12 reveals the following facts.

1. There is a steady decline in the value of capital coefficient. indicating the optimum use of capital.

2. There is a remarkable increase in the labour productivity showing the efficient use of labour.

3. There is a substantial increase in the capital labour ration reflecting the ploughing back of profit by the company and also the modernisation of plants.

4. The ratio of operational cost of income also shows that the industry is also operationally feasible.

5. There is an increase in the capital requirements indicating the interest of the industry in investing new technical plants and machinery.

6. The positive values of rates of return in dicate that the industry is very efficiently functioning.

The solvancy and liquidity indices are given in Table 4.13. These indices will help to find out the liquidity and solvancy position of the industry.

TABLE 4.13

INDICES OF SOLVANCY AND LIQUIDITY

1975 - '85

Year	Liquidity Indices	Solvancy Indices
1975	40.6	150.8
1976	56.9	150.4
1977	47.7	149.1
1978	112.6	223.7
1979	76.8	181.2
1980	99.2	191.3
1981	93.6	176.5
1982	138.3	226.7
1983	172.7	256.9
1984	207.5	322.0
1985	216.6	395.6

It is clear from the Table that the percentage of capital reserves and current assets to liabilities are steadily increasing indicating that the industry is in a good position to meet the liabilities and also there is no possibility of insolvency of the industry.

I. Determination of Growth Rates:

Compound growth rates in the value of production, fixed capital, sales and labour employed are estimated and the estimated growth f nctions are given below:

Production $P = 59033699\ e^{.2t}$

Labour $L = 385\ e^{.005t}$

Sales $S = 59265233\ e^{.02t}$

Capital $K = 27637579\ e^{.042t}$

The analysis of the growth rates reveals the following facts:

1. There is no difference in the growth rates of sales and production (2 percent)

2. The growth rate of labour is very low. 0.5 percent indicating the optimum use of labour.

3. The growth rate of capital is high when compared to labour indicating the capital intensive nature of the industry.

4. Production Function:

The functional relationship between labour, capital and value of production is ascertained by using an unrestricated Cobb-Douglas production function which will help to test the returns to scale also. The estimated production function given as.

$$Y = 54.57\ K.^{.0057}\ L^{2.17}$$

$R^2 = .6083$ (t = 1.3179**) (t = 2.8960*)

** Significant at 10% level

* Significant at 5% level

The estimated function explains the existence xxx of significant relation between capital, labour and production. The elasticity of capital with respect to production is low at .006 and labour is high with 2.17. That is one unit increase of capital is expected to increase the production by .006 units and that of labour is expected to increase production by 2.17 units. The high elasticity of labour explains that the progress of the industry is mainly due to labour. The sum of the exponents of labour and capital is greater than one (i.e) 2.476 indicating the operation of the law of increasing returns to scale. A simulataneous increase of one unit of capital and labour is expected to increase the output by more than proportionately. The estimated function is approximately good as it has high coefficient of determination R^2 at .6083.

Summary and Conclusion

V SUMMARY AND CONCLUSION

The current study on the performance of a Large Scale Ancillary Industry - 'Bimetal Bearings' was an attempt to find out the economic and operational viability of the industry in terms of capacity utilisation, capital investment and productivity during 1975-'85. The data collected from the balance sheets of the industry was analysed by applying time series exponential trend functions, ratios, percentages and regression lines. The major findings that emerged from the analysis were:

I. Capital Structure:

1. The ratio of working capital and fixed capital was transformed from 53:47 in 1975 to 37:63 in 1985.

2. The average annual growth rate of fixed capital was 6.2 percent and that of working capital was 5.9 percent.

3. The annual average growth rate of total capital employed was 6.5 percent.

4. The percentage of investment on plant and machinery increased from 58 in 1975 to 69 in 1985.

5. The investment (Additions to capital stock) increased by 5.6 percent.

6. The percentage of capital consumption/allowance (depreciation) declined from 49 in 1975 to 29 in 1985.

II. Cost Structure:

7. The proportion of fixed cost and operating cost to total cost remained more or less same during the period (30:70).

8. The annual average growth rate of operating cost was 6.1 percent and that of fixed cost was 5.5 percent.

9. The total cost increased by 6.3 percent annualy.

III. Capacity Utilisation:

10. The capacity utilisation was high ranging between 65 to 109 percent, but it declined by 1.3 percent.

11. The installed and working capacity increased by 4.6 percent 4.3 percent respectively.

IV Sales and production:

12. The average annual growth rate of production in terms of quantity and value were 4.3 percent and 6.4 percent.

13. The sales in terms of quantity and value increased by 4.4 percent and 6.3 percent annually.

V. Employment:

14. The average annual growth rate of labour employed was 1.6 percent.

15. The number of man-days lost due to labour unrest was 70345 and that of extra days of work was 62653 during 1975 to 1985.

VI. Income and Profit:

16. The percentage of income from sales increased from 85 in 1975 to 93 in 1985.

17. The pecentage of income from other sources declined from 15 in 1975 to 7 in 1985.

18. The gorss profit increased by 4.2 percent annualy and that of net profit by 5 per cent.

VII. Efficiency Indices:

19. The capital coefficient decreased from 4.6 to 1.2 while the labour coefficient increased from Rs. 195975 in 1975 to Rs. 259962 in 1985.

20. The capital -labour ratio increased from Rs. 22738 in 1975 to Rs. 204267 in 1985

21. The ratio of operational cost to production also declined from 2 in 1975 to 1.4 in 1985.

22. The capital productivity increased from.21 in 1975 to.73 in 1985.

23. The variations in the rates of returns were constant during the period.

24. There was a remarkable increase in the Liquidity index from 40 percent in 1975 to 216 percent in 1985. Similarly, the solvancy index increased from 150 percent in 1975 to 305 percent in 1985.

VIII. Compound Growth Rates:

25. The value of production increased at a compound rate of 1.9 percent and labour by .5 percent.

26. The value of sales increased at a compound rate of 2 percent and the capital by 4.2 percent.

IX. Production Functions:

27. The impact of capital increase on the value of production was very low and that of labour was very high. That is. .06 unit increase in the value of production per unit of increase in capital and 2.17 unit increase in the value of production per unit of increase in labour.

28. The industry was subject to increasing returns to scale.

Areas for Further Research:

1. Comparative study on the performance of private and public sector ancillary industries will help to assess the efficiency of the two sectors.
2. Ancillary-parent relationship can also be studied.
3. Studies on industrial verticalisations will be another area of research.

Conclusion:

The findings of the study indicate the economic and operational viability of the industry. More than the economic and structural aspects to accelerate parent - ancillary relationship the efforts to provide a common meeting ground between the parent industry and ancillary industry are very important. The ancillary-parent relationship should be strong and direct as in Japan. Another important problem is the discontinuous demand for the ancillary products by the parent industry. A policy of long term subcontract between the group of industries would be a positive step in ensuing stable markets.

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Balance sheets of the Bimetal Bearings Limited- 1975-'85.

Industry	Unit	1950 - 51 Capital	1950 - 51 Production	1979 - 80 Capital	1979 - 80 Production	1984 - 85 (targets) Capital	1984 - 85 (targets) Production
I. Industrial Machinery (total of 11 items)							
of which	Rs. Cr.			950.1	875.5	1550	1348
1. Machine tools	Rs. Cr.	-	30	190	163.3	300	250
2. Textile machinery	Rs. Cr.	-	-	300	210	370	295
3. Sugar	Rs. Cr	-	-	51.8	31.6	88	70
4. Bailars	Rs. Cr	-	-	254	259.4	43 0	346
II. Construction Machinery							
1. Earth moveing equipment	N.s	-	-	1540	1235	2700	2200
2. Road rollers	Nos	-	-	1800	323	1800	1400
III. Mechanical components and Consumer durables							
1. Ball and roller bearings	Mil Nos	-	-	36.4	32	34	—
2. Typewriters	Th Nos	-	-	131.4	91.3	170	143
3. Watches	Mn Nos	-		7	4 .6	15	12.5
IV. Road Transport							
1. Commercial Vehicle	thn Nos		16.5	84	57.4	140	105
2. Jeeps	th Nos	-		13	12.5	25	20

STRUCTURAL CHARACTERISTICS OF ENGINEERING INDUSTRIES IN INDIA

1978- 79.

Engineering Industries	Factories	Fixed Capital (Rs. Cr)	Production capital (Rs. Cr)	Invested capital (Rs. Cr)	Employm (Nos hu
Machinery	6383	639.2	1358	1725	3843
Electrical machinery	2882	532.8	1105	1549	2847
Transport equipment	2582	1229.9	1804	2078	3918
Metal products	5818	176.0	374	440	1831
Other manufacturers	1799	81.7	218	248	671
Total Engig	19,463 (21.7)	2659.6 (11.7)	4859 (15.5)	6040 (17.2)	13,121
All Industries	80,077 (100.0)	4401.7 (100.0)	31,423	35154	72,48

	Gross output (Rs.Cr)	Net output (Rs. Cr)	Net Income (Rs. Cr)	Total Emolu- ments (Rs Cr)	Tot pro (Rs.
Machinery	2486	664	527	323	204
Electrical Machinery	2351	575	455	273	182
Transport equipment	2126	592	513	363	151
Metal products	975	230	199	112	46
Other manufactures	337	88	74	44	30
Total Engineering	8275 (18.6)	2149 (22.5)	1723 (22.8)	1115 (24.2)	613 (20
All Industries	44344	9554	7571	4612	296

TABLE 1.2

DETAILS OF [illegible]

Year	Free hold Land	Buildings	Plants & Machinery	Furniture Fittings	Other	Total
1975	19,13,326 (23.73)	8,80,596 (10.94)	47,08,378 (58.49)	59,174 (0.76)	4,87,966 (6.03)	80,49,440
1976	19,13,326 (16.26)	14,69,120 (14.77)	[illegible] (56.97)	61,0[illegible] (0.63)	[illegible] (7.98)	93,27,290
1977	19,13,326 (16.26)	17,37,929 (14.7)	56,22,316 (47.80)	90,146 (0.77)	1,40,3575 (20.40)	1,17,67,092
1978	19,13,326 (9.86)	15,67,041 (8.08)	1,46,98,260 (75.76)	93,281 (0.48)	1,12,79,15 (5.82)	1,93,99,083
1979	19,13,326 (9.69)	13,11,924 (6.84)	1,36,04,457 (68.87)	1,11,855 (0.57)	28,11,797 (14.25)	1,97,53,359
1980	19,69,036 (9.45)	10,55,957 (5.0)	1,26,66,305 (60.78)	1,26,562 (0.61)	50,20,636 (24.09)	2,08,39,046
1981	20,31,458 (6.63)	8,2 5,089 (2.69)	1,20,00,904 (39.18)	1,89,690 (0.62)	1155,37814 (90.88)	3,06,34,954
1982	23,17,012 (4.48)	61,91,348 (11,98)	3,18,76,695 (61.70)	4,22,525 (0.82)	1,08,59,376 (21.02)	5,16,66,959
1983	24,11,036 (3.35)	80,35,025 (11,08)	3,92,04,575 (54.05)	5,60,057 (0.77)	2,23,19,997 (30.77)	7,25,28,488
1984	24,11,036 (2.82)	82,85,188 (9.67)	3,73,99,429 (43.68)	7,71,841 (0.90)	3,67,60,295 (42.93)	8,56,25,789
1985	24,11,036 (2.45)	92,28,271 (9.40)	6,74,99,129 (68.70)	7,56,277 (0.77)	1,83,47,762 (18.68)	9,82,52,475

Figures in parentheses show the percentages to row totals.