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Problems and prospect of Sponge Iron Industry in the Mangalpur Industrial Estate

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ABSTRACT

Asansol-Durgapur Industrial Belt situated in the district of Burdwan is a major industrial hub, not only of West Bengal, but also of the entire country. The existence of vast coal mines in the district has invited a large number of big industrial units of various types, which have consolidated the base for industrial development and made the Asansol - Durgapur zone an industrial complex. The area was aptly nicknamed the Ruhr of Bengal. The vast expanse covering the Rurh of Bengal had been the centre of heavy industrial enterprises. With the passage of time, however a lot of factories and units in the Asansol - Durgapur had to be unfortunately closed down and quite a few others are on the verge of closure. Moreover, prior to the decade of 1990, almost all big industries of the region were under Public sector and there was very little presence of the private sector. To give impetus to the cause of industrial infrastructure , Asansol Durgapur Development Authority (ADDA) was set up in the year 1980. Since its formation in 1980, the ADDA has been spearheading the cause of industrial infrastructure within 1615.9 sq. km. of rural and urban area to provide succor to a population of around three million. ADDA set up three industrial complexes in Durgapur, Mangalpur and Jamuria to promote industrialisation. The liberal industrial policy pursued by the central Government in 1991 proved to be the necessary catalyst. These efforts began to bear fruits and the last few decades or so saw rapid industrial initiatives in the region. Most of these initiatives were in the Iron and Steel sector because of the Region's close proximity to coal, iron and power producing zones. Incentives provided by the WBIDC and other development agencies and the boom in the steel market internationally helped these industries to prosper. Of late, however, some of these industries, especially the ones in the business of producing sponge iron, are struggling to stay afloat. This paper seeks to have a closer look at the financial health of the largest sponge iron producing unit of the the Mangalpur Industrial Estate - Jai Balajee Industries Limited identify the problems faced by the sponge iron producing units of the Estate and to suggest some remedial measures.

1. Introduction

Asansol-Durgapur Industrial Belt situated in the district of Burdwan is a major industrial hub, not only of West Bengal, but also of the entire country. The existence of vast coal mines in the district has invited a large number of big industrial units of various types, which have consolidated the base for industrial development and made the Asansol - Durgapur zone an industrial complex. The most important event in the industrial history of the region has been the setting up of a Steel Plant at Durgapur in public sector. The large Steel Works at Kulti, Hirapur, Burnpur, the locomotive factory at Chittaranjan, a big aluminium Works at Jaykaynagar, a large Paper mill at Raniganj, a modern cycle manufacturing factory near Asansol were among the notable big industrial units. Some of the other well known ones were : Alloy Steel Plant , Durgapur Projects Limited, Mining and allied machinery Corporation, Opthalmic Glass Factory, A.C.C. , Vickers- Babcock Limited , Graphite Industrial Ltd., Philips Carbon Black Limited, Indo American Electricals Company, Asiatic Oxygen Company, Durgapur Cement Works, Durgapur Thermal Power Station, Jessop and Co. and Hindustan Sheet Metal Works etc. Durgapur was aptly nicknamed the Ruhr of Bengal. The vast expanse covering the Rurh of Bengal had been the centre of heavy industrial enterprises. With the passage of time, however a lot of factories and units in the Asansol - Durgapur had to be unfortunately closed down and quite a few others are on the verge of closure. Moreover, prior to the decade of 1990, almost all big industries of the region were under Public sector and there was very little presence of the private sector. To give impetus to the cause of industrial infrastructure , Asansol Durgapur Development Authority (ADDA) was set up in the year 1980. Since its formation in 1980, the ADDA has been spearheading the cause of industrial infrastructure within 1615.9 sq. km. of rural and urban area to provide succor to a population of around three million. ADDA set up three industrial complexes in Durgapur, Mangalpur and Jamuria to promote industrialisation. The liberal industrial policy pursued by the central Government inn 1991 proved to be the necessary catalyst. These efforts began to bear fruits and the last few decades or so saw rapid industrial initiatives in the region. Since 2000, private investments worth Rs. 750 cores have been siphoned without any pre condition. A number of projects have been initiated giving a breather for thousands of people rendered jobless due to closure of several industrial units. Most of these initiatives were in the Iron and Steel sector because of the Region's close proximity to coal, iron and power producing zones. Incentives provided by the WBIDC and other development agencies and the boom in the steel market internationally helped these industries to prosper. Of late, however, some of these industries, especially the ones in the business of producing sponge iron, are struggling to stay afloat. All these units were set up in the early nineties and it was time to have a critical evaluation of their performance and financial health. With this obective in mind, the largest sponge

iron producing unit in the region- Jai Balajee Industries Limited- was selected to have a closer look at the financial health of the sponge iron industry in Mangalpur Industrial Estate.

2. Objectives

a) To study the physical and financial performance of the selected unit .

b) To analyse the problems faced by the Sponge Iron industry in the Mangalpur Industrial Estate and to examine the future prospect of this industry.

3. Methodology

In pursuance of the objective set forth, different analysis has been employed for the for the study. Data on different parameters and indicators of the financial performance of the selected unit has been collected for a period of 10 years (from 2005-06 to 2015-16) from the financial reports of these units. For the purpose of analysing the financial health of the selected units, certain ratios has been used. The performance has been studied in terms of selected parameters like profit, Return on Investment (ROI), Return on Equity (ROE), Earning per Share (EPS), Book Value per Share, Net profit margin etc. To gain an insight into the problems faced by these units and to discuss their prospects, intensive and structural discussions has been held with the stakeholders of the selected units. Apart from the computation of ratios, performance of the units has been examined by estimating trend and growth rates of different parameters.

4. Span of the study

The study span covers the years 2005-06 to 2014-15. The performance of selected units has been analysed for this period.

5. Limitations

The principal limitation of the study is non availability of data from the selected units for the entire span of the study period. Of the four sponge iron producing units, data could be collected only from two units.

Sponge iron provided the main source of iron for many centuries before the blast furnace was developed. In historic times, sponge iron was produced in shallow hearths, which used charcoal as reluctant fuel. The product of these early smelting process was a sponge mass of coalesced granules of nearly pure iron intermixed with considerable slag. Usable articles of wrought iron were produced by hammering the sponge mass, while still hot, to expel most of the slag and compact the mass. By repeated heating and hammering, the iron was further freed of slag and forged into the desired shape.

All of the methods through which low carbon wrought iron can be produced directly from the ore are referred to as direct reduction processes. After the development of the blast furnace, which produced high carbon pig iron, direct processes were nearly abandoned. However, direct reduction process is still used because of the ease with which iron ores are reduced making the processes appear enticingly simple, and primarily because the reduction takes place at relatively low temperature compared to Blast Furnace. Process that produce iron by reduction of iron ore, below the melting point of the iron produced, are called direct reduction processes, and the products referred to as Direct Reduced Iron (DRI), commonly called sponge iron.

In modern times, sponge iron has found increasing use in the manufacture of wrought iron and as substitute of scrap during steel making. Sponge iron is chemically more active than steel or iron millings, turnings or wire strips. Sponge iron is produced as granular material or as sintered mass, depending upon the methods of treatment applied to hot material. In the granular form, it is commonly known as powdered iron and used in the manufacture of many useful articles by the techniques of powder metallurgy.

There are two types of technologies available for producing sponge iron: Coal based and gas based. In the former case, coal is the reductant while for the later natural gas is used to reduce the iron ore. For coal based rotary Kiln processes, several technologies like SL/RN, CODIR, ACCAR, JINDAL,TDR and OSIL are in use while gas based plants have predominantly used MIDREX,HYL I and III technologies. In both cases, the objective of the process is to drive off the oxygen contained in various forms of iron ore (sized ore, concentrates, pellets, mill scale, furnace dust, etc.), in order to convert the ore to metallic iron, without melting it (below 1200 °C).

The direct reduction process is comparatively energy efficient. Steel made using DRI requires significantly less fuel, in that a traditional blast furnace is not needed. DRI is most commonly made into steel using electric arc furnaces to take advantage of the heat produced by the DRI product. As Natural gas is not available in many parts of the world, the growth of coal based plants have increased in those countries like India (where natural gas is available to a limited extent) where there is abundance of non coking coal and good grade Iron ore.

India is the world's largest producer of direct-reduced iron, a vital constituent of the steel industry. Many other countries use variants of the process, so providing iron for local engineering industries.

6. Performance appraisal of the selected unit

Jai Balaji Industries Limited is the first company in West Bengal to start operation by setting up a Sponge iron Plant. The company , which was formerly known as Jai Balaji Sponge limited, was incorporated on 1st July 1999. It has an installed capacity of 3.45 million metric ton.

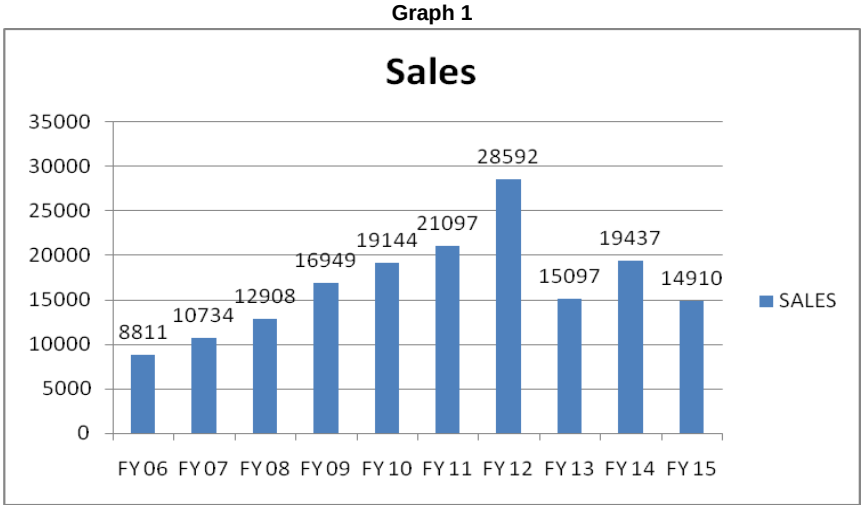
The following table gives an overview of the financial overview of the company for the period 2005-06 to 2014-15.

Table 1
Financial Overview of Jai Balaji Industries Limited

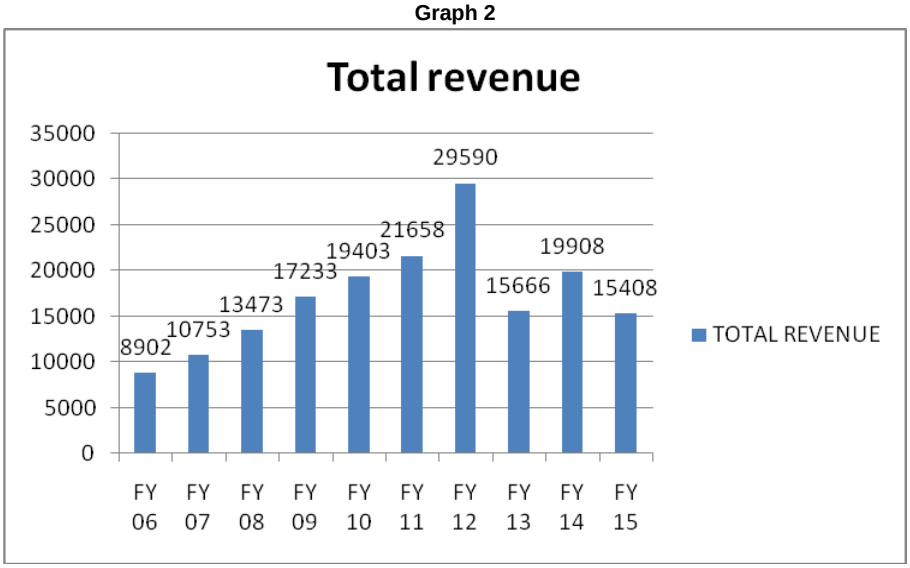
YEAR	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15
SALES	**8811**	**10734**	**12908**	**16949**	**19144**	**21097**	**28592**	**15097**	**19437**	**14910**
OTHER INCOME	91	19	565	284	259	561	999	569	471	498
TOTAL REVENUE	**8902**	**10753**	**13473**	**17233**	**19403**	**21658**	**29590**	**15666**	**19908**	**15408**
LESS- COST OF SALES	7924	9207	10576	15353	16791	18136	28891	16200	17379	15402
EBIDTA	**978**	**1546**	**2897**	**1880**	**2612**	**3522**	**699**	**-534**	**2529**	**6**
DEP	104	234	434	508	693	828	1388	862	1357	1341
EBIT	**874**	**1312**	**2463**	**1372**	**1919**	**2694**	**-689**	**-1396**	**1172**	**-1335**
BORROWING COSTS	190	354	1101	1305	1427	1564	3200	1764	3364	3841
EBT	**684**	**958**	**1362**	**67**	**492**	**1130**	**-3889**	**-3160**	**-2192**	**-5176**
TAX PROVISION	232	338	173	54	174	390	-1128	-1029	-998	-1115
PAT	**452**	**620**	**1189**	**13**	**318**	**740**	**-2761**	**-2131**	**-3190**	**-4061**
No.OF EQUITY SHARES	47.1	47.1	47.1	47.4	56.2	63.7	63.7	63.7	67.2	73.7
EPS	9.6	13.16	25.23	0.27	5.66	11.6	-43.28	-33.42	-48.27	-55.83

Lets now analyse the financial information by using charts and graphs.

Graph 1



Graph 2

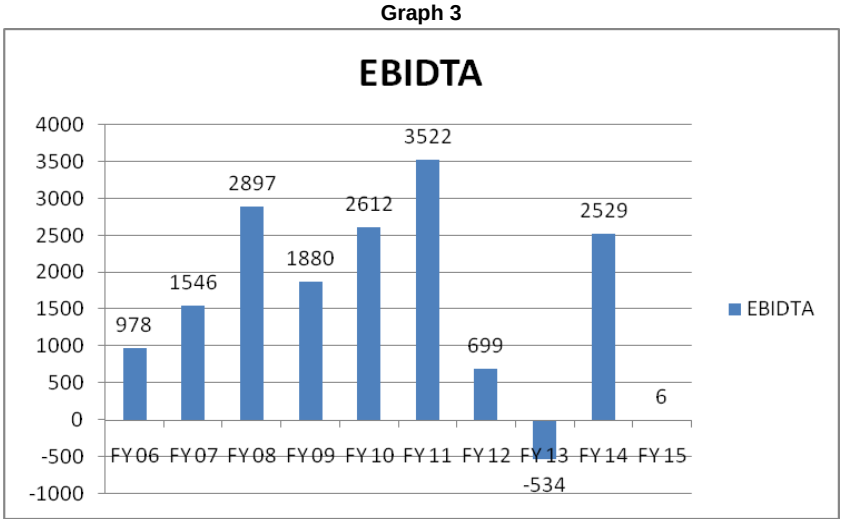


It can be seen from the above table and graph that sales were increasing at a fairly steady rate till 2011-12, but started to fall sharply after that. In fact, during the period of 2005-06 to 2011-12, sales increased from 8811 mn to 28592mn at a Compound annual growth rate (CAGR) of $(28592/8811)^{1/6} - 1 =$ 21.7 % and total revenue increased from 8902 mn to 29590

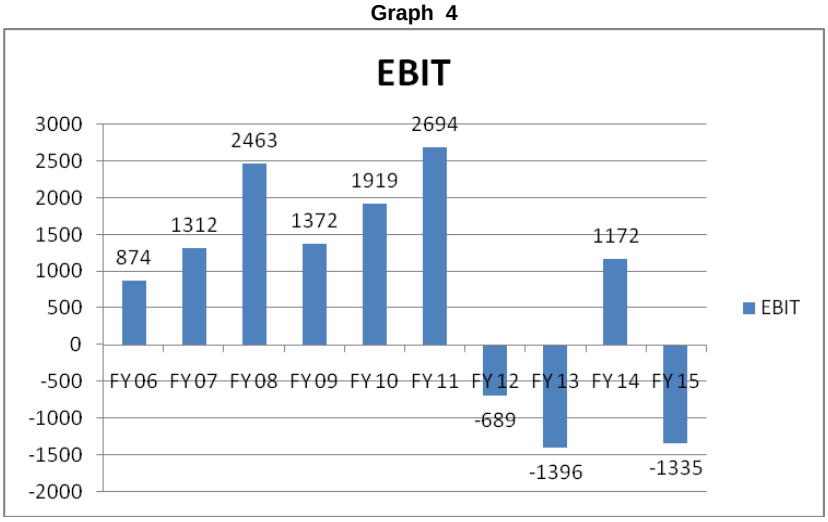
mn at a Compound annual growth rate (CAGR) of $(29590/8902)^{1/6} - 1 = 22.2\%$.

But in just 3 years from 2011-12 to 2014-15, sales were halved from 28592 mn to 14910mn and total revenue reduced from 29590 mn to 15408 mn.

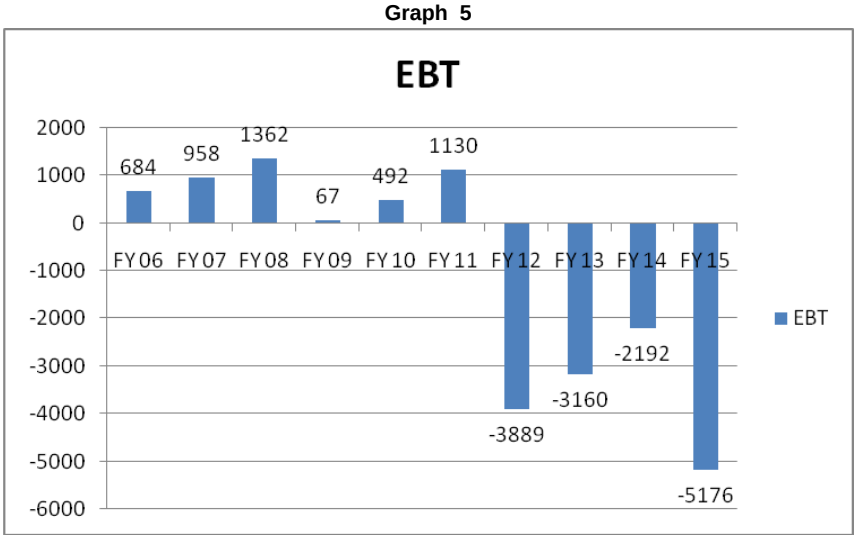
Graph 3



Graph 4



Graph 5

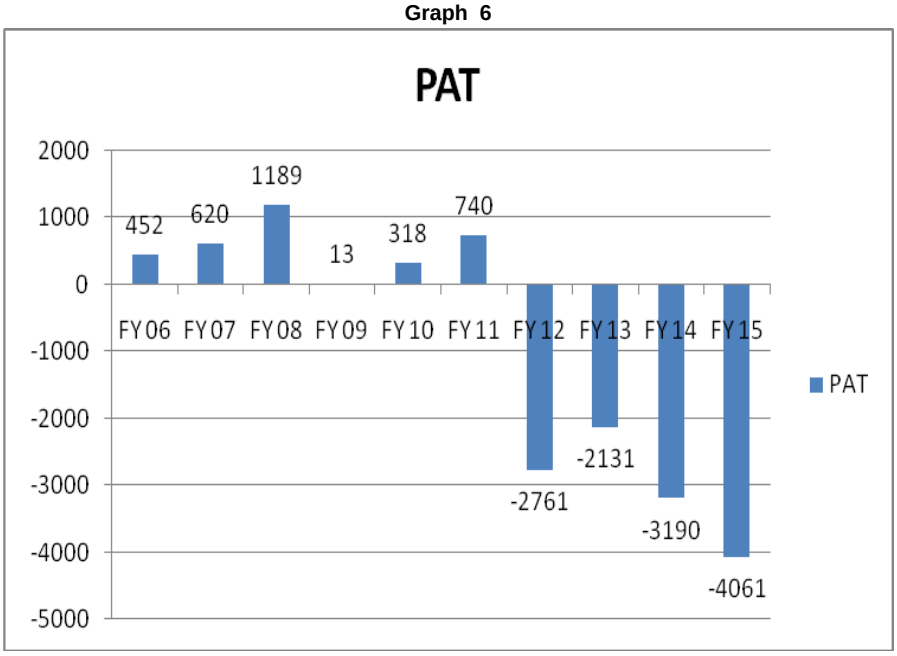


If we look at the graphs of EBDIT, EBIT, PAT, EPS, we can see that in continuing with the trend of Sales and total Revenue, the company was doing fine from 2010-11 but started making losses thereafter. The company was earning fair amount of EBDIT, EBIT, PAT till 2010-11. Whereas EBDIT was positive till year 2011-12 and turned negative from 2012-13, EBIT and PAT turned red from the year 2010-11 itself.

EBIT trebled from 874 mn in 2006 to 2694 mn in 2011 but thereafter nosedived .

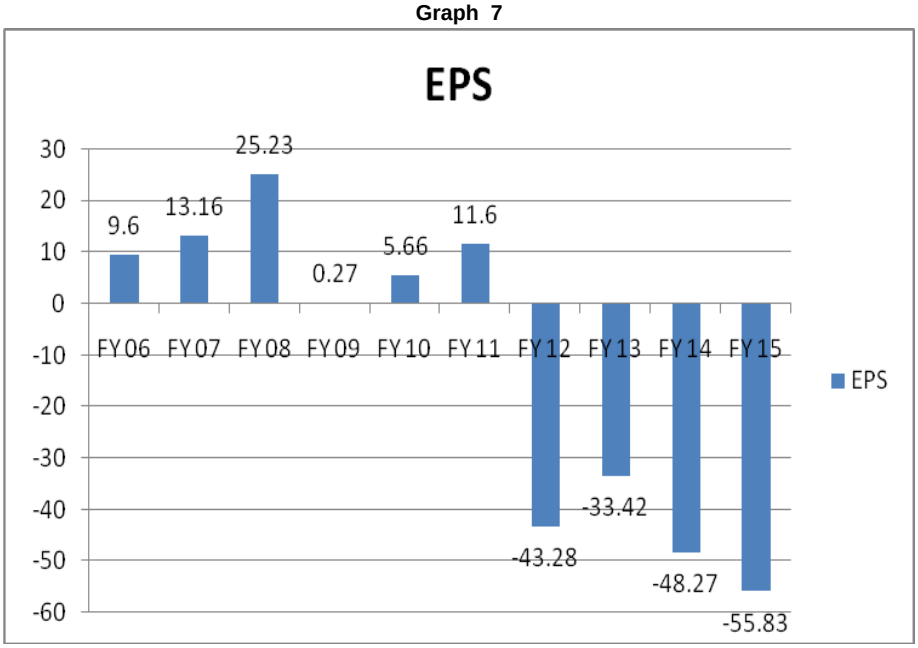
Similarly, we can see that the company was earning positive PAT till FY 2011, reaching a high of 1189 mn in FY 2008, but started incurring losses from FY 2012. What is more alarming is that the fall in all financial indicators EBDIT, EBIT, EBT,PAT was very sharp and spectacular.

Graph 6



It is crystal clear from the above table and graphs as to where the company is heading. Sales and revenue were rising at a fairly good rate till 2011-12, started to nosedive thereafter.

Graph 7



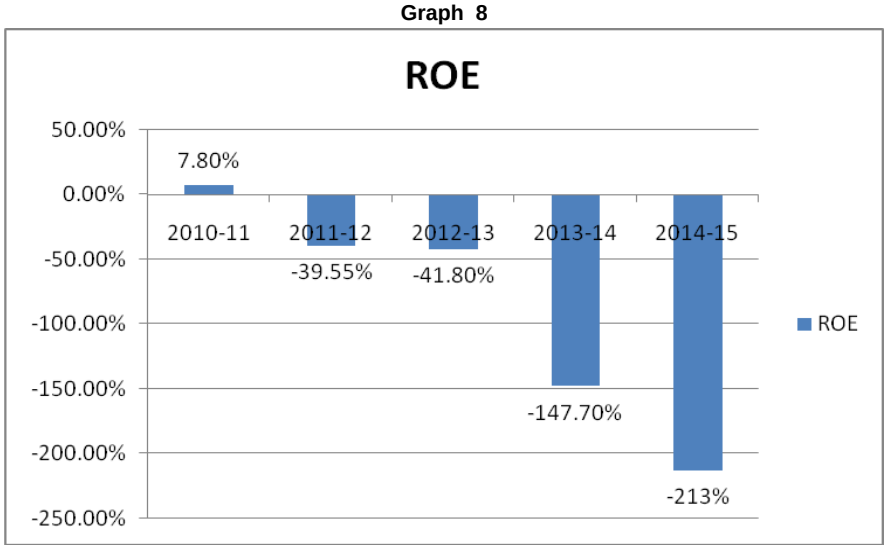
We can see from the above graph how the company's fortunes have dwindled post 2012. EPS was 9.6 in FY 06, increased to 13.16 in FY 07, rose further to 25.13 in FY 08, stumbled to 0.27 in FY 09, recovered to 5.66 in FY 10 and again to 11.6 in FY 11, but fell spectacularly thereafter.

Let us now consider some of the financial ratios of the company for the last 5 years , i.e. from 2010-11 to 2014-15.

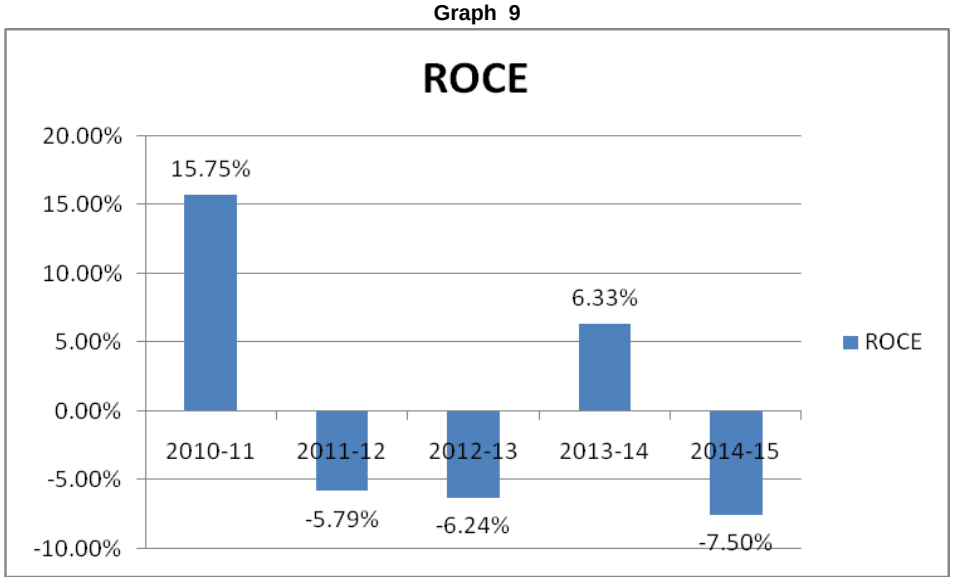
Table 2
Financial Analysis of Jai Balaji Industries Limited

YEAR	FY 11	FY 12	FY 13	FY 14	FY 15
SALES	**21097**	**28592**	**15097**	**19437**	**14910**
OTHER INCOME	561	999	569	471	498
TOTAL REVENUE	**21658**	**29590**	**15666**	**19908**	**15408**
LESS- COST OF SALES	18136	28891	16200	17379	15402
EBIDTA	**3522**	**699**	**-534**	**2529**	**6**
DEP	828	1388	862	1357	1341
EBIT	**2694**	**-689**	**-1396**	**1172**	**-1335**
BORROWING COSTS	1564	3200	1764	3364	3841
EBT	**1130**	**-3889**	**-3160**	**-2192**	**-5176**
TAX PROVISION	390	-1128	-1029	-998	-1115
PAT	**740**	**-2761**	**-2131**	**-3190**	**-4061**
NUMBER OF EQUITY SHARES	63.7	63.7	63.7	67.2	73.7
EPS	11.6	-43.28	-33.42	-48.27	-55.83
SHAREHOLDERS FUND	9740	6980	5100	2159	-1808
LONG TERM BORROWINGS	7365	4922	17287	16350	19642
CAPITAL EMPLOYED	17105	11902	22387	18509	17834
TOTAL ASSETS	35264	39055	40009	40075	39743
MATERIALS CONSUMED	15198	23451	10621	13977	9432

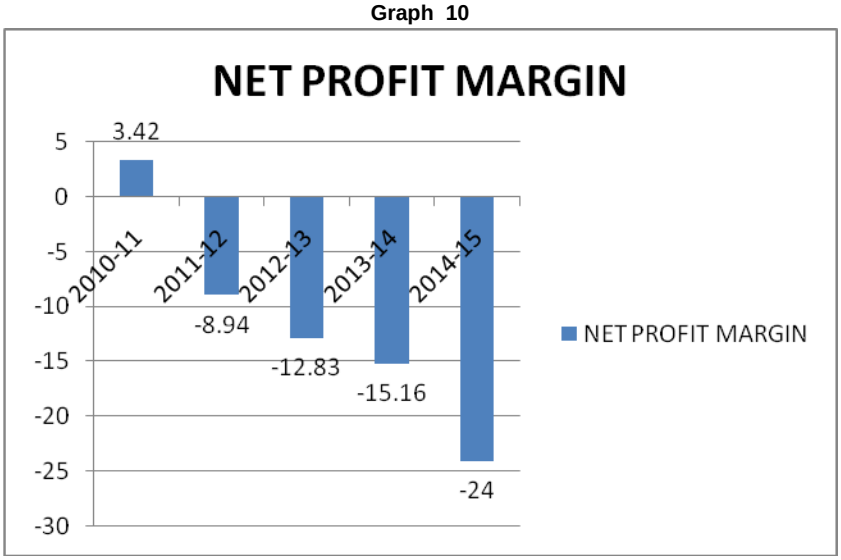
Graph 8



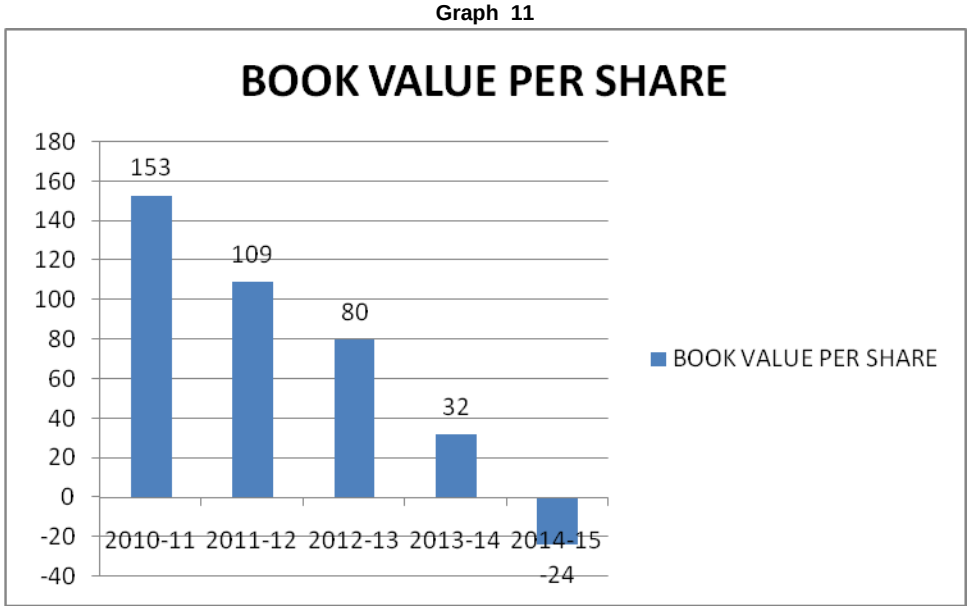
Graph 9



Graph 10



Graph 11



All the charts, graphs and ratios are pointing to a very sorry state of affairs of the company. Things have come to such a nadir that in 2015, all of shareholders funds have been wiped out and book value per share has become negative. Accumulated losses of the company as on 31st march 2015 , are in excess of its entire net worth as on the same date. As such, the company has become a sick industrial company and the necessary reference has been made with the Board for Industrial & Financial Reconstruction (BIFR) in terms of the provisions of Section !5(1)of the Sick Industrial Companies (Special Provisions) Act, 1985 (SICA) , for determination of measures for its rehabilitation. The company is in the process of making the necessary statutory compliances.

7. Problems

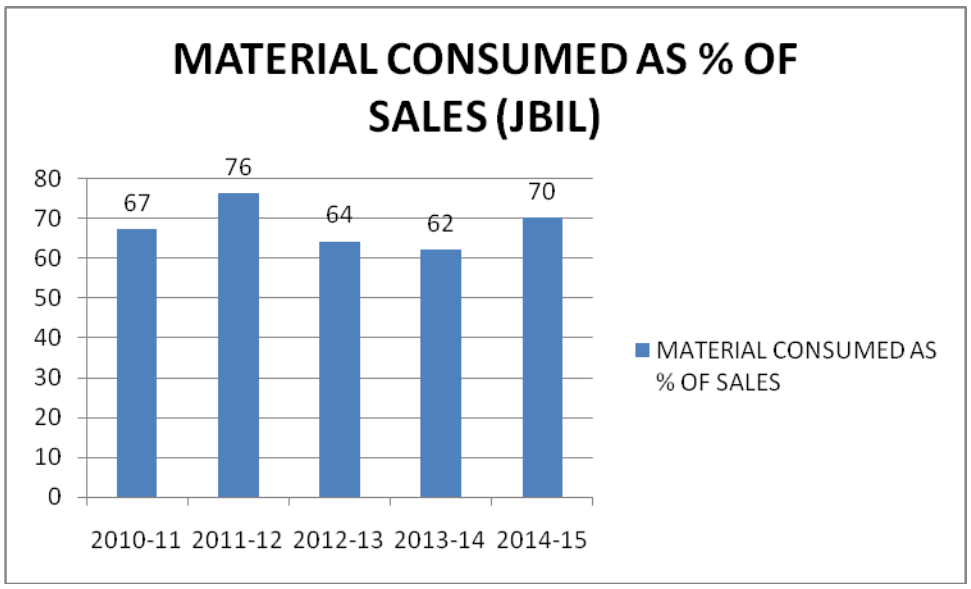
Presently, this important segment of Indian Steel industry is passing through its worst crisis. On the basis of discussions with different stakeholders of the selected units , following are the main problems and challenges that are being confronted by the Indian Sponge iron industry.

Increase in the price of raw materials

Non coking coal and iron ore are the two main raw materials used in sponge iron industries. the prices of coal and iron ore has gone up exorbitantly in recent times.

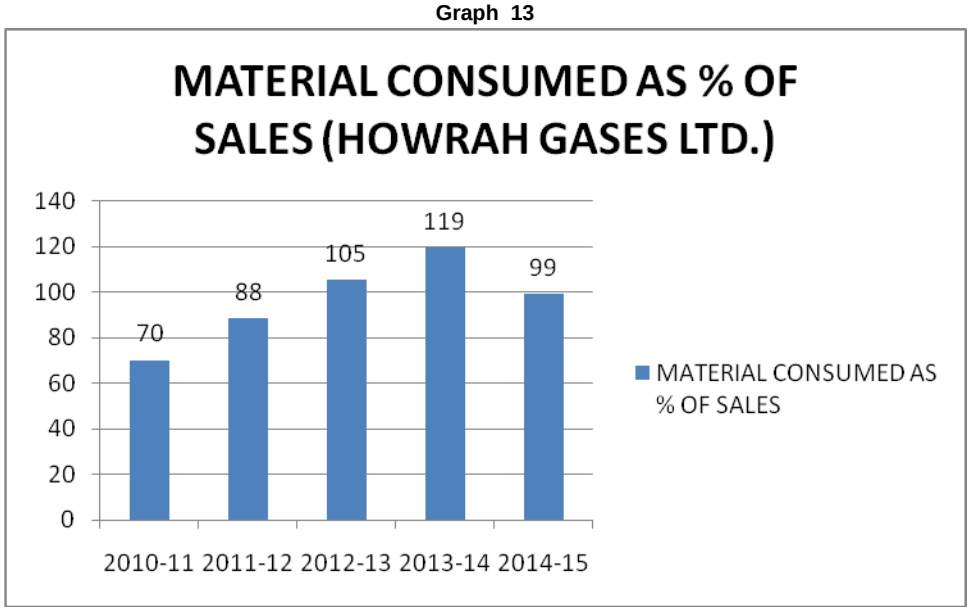
The following graph shows the raw material consumed as a percentage of sales over the last five years of study in case of Balaji Industries . It can be seen from the table that on an average cost of materials constitute 69% of sales of Balaji Industries (graph no. 24).

Graph 12



The impact of material price is more severe in case of Howrah Gases Ltd., as can be seen from the following graph (No . 25).

Graph 13



It can be seen from the above graph that material prices as a percentage of sales average a whopping 96 % for the last five years of study.

Reasons for increase in the price of raw materials of Sponge Iron Industries:

Inadequate availability and uncertainty in the prices of iron ore

NMDC is the prime source of iron ore for sponge iron producers as they have almost 100% reserves of sponge of sponge iron grade , particularly DRCLO in Bailadila Sector. They are single largest dominant player in terms of market share of the sponge iron producers. In fact, NDMC has more than 43% of non captive iron ore market share. Presently, they do not have any clear and transparent pricing mechanism. In fact, there are allegations that they exploit their dominant position. Further due to restricted availability, import of iron ore has increased substantially. Formerly, the world's number 3 supplier of iron ore, India has been importing it over the past three years due to court impose restriction aimed at curbing illegal mining in the major producing states of Karnataka and Goa. The shortage deepened when some mines in the states of Odisha and Jharkhand were ordered to close after the expiry of licenses. Import of iron ore which stood at 320,000 tonnes in the year 2013-14, jumped to a record above 15 million tonnes in the year 2014-15.

Inadequate availability of non coking coal

Against an annual requirement of 30-35 million tonnes, coal based sponge iron producers are hardly getting about 10 million tonnes from CIL sources. Rest of requirements they are meeting from open market and through e- auctions. Some of them are importing non coking coal, but imported coal is too costly to afford specially by smaller and land locked units. A few units are also sourcing from their captive coal mines.

Frequent increase in prices of coal by CIL is also hurting sponge iron producers.

Cancellation of Coal blocks :

The hon'ble Supreme Court vide its order pronounced on 24th September 2014, has cancelled number of coal blocks allotted to various companies. These include two coal blocks allotted to jai balajee Industries. This was one of the reasons for the poor performance of the company in the year 2014-15.

Unlike integrated steel plants which use iron ore fines, pellets and lumps to produce steel, sponge iron makers in India mostly use ore lumps in their Direct-Reduced Iron (DRI) furnaces. Lump price ex-mine in Odisha, home to the largest number of sponge iron plants, has gone up by approximately 50 per cent over the study period.

In the same period, non-coking coal, the other key input for sponge iron, has seen a price rise of twenty five to thirty per cent. With domestic coal supply a mess due to acute shortage of railway rakes, sponge iron makers are mostly depending on imported coal. Up to now, the units have been able to pass on the hike in input cost to our customers, the steel plants, mainly for two reasons. First, steel prices are also moving up. Second, the international price of scrap, used as an alternative to sponge iron by the secondary steel manufacturers, is ruling high, giving us the cushion to raise our product price. This is not sustainable. The tenure of steel production cut in China will end soon This will bring pressure on domestic steel prices and consequently on sponge iron prices. Beside, scrap prices in the international market have been volatile. Any drop here will shift secondary steel makers to scrap and force sponge iron producers to reduce prices.

Threats from the import of Steel Melting Scrap :

Due to the slowdown in the world steel industry, a lot of steel melting scrap is finding its way into India. Lower import duty on steel making scrap had further made it an attractive preposition. Imports in 2012-13 have crossed all earlier records. Imports of huge quantity has led to outgo of valuable foreign exchange of more than $3.5 billion, which has impacted India's foreign trade balance and widened the current account deficit (CAD) besides severely effecting the Indian sponge producers.

Threat from Imports of DRI / HBI

Imports of DRI /HBI are also increasing at an alarming rate. It was almost nil in 2010-11, but increased to 7.56 lakh tonnes in 2012-13.

Technology

Second generation technology based on mainly SL/RN were developed with a view to drastically reduce capital cost. Such plants were sub- optimally designed compromising material quality of plant and machinery, life time, capacity and quality parameters.

Most small capacity plants are performing badly with frequent break down leading to increased maintenance cost with capital repairs of vital equipments within 10-15 years. Technological limitations for exploiting inferior grades of iron ore and coal are also a cause of concern.

Environment

Small plants are perceived to be highly polluting in nature. While gas based sponge iron process is highly eco-friendly and energy efficient, coal based sponge iron process is a highly energy intensive activity and leads to higher carbon load on climate, especially by smaller units.

Apart from these, there are environmental issues, and high rail and road freight and inadequate rail and road transport network are also concerns which badly affect the financial performance of sponge iron producers.

8. Prospect

The domestic crude steel production slowed down after 2012 due to cheaper imports from Korea and Japan. Subsequently, the EAF players were the hardest hit by the cheap imports and EAF plants were shut as these EAF producers were typically small. Thereby, leading to a decline in EAF steel production succeeding 2013. The slowdown in EAF steel production impacted domestic sponge iron production. Simultaneously, sponge iron production was also plagued with several issues such as the iron ore mining ban in India made it difficult to source raw material and the decline in steel scrap prices made scrap economically viable. The iron ore mining was banned in Karnataka (July 2011) and Goa (September 2012) because of environmental concerns, land use and other covenants. Consequently, the sponge iron production declined by ~23% between 2011-13. The price of sponge iron gained momentum during the period owing to demand-supply mismatch. The sponge iron prices increased at a CAGR of 22.5% from 2010-12. However, these moderated by ~9% in 2013 (still ~33% higher than 2010 levels) as the iron ore mining ban was eased. The mining ban was partially lifted from Karnataka (April 2013) and followed by Goa (April 2014) albeit with a production cap. The sponge iron production increased by 20% on a Y-O-Y basis in 2014 as the non-coking coal supplies improved. However, the sponge iron prices increased marginally by ~2% Y-O-Y owing to demand-supply mismatch. The EAF steel production grew 8% in the period as compared to a double digit growth in the production of sponge iron.

In the past 2 years, the domestic crude steel industry was in glut marked by stagnant steel production due to cheap imports from China, Korea and Japan. A sluggish steel market translated into stagnant demand for sponge iron and its production declined by ~20% (2015). Moreover, sponge iron prices also fell by ~11% (2015). However, as the price of scrap rose by ~47% (2016), the sponge iron demand as a substitute to scrap increased despite a stagnant EAF steel production. The sponge iron production grew by 22% (2016). Although, prices continuously declined as the end steel prices remained low.

The demand for steel in India is expected to recover , supported by a rebound in the automobile and infrastructure sectors. The imposition of definitive anti-dumping duty on steel products until 2021 by the Government of India will safeguard Indian steel producers from cheap imports and is anticipated to

assist in the recovery of domestic steel prices. An improvement in steel demand and its prices may lead to a rise in sponge iron demand. On the input side, the government plan to auction new coal blocks and gradually ease out production cap on iron ore, this will lead to easy supplies for sponge iron manufacturers. In 2017, the sponge iron industry is likely to witness better business atmosphere both in terms of volume and margins.

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