PUBLIC ENTERPRISES, GOVERNMENT POLICY AND IMPACT ON COMPETITION

INDIAN STEEL INDUSTRY

Final Report

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Acronyms

BR	Bars and Rods
BIS	Bureau of Indian Standards
BOF	Basic Oxygen Furnace
CAGR	Compound Annual Growth Rate
CAGR	Compound Annual Growth Rate
CR	Cold Rolled
DEPB	Duty Entitlement Passbook Scheme
DRI	Directly Reduced Iron
EAF	Electric Arch Furnace
ESSAR	Essar Steel Ltd
GP/GC	Galvanized Sheets
HBI	Hot Briquetted Iron
HHI	Herfindahl-Hirschman Index
HRC	Hot Rolled Coils
IF	Induction Furnace
IISI	International Iron & Steel Institute
INSDAG	Institute for Steel Development and Growth
IPT	Inter Plant Transfer
ISA	Indian Steel Alliance
ISPAT	Ispat Industries Ltd
JPC	Joint Plant Committee
JSPL	Jindal Power and Steel Ltd.
JSWL	JSW Steel Ltd
JVSL	Jindal Vijaynagar Steel Ltd.
M&A	Mergers and Acquisitions
MBF	Mini Blast Furnace
NMDC	National Mineral development Corporation
NSP	National Steel Policy
OC	Own Consumption
OHF	Open Hearth Furnace
OMC	Orissa Mining Corporation
OMDC	Orissa Mineral Development Corporation
POSCO	Pohang Steel Corporation
R&D	Research and Development
RINL	Rastriya Ispat Nigam Ltd
SAIL	Steel Authority of India
SDF	Steel Development Fund
SME	Small and Medium Enterprises
SSICs	State Small Industries Corporations
TMBP	Tin Mill Black Plate
TISCO	Tata Iron and Steel Co.
TSL:	Tata Steel Ltd
TUFS	Technology Up-gradation Fund Scheme

1. Introduction

India's economic growth is contingent upon the growth of the Indian steel industry. Consumption of steel is taken to be an indicator of economic development. While steel continues to have a stronghold in traditional sectors such as construction, housing and ground transportation, special steels are increasingly used in engineering industries such as power generation, petrochemicals and fertilisers. India occupies a central position on the global steel map, with the establishment of new state-of-the-art steel mills, acquisition of global scale capacities by players, continuous modernisation and upgradation of older plants, improving energy efficiency and backward integration into global raw material sources.

Steel production in India has increased by a compounded annual growth rate (CAGR) of 8 percent over the period 2002-03 to 2006-07. Going forward, growth in India is projected to be higher than the world average, as the per capita consumption of steel in India, at around 46 kg, is well below the world average (150 kg) and that of developed countries (400 kg). Indian demand is projected to rise to 200 million tonnes by 2015. Given the strong demand scenario, most global steel players are into a massive capacity expansion mode, either through brownfield or greenfield route. By 2012, the steel production capacity in India is expected to touch 124 million tonnes and 275 million tonnes by 2020. While greenfield projects are slated to add 28.7 million tonnes, brownfield expansions are estimated to add 40.5 million tonnes to the existing capacity of 55 million tonnes.

Steel is manufactured as a globally tradable product with no major trade barriers across national boundaries to be seen currently. There is also no inherent resource related constraints which may significantly affect production of the same or its capacity creation to respond to demand increases in the global market. Even the government policy restrictions have been negligible worldwide and even if there are any the same to respond to specific conditions in the market and have always been temporary. Therefore, the industry in general and at a global level is unlikely to throw up substantive competition issues in any national policy framework. Further, there are no natural monopoly characteristics in steel. Therefore, one may not expect complex competition issues as those witnessed in industries like telecom, electricity, natural gas, oil, etc.

This, however, does not mean that there is no relevant or serious competition issue in the steel industry. The growing consolidation in the steel industry worldwide through mergers and acquisitions has already thrown up several significant concerns. The fact that internationally steel has always been an oligopolistic industry, sometimes has raised concerns about the anti-competitive behavious of large firms that dominate this industry. On the other hand the set of large firms that characterize the industry has been changing over time.

Trade and other government policies have significant bearing on competition issues. Matters of subsidies, non-tariff barriers to trade, discriminatory customs duty (on exports and imports) etc. may bring in significant distortions in the domestic market and in the process alter the competitive positioning of individual players in the market. The specific role of the state in creating market distortion and thereby the competitive conditions in the market is a well-known issue in this country.

This report proceeds as follows. Section 2 of the report provides a brief over view of the performance and structure of the Indian steel industry by analysing published secondary time series data on certain key indicators. Market structure is analyzed using indicators such as number of players and their respective shares in total production, share of public and private players in the total production/sales, production capacity of major players, etc. Given the heterogeneous nature of the product this analysis is done for the various segments of steel that constitute the "relevant market". This analysis is a precursor in identifying segments where competition may be an issue of concern to allow for a pointed analysis. Section 3 of the report documents policy and institutional structure governing the steel industry in India and the role played by the Government in the development of this industry.

Section 4 of the report examines issues of competition of steel industry in India, by identifying the structurally inherent and the market determined positions of various steel firms specifically to see their market power, vis-à-vis both their final consumers as also those within the steel industry. The issues emerging out of the size and market shares, specifically taking into consideration the investment aspects are also discussed in this section. The other issue of significant importance in the context of competition is the command over natural resources that a few players possess and

that enable a significant cost advantage over the rest in the market. These are the result of government policies of the past, to support growth of a particular industry. These preferential policies and their impact on competition are also analysed in this section.

Section 5 concludes with a discussion on state of the competition in the Indian steel sector pointing to a few key recommendations for the Competition Commission of India. Appendix I, II, III and IV provide data on the sector, and briefly discuss international conditions, and provide an historical overview.

This study finds little evidence of any cartelization or joint pricing behaviour on the part of the incumbents. It finds that government intervention, and slow responsiveness to changing conditions has contributed to shortages in the past, which in turn leads to action by the incumbents that look like, but is not, anti-competitive behaviour. Unequal access to raw material, as well as export/import curbs, are the key issues affecting the creation of a level playing field. It is the last two as well as ready availability of information on costs and prices across the value chain that could warrant some action by the regulator.

2. Steel Industry in India: Overview, Performance and Structure

Background

The establishment of Tata Iron and Steel Company (TISCO) in 1907 was the starting point of modern Indian steel industry. Afterwards a few more steel companies were established namely Mysore Iron and Steel Company, (later renamed Vivesvaraya Iron & Steel Ltd) in 1923; Steel Corporation of Bengal (later renamed Martin Burn Ltd and Indian Iron & Steel Ltd) in 1923; and Steel Corporation of Bengal (later renamed Martin Burn Ltd and Indian Iron and Steel Co) in 1939.[1] All these companies were in the private sector.

Key Events

1907*: Tata Iron and Steel Company set up.
1913: Production of steel begins in India.
1918: The Indian Iron & Steel Co. set up by Burn & Co. to compete with Tata Iron and Steel Co.
1923*: Mysore Iron and Steel Company set up
1939*: Steel Corporation of Bengal set up
1948: A new Industrial Policy Statement states that new ventures in the iron and steel industry are to be undertaken only by the central government.
1954: Hindustan Steel is created to oversee the Rourkela plant.
1959: Hindustan Steel is responsible for two more plants in Bhilai and Durgapur.
1964: Bokaro Steel Ltd. is created.
1973: The Steel Authority of India Ltd. (SAIL) is created as a holding company to oversee most of India's iron and steel production.
1989: SAIL acquired Vivesvata Iron and Steel Ltd.
1993: India sets plans in motion to partially privatize SAIL.

Source: * Governmen of India, Joint Plant Committee Report 2007, rest of the dates from: http://www.fundinguniverse.com/company-histories/Steel-Authority-of-India-Ltd-Company-History.html

At the time of independence, India had a small Iron and Steel industry with production of about a million tonnes (mt). In due course, the government was mainly focusing on developing basic steel industry, where crude steel constituted a major part of the total steel production. Many public sector units were established and thus public sector had a dominant share in the steel production till early 1990s. Mostly private players were in downstream production, which was mainly producing finished steel using crude steel products. Capacity ceiling measures were introduced. Basically, the steel industry was developing under a controlled regime, which established more public sector steel companies in various segments.

Till early 1990s, when economic liberalization reforms were introduced, the steel industry continued to be under controlled regime, which largely constituted regulations such as large plant capacities were reserved only for public sector under capacity control measures; price regulation; for additional capacity creation producers had to take license from the government; foreign investment was restricted; and there were restrictions on imports as well as exports.

Undoubtedly there has been significant government bias towards public sector undertakings. But not all government action has been beneficial for the public sector companies. Freight equalization policies of the past were one example. The current governmental 'moral-suasion' to limit steel price increases is another.

However, after liberalization—when a large number of controls were abolished, some immediately and others gradually—the steel industry has been experiencing new era of development. Major developments that occurred at the time of liberalization and thenceforth[2] were:

1. Large plant capacities that were reserved for public sector were removed;
2. Export restrictions were eliminated;

[1] *Government of India, Joint Plant Committee Report 2007.*
[2] *Government of India, Ministry of steel, Annul Report 2007-08.*

3. Import tariffs were reduced from 100 percent to 5 percent;
4. Decontrol of domestic steel prices;
5. Foreign investment was encouraged, and the steel industry was part of the high priority industries for foreign investments and implying automatic approval for foreign equity participation up to 100 percent; and
6. System of freight ceiling was introduced in place of freight equalization scheme.

As a result, the domestic steel industry has since then, become market oriented and integrated with the global steel industry. This has helped private players to expand their operations and bring in new cost effective technologies to improve competitiveness not only in the domestic but also in the global market. Private sector contribution in the total output has since been increasing in India. Development of private sector has caused high growth in all aspects of steel industry that is capacity, production, export and imports. During the last decade more than 12 mt of capacity has been added in the steel industry, this is mostly in the private sector. Recently, the steel industry is receiving significant foreign investments such as POSCO—South Korean steel producer—and Arcelor-Mittal Group—UK/Europe based steel producer—announcing plans for establishing about 12 mt production units each in India.

The Indian steel industry, with a production of about 1 mt at the time of independence, has come long way to reach the production of about 57 mt in 2006-07. Moreover, the steel industry is showing promising future growth as major players in the industry have announced their plans for significant investments in expanding their capacities.

Impressive development of the steel industry with active participation of private sector and integration of India steel industry with the global steel industry has also induced the government to come up with a National Steel Policy in 2005. The National Steel Policy 2005 was drafted with the aim of establishing roadmap and framework for the development of the steel industry. The policy envisages steel production to reach at 110 mt by 2019-20 with annual growth rate of 7.3 percent. As later sections will show these expectations are not excessively high.

With increasing need for large investments in the industry private sector's role would be crucial in the development of the steel industry. The future, it appears, will continue to be dominated by a few large players and the industry will remain oligopolistic – as it is internationally. Moreover, as shown in Appendix I share of fixed cost to total cost for selective steel producers in India is very high making it prone to increasing returns to scale and the consequent market structure (See Table A1.8). TISCO, public sector entities, POSCO, Jindals, Essar, and Arcelor-Mittal will be among the major players accounting for the bulk of the 100 plus million tons of production in the future.

There is a key factor behind the predominance of large units and oligopolistic industry structure. And that is the production process. The following section discusses the process and underlying technology.

Steel production processes

Blast furnace/basic oxygen furnace (BF/BOF): BF basically converts iron ore into liquid form of iron. Iron produced by BF contains high amount of carbon and other impurities, this iron is called pig iron. Pig iron due to its high carbon content has limited end use application such as covers of manholes. To make steel products out of pig iron it is further processed into BOF where its carbon content and other impurities are burnt or removed through slag separation. Main inputs to BF are iron ore and coal/coke. BOF is also called oxygen furnace because oxygen is the only fuel used in the process. Generally, integrated milling use BF/BOF routes to produce finished steel. Producers that use this technology include SAIL, RINL, TSL and JSWL.

Electric Arc Furnace (EAF): Basic purpose of the EAF is remelting sponge iron, melting scrap, its main inputs, to produce finished steel. It uses electricity as much as 400-500 kWh/ton. ISPAT, ESSAR, and the Jindal group are examples of producers, which use this technology.

COREX or Cipcor Process: COREX is an advance process of making steel. Though few use this process, it is possible to use non-coking coal directly in smelting work and it also makes it possible to use lump ore and pellets as inputs. These two advantages allow steel producers to eliminated coking plants and sinter plants. Purpose of coking plant is to convert non-coking coal into more efficient fuel and purpose of sinter plant is purify lump ore or pellets for further

processing. Basic inputs to COREX are iron-ore and coal. Jindal Iron & Steel Company (JISCO) uses COREX technology to produce finished steel.

Induction Arc Furnace (IAF): is one of the most advance processes of making steel. Like EAF it uses electricity as its main fuel. IAF is most environment friendly and efficient way of producing steel. However, its lack of refining capacity requires clean products as its inputs. Large numbers of small steel companies use this technology.

The high weight of the product significantly pushes up transport and movement costs. Therefore large integrated plants are the norm for cost efficient production. For specialized steel and alloys efficient production by smaller plants is possible.

Steel Producers

Broadly there are two types of producers in India viz. integrated producers and secondary producers. Integrated steel producers have traditionally integrated steel units have captive plants for iron ore and coke, which are main inputs to these units. Currently there are three main integrated producers of steel namely Steel Authority of India Limited (SAIL), Tata Iron and Steel Co Ltd (TISCO) and Rashtriya Ispat Nigam Ltd (RINL). SAIL dominates amongst the three owing to its large steel production capacity plant size.

Secondary producers use steel scrap or sponge iron/direct reduced iron (DRI) or hot briquetted iron (HBI). It comprises mainly of Electric Arc Furnace (EAF) and Induction Furnace (IF) units, apart from other manufacturing units like the independent hot and cold rolling units, rerolling units, galvanizing and tin plating units, sponge iron producers, pig iron producers, etc. Secondary producers include Essar Steel Ltd., Ispat Industries Ltd., and JSW Steel Ltd. There are 120 sponge iron producers; 650 mini blast furnaces, electric arc furnaces, induction furnaces and energy optimizing furnaces; and 1,200 re-rollers in India.[3]

The integrated producers constitute most of the mild steel production in India. Their main products include flat steel products such as Hot Rolled, Cold Rolled and Galvanised steel. They also produce long and special steel in small quantities. On the other, secondary producers largely produce long steel products.

Re-rollers are the units that come under secondary producers' category, and produce small quantity of steel like long and flat products. These units either procure their inputs from the market or through their backward integrated plants. They use sponge iron, pig iron or combination to produce finished steel or ingots.[4]

Types of steel[5]

Steel is an iron based mixture containing two or more metallic and/or non metallic elements usually dissolving into each other when molten. Since it is an iron based alloy—as per its end use requirements—other than iron it may contain one or more other elements such as carbon, manganese, silicon, nickel, lead, copper, chromium, etc. For example, stainless steel (a type of steel) mainly contains chromium that is normally more than 10.5 percent with/without nickel or other alloying elements. Steel is produced using Steel Melting Shop that includes converter, open hearth furnace, electric arc furnace and electric induction furnace.

There are broadly two types of steel according to its composition: alloy steel and non-alloy steel. Alloying steel is produced using alloying elements like manganese, silicon, nickel, chromium, etc. Non-alloy steel has no alloying component in it except that are normally present such as carbon. Non-alloy steel is mainly of three types viz**.** mild steel (contains upto 0.3% carbon), medium steel (contains between 0.3-0.6% carbon) and high steel (contains more than 0.6% carbon). All types of steel other than mild steel are called special steel. It is mainly because a special care is taken in order to maintain particular level of chemical composition in such steel. This process gives different properties to the steel according to its composition. In India, non-alloying steel constitutes about 95 percent of total finished steel production, and mild steel has large share in it.

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[3] *Government of India, Ministry of Steel, National Steel Policy, 2005.*

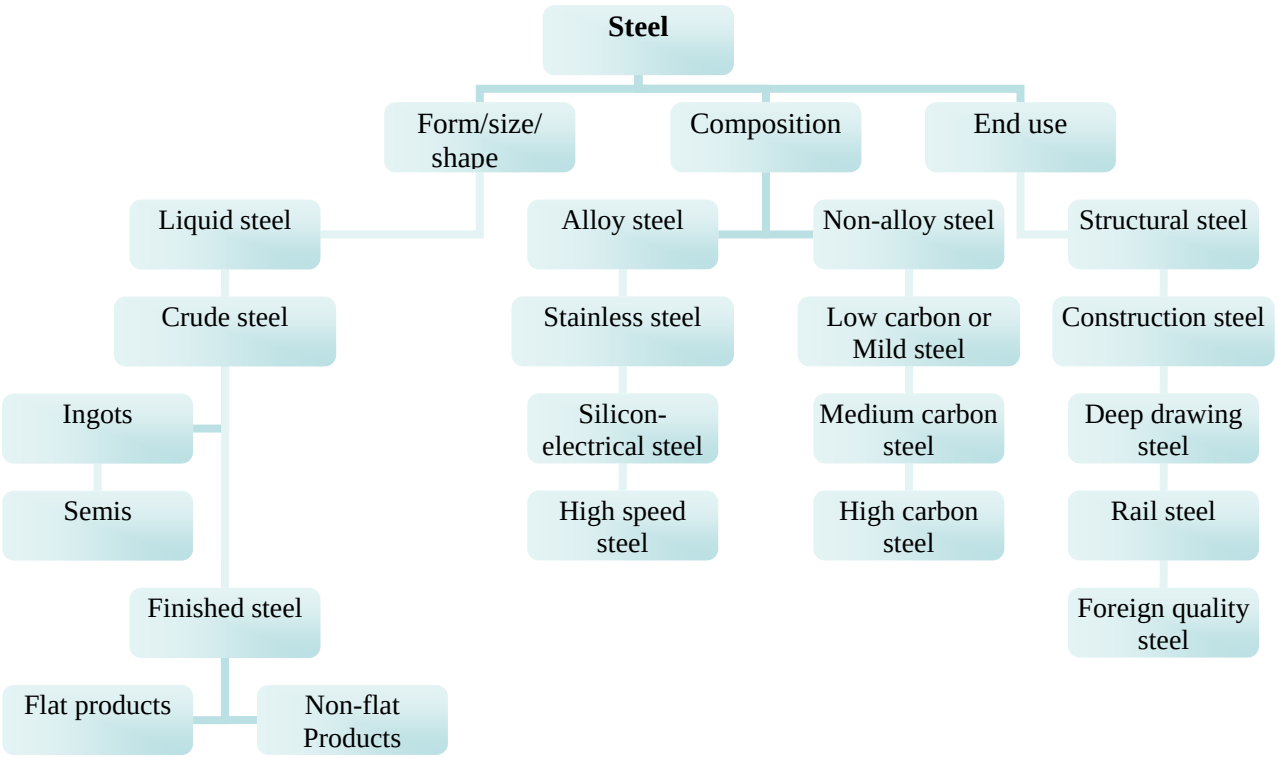
[4] *http://www.indiansteelalliance.com*

[5] *Information, related to definition and categories of steel, used in this part of the section is based on the "Glossary of Terms/ Definitions commonly used in Iron & Steel Industry" by Ministry of Steel, Government of India. For more information visit: http://steel.nic.in/Glossary-I.pdf).*

According to shape/size/form steel is categorized into different types such as liquid steel, ingots, semis (semi-finished steel) and finished steel. Liquid steel is a first product that comes out from Steel Melting Shop. Liquid steel further goes into ingots, and then ingots advance to semis. Semis are called semi-finished steel products because they are further subject to forging/rolling in order to produce finish steel products such as flat steel products and long steel products. Crude steel generally includes ingots and semis.

According to end use, steel is categorized into structural steels, construction steel, deep drawing Steel, forging quality, rail steel, etc. The following chart depicts various types of steel products according to different categories.

Chart 2.1: Categories/types of steel products



Production

During the last five years finished steel production (alloy and non-alloy) grew at the rate of 8 percent (CAGR) to reach at 57.66 mt in 2006-07 from 39.22 mt in 2002-03 (Table 2.2). In 2006-07, the secondary producers alone contributed about 76 percent and the rest came from the main producers.

After liberalization, on the account of active participation of private sector in the steel industry, public sector share in the total production started dwindling. In 2003-04, share of public sector in the finished steel production (alloy & non-alloy) was 28 percent, which was reduced to 23 percent in 2006-07.

According to estimates of Ministry of Steel[6], Government of India—production capacity of the steel industry will be 124 mt at the end of the year 2011-12. It is mainly attributed to positive trends in the consumption. Main producers such as TISCO, SAIL and JSW are aggressively investing in expanding their plant capacities. TISCO has an installed production capacity of 7.5 to 8 mt with another 2.4 mt would be added by 2009. The TISCO is the front runner with an expansion plan of about 30 mtpa by 2020. JSW and SAIL have expansion plans of about 27 mtpa and 24 mtpa, respectively.

[6] *Government of India, Ministry of Steel, Annual Report 2007-08.*

Consumption

During last five years (2002-03 to 2006-07) the steel consumption has grown by about 11 percent, which was higher than the estimation of National Steel Policy 2005. Especially in last two years (2005-06 and 2006-07) consumption growth has been quite impressive, 13.90 percent and 12.91 percent, respectively. The consumption has reached its ever highest level of 46.78 mt in 2006-07 (see figure 2.2). Some estimations state that this upturn trend in consumption will continue in the future mainly owing to healthy economic growth and promising demand from growth driving sectors such as infrastructure, construction, housing, consumer durables, etc.

India's per capita consumption of steel stood at 46 kg, whereas world average is 150 kg. Average for developed world is 450 kg. Thus, it is clear that there is much scope for the growth of consumption in India. Major sectors which contributed to steel consumption in 2005-06 are depicted in the figure below (Figure 2.3). Infrastructure and manufacturing sectors together contributed almost 50 percent of total demand for the steel in 2005-06.

Trade

In last five years (2002-03 to 2006-07) imports are growing at much faster rate than exports. As a result net trade in steel is getting narrower (see Table 2.1). While imports have grown by CAGR of 24.49 percent, exports have grown just by a CAGR of 2.16 percent in last five years. Overall net trade in steel has managed to be in surplus till 2006-07.

Performance of the Indian Steel Industry

Data from a range of sources including Joint Plant Committee, Prowess Database, as well as international trade data, all reveal that there is no single entity that dominates either the sector as a whole, or any of the major product segments. Tables are provided at the end of this chapter. But the key point is that this is not a monopoly, either in its aggregate form, or in any of its components. Later chapters will discuss whether there is any evidence of anti-competitive behavior by the incumbents.

In segment after segment, the pattern is very clear; the more aggressive growth oriented firms have been capturing greater market shares. In some cases, they may be relatively smaller secondary producers, and in others the larger one. There is no evidence, of expansion of output or profitability, that anti-competitive behaviour of any of these firms, should have resulted in.

Production

As mentioned above, growth of the Indian steel industry has been quite rapid; production growth CAGR was about 8 percent (see Table 2.2), very much in line with economic growth during 2002-03 and 2006-07. The private sector constituted 77 percent of the total production in 2006-07, and its share has been rising for the past few years. While SAIL is a major public sector undertaking, it is also the largest producer of steel in the country accounted for 17 percent of the total production in 2006-07, followed by TSL and RINL with shares 8 percent and 5 percent, respectively.

At-least where market sizes are concerned, whether individually or as a group, the public sector is no longer at the 'commanding heights' of the steel sector. But a better understanding is received when we look at the segment-wise break-up in later sections.

In 2006-07 non-alloy steel constituted 95.6 percent of total finished steel production and rest was alloy steel. Out of total non-alloy production non-flat products were 49.27 percent, and in the rest 48.34 percent were flat products and 2.39 percent were pipes (large dia).

Of total finished (non-alloy) productions of bars & rods (non-flat product) and hot rolling coils/skelp/strips (flat product) were 37.48 percent and 22.27 percent, respectively. Together these two major products constituted for 59.75 percent of total finished (non-alloy) steel production in 2006-07. This trend has been more or less constant for last five years (see Table 2.3).

The top six segments: Bars & rods, structurals, HR coild/strips/skelps, cold rolling coils/strips, plates and GC/GP sheets, contributed about 93.50 percent of total finished steel (non-alloy) production in 2006-07.

About 70 percent of bars and rods production came from secondary producers in 2002-03, which was increased to 72.3 percent in 2006-07. For HR coils/sheets/strips/skelps the figure was 55

percent. Secondary producers comprising ESSAR, JSWL, ISPAT and other small secondary producers have experienced rise in their shares in total production of HR coils/sheets/strips/skelps.

Bars and Rods (BR)

BR is a major part of the total steel production (non-alloy) in the country. The segment recorded a growth rate of about 6.3 percent the highest in last five years prior to 2006-07 (later data are no yet available). Since the BR segment constitutes 76 percent of total non-flat steel production, it was a major contributor to the growth rate of non-flat steel production overall. The main producers accounted for 30 percent and 27 percent of total BR production in 2002-03 and 2006-07, respectively. The public sector RINL has a large share (17%) among main producers in the production of BR. However, RINL's share has recorded 2 percent decrease in last two years. Secondary producers have seen increase in their share in total BR production from 70 percent in 2002-03 to 73 percent in 2006-07.

Structurals

The two public sector undertakings, SAIL and RINL, are the major producers of structurals. Both the companies constituted 36 percent of total production of structurals in the country. However, the shares of SAIL and RINL have been declining quite rapidly. In 2006-07 combined share of SAIL and RINL stood at 23 percent, which was 36 percent in 2002-03. As the accompanying tables later show, the share of SAIL has declined more than RINL. However the share of secondary producers in total structurals has been rising from 64 to 77 percent between 2002-03 and 2006-07. This does not indicate any great advantages that these players might have, but merely that the public sector entities have not been investing as much.

Hot Rolling coils/plates/sheets

SAIL is the single largest producer of HR coils/plates/sheets, followed by TSL and JSWL with the shares of 36 percent, 22 percent and 10 percent in 2003-04. However, in 2005-06, shares of SAIL and TSL declined to 31 percent and 19 percent. And shares of other major producers: ESSAR, ISPAT and JSWL increased.

CR coils/sheets

CR coils/sheets experienced CAGR of 5.13 percent between 2002-03 and 2006-07. CR coils/sheets constitute 9-10 percent of total finished steel (non-alloy) production. There are two main producers namely TSL and SAIL of CR coils/sheets. These two producers accounted for 52 percent of total production of CR coils/sheets in 2002-03. Market of CR coils/sheets is oligopolistic in nature as top four producers were responsible for 85 percent of total production of CR coils/sheets in 2006-07.

GP/GC sheets

GP/GC sheets segment has share of 8-9 percent in total finished steel (non-alloy) production. For last two years (2005-06 and 2006-07), the top six producers accounted for almost 49 percent of total GP/GC sheets production. Share of the secondary producers, which include ESSAR, JSWL, ISPAT and other secondary producers has been increasing. As in 2002-03 their contribution to total production of GP/GC sheets was 76 percent, which reached to 82 percent in 2006-07. On the other side, main producers' (TSL and SAIL) share in the production of GP/GC sheets has declined from 24 percent in 2002-03 to 19 percent in 2006-07.

Plates

Plates constitute 6-7 percent of total finished steel (non-alloy) production. SAIL dominates the market for plates as it accounted for 71 percent of total plates production in 2006-07. Even though SAIL's share in total plates production has declined from 86 percent in 2002-03 to 71 percent in 2006-07, it still dominates the market for plates. Combine share of just two companies SAIL and ESSAR was responsible for 90 percent of total plates production in India in 2006-07.

Imports

Top six steel products were responsible for 73 percent of total imports of steel in India in 2006-07. Main contributors were HR coils/skelps/strips/sheets, Plates and CR coils/sheets, which together constituted 56 percent of total imports in 2002-03, which increased to 62 percent in 2006-07. Particularly in the last two years (2005-06 and 2006-07) imports of BR and structurals have

declined. Flat products such as plates, CR coils/sheets and GP/GC sheets have seen positive growth from 2004-05 to 2006-07. Imports of HR coils/skelps/strips/sheets, a single largest import item, have observed marginal decline in 2006-07. In general India is becoming net importer and expected to be so in 2007-08[7]. Imports grew at a CAGR of about 24 percent in last five years. This is mainly due to increase in domestic demand for specific quality/size/grade of steel. Moreover, price considerations for specific quality/size/grade of products have pushed imports upwards[8].

Imports as percentage of total consumption have grown in last five years. India imported 5.42 percent of its total steel consumption in 2002-03, which rose to 10.64 in 2006-07.

Exports

GP/GC sheets constituted a single largest product in total exports of steel. Share of GP/GC sheets were 30 percent in total steel export in 2002-03, which dipped by 5 percent in the following year. However, it recovered to reach at 37 percent in 2006-07. Although exports of three major segments: GP/GC sheets, HR coil/strips/skelps/sheets and CR sheets/coils have declined in the last three, these segments still formed 70 percent of total exports of steel in 2006-07. Overall moderate growth of exports during the last five years has been mainly due to the need to meet the growing domestic demand and to some extent appreciating rupee was also responsible for the slow growth in exports[9].

During the last five years share of exports in total finished steel (alloy & non-alloy) production has declined. As can be observed from table 2.14, India exported 14.21 percent of total production in 2002-03, which reduced to 11.24 percent in 2006-07.

Financials

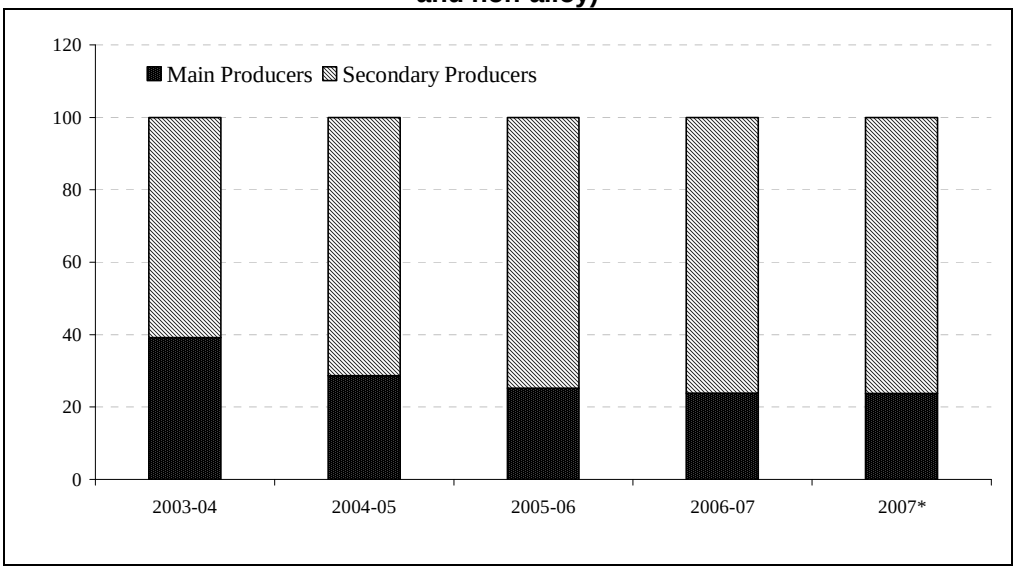
The year 2006-07 was a good year for Indian steel industry as it registered positive growth as a whole. During January-March 2007 PTA for the sector as a whole was Rs. 4109.6 crores a growth of 14 percent over previous quarter[10].

Tables 2.14 and 2.15 show profitability of the major incumbents. PAT as a share of Capital Employed varies greatly, as for the big players like SAIL, TSL and JSW Steel it is around 16 percent, 15 percent and 14 percent respectively. For other secondary main producers such as Essar Steel Ltd and Ispat Industries Ltd the figures were 4.84 percent and -0.12 percent. Even if we see figures on Return on Capital Employed (ROCE), the picture remains same as Essar Steel and Ispat Industries have performed badly compared to other three big steel producers (Table 2.15). The later sections of this report will show that the government preferences towards big steel players especially in the context of iron ore captive mining have put smaller players at disadvantageous state in the market. Big players, with full or partial captive facilities, do enjoy low cost of production and secure supply of raw material. Nevertheless, inherent nature of the steel industry, which requires huge initial investments to create production base and expand the capacities, is also responsible for the oligopolistic nature of the industry.

[7] Joint Plant Committee, performance review: iron & steel 2006-07.
[8] Ibid
[9] Ibid
[10] Ibid

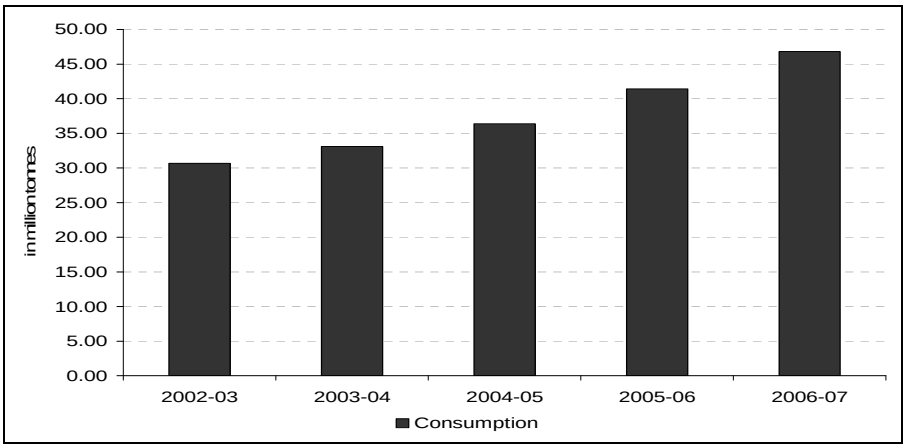
Tables and Figures

Figure 2.1: Share of main and secondary producers in total finished steel production (alloy and non-alloy)



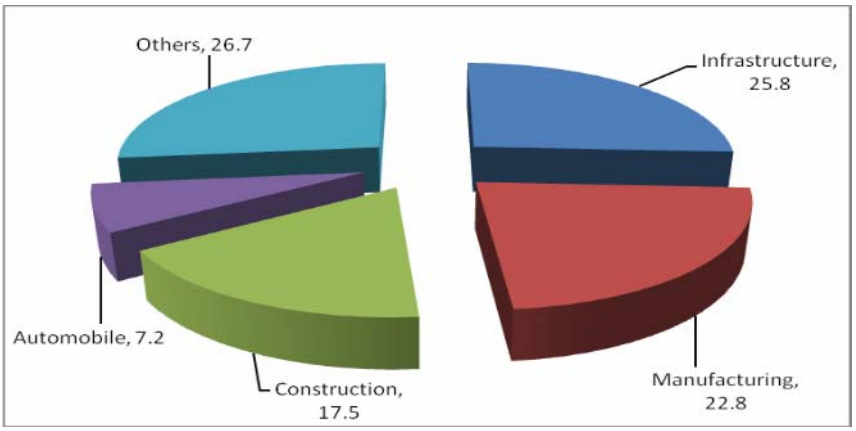
Source: www.indiastat.com
*Figures for April-December 2007.

Figure 2.2: Finished steel production (alloy & non-alloy)



Source: Government of India, Ministry of Steel, Annual Report 2007-08.

Figure 2.3: Major consumer of steel in 2005-06 (in %)



Source: CARE Steel Industry Report

Table 2.1: India's Trade in finished Steel (alloy & non alloy)

in million tonnes

Year	Import	Export	Net
2002-03	1.77	5.28	3.51
2003-04	1.83	5.89	4.06
2004-05	2.60	4.97	2.36
2005-06	4.81	5.19	0.38
2006-07	5.30	5.91	0.61

Source: Joint Plat committee, Annual Report 2007-08.

Table 2.2: Producer-wise production of finished steel (alloy & non-alloy) for sale

(in '000 tonnes)

Producers/Year	2002-03	2003-04	2004-05	2005-06	2006-07
Public Sector					
SAIL	8312 (21)	8792 (20)	9153 (20)	9283 (18)	9806 (17)
RINL	2652 (7)	2834 (7)	2904 (6)	2980 (6)	3042 (5)
Other PSUs	193 (0)	222 (1)	262 (1)	329 (1)	343 (1)
A. Total Pub	11157 (28)	11848 (27)	12319 (26)	12592 (25)	13191 (23)
Private Sector					
TSL	3377 (9)	3535 (8)	3505 (7)	3821 (7)	4423 (8)
Majors	4917 (13)	5832 (13)	6786 (14)	9534 (19)	11629 (20)
Other secondary producers	19765 (50)	22134 (51)	24255 (52)	25275 (49)	28418 (49)
B. Total Pvt	28059 (72)	31501 (73)	34546 (74)	38630 (75)	44470 (77)
Grand Total (A+B)	39216 (100)	43349 (100)	46865 (100)	51222 (100)	57661 (100)

Source: Joint Plant Committee; Figures in parenthesis indicate percentage of total; Production figures include interplant transfers and own consumption.

Table 2.3: Segment-wise production of finished steel (non-alloy)

(in '000 tonnes)

Segment	200(2-03	2003-04	2004-05	2005-06	2006-07
Bars & Rods	13850 (39)	14356 (37)	15347 (38)	16636 (37)	18811 (37)
HR Coils/Skelp/Strips	8385 (24)	8757 (23)	9215 (23)	9515 (21)	11181 (22)
Structurals/Spl.Sec.	2983 (8)	3944 (10)	4008 (10)	4484 (10)	4884 (10)
CR Coils/Sheets/Strips	3366 (10)	3557 (9)	3485 (9)	3989 (9)	4322 (9)
GP/GC Sheets	2790 (8)	3130 (8)	3672 (9)	3782 (9)	4391 (9)
Plates	1832 (5)	2182 (6)	2575 (6)	2974 (7)	3342 (7)
Others	2204 (6)	2658 (7)	2428 (6)	3010 (7)	3265 (7)
Total	35410 (100)	38584 (100)	40730 (100)	44390 (100)	50196 (100)

Figures in parenthesis indicate percentage of the total.
Source: Joint Plant Committee.

Table 2.4: Producer-wise production of steel (non-alloy) Bars & Rods

(in '000 tonnes)

Year	TSL	SAIL	RINL	Other secondary producers	Total
2002-03	709.4 (5)	1055.5 (8)	2353.1 (17)	9732 (70)	13850 (100)
2003-04	694.5 (5)	1150.3 (8)	2390.5 (17)	10120.7 (70)	14356 (100)
2004-05	705.7 (5)	1178.5 (8)	2612.1 (17)	10850.7 (71)	15347 (100)
2005-06	767.8 (5)	1175.2 (7)	2678.3 (16)	12014.7 (72)	16636 (100)
2006-07	1229.6 (7)	1178.9 (6)	2752.1 (15)	13650.4 (73)	18811 (100)

Source: Joint Plant Committee; and Steel Scenario Yearbook 2007, Spark Steel & Economy Research Centre (p) Ltd.; Figures in parenthesis indicate percentage of total.

Table 2.5: Producer-wise production of steel Structurals (non-alloy)

(in '000 tonnes)

Year	SAIL	RINL	Others secondary producers	Total
2002-03	761.3 (26)	299 (10)	1922.7 (64)	2983 (100)
2003-04	733 (19)	443.4 (11)	2767.6 (70)	3944 (100)
2004-05	751.2 (19)	292.1 (7)	2964.7 (74)	4008 (100)
2005-06	785.6 (18)	301.8 (7)	3396.6 (76)	4484 (100)
2006-07	813.9 (17)	289.9 (6)	3780.2 (77)	4884 (100)

Source: Joint Plant Committee; and Steel Scenario Yearbook 2007, Spark Steel & Economy Research Centre (p) Ltd. Figures in parenthesis indicate percentage of total.

Table 2.6: Producer-wise production of HR coils/sheets/plates

(in '000 tonnes)

Producers/Year	2003-04	2005-06
SAIL	4648 (36)	4830.4 (31)
TSL	2846 (22)	3030 (19)
JSW steel Ltd.	1300 (10)	2148 (14)
ESSAR	1700 (13)	2580 (16)
ISPAT	1500 (12)	2143 (14)
Other Secondary	985 (8)	1052 (7)
Total	12979(100)	15783.4 (100)

Source: Estimated from Joint Plant Committee and specific company information. Figures in parenthesis indicate percentage of total.

Table 2.7: Producer-wise production of steel CR coils/sheets

(in '000 tonnes)

Year	TSL	SAIL	ESSAR	JSWL	ISPAT	Others secondary producers	Total
2002-03	854 (25)	912.6 (27)				1599.4 (48)	3366
2003-04	826.2 (23)	942.2 (26)				1788.6 (50)	3557
2004-05	919.9 (26)	923.1 (26)	0	355 (10)	0	1287 (37)	3485
2005-06	988.4 (25)	929.4 (23)	298 (7)	269 (7)	844 (21)	660.2 (17)	3989
2006-07	1003 (23)	933.2 (22)	859 (20)	295 (7)	846 (20)	385.8 (9)	4322

Source: Joint Plant Committee; and Steel Scenario Yearbook 2007, Spark Steel & Economy Research Centre (p) Ltd.; Figures in parenthesis indicate percentage of total.

Table 2.8: Producer-wise production of steel GP/GC sheets

(in '000 tonnes)

Year	TSL	SAIL	ESSAR	JSWL	ISPAT	Others secondary producers	Total
2002-03	363.8 (13)	301.8 (11)	NA	NA	NA	2124.4 (76)	2790 (100)
2003-04	436 (14)	338.1 (11)	NA	NA	NA	2355.9 (75)	3130 (100)
2004-05	525 (14)	278.8 (8)	0	370 (10)	0	2498.2 (68)	3672 (100)
2005-06	508 (13)	298.6 (8)	191 (5)	232 (6)	782 (21)	1770.4 (47)	3782 (100)
2006-07	520.5 (12)	292.3 (7)	339 (8)	301 (7)	742 (17)	2196.2 (50)	4391 (100)

Source: Joint Plant Committee; and Steel Scenario Yearbook 2007, Spark Steel & Economy Research Centre (p) Ltd.; Figures in parenthesis indicate percentage of total.

Table 2.9: Producer-wise production of steel Plates

(in '000 tonnes)

Year	TSL	SAIL	ESSAR	JSWL	ISPAT	Others secondary producers	Total
2002-03	55 (3)	1572.4 (86)	NA	NA	NA	204.6 (11)	1832 (100)
2003-04	89.6 (4)	1843.5 (84)	NA	NA	NA	248.9 (11)	2182 (100)
2004-05	88 (3)	2160.2 (84)	253 (10)	0	0	73.8 (3)	2575 (100)
2005-06	82 (3)	2238.5 (75)	523 (18)	0	86 (3)	44.5 (1)	2974 (100)
2006-07	69.4 (2)	2380.8 (71)	638 (19)	0	182 (5)	71.8 (2)	3342 (100)

Source: Joint Plant Committee; and Steel Scenario Yearbook 2007, Spark Steel & Economy Research Centre (p) Ltd.

Table 2.10: Segment-wise imports of steel (alloy & non-alloy) in India

(in '000 tonnes)

Segment/ Year	2002-03	2003-04	2004-05	2005-06	2006-07
Bars and Rods	103.1(6) (6)	71 (4)	128.6 (5)	375 (8)	290.1 (5)
Structurals	46.8 (3)	17.4 (1)	66.4 (3)	99.1 (2)	86.2 (2)
Plates	367.2 (21)	423.5 (23)	423.1 (16)	791.9 (16)	1124.5 (21)
HR Coils/Skelps /Strips/sheets	360.3 (20)	413.3 (23)	848.5 (33)	1583.5 (33)	1571.7 (30)
CR Coil/Sheets	302.5 (17)	242.9 (13)	287.3 (11)	487.2 (10)	605.8 (11)
GP/GC Sheets	91.9 (5)	102.1 (6)	105.8 (4)	134.1 (3)	195.2 (4)
Others	499.1 (28)	562.6 (31)	743.8 (29)	1339 (28)	1421.9 (27)
Grand Total	**1770.9** (100)	**1832.8** (100)	**2603.5** (100)	**4809.8** (100)	**5295.4** (100)

Source: Joint Plant Committee; Figures in parenthesis indicate percentage of total

Table 2.11: Imports as a percentage of consumption of steel (alloy & non-alloy)

(in %)

Category	2002-03	2003-04	2004-05	2005-06	2006-07
Bars and Rods	0.76	0.51	0.84	2.25	1.54
Structurals	1.54	0.51	1.66	2.21	1.76
Plates	18.73	18.50	14.90	22.19	25.87
HR Coils/Skelp/Strips/sheets	4.57	4.83	8.69	15.58	13.11
CR Coil/Sheets/TMBP	9.48	8.04	9.12	12.26	13.41
GP/GC Sheets	7.26	6.04	5.49	6.54	8.13
Others	27.54	29.88	38.86	51.62	50.40
Grand Total	5.42	5.27	6.70	11.05	10.64

Table 2.12: Category-wise exports of steel (alloy & non-alloy)

(in '000 tonnes)

Category	2002-03	2003-04	2004-05	2005-06	2006-07
Bars & Rods	514.9 (10)	499 (8)	162 (3)	387 (7)	329 (6)
Structurals	34.7 (1)	64 (1)	70 (1)	89.4 (2)	75 (1)
Plates	279.2 (5)	355 (6)	158 (3)	149.8 (3)	106.5 (2)
H R Sheets/Coils	1392.5 (26)	1522 (26)	1328 (27)	1371.1 (26)	1580.3 (27)
C R Sheets/Coils	574.3 (11)	770 (13)	620 (12)	450.5 (9)	386.4 (7)
GP/GC Sheets	1610 (30)	1486 (25)	1843 (37)	1842.6 (36)	2173.3 (37)
Others	875.6 (17)	1195 (20)	785 (16)	898.7 (17)	1256.3 (21)
Grand total	5281.2 (100)	5891 (100)	4966 (100)	5189.1 (100)	5906.8 (100)

Source: Joint Plant Committee; Figures in parenthesis indicate percentage of total

Table 2.13: Export as a percentage of total finished steel Production (alloy & non-alloy)

Category	2002-03	2003-04	2004-05	2005-06	2006-07
Bars & Rods	3.72	3.48	1.06	2.33	1.75
Structurals/Spl.Sec.	1.16	1.62	1.75	1.99	1.54
Plates	15.24	16.27	6.14	5.04	3.19
H R Coils/Skelp/Strips/sheets	15.64	15.83	14.42	13.54	13.30
C R Coils/Sheets/Strips	17.06	21.65	17.79	11.29	8.94
GP/GC Sheets	57.71	47.48	50.19	48.72	49.49
Others	25.45	30.43	15.06	19.64	25.66
Total Production (Alloy & non-alloy)	14.21	14.47	11.41	11.14	11.24

Table 2.14: Financial performance of major and other major producers 2006-07 - I

(Rs. Crore)

Company Name	Sales	PAT*	Capital employed	PAT/cap. Employed (%)	Sales/cap. Employed (%)
Essar Steel Ltd.	9006.57	435.52	10449.02	4.17	4.84
Ispat Industries Ltd.	8423.44	-10.26	9338.85	-0.11	-0.12
J S W Steel Ltd.	9297.26	1291.89	9412.5	13.73	13.90
SAIL	39312.59	6202.29	19684.28	31.51	15.78
Tata Steel Ltd.	27437.29	4165.61	37680.64	11.06	15.18

*Profit After Tax

Table 2.15: Financial performance of major and other major producers 2006-07 - II

(Rs. Crore)

Company Name	Current liabilities & provisions	Total Assets	PBIT#	ROCE*
Essar Steel Ltd.	3612.99	16301.19	1320.29	10.41
Ispat Industries Ltd.	2180.01	14677.74	1031.74	8.26
J S W Steel Ltd.	2296.56	13140.94	2397.47	22.11
SAIL	11957.99	35270.45	9772.68	41.92
Tata Steel Ltd.	8714.83	50653.54	6949.8	16.57

*Return on Capital Employed; # Profit Before Interest & Tax.

3. Institutional Design

Introduction

Steel was under a fairly strict framework of regulation till 1992 and the erstwhile policy was to allocate scarce investment and infrastructure resources for optimum and planned development of the industry and to make available this scarce industrial intermediate to the users at a reasonable price. The basic purpose of the past policy was to manage a scarcity driven market towards an announced objective of establishing a fair and equitable distribution of this product and to keep it affordable as far as possible.

The pre-reform steel market in India was controlled in all relevant areas. Competition was limited in this shortage-infested market that had no real role to play in the growth of the individual companies or their performance and the allocative efficiency of investible resources. The prices set by the government were more on political consideration and not strictly on the basis of costs of production or markets demand and supply balance.[11] In the absence of an elaborate and an efficient distribution mechanism, one can expect such a system of controlled prices to be favourable to the consumers. However, the trading intermediaries, with whatever role they were allowed to play, gobbled up the margin between the market and the administered prices, with little benefits left to the vast number of small consumers.

This was natural given that supply was limited, and higher demand required an allocation mechanism between the many competing consumers. And the intermediaries used price as a means of allocation. In free market such price 'controls' only lead to rents for those not facing the controls. In this particular case this would have only adversely affected the willingness of those facing the controls to invest in increasing production or improving technology.

Following the reforms ushered in the nineties this regulatory regime was dismantled. The steel market and the industry currently are free from all regulations in trade, production and investment. Till some time ago, steel was included in the list of essential commodities. After it has been removed, the government's scope for direct policy backed intervention has reduced considerably.

The chapter is organized as follows, Section I describes the policies governing the industry, section II discusses the role of Government and section 3 discusses the specific role of Government in promoting competition in the Industry.

Policy regime for the Steel sector in India

Under the new industrial policy, iron and steel has been made one of the high priority industries. Price and distribution controls have been removed as well as foreign direct investment up to 100% (under automatic route) has been permitted.

The Trade Policy has also been liberalized and import and export of iron and steel is freely allowed with no quantitative restrictions on import of iron and steel items. Tariffs on various items of iron and steel have drastically come down since 1991-92 levels and the government is committed to bring them down to the international levels. With the abolishing of price regulation of iron and steel in 92, the steel prices are market determined.

The Government announced the National Steel policy in 2005. The policy targets indigenous production of 110 million tonnes (mt) by 2019-20 from the 2004-05 level of 38 mt at a compounded annual growth of 7.3 percent per annum. Similarly targeted consumption is 90 mt by 2019-20 from the 2004-05 level of 36 mt, implying a CAGR of 6.90 percent.

The policy devises a multi-pronged strategy to achieve these targets with following focus areas - removal of supply constraints especially availability of critical inputs like iron ore; improve cost competitiveness by expanding and strengthening the infrastructure in roads, railways, ports and

[11] Although on paper, the steel prices were to be based on an elaborate model developed by the Bureau of Industrial Costs and Prices, in practice, the same was rarely followed.

power; increase exports;[12] meet the additional capital requirements by mobilizing financial resources; promote investments by removing procedural delays. In addition the policy also addresses challenges arising out of environmental concerns, human resource requirements, R&D, volatile steel prices and the secondary sector.

The Eleventh plan working group for steel recommends the following for effective development of the steel industry:

1. Full utilization of the existing policy framework of Public-Private Partnerships (PPPs) in development of infrastructure like Railways.
2. Set up an R&D Mission in order to provide accelerated thrust on R&D and thereby improve the competitiveness of the industry.
3. Spread awareness about hedging mechanisms available in exchanges like MCX and NCDX and develop appropriate regulatory mechanism to avoid any manipulative practices.
4. Develop an appropriate Institutional Framework for collection of data and dissemination of Information.
5. Consider setting up of a multi-disciplinary organization along the lines of the International Iron & Steel Institute (IISI).
6. Proposal to have a dedicated plan fund of Rs. 25 crores for the 11th Five Year Plan in the Ministry of Steel towards grant for development of human resources for iron and steel and for ad campaigns for promotion of steel usage.
7. A Technology Up gradation Fund Scheme (TUFS) for the Small and Medium Enterprises (SME) sector in steel industry to upgrade the technological profile of the plants in the SME sector.

Role of Government

In the pre reform era, the ministry of steel played the role of key regulator and was involved in decision making related to pricing, allocation and distribution. With dismantling of the strict regulatory regime, the role of Government in all sectors has changed to that of a facilitator. So is true of the steel industry. In the post-de-regulation period, the role of the Ministry of Steel is now considered that of a facilitator. This is how the government itself sees its role.[13] The box below excerpts the annual report of the Ministry overseeing the steel sector.

Given the oligopolistic features of the steel industry, the role of Government in promoting competitive forces in the industry is of some importance. Government intervention may be called for, especially to protect larger consumer interests. But whether it is done via policy or through some regulatory/judicial mechanism is the question of interest. However, the government continues to intervene in ad-hoc ways through its administrative ministry on and off. For instance government's diktat to the steel producers to hold prices down in the face of rising domestic and global demand for steel is a clear example of government's undue intrusion in the market.

Excerpts from Annual Report 2007-08, Ministry of Steel, Government of India.

Role of the Ministry

1. Providing linkage for raw materials, rail movement clearance etc. for new plants and expansion of existing ones.
2. Facilitating movement of raw materials other than coal through finalization of wagon requirements and ensure an un-interrupted supply of raw materials to the producers.
3. Interaction with All India Financial Institutions to expedite clearance of projects.
4. Regular interactions with entrepreneurs proposing to set up new ventures, to review the progress of implementation and assess problems faced.
5. Identification of infrastructural and related facilities required by steel industry.

[12] In the current economic climate, it is not clear why export should remain a policy objective. Given the expectation of 7% plus long term economic growth, such production increases would barely be adequate to meet domestic demand.

[13] Annual report(2007-08), Ministry of Steel

6. Promoting, developing and propagating the proper and effective use of steel and increasing intensity of steel usage particularly in the construction sector in rural and semi urban areas, through the setting up of “Institute for Steel Development and Growth (INSDAG)” in Kolkata.
7. Encouraging research & development activities in the steel sector. There is an institutional mechanism through which financial assistance is provided from Steel Development Fund for this purpose. Efforts are being made to further augment R&D activities in the country.
8. Interacting with State Governments to provide power at reduced/ concessional tariffs especially to mini steel plants all over the country. Similarly, the freight rates adopted by the Railways have been rationalized after inter action with the Railway Board and freight cost on raw material transportation for steel producers is reduced.
9. Rationalizing the classification of coking coal in consultation with the Coal Ministry so as to reduce the impact of royalty payable on this basic raw material. Import duties on several raw materials, such as, scrap, ships for breaking, coke, non-coking coal etc. used by the steel industry has been reduced steadily over the past 4-5 years.

4. Analysis of Competition in the Steel Industry[14]

Steel products vary by size, shape, chemistry and physical characteristics and the same have to satisfy a large number of physical and chemical properties, if destined to industrial or critical construction applications, at the higher end of vertical product chain. Moreover, given that a steel plant has limitations in producing every grades and shapes on account of diseconomies of scale and technical constraints, competition for each gets confined to only smaller number of players. It makes, therefore, little sense to talk about the industry as a whole to understand the nature of competition in the market. Therefore, each major product is being taken separately for examination.

Flat Products

Flat products are rolled mostly from semi-finished forms called slabs. There are two streams of flat products originating either from a plate mill (Plates) or a hot strip mill/ steckel mill (HR coils). Usually, plates are used directly. The HR coils (HRCs) are used directly too, but, most of them are further rolled and processed to produce items such as cold rolled sheets/coils, coated sheets and coils, pipes, etc.. HR coils are the most important intermediate products for various reasons.

Table 4.1: Production and Domestic Sales of HR Coils/sheets/plates 2003-04

('000 tonnes)

Producers	Domestic Sales	Production	Dom. Sales as %age of Production
SAIL	2548.0	4648.0	54.8
Tata Steel	1306.0	2846.0	45.9
JSW Steel	1300.0	1300.0	100.0
Essar Steel	1700.0	1700.0	100.0
Ispat Industries	1500.0	1500.0	100.0
Other Secondary	985.0	985.0	100.0
Total	9339.0	12979.0	72.0

Source: Estimated from Joint Plant Committee and specific company information.

Table 4.2: Production and Domestic Sales of HR Coils/sheets/plates 2005-06

('000 tonnes)

Producers	Domestic Sales	Production	Dom. Sales as %age of Production
SAIL	2945.2	4830.4	61.0
Tata Steel	1352.0	3030.0	44.6
JSW Steel	1189.3	2148.0	55.4
Essar Steel	1761.5	2580.0	68.3
Ispat Industries	1810.2	2143.0	84.5
Other Secondary	1052.0	1052.0	100.0
Total	10110.2	15783.4	64.1

Source: Estimated from Joint Plant Committee and specific company information.

Despite the data gaps one is faced with, one remains fairly clear in concluding that the HR coils market, and especially of the wider dimensions, is controlled by five major producers.

It may be noted that the above mentioned dominance in the HR coils market has not resulted from any consolidation through mergers and acquisitions. This has happened due to lack of new entry. This, in turn, could be due to either the absence of opportunities or existence of naturally structured or artificial entry barriers. This will be unfolded in what follows in this section.

The question now is whether there is abuse of dominance or that position of dominance has been misused through cartelisation or agreements (formal or informal) by the HR coils manufacturers to the detriment of the competitive character of the market and thereby to the disadvantage to the consumers. In an oligopoly, abuse of dominance emanates from cartelisation and the same

[14] This section draws from a Indicus Analytic report by A.S. Firoz, 2008, State of Competition in the Indian Steel Industry.

needs to have arisen out of collective action of the dominant players; and this, in most cases should be reflected in the pricing behaviour.

It is interesting to note, in the context of the points raised by the HR Coils user industries, between 2003-04 and 2005-06, although the actual production of HR coils/sheets and plates (Hot strip mill or steckel mill products) increased by 21.6 per cent in the course of two years domestic sales increased by 8.25 per cent only. The share of domestic sales in total production of these products dropped from 72 per cent in 2003-04 to 64.1 per cent in 2005-06.

In 2007-08, while the merchant apparent consumption of HR coils (not considering the captive use) increased by 12.6 per cent over the previous year, the domestic production for sale dropped by 0.65 per cent. At the same time exports of HR coils remained fairly high at 1.39 million tonnes, although dropped 7.8 per cent from the previous year as a result of government interventions and discouragement through policy measures.

There is no document to establish that there is formal or 'written down' agreements on prices among the major players. There are only accusations by concerned parties which cannot be taken on a face value. However, their pricing behaviour clearly exhibits a pattern reflected in the timing of the pricing decisions and the quantum of price changes each undertakes. This common behaviour is, prominently observed in the case of the three companies – Essar Steel, JSW Steel and Ispat Industries Ltd. Although earlier, it was true for Tata Steel and SAIL as well, in the recent times, the decisions of SAIL have been under government control and those of Tata Steel are based on their increased attention to contracts sales in place of spot transactions.

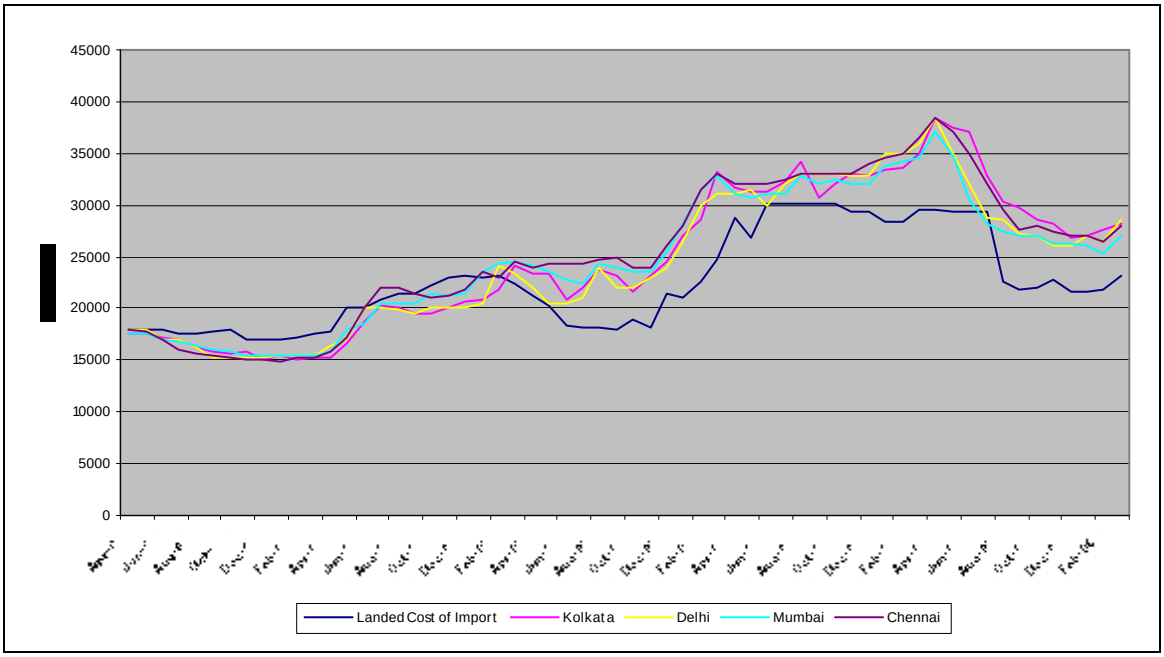
There is a need to distinguish between situations such as (i) price rise necessitated by factors external to the industry e.g. increase in capital cost, rise in border steel prices and hence erosion of profitability and (ii) expectation of demand-supply gap providing an opportunity to increase profit. However, It is very difficult to isolate price changes on account of (i) or (ii). In a dynamic market, (i) may trigger speculative boom leading to conditions in (ii). In steel, only accusation was against the members of Indian Steel Alliance as dominant price setters, which also disintegrated recently.

The government's official arm for price data collection, that is, Joint Plant Committee, collects and disseminates only retail market data which can at best be an indication only as there is always a time lag in changes between the producer and the retail prices. Also, the retail prices include all taxes and traders' margin. The latter can vary significantly based on the local conditions of the market. Retail prices also include imported products which may be driven by entirely different factors.

The government, however, asked the steel producers to put up the steel prices either on their web sites or publish them on newspapers as and when changed. Although this was obeyed and one could with certain degree of difficulties see a price list, the same could not also be considered to be useful as the same had reference only to some basic grades, without the extras or discounts. The steel companies also followed different methods to display prices (such as "prices per piece", a completely unorthodox method) and also different reference products, making comparisons difficult. It was not only found to be difficult in most cases to locate the prices on the company's websites in certain cases even if they existed somewhere hidden, since the display happens to be for a short while, getting a time series from them became almost impossible. There is clearly no transparency in the dissemination of price data, ostensibly due to commercial sensitivities attached with them.

There is open acceptance, even by the government, of the fact that till recently the HRC producers adjusted their prices to the landed costs of import or there is a desire for them to do so. Landed costs of import mean the fully duty paid cost of the imported material. They still wish to do that but for the government's informal arm twisting that the industry is forced to cut prices below such levels. This is precisely the reason why the government also has in most of time and overwhelmingly resorted to import duty cut to bring prices down in the home market.

Figure 4.1: Market Prices and Landed Costs of Imports



Source: Joint Plant Committee

The practice of adjusting prices to the alternative border prices however does not mean that the steel makers have been involved in unethical anti-competitive practices. But, if conditions are created by the steel makers by maintaining a skewed strategic balance between exports and domestic sales in a manner to make this pricing mechanism look benign and competitive, then there are serious competition issues to be raised.

Due to such factors, the export (on fob basis) and import prices (on cif basis) vary significantly from one another and it is difficult to show if they are based on a common market conditions.

There is a visible correlation between domestic prices of steel and the landed costs of imports with correlation co-efficients measured at a little above 0.88 in each case when measured between landed costs of imports and market prices at Chennai as also at Mumbai on a monthly time series data covering a period of April 2001 – March 2006 for a representative item HR coils of 2 mm thickness. (See Figure 4.1 above).

It is only when the steel producers are seen to be working towards a strategic arrangement to create conditions to enable them to do so. One of the accusations against the steel industry, especially those who produce HR Coils, is that they export, even if necessary, at a relatively lower price to create an artificial shortage in the domestic market, so that they can adjust their prices to the landed costs of imports or higher.

The point that exports were undertaken at prices below those in the domestic market and more specifically that exports were undertaken at a net realisation lower than that could be had from the domestic sales of the same products needs careful examination of the domestic, import and export prices of steel products and more specifically HR coils. A detailed empirical examination of it could not be possible due to well known data constraints. Only a short period study was undertaken to compare the net realisation from exports and from domestic sales results of which are being shown below (See Table 4.3). Although one may not be able to draw strong conclusions from it, there are some hints of HR coils being exported at prices lower than domestic selling prices.

If the overseas price of exports is favourable, exports are a natural choice. Further, specific export consignment does not entirely depend on the price differential related to it. There are many products which are developed and produced only for exports. Domestic demand for all these may be very limited. We are referring to products of common use, say HR coils, which a producer may plan to be sold both in the domestic market, but, he may accept lower prices for significant volumes, merely to see that he is not under pressure to sell more in the domestic

market. The volumes take care of the lower prices in the overseas market, and in that case exports are a pure commercial decision.

Further, the same action may cause artificial shortages or mere perception of shortages in the domestic market leading to price increases. In that case exports are used as a gaming device and as a threat to domestic buyers. Such a shortage syndrome and a higher price regime can be maintained perpetually even if all the domestic consumers are supplied with the required materials merely by the threat that in the event of non-acceptance of higher prices can lead to diversion to exports. We do see this as an issue of competition and an obvious response which the government has resorted to in situations like this is to impose an export tax.

Table 4.3: Comparison of Export and Domestic Prices of HR Coils

Period	Domestic Ex-Plant (Reference Plant)	Average Export (fob) US$ per tonne	Average Export (fob) Rs./tonne	Average Export net realisation Rs./tonne	Low Export prices ($/tonne)	Low Export prices (Rs./tonne)	Low Export (Ex-Plant) Rs./tonne	Difference Between Domestic Ex-plant and net low export realisation (Rs./tonne)	Difference Between Domestic Ex-plant and net average export realisation (Rs./tonne)
Oct-07	29350	660	25740	25140	615	23985	23385	5965	4210
Nov-07	29350	662	25652.5	25052.5	610	23637.5	23037.5	6312.5	4297.5
Dec-07	29150	665	25602.5	25002.5	640	24640	23640	5510	4147.5
Jan-08	29750	648	24948	24348	620	23870	22870	6880	5402
Feb-08	32000	680	26622	26022	645	25251.75	24251.75	7748.25	5978
Mar-08	31350	775	30767.5	30167.5	684	27154.8	26154.8	5195.2	1182.5
Apr-08	39500	816	32517.6	31917.6	713	28413.05	27413.05	12086.95	7582.4

Source: Steel Trade Intelligence

The pricing behaviour apart, a basic but important question arises in this context: does this level of concentration give the HRC producers sufficient degree of pricing power? The following issues need to be noted.

- One, imports being free, always provided an alternative to the domestic user industries. However, import prices, even without import duties, provide an undue advantage to the domestic industry as the landed costs of imports include significant ocean freight.
- Two, most of the users of HRCs are medium size firms but together they make a big clout in the political and administrative system forcing the government to intervene frequently and decisively in their favour whenever the pricing scenario turns against them. Only a few months ago the government literally forced the steel majors to maintain stability of steel prices at a relatively low level despite the fact that the global conditions of the market and the domestic demand and supply conditions could provide a significant room for them to raise prices.
- Three, there was no record of strong government intervention to restrict prices in the secondary sector. It may be noted that downstream CR and GP/GC production in the secondary sector accounted for about 6.5 million tonnes of HRC consumption in 2006-07 out of which about a million tonnes were imported.[15] The competitive position can turn largely favourable to the HRC manufacturers if favourable alternatives like duty free imports are not made available to the buyers.

  Intra – industry issues of this kind have drawn more attention in the recent times.[16] While the government has been sensitive to the ultimate consumers of steel in India by taking proactive action to arrest steel price rise, in the past, it had also taken highly protective measures in the interests of the steel makers. For example, the merchant mills producing CRC, GP/GC and even steel tubes were, in fact, hurt by what they describe as undue

[15]Estimated from JPC's published information (Annual Statistics) and other company specific information.
[16]The intra industry problem does not end within the industry itself. The conditions within the industry seriously hurt the interests of the final steel consumer or the consumers of steel bearing products.

protection provided to the HRC manufacturers by high import duty, non-tariff import barriers like floor prices etc. The users of HRC considered it as against their interests.[17]

The HRC downstream market is more competitive, especially in the case of GP/GC sheets and in specific segments of CRCs. Even then, by maintaining a price differential unfavourable to the merchant mills, the integrated mills can keep the downstream product prices sufficiently competitive taking the advantage of integrated operation and lower conversion costs at their own plants, absence of transportation costs and certain non-refundable/non- adjustable taxes, reduced material loss and to some extent economies of scale. Therefore, control over HRC makes the integrated mills stronger in the market for downstream products as well.

It is quite apparent from above that under normal conditions, the steel majors cannot really dictate terms with their CR and GP/GC customers (downstream), Yet, there has been a lot of talk about cartelisation in the steel industry especially involving large HRC producers, which cannot be easily substantiated.

As mentioned above, the near simultaneous announcements of steel price increases several times in the past have brought in strong accusation of cartelisation and price manipulations on the part of the major steel makers.[18] One has also to note that collective pricing decisions may be purely a response to external pricing alternatives available to their customers through imports. Not all such actions may conform to the pure text book cases of cartelisation to maximize joint profits. The fact remains, with limited capacity being added, the players have no large output ready with them to attempt raising their market share by price undercutting. Each of the producers did so when the market was choked with excess capacity. While one would tend to point to the recent developments in the market where evidently the producers worked in unison, not a trace of cartelisation was perhaps evident when the prices crashed prior to 2002. The domestic producers were undercutting each other at prices below even the possible import price.

Semi-finished Products Market

SAIL, Tata Steel and RINL put together account for 13 percent of the total production (for sale) of semi-finished products (billets/pencil ingots, slabs and blooms). The rest is accounted for by those in the secondary sector. However, given the fact that there are both imports and exports were undertaken primarily by the main producers, the actual share of the main producers in the total market for semis stands at only about 11.25 percent.

The market share of the main steel producers is not large enough for total business control. However, considering the fact that the secondary producers are about 750 in number and the main producers are only three, one can appreciate the individual position of each producer in the market. There are, however, divergent views on whether with such market shares, the main producers can command over prices. Who follows who in the market is difficult to establish. Further, significant quantities of billets of the main producers going to contract sales, spot prices are more likely to be determined by localised conditions and primarily by the players in the secondary sector.

Market Sharing

Are the steel producers involved in sharing market regionally? Steel is a high transport cost industry. Therefore, there will be a natural tendency for the producers to push more sales closer to the mill. However, excess capacity in a region may force the mills to look outward and sell into the territories of other mills and raise the level of competition in the market. Even if this is not necessary, a certain producer may sacrifice profit to sell in markets at a distance merely for strategic commercial reasons, even when the entire quantity could be profitably sold in the

[17]This argument was used more specifically to counter imposition of floor prices on HR coils at an artificially high level of $302 per tonne, when the global prices of HRC went down to $210 per tonne C&F and those of CRC to $280 per tonne. It may be noted that even after the government had withdrawn the floor prices, the same had to be maintained for years following a court verdict on it.

[18] Interestingly, while the private producers seem to have had closer relationship, the PSU pricing did not totally conform to the levels adopted by the private companies. While this is taken to some extent as a lethargic response of the PSUs to change and subsequent delay in decision, the PSUs also do come under certain political pressure to remain range bound in their actions.

market close to the plant. Market sharing arrangements can come up to collectively raise average revenue by calibrating sales to maximize prices in the regional markets. But little hard evidence of the same exists. Only some undocumented and circumstantial evidence is available, that is not good enough to establish or disprove the allegation.

Government Interventions

The perceived or real abuse of dominance has been counteracted by constant government interventions. Intervention by the government on matters of pricing steel long products also in the recent times has also pointed to the acceptance of the government that the major steel producers have substantial pricing power in the market and that they can be expected to act in uniform with substantial net impact on the market to move the trends in the desired direction. In fact, although the government action is purported to correct market imperfection, it has at the same time given rise to competition issues in the market. And more importantly, it affects adversely the large players' incentive to invest.

The differential competitive positioning of the steel firms on this count has been derived historically as a result of the market distorting regulatory government policies in the past. The erstwhile licensing policy of the government in the first place prohibited private entry into the integrated route and then gradually allowed private investment only in small EAF based mini steel plants before deregulating the sector completely in 1991-92. Further, price and distribution control for steel produced in the integrated sector did not allow for sufficient growth for the players already in the industry.

Slow government responsiveness: To some extent, this disparity continued even today. This may not have been due to any conscious policy of the government to favour any individual group or segment of the industry, but the slow process of change has resulted in continuation of such differentiating competitive conditions. Although the choice of technology has become increasingly market determined and is based increasingly on pure commercial considerations, the policies related to ownership and leasing of mines and specific government interventions do significantly influence the technology choice.

Subsidizing the small units: The scheme providing subsidies to the steel distributed through State Small Industries Corporations (SSICs) goes against consumer and competition interests. The government, through this scheme, makes SAIL, Tata Steel and RINL to sell steel at a subsidized price to these SSICs which finally are to go small customers. The subsidy amount is reimbursed to the producers from Steel Development Fund (SDF). While the objective of this is to support the interest of very small consumers, a government committee report itself says that the SSICs act as an agent/trader only and the benefits do not reach the intended beneficiaries and finally the products are sold either to the significant consumers or large traders. The point is, in this way, the government creates favorable pricing conditions for a select few and multiple prices in the market.

Import Policy Induced Distortions in the Competition in the Market

The government's fiscal policy has been somewhat supportive to the domestic steel industry and against the interest of the consumer industries; these could be considered to be anticompetitive.

- Take for instance the the import duty on steel, that remained at very high levels for a long time, at 25 percent till January 2004. It is only now that anti-inflationary action has led to import duty being waived.
- Also, the industry benefited from the floor prices imposed on prime steel products, not only when the global prices dropped to abysmal levels, but also when they started rising to reasonable positions. Though these have finally been abolished, the protracted protection unduly supported the steel makers at the cost of the consumers.
- The industry also gained from certain procedure related non-tariff barriers like mandatory certification requirement for quality of imported products by the Bureau of Indian Standards (BIS). This involved lengthy and cumbersome procedures involving high transactions costs for the importers.
- The government also designated specific ports for imports of certain categories of steel with a clear (though not formally stated) intention to curb their imports.

- The imposition of an anti-dumping duty[19] on non-alloy steel a few years ago on an absolutely flimsy ground was also questioned widely by the consumer industry.
- Further, a prohibitive import duty on seconds and defectives also went against genuine consumer forcing them to buy prime materials against their wishes and requirement. Given the fact that there is a large number of diverse industries dependent on low priced defective materials and there are no specific reasons why such consumers should be forced to buy high cost raw materials for their low value products, the government's persistent stand against imports of seconds and defectives violate the spirit of competition with openly doled out favours to the major steel makers. The steel industry often raised health issues in certain cases which are nothing but administrative and law enforcement matters having no relation either to the policy or the market.

These measures were against the interests of a certain segments of the steel industry itself (for example, the merchant CRC and GP/GC producers), and served the major steel producers when it came to competition with the user industry.

Control Over Natural Resources and Captive Mines

While cartelization cannot be established with facts and in the context of the existing competition laws in the country, there are larger concerns in the steel industry about competition issues when it comes to differential pattern of access o raw materials such as iron ore, coal, manganese ore and chromium ore, etc.. All these have created differential advantage to the steel makers.

Captive mining historically arose from steel enterprises starting iron ore or coal based production when there were no independent mining enterprises in the relevant areas. Also, such action was more valid in the context of administered pricing regimes of the past. In such a situation when the output price is regulated on the basis of costs, it did not matter, whether raw materials such as iron ore or coal are mined by the steel producers or were bought from an external agency mining independently at a market determined or administered price. However, the relevance of continuation of such a system needs to be reviewed when there are no restrictions on the output (steel) prices and free market conditions prevail in that market. One needs also to study the host of distortions that arise in the market of iron ore which, in turn, get reflected in the economics of steel production and consequently raise intra industry competition issues in the steel market.

Historically, Tata Steel and SAIL got into steel production based on iron ore mines leased out to them on a captive basis. Other than them, the country had steel production only from scrap based units who had nothing to do with iron ore.

Coal (coking or non-coking) has limited private participation in the supply side and it is sold to the steel companies at administered prices by government owned Coal India Ltd. For other raw materials, such as manganese, some of the steel makers have captive access to them, but the bulk of that is bought from the open market. In the overall economics of steel production, manganese is not so important considering its relatively low share in the costs of production. Captive chromium ores are important in the case of stainless steel production only.

Iron ore, therefore, is the most important mineral in the context of captive mining and the related policies lie at the centre of competition issues in the iron ore and steel market.

Structure of the Iron Ore Market

From the supply side, today, the iron ore market is divided into the following segments:

1. Merchant mining companies in the public sector such as NMDC, OMC OMDC etc. who sell iron ore either at market based or government determined prices.
2. Merchant mining companies in the private sector who sell iron ore at market based prices
3. Steel producers' captive mines.

From the demand side of the market, the market is segmented in the following way:

[19] Though this needs to be monitored as dumped product can injure the domestic market. So far there have been 14 cases of anti dumping and in many cases government had imposed anti dumping duty. The main countries that were involved in these cases were Russia, China and Ukraine.

1. Iron and steel companies making use of their own captive resources mined directly or indirectly at the actual cost of mining (plus freight)
2. Iron and steel companies obtaining assured allocations from NMDC or any other government company at prices fixed by the concerned iron ore company with or without the government clearance/approval.
3. Iron and steel companies buying partly or fully their requirement from the merchant mining companies/traders at market prices.

The structure of the market seen both from the supply and the demand sides provides extremely interesting scenarios. In terms of supply assurance, the steel producers with captive mines are best placed followed by those with assured allocations from the merchant mining companies in the public sector. The iron and steel companies who have to depend on the market are the worst placed. Among them, those with long term arrangement with then iron ore miners are placed better.

While the market price of iron ore is driven by specific demand and supply conditions in the market and is also linked to the prices of steel scrap, steel, sponge iron etc.., the public sector behemoths such as NMDC provides iron ore at non-market prices, mostly far lower than the prevailing domestic or global market prices on allocation basis. Since the basis of allocation is not well defined, this market remains far from being competitive, with built in subsidies, and clearly provides a competitive edge over all those who are to buy their iron ore from the market.

There is no problem *per se* if a raw material resource such as iron ore or coal is available to a user industry at cost when they have captive access. The difficulty arises under the following circumstances,

1. When the user industry, say, a steel producer is provided with a iron ore or coal mining lease grant, at a price/cost that has no relevance to the value of the asset, especially when other producers who are dependent on the same raw material are outside of this favour. It is like providing land or a factory to one free of cost and to another at market prices to do the same business. The established incumbents, especially the public sector entities and TISCO gain inordinately from such actions of the past.
2. When an overriding priority is assigned to an applicant for mining leases when linked to forward integration that is when captive mining leases are provided priority over the rest without any additional obligation to fulfill. Also, when a priority is assigned to state owned mining companies ignoring the fact that they operate in the same market under exactly the same conditions.
3. When a prospective investment is incentivised with the promise of a captive mining lease by the state government.

Not only that all the above cases are in contravention to the free market conditions, the captive mining is being seen by the government itself as a subsidy to the industry.

As can be seen from the charts annexed, on an average the iron ore cost to the steel companies with total captive mining falls in the range of Rs.322 per tonne for Tata Steel to Rs.558 per tonne for SAIL for the year 2005-06. For a company dependent on partly captive resources (up to about 30%) such as JSW Steel, located in a mining area, the costs were Rs. 886 per tonne. For RINL, totally dependent on assured supply from NMDC at government determined prices, the costs were in excess of Rs. 1500 per tonne in 2005-06 and Rs.1100 per tonne in the previous year. [20] As against this, a typical sponge iron unit dependent totally on the open market paid Rs. 2800 for CLO and others Rs. 1600 per tonne for fines, ex-mine, excluding transport costs.

Thus, conditions of competitiveness can be an outcome of distorted competition in the market. One source of this distorted competition is the unequal access to the raw materials, which may yield some firms an artificial competitive advantage. This advantage is in no way related to specific techno economic efficiency in operation of the firms in question

[20]The 2005-06 figure was taken from an executive of the company on informal basis.

Much of the government policy favouring captive mining is based on the stated objective of providing supply security[21] and thereby reduces the supply side risks in the usually bulky investments in steel. However, in the conditions of large scale long term and annual contracts which drive the iron ore business today, captive mining cannot be seen as the only way to provide supply security. Clearly, as seen from the MoUs signed by various entrepreneurs with different state governments, captive mines are an integral part of the steel projects proposed. Arguably, supply security may not be the prime issue, rather it is assured returns.

The other major competition issue associated with captive mining is that till now is related to the size of the lease holding and the command over the resources extended. For example, SAIL and Tata Steel have large iron ore resources under their control, far more than what they would be likely to require in the foreseeable future. They are being allowed to hold on to these resources on rather uncertain expansion projects.[22] In a situation when there is apparently a shortage with limitations being seen in expansion of production, significant resources are getting locked up under the lease holding of a few companies which in turn in creating a shortage of capacity and subsequent rise in the prices of iron ore in the open market. This has gone against the interest of the steel or iron producers dependent on the market.

Table 4.4: Iron Ore Mining Leases with Tata Steel

Mining Area/Block	District	State	Mining Area in Hectares
Noamundi	West Singbhum	Jharkhand	1273.76
Noamundi	West Singbhum	Jahrkahnd	85.56
Joda East	Keonjhar	Orissa	671.09
Bamebari	Keonjhar	Orissa	464.00
Katamati	Keonjhar	Orissa	403.32
Joda West	Keonjhar	Orissa	1437.72
Khondbandh	Keonjhar	Orissa	978.00
Total			5313.456

Source: Indian Bureau of Mines, Industry Intelligence, Respective State Governments.

[21] Supply security is being seen as disengagement from the market. In many ways, the steel makers get rid of contracts and supply headaches. Captive mining has become a favourite of the steel makers when iron ore or coal prices shot up in the recent years. In the past, lack of independent interest in mining iron ore coal, the steel makers had no option but to take up these activities on their own shoulders. Could Tatas think about depending on some inexperienced and unknown mining operator to start their steel business in the early decade of the twentieth century? It also amounts to doing two businesses – one of steel and the other of iron ore or coal. Much of the inefficiency in steel can be covered up through gains from coal/ iron ore. Steel capacity by blast furnace or any other route involves heavy capital outlay in the range of Rs. 4000 crores per million tonnes directly and additionally in related infrastructure. It has therefore necessarily to be backed up by secure raw material supply for a period of, preferably, 50 years or at least 30 years.

[22] Although one can have details of the mining leases including the mining area, location etc.., the Indian Bureau of Mines do not publish the data on reserves/resources under each lease. The resources are estimated from the average mineralization ratio in the area etc.. apart from other geological information that may be available indirectly. As per information available from FIMI, Tata Steel may have iron ore reserves of more than 2 billion tonnes while the same is over 5 billion tonnes (including Chiria). The estimates look realistic, although it was feared that the same could be exaggerated by FIMI.

Table 4.5: Mining Leases Granted to SAIL

Mining Area/Block	District	State	Mining Area in Hectares unless otherwise mentioned
Gua	Singbhum West	Jharkhand	1443.00
Gua	Singbhum West	Jharkhand	12.14
Manoharpur (Chiria)	Singbhum West	Jharkhand	2269.00
Kiriburu	Singbhum West	Jharkhand	82.00
Kiriburu	Singbhum West	Jharkhand	1936.1
Meghahataburu	Singbhum West	Jharkhand	879.43
Budhaburu (Chiria)	Singbhum West	Jharkhand	3.18 sq mile
Budhaburu (Chiria)	Singbhum West	Jharkhand	1.25 sq mile
Budhaburu (Chiria)	Singbhum West	Jharkhand	1.98 sq mile
Jilingburu1	Singbhum West	Jharkhand	210.53
Jilingburu2	Singbhum West	Jharkhand	30.44
Ankua	Singbhum West	Jharkhand	67.18
Ankua	Singbhum West	Jharkhand	622
Bolani	Keonjhar	Orissa	1586.36
Bolani	Keonjhar	Orissa	1321.45
Barsuan Kalta Taldih	Sundergarh	Orissa	2486.382
Toda Reserve Forest	Sundergarh	Orissa	77.94
Toda Reserve Forest	Sundergarh	Orissa	25.98
RAJHARA MECH.MINES	DURG	Chhattisgarh	220.00
JHARANDALLI	DURG	Chhattisgarh	813.19
KOKAN	DURG	Chhattisgarh	241.76
Kulwar - Nagpur	DURG	Chhattisgarh	938.06
Dalu (or Dalli?) Mechasnised Mine	Durg	Chhattisgarh	719.60
Mahamaya and Dulki	Durg	Chhattisgarh	1522.67
Kemmangundi	Chikmagalur	Karnataka	42.70
Rowghat		Chhattisgarh	500.00

Source: Indian Bureau of Mines, Industry Intelligence, Respective State Governments.

The state governments such as Orissa, Chhattisgarh, Jharkhand and Karnataka, have recently signed Memorandum of Understanding (MoUs) with prospective steel enterprises promising them, among others, iron ore mining leases on captive basis, against the promise to set up steel plants. Although the actual leasing out is linked to progress made on the investments, there were no pre-announced competitive criteria which the state governments should apply to select one among many (if the case be) even make a 'promise' against a promise. In the case of the MoU with POSCO, the Orissa government, with the implicit support of the central government has considered captive mining leases for them allowing them at the same time to export most of that, which itself is an extraordinary grant.

The state governments while according priority allocation of mines to new investors in the state has not spelt out a policy towards existing players on how to take care of their concerns and how to bring them in at par with the new players. In many ways, one finds that policy induced bias in the policy of captive mining has worked to bring in distortions in the market of iron ore and steel.

Export Tax

The government has recently introduced a series of measures to curb inflation. One of them is introduction of an export tax on certain types of iron and steel products. The measures are to raise immediate supply to the domestic market. Prior to that, the government had introduced an export tax on iron ore at the rate of Rs. 300/50 per tonne (depending on the grade) last year which has since been revised to an ad valorem rate of 15 percent flat.

The Export Tax on iron ore is more intriguing. The government has considered the tax at the current high level to conserve the mineral for future domestic use when the current production

and production capacity already built up are far in excess of current demand in the country. There are studies that find unfounded the fear that iron ore in the country will fall short of demand in the foreseeable future.[23] While the current iron ore production is in the range of 200-210 mt, and the industry has an estimated mining capacity of about 250 mt, local consumption stands at about 85-90 mt.[24] That is, even after the domestic demand is fully met, there will be over 100 mt of iron ore which can only be exported. There are reports of stocks accumulating in mines and the ports.[25] Bringing in restrictions in such conditions may force the mining industry to adopt second best alternatives, perhaps such as setting up value adding facilities, where they do not have competitive advantage or sell at artificially depressed domestic price.

The other issue is that if conservation is a national priority, there is an economic cost to conservation and who pays for that and in which way. Today, the burden of an export tax or measures to discourage exports has fallen entirely on the iron ore mining industry with only the user industry to benefit from it. The government, in the case of its understanding that iron ore needs to be conserved, should have a policy in such a way that the burden of a restrictive policy is well distributed or the affected industry is adequately compensated so that their investments and resources are well protected in value.

The last but not the least important of them all is a proposal under consideration of the government of India (as reported widely across national newspapers) to exempt NMDC from paying export duty on iron ore. More interesting is the fact that the government is even considering to return the export tax collected so far by the company as a reward for holding price line down in the domestic market. These are significant competition issues and need no further explanation why so.

Competition issues in the Context of Investment and Growth

Steel production is a significant infrastructure dependent industry and capacity creation involves substantial direct capital costs for developing infrastructure for raw materials, transport logistics, storage etc. While some of these infrastructure development activities are taken up routinely by the government as a part of larger development efforts, there are very specific investments which are directed at only specific beneficiaries such as a large steel plant. These include, for example, building of roads, bridges, urban infrastructure which are directly related to the economics of the plant. There is no clear policy in pricing such services. Since such development efforts are not made uniformly, there can be valid cases of policy based discrimination. This is particularly true when the government undertakes area based development to suit specific enterprises.

Different schemes of tax concessions, especially those seen in the form of waiver of state sales tax, octroi, etc. granted to prospective investments to attract them to particular state amount to subsidies.

Competition issues are also visible when large enterprises are provided with cheaper and more assured supply of scarce resources such as energy and minerals. For example the shift of rolling mills from Mandi Gobindgarh in Punjab to Baddi in Himachal Pradesh on account of lower electricity rates and other tax incentives. In Jharkhand, Orissa and Chattisgarh sponge iron plants have been set up precisely due to assured coal linkages.

Concluding Note – Economies and Favoritism

The recent announcement of various steel companies of their plans to expand capacity in the coming years show that if their plans materialize, the steel market will see significant increase in concentration and emergence of strong oligopoly in most product categories. It is worth noting that individual project sizes have gone up from an average of about 3 mt of annual capacity for a large one to about 12-15 mt today. Whereas the largest single site steel mill today has a annual crude steel capacity of only 5 mt, the projects such as those of POSCO, Arcelor Mittal Steel, Tata Steel, JSW Steel, Essar Steel, etc. are above 10 mt in each case and with multiple projects in their hands, each will have significant individual capacity in the country's industry. In all such

[23]Mineral Policy Issues in the Context of Export and Domestic Use of Iron Ore in India, Indian Council for Research on International Economic Relations, February 2008.

[24]Estimates of production and capacity are based on discussions with FIMI. The consumption estimates are of the author based on steel production. The same, however, stands much lower in the estimates of Indian Bureau of Mines.

[25]Reports from Indian Bureau of Mines, FIMI, etc.

projects, bank and institutional funding will be of utmost importance and only the ones with greater financial prowess and market share will be able to draw such large funds.

Overall, large scale steel industry benefits from economies of scale and scope coming in from all three major components of competitive production – Production, Finance, and Marketing. It is no surprise therefore that firms that were focusing on limited set of product segments are now broad-basing their product offerings. In doing so, larger firms do find it easier (and potentially cheaper) to avail finance. However, these are natural advantages, and should not be considered to be against the principal of level playing field for all competitors in the industry.

Moreover, there is no one to one correspondence between optimum size of the firms and scales of operation. For various historical reasons, extent of globalisation, availability of capital, technology, capital intensity, lack of raw materials availability and global dependence for it, etc. the average size of the firms in the developed countries is more than those in the developing world. Further, business failures have led to consolidation.[26]

All evidence points towards two points. First, there is no evidence of anticompetitive behavior by the incumbent. However, a level playing field is not being achieved primarily because, either by design or default, government action favours one set of units over the others. Second, though the public sector has been a beneficiary of government bias in the past, it is by no means the only ones. Other private entities have benefited from favors granted by both central and state governments. It is not clear whether these can be considered to be anti-competitive, though such actions do adversely affect free and fair competition.

[26] See Appendix III, Table A3.2, which shows the production capacity of the top 15 steel producers and their market shares.

5. Conclusions

Increasingly it is being argued that there is a limit to which the economic regulation can attempt to 'mimic' the social welfare results of competition. Thus, in the economics of regulation literature, there is a strong preference for competition over state regulation and, where there is not a natural monopoly, for adopting regulation till the arrival of competition. The classical perspective is that the objectives of low prices, efficiency and innovation are best secured when one does not aim at them directly. Steel sector was the first to be liberalized and as our study shows there are enough players; though the industry is concentrated in some segments. However, this is no way suggests that the sector should be subject to regulation, which also includes the government. Thus, any suggestion of setting up an independent steel regulator goes against the standard philosophy of regulation.

Regulation should thus be restricted to case of market failures like natural monopolies, externalities and asymmetric information between buyers and sellers. The classicists maintain that decentralised individual decisions made in a workably competitive market are more likely to prove economically efficient than centralised, bureaucratic decisions of the regulator (Breyer, 1990).

Larger the complexity and uncertainty in a market, larger is the risk of unintended consequences of regulatory intervention. Further, the informational requirements of anti trust policies are much lower since the authorities assess behaviour only after the alleged abuse has taken place. While regulation is meant to eliminate existing dominant positions during the transition phase of the market (and certainly steel is no candidate for a sector being in a transition stage) antitrust tries to punish abuses of dominant positions (Breyer, 1990; Bijl and Peitz, 2002).

In this background we see that the overseer of the steel sector should be the Competition Commission of India as the issues of concerns fall in their domain. As far as possible the government should deregulate the sector. It seems to have done so in letter but not in spirit. In the garb of policy the government inadvertently introduces regulatory distortions and the report has clearly established this.

There are many distortions in the industry that go against the principles of free and fair competition. And in most if not all cases, these are the result of government preferences to a chosen few. On the other hand, the government's current approach to informally control steel prices is based on the assumption that a few steel producers have sufficient command over the market and that they can be talked to uniformly cut prices to whatever objective to fulfill. In fact, while the government should be taking measures to bring in competitive efficiency by conscious interventions to eradicate market distortions, what the government doing is exactly the opposite in most cases, bringing in more distortions than competition. On the contrary other advanced countries have created freer business environment, transparent laws and strong adherence to the laws in order to make the system work at maximum possible efficiency.

To the government's credit however, we do not find significant enough evidence of continued government preferences to the large public sector steel companies. Though the special privileges the public sector enjoyed in the past continues to give it some edge in the present. However, it is unlikely to be a significant enough distortion to warrant any explicit pro-competitive action by the regulator.

Such government intervention related distortions are likely to adversely affect investment plans of the incumbents. This is more likely to create scarcity in the domestic market, than any joint action by the current incumbents. Many of the government's policy such as the priority allocation of mineral resource assets to captive use, exports tax, tax sops to attract investment to specific regions, etc., have in-built non-competitive elements. They distort the market and resource allocation. Among all of them, captive and prioritization of mining leases to end user industries and export tax on steel and iron ore introduced recently have the most adverse implications on the market from the competition point of view.

There is no doubt that the concentration level in certain products market such as HR coils is significant with the dominance of a few at the top. However, there is no evidence of formal "agreements" to fix prices or real sense of the term. The evidence of the HR coils producers responding identically to external conditions such as changes in global prices etc. is not sufficient enough to be rated as anti-competitive. HR coils segment, is by far the most likely to be 'cartelized', the competition levels and/or imports in other segments are too high to enable any

sustainable joint action by the current incumbents. In other words, there is no evidence of anti-competitive behavior by the steel industry.

In order to spot emerging cartels in the sector the commission should monitor: Price announcements by major players – the timing and the extent of those, market shares, mergers and acquisitions and reasons for those, flow of bank credits and the role of the banks and the financial institutions in supporting mergers and acquisitions, profitability of those with larger share in the market compared to those of the rest in the industry, bank or government support to large corporate bodies to restructure debt, anti-dumping and countervailing subsidy case initiations, etc. However, simultaneous price increase is one of the many indicators and may not be conclusive if taken solely as an indicator of anti-competitive behaviour. While there has been no major consolidation in the steel industry in India so far to draw the attention of the competition authority, the nature of investment, their size, ownership pattern which are currently at various stages of implementation may be of significant concern. However, given the fact that (i) rapid production increases in the medium term (expected doubling of production in the next few years), (ii) the entry of new international players in India, and (iii) duty free/low imports, even the merger of one or two large firms would not enable sustainable anti-competitive behavior in the long term.

In this sector, therefore a far-sighted pro-competitive action would be more to deal with enabling rapid entry and expansion, reducing controls on international trade, and ensuring a level playing field. These are no so much regulatory but policy issues, but they will have ramifications on competition in the sector. The Competition Act has in fact paid very little attention to government policies and actions which supports anti-competition conditions in business and such behaviour among individual agents in the economy. Opinions by the Commission in matter of policy of competition of the government are not binding on it.

However, this can be addressed by the Advocacy role of the CCI. This can be executed through publications, seminars, conferences on contemporary competition issues and developments in the industry. CCI should have training programme for government officers, monitor and study the government practices, not only in awarding contracts, but also, in respect of prioritisation of issues, applications etc.. The Commission is already involved in such programmes and it is believed that as general awareness builds up, the character of the campaign will move to be issue based and industry specific.

Action, if any, by the CCI therefore would need to be built around the following pillars:

- Investigate and take a view on how to deal with potential anti-competitive behaviour in one segment of the industry, where the rest of the industry (consisting of broadly the same set of players) is largely competitive. In this regard the HR coil segment is quite apt since it has high concentration levels
- Investigate issues related to captive mining and priority allocation of mines to the some players, which is an indirect means of subsidization. The difficulty with captive mining as a concept lies in the fact that first it creates a dominant position for the mineral and allows non-competitive pricing and advantages thereof to the owner of the mine. The Competition Act defines “Dominant position” as a position of strength enjoyed by an enterprise in the relevant market, in India, which enables it to operate independently of the competitive forces prevailing in the relevant market or affect its competitors or consumers in the relevant market in its favour” in explanation in section 4 of the Act. Captive mining provides an advantage over competitors.
- Issues such as state-level subsidies may also have ramifications on competitiveness of a firm in that industry, and the creation of a level playing field. A view will need to be developed by the regulator for the many variants around this theme.
- Government action like moral suasion for unrelated objectives of the government has significant impact on competition. The current inflation-steel prices story is an apt example. How should the regulator deal with such issues is an open question.
- The public sector may be gaining from government provision of low cost inputs of various kinds – whether it is finance or raw material. However, the public sector also suffers from high costs of operations and the benefits only go on to hide the various cost inefficiencies in the public sector. The removal of such preferences will affect the public sector

adversely – what should be the view of the regulatory authority on this matter needs to be fleshed out.

- The removal export/import curbs are however clearly a pro-competitive measure and an unambiguous view is required on the same.

***

Appendix I

Tables - Steel Statistics

Table A1.1 Production for sale of finished steel (non-alloy) 2006-07

(in '000 tonnes)

	Main Producers	Secondary Producers	IPT/Own Consumption	Total
1. Non-Flat Products				
Bars & Rods	5161	13650		18811
Structurals/Spl.Sec.	1104	3780		4884
Rails&Rly.Materials	918	120		1038
TOTAL (Non-flat product)	7183	17550		24733
2. Flat Products				
Plates	2450	892		3342
H R Coils/Skelp/Strips	4526	8464	1809	11181
H R Sheets	292	411		703
C R Coils/Sheets/Strips	1936	5511	3125	4322
GP/GC Sheets	813	3578		4391
Elec. Sheet	76	72	5	143
Tin Plates	17	155		172
T M B P	9	11	11	9
Tin Free Steel		2		2
TOTAL (Flat Products)	10119	19096	4950	24265
3. Pipes (Large dia)	88	1110		1198
TOTAL (Fin.Carbon Steel)	17390	37756	4950	50196

Source: Annual Statistics, Joint Plant Committee, Published for internal use.

Table A1.2: Forecast of Capacities of Plate Mills/Hot Strip Mills/Other Mills

(in million tonnes)

Plate Mills/Years	2006-07	2011-12
Bhilai : SAIL	0.95	1.42
Rourkela :SAIL	0.3	1.99
JSPL (Raigarh)	0	1
Essar Steel	0	1.5
Monnet Ispat	0	0.5
JSPL (Deojhar)	0	2.2
JSW (Torangallu)	0	0.5
Welspun	0	1.5
Total	**1.25**	**10.61**
Hot Strip Mills		
Bokaro : SAIL	3.995	7
Rourkela : SAIL	1.44	1.5
Tata Steel	3	5.9
Essar Steel	3.6	4.6
JSW Steel	2.5	6.7
Ispat Industries	3	3.6
Bhushan Steel Ltd.	0	1.8
Bhushan Power and Steel Ltd.	0	0.9
Tata Steel (Kalinga Nagar)	0	3
JSPL (Jharkhand)	0	2
BSL (West Bengal)	0	2
Jindal Stainless	0	0.8
Total Hot Strip Mill Capacity	**17.535**	**39.8**
Others Including Narrow Strips	1.25	3

Source: Company announcements time to time

Table A1.3: Iron Ore Consumption and Costs for Select Indian Steelmakers
SAIL (Average of all plants)

	2005-06	2004-05	2003-04
Iron Ore Consumed (tonnes)	23950548	20213579	21341162
Iron Ore Consumed (Value: Rs. Crore)	1335.68	1019.22	932.4
Iron ore Transfer Price (Rs./tonne)	557.68	504.23	436.90

JSW

	2005-06	2004-05	2003-04
Iron Ore Consumed (tonnes)	4672179	4430132	3872422
Iron Ore Consumed (Value: Rs. Crore)	413.91	261.06	147.03
Iron ore Transfer Price (Rs./tonne)	885.90	589.28	379.68

TATA STEEL

	2005-06	2004-05	2003-04
Iron Ore Consumed (tonnes)	8486755	5986753	6145184
Iron Ore Consumed (Value: Rs. Crore)	273.53	181.78	160.72
Iron ore Transfer Price (Rs./tonne)	322.30	303.64	261.54

RINL

	2004-5	2003-4
Iron Ore Consumed (tonnes)	6071994	6197105
Iron Ore Consumed (Value: Rs. Crore)	668.88	508.6
Iron ore Transfer Price (Rs./tonne)	1101.58	820.71

JSPL

	2005-06	2004-05	2003-04
Iron Ore Consumed (tonnes)	2862775	1846726	1620107
Iron Ore Consumed (Value: Rs. Crore)	140.01	108.18	145.22
Iron ore Transfer Price (Rs./tonne)	489.07	585.79	896.36

Note: One crore = Ten millions
Source: Estimated from Annual Reports of the respective companies

Table A1.4: Category-wise apparent consumption of finished steel

(in '000 tonnes)

Category/ Year	2002-03	2003-04	2004-05	2005-06	2006-07
Bars and Rods	13511	13923	15259	16689	18782
Structurals	3035	3393	4011	4482	4905
Railway Materials	882	930	1007	998	1045
Total non flat products (1-3)*	17428	18246	20277	22169	24732
Plates	1961	2289	2840	3568	4346
Hot Rolled Sheets/Coils/Skelp	7890	8554	9768	10162	11993
Cold Rolled Sheets/Coils/TMBP	3212	3024	3153	3991	4530
Galvanised Plain/Corrugated Sheets	1265	1691	1926	2051	2400
Electrical Steel Sheets	192	184	221	336	393
Tin Plates/ Tin free steel	241	218	218	262	320
Pipes	497	551	468	998	1063
Total flat products (5-11)*	11469	12423	14112	17016	19596
Total (non alloy) finished steel*	28897	31169	34389	39189	44328
Total finished steel (alloy & non-alloy)*	30677	33119	36377	41433	46783
Semis (including alloy)	9413	11324	14169	15166	17457

*After adjusting for DBI counting
Source: Joint Plant Committee, Annual Statistics, 2006-07

Table A1.5: Category-wise Import of semi-finished and Finished Steel by India

(in '000 tonnes)

Category	2001-02	2002-03	2004-05	2005-06	2006-07
Semi-finished steel					
Semis	**96.4**	**86.5**	**227.3**	**372.1**	**268.7**
Re-rollable scap	**59.8**	**50.6**	**100.9**	**169.5**	**154.7**
Finished steel					
Bars and Rods	103.1	71	128.6	375	290.1
Structurals	46.8	17.4	66.4	99.1	86.2
Rly. Materials	0.1	0.2	2.1	0.3	2.5
Plates	367.2	423.5	423.1	791.9	1124.5
HR Sheets	42.7	41	61.7	31.7	56.9
HR Coils/Skelp/Strips	317.6	413.3	816.8	1526.6	1571.7
CR Coil/Sheets	302.5	242.9	287.3	487.2	605.8
GP/GC Sheets	91.9	102.1	105.8	134.1	195.2
Elec. Sheets	52	80.6	110.8	215.9	252.4
TMBP	2.1	0.2	0.2	1.9	1.8
Tin Plates	48.5	35.4	42.1	75.8	124.1
Tin Plates W/W	23.8	16.4	13.6	22.5	25
Tin Free Steel	51.7	28.7	21.7	28.2	32.2
Total Fin. Steel (Non-Alloy)	**1450**	**1472.7**	**2080.2**	**3790.2**	**4368.4**
Total steel (non-alloy)	**1606.2**	**1609.8**	**2408.4**	**4331.8**	**4791.8**
Alloy/stainless steel	**164.7**	**223**	**195.1**	478	503.6
Total Steel (I+II)	**1770.9**	**1832.8**	**2603.5**	**4809.8**	**5295.4**
Other Steel items					
Pipes & Fittings	119.6	133.3	57.5	1118.5	137.2
Misc. Steel Items	189.9	53.9	109	473.6	317.7
Steel Scrap	1280.4	1497.3	2042	3335.8	2185.3
Grand Total	**3360.8**	**3517.3**	**4812**	**9737.7**	**7935.6**

Source: Joint Plant Committee, Annual Statistics, 2006-07

Table A1.6: Category-wise Exports of Iron and Steel from India

(in '000 tonnes)

Category	2002-03	2003-04	2004-05	2005-06	2006-07
SEMIS (Non-Alloy)	460.2	684	261	388.3	665.3
Finished Steel (Non-Alloy)					
Bars & Rods	514.9	499	162	387	329
Structurals	34.7	64	70	89.4	75
Plates	279.2	355	158	149.8	106.5
H R Sheets/Coils	1392.5	1522	1328	1371.1	1580.3
C R Sheets/Colls	574.3	770	620	450.5	386.4
GP/GC Sheets	1610	1486	1843	1842.6	2173.3
Electrical Sheets	18.7	34	15	24.4	1.5
Tinplates	33.4	29	36	43	37
Pipes	48	76	149	120	203.5
Total Finished Steel (Non-Alloy)	4505.7	4835	4381	4477.8	4892.5
Total Steel (Non-Alloy)	4965.9	5519	4642	4866.1	5557.8
Total Steel (Alloy)	315.3	372	324	323	349
Total Steel (Alloy & non-alloy)	**5281.2**	**5891**	**4966**	**5189.1**	**5906.8**
Pig Iron	628.5		393	440.1	706.7
Spone Iron				42.3	55.6

Note : * : Provisional.

Source : Ministry of Steel, Govt. of India.

Table A1.7: Category-wise apparent consumption of finished steel

('000 tonnes)

Category	2002-03	2003-04	2004-05	2005-06	2006-07
Bars and Rods	13511	13923	15259	16689	18782
Structurals	3035	3393	4011	4482	4905
Railway Materials	882	930	1007	998	1045
Total non flat products (1-3)*	17428	18246	20277	22169	24732
Plates	1961	2289	2840	3568	4346
Hot Rolled Sheets/Coils/Skelp	7890	8554	9768	10162	11993
Cold Rolled Sheets/Coils/TMBP	3212	3024	3153	3991	4530
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Electrical Steel Sheets	192	184	221	336	393
Tin Plates/ Tin free steel	241	218	218	262	320
Pipes	497	551	468	998	1063
Total flat products (5-11)*	11469	12423	14112	17016	19596
Total (non alloy) finished steel*	28897	31169	34389	39189	44328
Total finished steel (alloy & non-alloy)*	30677	33119	36377	41433	46783
Semis (including alloy)	9413	11324	14169	15166	17457
	32686	34757	38871	43537	49777

*After adjusting for DBI counting

Source: Joint Plant Committee, Annual Statistics, 2006-07

Table A1.8: Company-wise costs of steel production for selected steel producers

Company Name	Total cost	Fixed cost	Variable cost	% of FC in TC
Essar Steel Ltd.	9606.53	4905.3	4701.23	51.06
Ispat Industries Ltd.	8611.64	5808.41	2803.23	67.45
J S W Steel Ltd.	8107.37	5565.22	2542.15	68.64
Steel Authority Of India Ltd.	34904.99	15488.98	19416.01	44.37
Tata Steel Ltd.	16204.41	6621.62	9582.79	40.86
Rashtriya Ispat Nigam Ltd.	8401.15	4755.09	3646.06	56.60

Source: CMIE, Prowess

Appendix - II
Figures

Figure A2.1 : Iron Ore Price Trend

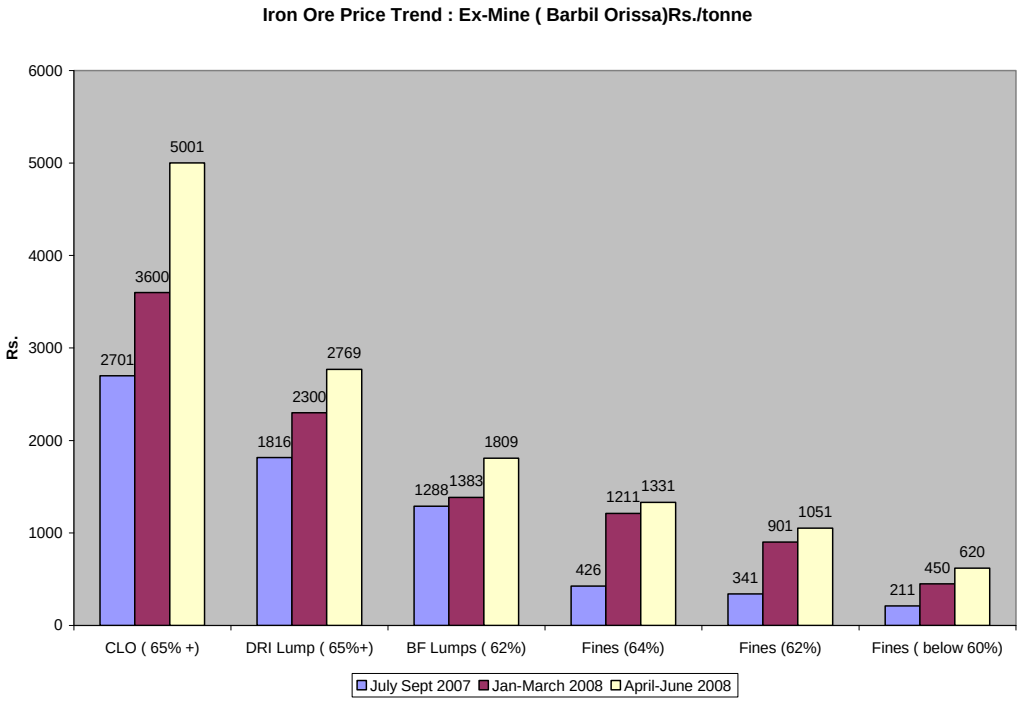


Figure A2.2: Costs of Production of HRC(P&O)

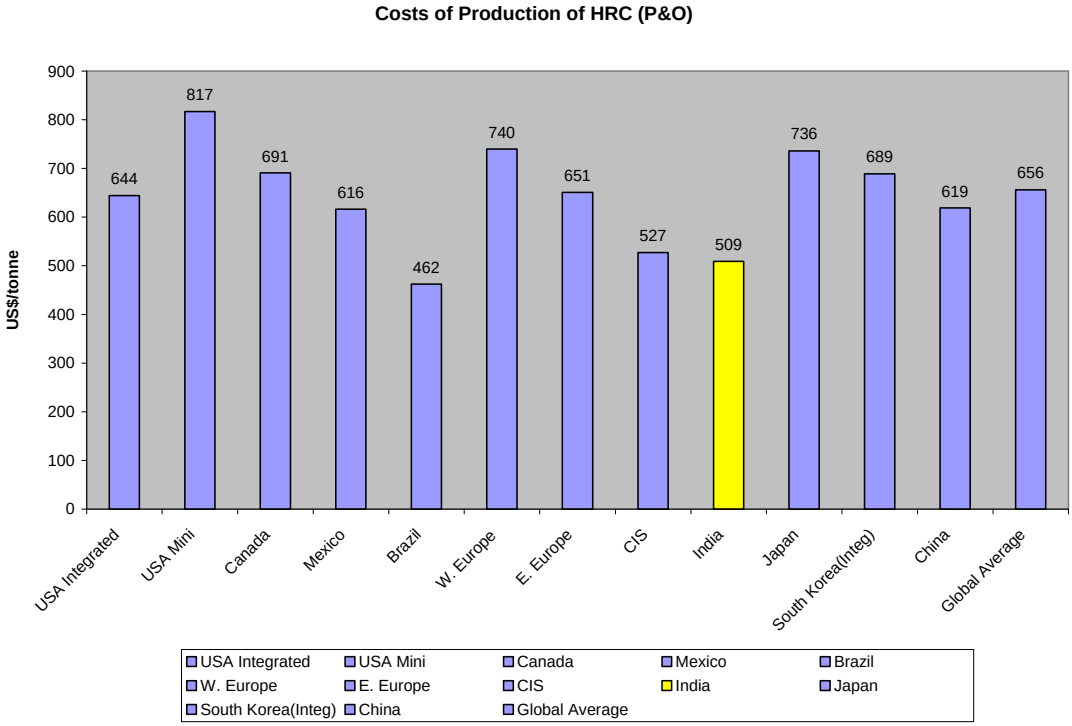
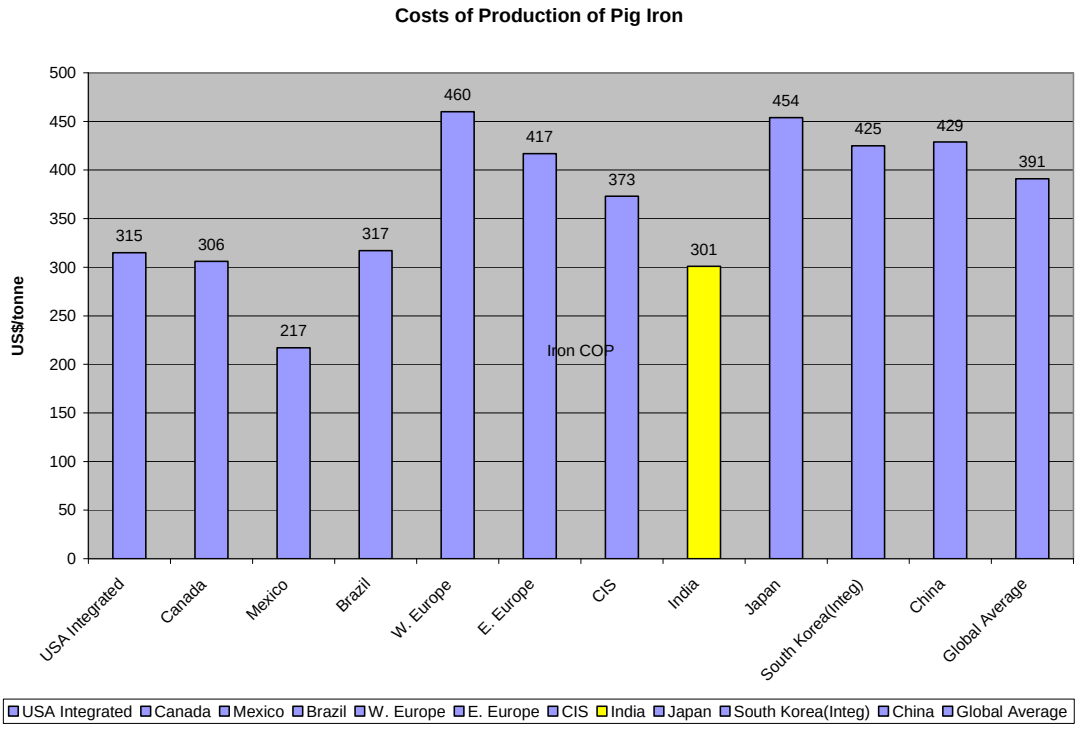


Figure A2.3: Costs of Production of Pig Iron



Appendix III

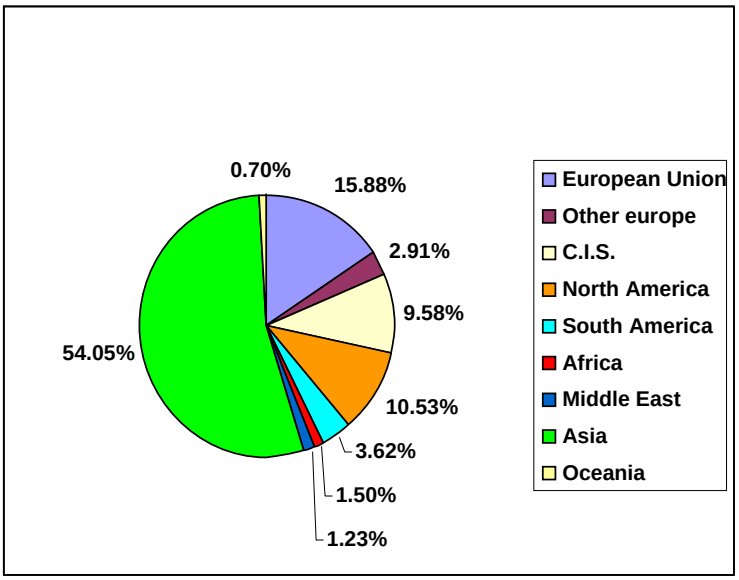
International

Crude Steel Production and Consumption

On the global scene, China dominates the world production of crude steel. In the year 2006 the top five largest producers of crude steel together accounted for 60.62% of the total crude steel production of the world.

Asia with a 54% share (Fig A3.1) in world crude steel production is the largest crude steel producing region followed by European Union (15.88%). The production in Asia is driven by strong demand generated by emerging economies of China and India.

Figure A3.1: Region wise Crude Steel Production, 2006

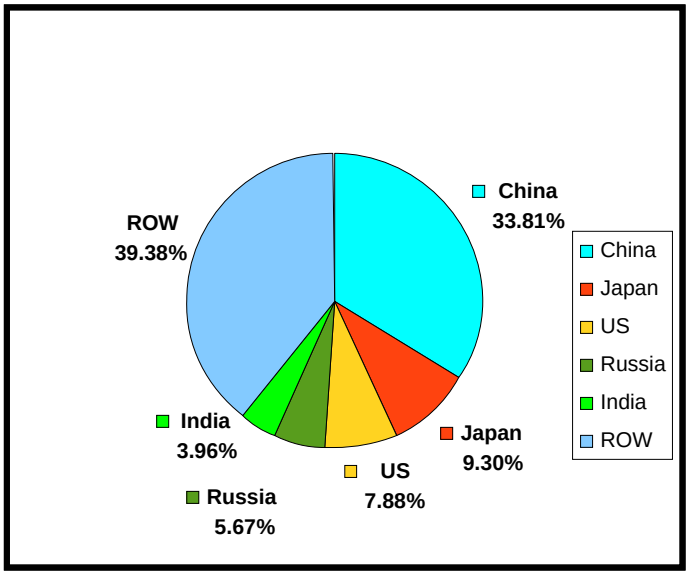


Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies - Brussels, 2007

Figure A3.2 depicts the production shares of the five largest crude steel producing countries of the world in and 2006. China ranks first in the international production of crude steel with an overwhelming share of 33.81 percent in 2006, followed by Japan (9.3%), United States (7.88%) and Russia (5.67%). India with a share of 3.96 percent surpassed South Korea in 2006 to become the fifth largest producer of Crude steel in the world.

The key industries spurring the production of steel in china are the fast growing car-making and shipbuilding and massive expansion in infrastructure with flagship projects like facilities for 2008 Beijing Olympics and the Three Gorges Dam.

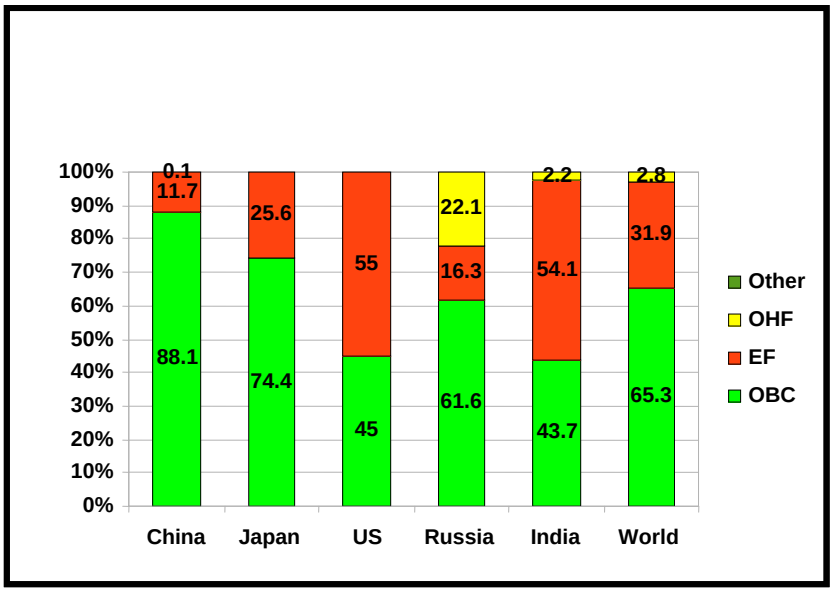
Figure A3.2: Top Five Crude Steel Producing Countries, 2006



Note: ROW: Rest of the World
Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies - Brussels, 2007

Figure A3.3 depicts production of crude steel by different processes in the top five producer countries. In 2005, 65.3 percent of the total crude steel production of the world was produced through the Oxygen Blower Converter route (OBC), followed by Electric Furnace (EF) and Open Hearth Furnace (OHF). In the world's largest producer country China, 88.1percent of total production is through OBC route. In India too OBC route accounts for largest share in production of crude steel followed by EF.

Figure A3.3: Crude Steel Production by Process, 2005



Note: ROW: Rest of the World
Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies - Brussels, 2007

The production of crude steel in India has consistently risen over the ten year period from 1997 to 2006 (Table A3.1). However over the same period, India's share in world crude steel production has remained fairly static. It recorded a jump between 2004 and 2005 from 3.05 percent to 3.99 percent, declining marginally to 3.96 percent in 2006.

Table A3.1: Production and Share of India in World Crude Steel Production

(in '000 tonnes)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
India	24415	23480	24296	26924	27291	28814	31779	32626	45780	49450
World	798954	777330	788970	847671	850266	903929	969743	1068691	1146203	1249997
Share%	3.06	3.02	3.08	3.18	3.21	3.19	3.28	3.05	3.99	3.96

Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies - Brussels, 2007

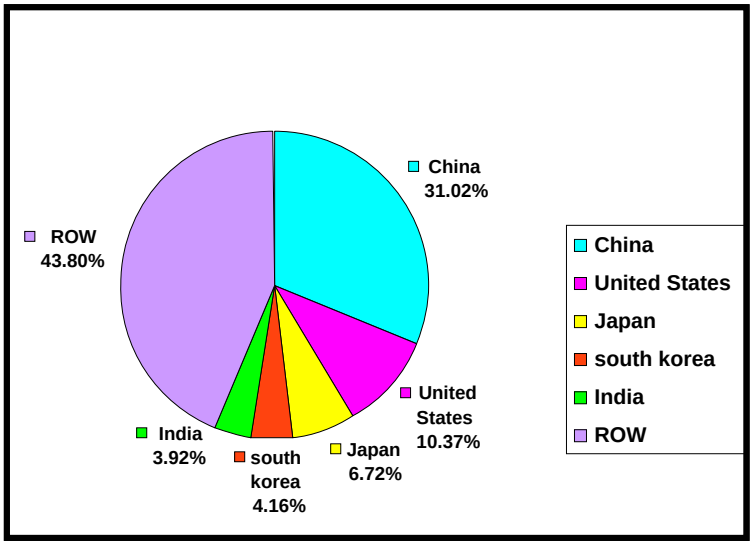
Table A3.2 Top steel producers and their shares in the world crude steel production

Rank	2005			2006			2007		
	Company	mmt	% share	Company	mmt	% share	Company	mmt	% share
1	Mittal steel	63.00	5.50	ArcelorMittal	117.20	9.38	ArcelorMittal	116.40	8.66
2	Arcelor	46.70	4.08	Nippon Steel	32.70	2.62	Nippon Steel	35.70	2.66
3	Nippon Steel	32.00	2.79	JFE	32.00	2.56	JFE	34.00	2.53
4	POSCO	30.50	2.66	POSCO	30.10	2.41	POSCO	31.10	2.31
5	JFE	29.90	2.61	Baosteel	22.50	1.80	Baosteel	28.60	2.13
6	Baosteel	22.70	1.98	US Steel	21.20	1.70	Tata Steel	26.50	1.97
7	US Steel	19.30	1.68	Nucor	20.30	1.62	Anshan Benxi	23.60	1.76
8	Nucor	18.40	1.61	Tangshan	19.10	1.53	Jiangsu Shagang	22.90	1.70
9	Corus Group	18.20	1.59	Corus Group	18.30	1.46	Tangshan	22.80	1.70
10	Riva	17.50	1.53	Riva Group	18.20	1.46	US Steel	21.50	1.60
11	Thyssenkrupp	16.50	1.44	Severstal	17.50	1.40	Wuhan	20.20	1.50
12	Tangshan	16.10	1.40	Thyssenkrupp	16.80	1.34	Nucor	20.00	1.49
13	Evraz	13.90	1.21	Evraz Group	16.10	1.29	Gerdau Group	18.60	1.38
14	Gerdau	13.70	1.20	Gerdau Group	15.60	1.25	Riva	17.90	1.33
15	Severstal	13.60	1.19	Anshan	15.30	1.22	Severstal	17.30	1.29
Top 15 producers		372.00	**32.46**		412.90	**33.03**		457.10	**34.00**
Others		774.00	67.54		837.10	66.97		887.20	66.00
Total world production		1146	100.00		1250	100.00		1344.3	100.00

Source: www.worldsteel.org ; and Steel Statistical Year Book 2007, International Iron & Steel Institute, Brussels.
**mmt=Million Metric Tonnes.*

Top producer countries of crude steel are also the largest consumers except for Russia. Figure A3.4 below shows that China leads in consumption of crude steel as well with a share of 31 percent. Next is United States (10%) followed by Japan (6.72%), South Korea (4.39%) and India (3.92%). Taken together these five countries accounted for 56 percent of the global consumption of crude steel in 2006. Out of top five largest consumers, four are the emerging economies of Asia which are generating significant demand for steel.

Figure: A3.4: Top Five Consumer Countries of Steel



Note: ROW: Rest of the World Note: ROW: Rest of the World
Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies - Brussels, 2007

The world per capita consumption of crude steel has risen from 143.2 Kg in 1997 to 202.2 Kg in 2006 (Table A3.3). India's per capita crude steel consumption is only one seventh of China's 291 Kg. At 42.2 Kg the per capita consumption of India is also very low as compared to the world average of 202.2 Kg. Among the top five crude steel consumers; South Korea has the highest crude steel consumption per capita of 1073.9 Kg.

Table A3.3: Apparent Consumption of Crude Steel Per capita

	China	Japan	United States	South Korea	India	World
1997	92.7	677.8	449.6	871.4	27.5	143.2
1998	98.4	573.3	484.9	559	26.8	139.1
1999	108.1	560.1	453.9	757.3	29.1	139.6
2000	108.7	626.6	468.1	855.1	28.9	148.3
2001	133.4	590.9	397.4	843.8	29.3	148.3
2002	159.7	577.3	406.7	960.2	27.9	155.4
2003	199.4	598.5	360	1000.2	31.1	165
2004	227.3	629.9	417.2	1029.8	33	179.6
2005	268.9	648.2	377.9	1023.6	38.5	187
2006	291	651	424.5	1073.9	42.2	202.2

Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies Brussels, 2007

Trade in Iron Ore

Iron ore is the raw material used to make pig iron, which is one of the main raw materials to make steel. 98 percent of the mined iron ore is used to make steel. Table A3.4 shows that Australia and Brazil are the leading exporters of iron ore in the world. In the year 2006 Australia exported 248147 mt of iron ore closely followed by Brazil. India was the third largest exporter of iron ore in 2006.

Table A3.4: Exports of Iron Ore

Year	Australia	Brazil	India	Canada	South Africa(CU)
1997	147266	140419	32856	32340	20730
1998	136424	143197	32828	30601	22093
1999	139420	140200	30972	26886	21096
2000	157331	160114	34918	26510	21397
2001	157079	155741	36607	21981	23520
2002	165583	170015	54929	25638	24304
2003	186123	184442	57345	27126	23412
2004	210450	236758	62650	22453	24745
2005	238763	225135	89585	27303	27413
2006	248147	246580	86785	27484	26161

Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies Brussels, 2007

The top crude steel producing countries China and Japan are also the top two importers of crude steel in 2006 followed by Germany, South Korea and Netherlands (Table A3.5).

Table A3.5: Imports of Iron Ore

Year	China	Japan	Germany	South Korea	Netherlands
1997	55106	126601	41687	38592	8596
1998	51771	120782	52530	33612	8831
1999	55274	120107	38802	35400	7911
2000	69971	131733	47503	38980	7334
2001	92393	126297	40095	45875	7703
2002	111423	129088	44298	43311	7370
2003	148128	132081	33876	43069	14705
2004	208089	134884	38861	44225	30279
2005	275260	132285	39061	42250	37637
2006	326303	134287	44850	42807	33562

Source: Steel Statistical Yearbook 2007, IISI Committee on Economic Studies Brussels, 2007

Global Experiences: Competition Issues

The steel industry globally is getting increasingly consolidated with a series of mergers and acquisitions in the past ten years (see Table A3.6 below). However, the consolidation in steel has more or less involved only the top players. As a result, the share of the top five steel producers in global total has risen from 12 percent in 1994 to 18 percent in 2007. What is most interesting to observe is that during the same period (only the end years considered), the share of the next five producers have remained in tact at 7 percent.

An extrapolation of current trends suggests that the top 10 companies in the world will hold a global market share of almost 35 percent in 2010. This might mean three or four players producing more than 80 million tons, and five or six players producing between 40 mmt and 60 mmt, annually.[27]

Consolidation has added a new dimension to the steel industry. With multiple locations, across continents, the steel companies have gained a fuller global character. Further, M&A's follow individual national laws which themselves are fairly diverse. Most of the major M&A's have been pre-approved by competent authorities, wherever they have been. The national governments, especially in the developed world, has been proactive in supporting their own companies taking over assets in foreign countries, even while they may have at times expressed concern over the foreign companies doing the same and also their own companies getting engaged in the consolidation process.

[27] Boston Consulting Group(BCG) Report: "Beyond the Boom: The Outlook for Global Steel,"

Table A3.6: Biggest deals in steel Industry since 1995

Target/Nationality	Buyer/Nationality	Value ($bln)	Year
Arcelor/ Luxembourg	Mittal Steel/ Netherlands	32.2	*2006
NKK Corp/Japan	Kawasaki Steel/Japan	14.1	2001
LNM Holdings/ Netherlands	Ispat Intl./ Netherlands	13.3	2004
Corus/UK&Netherlands	Tata Steel/India	12.2	*2007
Krupp AG/Germany	Thyssen/Germany	8.3	1997
Pechiney SA/France	Alcan/Canada	7.8	2003
Alusuisse Lonza Group AG/Switzerland	Alcan Aluminium Ltd/Canada	6.3	1999
Dofasco/Canada	Arcelor/Luxembourg	5.2	2005
International Steel Group/United States	Mittal Steel/ Netherlands	4.8	2005

Note: * Year announced.
Source: http://www.reuters.com

The effects of consolidation in the industry are being gradually felt globally in the steel market. For instance it is observed that steel prices are firm even at times of low demand or excess supply. Points are being raised on the role of the consolidated industry and its increased market power in the context of the phenomenal price rise observed in the past couple of years.

What is being apprehended is that the steel majors globally have got together to control prices and market shares to mutual advantage. A recent survey undertaken by Steel Business Briefings among top business executives point to such a possibility.[28] Questions have been raised if the steel majors are manipulating by creating artificial shortages around the world adopting non-competitive and unethical practices. While the consolidated steel industry is in command, the iron ore and coal industries globally are far more consolidated and with their oligopolistic control over the market have been able to continuously raise prices irrespective of the actual demand supply conditions in the market. As has happened in the case of these raw materials industry, in steel too, the smaller and marginal players are finding it more convenient to merely follow the leaders instead of attempting to grow competitively.

[28] Steel Business Briefings, UK, August 2004

Appendix IV

History

Source: International Directory of Company Histories, Vol. 66. St. James Press, 2004.

Iron had been produced in India for centuries, while Indian steel was superior in quality to British steel as late as 1810. With the consolidation of the British raj the indigenous industry declined and the commercial production of steel did not begin in earnest till 1913, when the Tata Iron and Steel Company began production at Sakchi, on foundations laid by Jamsetji Tata, whose sons had raised the enormous sum of INR 23 million to set up the company, partly from family funds but mostly from Bombay merchants, several maharajahs, and other wealthy Indians who supported the movement for Indian self-sufficiency (Swadeshi) but did not want to appear openly anti-British. Tata was to dominate the Indian steel industry until the 1950s. The Indian Iron & Steel Company was set up in West Bengal in 1918 by the British firm Burn & Co., with plans to become a rival steelmaker. Steel prices declined in the early 1920s, however, and the company produced only pig iron until 1937. The acute depression suffered by the iron and steel industry after World War I was alleviated by the government's protective measures. The industry continued to make steady progress.

From the late 1920s, when the British authorities introduced a system of tariffs that protected British and Indian steel but raised barriers against imports from other countries, the Indian market was divided in the ratio of 70 to 30 between British producers on the one hand and the Tata company on the other--thus effectively excluding indigenous newcomers. By 1939 the Tata works were producing 75 percent of the steel consumed in what was then the Indian Empire, consisting of the present-day India, Sri Lanka, Pakistan, Bangladesh, and Burma.

In the late 1930s, as European rearmament pushed iron and steel prices upward, the export of Indian pig iron increased and two small firms began to compete directly with the Tata company in steel production. The first was the Mysore State Iron Works, which had been set up by the maharajah of Mysore in 1923 to produce pig iron at Benkipur, now Bhadravati. The second was the Steel Corporation of Bengal, a subsidiary established by the Indian Iron & Steel Company in 1937, the year after it had bought up the assets of the bankrupted Bengal Iron and Steel Company. The Steel Corporation of Bengal was reabsorbed into its parent company in 1953. All three companies profited from the British connection during World War II. Annual output rose from one million tons in 1939 to an average of 1.4 million tons between 1940 and 1945.

In 1947, when India became independent as the biggest, but not the only, successor state to the British raj, the three major iron and steel companies had a total capacity of only 2.5 million tons. A great deal of their plant was already more than three decades old, and badly in need of repair and replacement, while demand for iron and steel was growing.

Under the terms of the new government's Industrial Policy Statement of 1948, confirmed in the Industries Development and Regulation Act three years later, new ventures in the iron and steel industry were to be undertaken only by the federal government, but existing ventures would be allowed to stay in the private sector for the first ten years. Thus the First Five Year Plan, from 1951 to 1956, involved the use of government funds to help Tata Iron and Steel and Indian Iron & Steel to expand and modernize while remaining in the private sector. As for new projects, in 1953 the government signed an agreement with the German steelmakers Krupp and Demag on creating a publicly owned integrated steel plant, which was sited at Rourkela, in the state of Orissa, to make use of iron ore mined at Barsua and Kalta. Krupp and Demag were chosen after the failure of Indian requests for aid from Britain and the United States, but were excluded from the project by 1959, when the Estimates Committee of the Lok Sabha, the lower house of the Indian Parliament, concluded that getting investment funds from them was equivalent to borrowing at an interest rate of 12 percent.

In order to carry out its side of the agreement the government set up Hindustan Steel Ltd. in 1954, as a wholly state-owned company responsible for the operation of the Rourkela plant. By 1959, when the plant was commissioned, Hindustan Steel had become responsible for two more plants, at Bhilai in Madhya Pradesh and at Durgapur in West Bengal, under the Second Five Year Plan, which started in 1956.

Hindustan Steel took over the operation of all the iron ore mines supplying its plants, all three of which had been located to take advantage of existing supplies. This policy of locating steel production near raw materials sources reflected the relatively small and dispersed nature of the domestic market for steel at that time, and contrasted with the market-related location policies of companies in more advanced steel-producing countries, such as the United States.

Hindustan Steel's other major venture was its Alloy Steels Project, also based at Durgapur, which was inaugurated in 1964. Hindustan Steel's tasks included not only steel production but also the procurement of raw materials, and its subsidiaries included, in addition to the iron ore mines already mentioned, limestone and dolomite mines and coal washeries. It also operated a fertilizer plant at Rourkela.

The modernization of the two private sector leaders and the program of public sector investment together raised Indian steel output from about one million tons a year in the 1940s to three million tons in 1960, then to six million tons only four years later. Pig iron output rose by an even greater margin, from 1.6 million tons in 1950 to nearly five million tons in 1961. Both wings of the iron and steel industry contributed to the expansion of the engineering and machinery industries envisaged in the Mahalanobis model, and in turn were stimulated by the increased demand to raise production volume and quality. In 1965 Hindustan Steel's latest project, for an iron and steel plant with an associated township at Dhanbad in the state of Bihar, was transferred to a new company created one year earlier, Bokaro Steel Limited. Contact continued between the two companies, however, mainly through an arrangement whereby the chairman of each company was made a part-time director of the other.

Throughout its first five years of production, 1958 to 1963, Hindustan Steel's losses rose steadily from INR 7.51 million to INR 260 million. It made a small profit in 1965 and 1966, only to slip back into the red and stay there until 1974, the last year of the company's existence under that name. Among the reasons the company gave for these disappointing results were the losses incurred at the Rourkela fertilizer plant, the Steel Alloys Project, and the Durgapur steel plant; an increased rate of interest on government loans; an increase in provision for depreciation; and the high costs of imported plant and equipment.

Problems Leading to the Creation of SAIL in 1973

The rate of growth of the iron and steel industry, and of the engineering and machinery producing sectors with which its fate was so closely linked, declined significantly once the phase of import substitution was complete and the droughts of the mid-1960s had forced a diversion of resources from industry. Pig iron output, which had risen so spectacularly in the 1950s, rose from seven million tons in 1965 to ten million tons in 1985, while production of steel rose from 6 million tons to 12 million tons in the same period. The industry suffered due to state intervention to keep its domestic prices low as an indirect subsidy to steel users, and--though the technical problems were different--from a heritage of outdated and inefficient plants and equipment.

Indian government policy since 1965 has been to use its iron ore less as a contribution to domestic growth than as an export, earning foreign exchange and helping to reduce the country's chronic deficit on its balance of trade. Production of ore increased, from 18 million tons in 1965 to 43 million tons in 1985, in order to supply a growing number of overseas markets.

With the expansion and diversification of Hindustan Steel, the separate establishment of Bokaro and the beginning of planning for new plants at Salem, Vishakhapatnam, and Vijaynagar, it became increasingly clear that public sector iron and steel production would need some new form of coordination to avoid duplication and to channel resources more effectively. The Steel Authority of India Ltd. was established in January 1973 for this purpose, to function as a holding company along the lines of similar but older bodies in Italy and Sweden. The new organization was placed on a secure footing when the Indian Iron & Steel Company was nationalized, giving SAIL control of all iron and steel production apart from the venerable Tata Iron and Steel Company and a number of small-scale electric-arc furnace units.

The 1980s were not a happy decade for SAIL. It suffered losses between 1982 and 1984 but went back into the black in the following two years. Meanwhile Tata Iron and Steel was consistently profitable. By 1986, when the Indian steel industry's total capacity was 15.5 mt, only 12.8 mt were actually produced, of which SAIL produced 7.1 mt. Thus imports of 1.5 mt were needed to meet total demand, after years of exporting Indian steel. By 1988 all the main steel

plants in India except Vishakhapatnam were burdened with obsolescent plants and equipment, and Indian steel prices were the highest in the world.

During this time period, SAIL remained in the public sector as a central instrument of state plans for industrial development. The country's reserves of iron ore and other raw materials for iron and steel made the industry central to the economy. At the beginning of the 1980s India had recoverable reserves of iron ore amounting to 10.6 billion tons, a natural endowment that it would take 650 years to deplete at then current rates of production. The high-grade ore within this total--that is, ore with an iron content of at least 65 percent--was, however, thought likely to reach depletion in only 42 years; yet it still represented about one-tenth of the world total. SAIL struggled to maintain production, let alone expand it, in large part because of circumstances outside its control. Since the purchase of raw materials typically accounted for 30 percent of the Indian steel industry's production costs, any rise in the prices of coal, ferro-manganese, limestone, or iron ore cut into the industry's profitability. In the first half of the 1980s, for example, prices for these materials rose by between 95 and 150 percent, at the same time as electricity charges rose by 150 percent. Most of these increases were imposed by other state enterprises.

Nor did it help SAIL that the high sulfur content of Indian coal required heavy investment in desulfurization at its steel plants. Indeed, the industry had chronic problems in trying to operate blast furnaces designed to take low-sulfur coking coal. The more suitable process of making sponge iron with non-coking coal, then converting it to steel in electric arc furnaces, was introduced in the private sector later, though by 1989 only 300,000 tonnes were being produced in this way. India's basic output costs of INR 6,420 per ton in 1986 compared well with the averages for West Germany (INR 6,438), for Japan (INR 7,898), and for the United States (INR 6,786). What finally kept Indian steel from being competitive was the imposition of levies that raised its price per ton by about 30 percent, and which included excise duties, a freight capitalization surcharge, and a Steel Development Fund charge.

SAIL was no more able than large steel companies in other countries to achieve the optimum balance between demand and supply, between increasing the quantity of output and improving its quality by modernizing, and thus escaping from its heritage of outdated plant and equipment.

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