AN OVERVIEW OF THE SOUTH AFRICAN
IRON, MANGANESE AND STEEL INDUSTRY
DURING THE PERIOD 1984-2003

DIRECTORATE: MINERAL ECONOMICS
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DIRECTORATE: MINERAL ECONOMICS
(MINERALS BUREAU)

Compiled by:
MW Bonga

Issued by and obtained from
The Director: Mineral Economics, Mineralia Centre,
234 Visagie Street, Pretoria 0001, Private Bag X59, Pretoria 0001
Telephone (012) 317-8538, Telefax (012) 320-4327
Website: http://www.dme.gov.za
ETHICAL QUESTIONS IN A FINITE WORLD

The reality that our system is finite and that no expenditure of energy is free confronts us with a moral decision at every point in the economic process, in planning and development and production. What do we need to make? What are the real long-term costs of production, and who is required to pay them? What is truly in the interest of man, not in the present only, but as a continuing species? (Dally, 1992c)
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Introduction
Developments over the last ten years suggest that the long-term prospects for ferrous metals have fundamentally improved. An analysis of the trends from the mid 1980s to the present day reflects a progressive increase in demand for ferrous metals.

The introduction of new technology, new working practices and new products has resulted in reduction of production cost and prices of ferrous metals particularly steel prices. The real cost of production of steel has fallen during the last ten years due to technological innovation.

Productivity and industry efficiency
The ferrous metals industry has made dramatic improvements in the last twenty years in terms of energy efficiency. For example, in today’s production of steel, energy consumption per ton of steel produced is some 40% more efficient than twenty-five years ago in Europe and other regions. Output per man-hour is over three times the level of twenty years ago. The steel industry has been rejuvenated into a highly productive, highly flexible and dynamic business. At the same time, a new paradigm has emerged providing the basis on which society will assess the contribution of all materials including steel. This new paradigm is sustainability.

The SA Ferrous ores of Iron and Manganese

a) Iron

Introduction
South African iron ore resources, an estimated nearly 5,370Mt, are ranked the 9th largest in the world. If the Bushveld Complex’s lower-grade potential resources are included, the resource base increases by 26,400Mt, which would then rank South Africa’s iron ore resources as the 6th largest in the world (see figure 3.1). In terms of export of iron ore, South Africa is ranked number 6th in the world.

The principal deposits of iron ore of South Africa are the Superior-type banded iron formations of the Transvaal Supergroup in the Northern Cape Province, which can be traced as a prominent, arcuate range of hills for some 400km from Pomfret in the north to Prieska in the south. The most significant deposits occur in the vicinity of Postmasburg and Sishen, where high-grade hematite concentrations have been preserved in the narrow north-south trending belt of the iron- and manganese-bearing lithologies of the Asbestos Hills Subgroup (~2,670Mt at Beeshoek Mine, Sishen Mine and Welgevonden deposit – Astrup et al., 1998).

An additional 100Mt is estimated to occur as hematite concentrations within the Penge Formation of the Chuniespoort Group (Transvaal Supergroup), which crop out along the northern rim of the Bushveld Complex near Thabazimbi in the Limpopo Province.
The Bushveld Igneous Complex also contains approximately 26 400Mt of iron ore resources in the form of titaniferous magnetite, titanium dioxide and vanadium pentoxide: 50 – 67% Fe; 8 – 22% TiO₂; 0 – 2% V₂O₅ (Astrup et al., 1998).

Other significant magnetite deposits are estimated to contain in the region of 2,600Mt iron ore resources (Astrup et al., 1998). These include the high-grade Palabora and Mapochs Mines (300Mt) as well as the low-grade Zandrivierspoort, Moonlight, Cascade, Delft, De Loskop, Kraaipan Station, Kromdraai and Crocodile River deposits (2,300Mt).
Figure 1: Regional Locality Map: Manganese and Iron Ore Operations
(Information Provided by African Rainbow Minerals)
Figure 2: Mine Property Distribution Map: Sishen/Postmasburg Manganese Field
(Information Provided By ARM)
The Main producers

The four major players in the industry are BHP Billiton, Rio Tinto, CVRD, and Kumba Resources. South African based Kumba is said to be the fourth largest after the three aforementioned companies. Kumba came into being as a result of the separation of the mining and the steel making components of Iscor Ltd in 2001. This separation came at a price for Kumba as the separation agreement requires that Kumba provides Iscor, since globalised and renamed Ispat- Iscor, with its iron ore requirements at cost. Its main sources of ore are Thabazimbi mine and the Sishen mine.

The two major players in the Northern Cape Iron ore fields are Kumba and Assmang—a subsidiary of African Rainbow Minerals (ARM). Unfortunately, the
fragmented nature of the long-term reserve assets of these companies calls for rationalization by way of an exchange or swapping of assets in order to consolidate and improve efficiency of future operations. Although the two have had discussions about this issue they could not agree on the valuation of their respective assets and the talks were subsequently called off.

- **Market Share**
  Kumba accounts for 80% of SA iron ore exports and Assmang accounts for the bulk of the remaining 20%. Kumba is one of the world’s premier suppliers of high quality lump-iron ore to the international steel industry and owns a large proportion of the known lump-ore reserves in the world. Kumba also sells 4.5 Mt per annum to Ispat-Iscor. The group annually produces 24 Mt of iron ore from Sishen and some 2.5 Mt from Thabazimbi. Eighty percent of ore from Sishen is exported and the remainder sold locally.

- **Exports**
  The two producers use the Saldanha Bay harbour (See figure 3.3) to export their iron ore. Ore is transported from the Northern Cape by means of rail on the Orex line. Recently, exporters have complained about the lack of capacity on the line as well as the handling facilities at the harbour. After a long delay to respond to the needs of the clients, the port infrastructure is being upgraded and is now nearing completion with the installation of additional tipplers and increased stockyard capacity. The rail upgrade will mainly consist of the purchase of additional wagons and locomotives.
At the beginning of the period under study a far larger proportion of the ore produced was consumed locally (fig 3.6). This is a period during which sanctions were still in force and as the sanctions eased towards the end of the 1980s, export sales overtook local consumption. The low export figures can also be attributed to the severe recession of the 1980s during which US steel industry permanently closed mills with a combined annual capacity of 40 million tons. The situation elsewhere in the world was no better. South African mines produced a total of 592.47 million tons of iron ore over this period.
Iron Ore Production Growth Rates
Over this period total tons sold grew by 3.01 percent per annum while export sales grew by 5.14 percent per annum and local sales were flat at 0.05 percent per annum (Fig 3.5). This growth indicates the extent to which the local iron ore industry depends on exports for its survival.

Consumption of Iron Ore, 1984-2003
A total of 592.47 Mt has been produced in SA over the past 20 years. Within this period only 37% of the ore produced was consumed by the local market while 60% went to satisfy global demand. Forty three percent of the total tons was produced during the first half of the 20 year period while 57% was produced during the second half.
Growth in the steel industry has resulted in a rise in demand for iron ore units locally and globally. Since the end of the 1990s most of this demand has stemmed from the developing world, especially China. China’s steel industry has been growing at an alarming rate to the extent that its government recently attempted to limit growth to avoid overheating in the economy. The Chinese government ordered that no approvals of any new steel, aluminium and cement projects be made this year (2004) in a bid to halt haphazard and redundant investments. Experts are of the view that a rapid slowdown poses a major threat to the west. They believe that since China has little experience in dealing with boom-and-bust cycles, the country’s economy is due for a hard landing. The Chinese authorities, however stress that action has been taken to ensure a soft landing.

Figure 3.6 South African Iron ore consumption and exports, 1984-2003

Only 37 percent of the total tonnage exported during the past 20 years was sold in the first decade of the period under study. This was partly due to the fact that during most of the 1980s, South African iron ore exports were hampered by international trade sanctions because of the racial policies of the then government in power; furthermore, a severe recession in the late 1980’s led to a major consolidation in the steel industry, the biggest consumer of iron ore. The fact that 63 percent was exported from 1994 to 2003 was a consequence of the lifting of sanctions and the surging demand for SA’s high grade hematite ore from international consumers particularly Asia, on the back of an upturn in the global economy and improvement in steel demand.

Iron Ore Prices
Most iron ore prices are negotiated between buyer and seller. About 20 percent of ore for domestic consumption is produced by captive mines ie mines that produce for their own use. Price movements tend to be a function of market conditions in the steel sector in the period preceding the price negotiations and hence, if market
conditions weaken, then there is unlikely to be any movement in iron ore prices. As no record of actual negotiated prices is kept by the directorate, unit values (total value of sale divided by the total sale tonnage) are used as an indication of the average price fluctuations over the course of the last 20 years.

Figure 3.7 Iron ore unit price growth rates, 1984-2003

Local sales unit prices, which at the beginning of the period under study were as low as R14/t, rose at a rate of 9.1 percent per annum while export sales unit prices increased at a marginally higher rate of 9.7 percent. (Fig 3.7). The increase in rand per ton prices, was mainly due to the progressive weakening of the rand over the period, see Fig 3.8.

Figure 3.8:Rand – Dollar Exchange Rates, 1984-2003

From Figure 3.8 it appears that the rand has systematically weakened at a rate of 8.9 percent per annum from 1984-2003. This weakening has had the effect of
generating more money from exports as exporters fetched higher rand prices per unit of iron ore. The detail of this effect is beyond the scope of this report.

Figure 3.9: Growth rate of iron ore unit prices in US Dollars (1984-2003)

Figure 3.9 shows that the increase in the dollar prices of iron ore was not spectacular. In fact the dollar iron ore price looks stagnant, on average, but if inflation is taken into account it seems that generally the price may have been coming down over the years. The effect of inflation will not be investigated further here but suffice to say that iron ore producers may have been taking cuts in prices in dollar terms. Figure 3.10 below indicates the stagnant dollar price when compared to the same price, which seems to be rising in rand terms. The apparent rise in rand prices appears not to have been due to the systematic weakening of the rand throughout the period under study, rather than price increases.

Figure 3.10: Iron ore unit prices, 1984-2003
Figure 3.11: Local, export and total sales of iron ore, 1984-2003

Total revenue of R8.57 billion has been generated from local sales over the period while export sales generated R27.58 billion. In total, an overall revenue of R36.17 billion was generated. Of this, R3.86 billion and R15.07 billion were generated from local and export sales respectively during the past five years. Despite this excellent performance, South African iron ore producers have not exploited the surge in demand as fully as may have been expected. This might have been due to production constraints as well as transportation problems, which will be discussed later.

Over this period, growth rates for total revenue was 13.25 percent per annum, export sales rose by 14.9 percent while revenue generated from local sales grew at 9.28 percent per annum. (See figure 3.11)

Trade

Africa: Nigeria is the largest African consumer of South African iron ore in Africa but the combined African consumption of iron ore is negligible and averages 0.047 percent over the period under study.

European Union: The greatest consumer of South African iron ore in the EU is the United Kingdom accounting for about 50 percent of the total consumption in that region. The region consumed about 37 percent of ore exported over the period under study.

South and North America’s consumption of South African ore was very small considering the regions size, at about 0.11 percent and 0.26 percent respectively. This might have been due to the fact that the region satisfies its own iron ore needs as there are big producers in the region such as CVRD and Rio Tinto.
Commonwealth of Independent States accounted for 5.7 percent of the total consumption over this period and the Middle East consumed 2.7 percent while other countries consumed 1.43 percent. China started as net exporter of iron ore when its steel industry was in its infancy, but as the industry matured and as its demand eclipsed supply it became a net importer. During the period under review China has consumed 23 percent of total SA iron ore exports. Japan emerged as the biggest consumer of SA iron ore outside of EU as it consumed 28 percent of the total exported during the period under study due to its long matured steel industry. In recent years China has overtaken Japan as the number one importer of SA iron ore outside of EU since 1994. (Fig 3.11a)

Fig 3.11a: SA Exports of Iron Ore to China and Japan

Transportation
South Africa’s iron ore is exported via Transnet’s Orex railway line through the port of Saldanha. As a result of the consistency of supply and bulk nature of the ore, special freight contracts are negotiated separately between Transnet and the ore producers on an annual basis. The Saldanha port iron ore handling facility has recently been upgraded – a second tippler is being installed and stockpile zones were improved from an initial storage capacity of 22 Mt, to 30 Mt. The next upgrade is expected to increase capacity to 38 Mt in 2007. As Port upgrades to enable Saldanha to handle extra capacity should be completed by early 2005, these will no longer a bottleneck but railway trucks and locomotives may be the next bottleneck.

The length of the Sishen to Saldanha railway line is 861 km – 2 to 3 times longer than the rail lines of CVRD (Brazil) and BHP Billiton (Australia) rail lines – both these lines (and associated ports) are controlled, paid for and maintained by the respective companies. The lower transport and freight cost gives the companies a competitive edge over South African companies.

There is a limit to the amount of ore that can be transported to and stored at the Saldanha Bay harbour and hence the possibility of using Ngqura (Coega Development Zone), near Port Elizabeth as an additional iron ore export point is under consideration. This will involve a new line, 380 km longer than the Orex
line, as upgrading of the existing non-dedicated line does not appear to be viable. In view of the current cost of transporting manganese ore from the Northern Cape to Port Elizabeth it seems unlikely that this scheme will prove acceptable.

b) Manganese

Introduction

South Africa’s largest and economically most important deposits of manganese are located in the Northern Cape province. These deposits occur in a zone extending northwards over a distance of 150 km, from just south of Postmasburg to as far as the Wessels and black rock Mines north of Hotazel. The northern or Kalahari field is the most extensive and contains South Africa’s major deposits of metallurgical grade ore. In the North-West province, deposits formed through the weathering of dolomite are found scattered across an area extending from west of Krugersdorp to the Botswana border.

- The Producers
Two players Assmang and Samancor, dominate the production of manganese in South Africa. Smaller producers are Metmin and National Manganese Mines.

- Market Share
Approximately 95 percent of the manganese produced is consumed in steel manufacturing, mostly in the form of manganese alloys. South Africa accounted for 19 percent of global production and 23 percent of its world exports during 2003. Four companies control 45 percent of the sea trade, namely: Samancor, Assmang, CVRD and Eramet. Of the total products exported, ore makes up 55 percent by mass, while alloys account for the balance.

There are 350 individual mines producing manganese ore in China, as opposed to some 250 in the rest of the world. Although it is a dominant beneficiator of manganese, China possesses negligible ore resources, less than 5 percent of the world resources. China has low grade carbonate ore, carrying less than 30 percent manganese, and is also lax in enforcing environmental regulations.

- Manganese Ore Production, 1984-2003
South Africa at 4000 Mt, holds more than 80 percent of world manganese resources, followed by Russia at 560 Mt and Gabon at 150 Mt. Despite dominating the world resources South Africa has been producing less manganese ore than the two countries during this 20-year period. The top three exporters of manganese ore are Gabon, Australia and South Africa.

A few major ore producers, producing from the few high grade manganese resources in the world, supply some 45 percent of the sea trade, of which two are domiciled in SA, namely Samancor and Assmang. Many alloy plants exist in the world. China, with many small producers poses a commercial threat to global alloy market due to uneconomic overproduction of manganese alloys as well as the production of ElMn and EMD, but represents an opportunity for long-term South African ore sales growth.
Figure 3.12 SA’s production of manganese ore, 1984-2003

SA Production Growth Rates
Figure 3.13 below shows the manganese production growth rate over the last two decades. Production declined at a rate of 0.89 percent per annum despite the initial rise that occurred at the beginning of the period under study. This can be explained by the sensitivity of the industry to any production increases that tend to be also reflected in the prices.

Figure 3.13: Manganese ore production curves and growth rates, 1984-2003
**Consumption**

Figure 3.14 South Africa’s Manganese Consumption Curves and Growth Rates 1984-2003

**Consumption Growth Rates**

Figure 3.14 shows domestic consumption (local sales tonnage) and export tonnage growth over the period 1984-2003. The consumption curves show that the export market for manganese ore has been diminishing at a rate of 2.72 percent per annum during the last 20 years while the local market has been steadily growing at a rate of 1.68 percent per annum. This is mainly due, to increased production of added value products such as ferromanganese and other manganese alloys for both local and export purposes.

**Prices**

Figure 3.15: Manganese ore unit value growth rates, 1984-2003
**Price Growth Rates**

As can be seen in the accompanying Figure 3.15 average unit value manganese ore prices rose significantly, in rand terms from 1984-2003. The average export price increased at a rate of 11.14 percent per annum throughout this period while the local unit value prices climbed some 11.63 percent per annum. In contrast, dollar unit prices moved up by only 2.28 percent per annum. If however, dollar prices were discounted to reflect the effects of inflation, the net effect would be negative growth for the period.

**Revenue**

Total revenue of R15.31 billion was generated from local and export sales of manganese. Of this 31.8 percent was contributed by local sales while export sales accounted for 68.2 percent. Export sales dominated earnings from the beginning of this period to the end.

**Revenue Growth Rates Discussion**

Figure 3.16 illustrates the growth rates in revenue generated from export and local sales of manganese ore from 1984 to 2003. Local sales revenue was low in 1984 at R32 million while the earnings value of exports was 5.36 times domestic sales. This discrepancy was due to the fact that export prices were for most of the times higher than the local prices. Moreover, a progressive weakening of the rand, which continued on a downward spiral until it was reversed in 2001, boasted export revenues.

Local sales revenue grew at 13.29 percent per annum, which was almost 5 percent higher than the export sales revenue (8.4 percent per annum on average) (see Figure 3.16 below). Rapid growth appears to have begun around 1995 and continued until 2002, as is suggested by the steepness of the two curves, until it was reversed in 2001 as a result of a sustained strengthening of the local currency against the US dollar. As indicated in Fig 3.15, with dollar prices and production being constant, and a change in R/$ exchange rate the revenue remains constant in dollar terms but changes up or down in rand terms. So that it seems it was more the effect of the volatility of the currency that caused a drop in the revenue graph tail (Fig 3.16) than it was the change in the demand of the product itself.
Transportation
Manganese ore mined in the Hotazel area of the Northern Cape is transported by rail to a bulk minerals handling terminal at Port Elizabeth, a distance of more than 700 kilometres. The mechanical plant has been in operation for over 40 years and is now considered to be antiquated. Discussions are currently being held on removing the bulk minerals terminal from Port Elizabeth and relocating it at the new Port of Ngqura by about 2008. A decision could also be made on adding an export facility for iron ore exports, which would improve the economic feasibility of the project and allow exporters an alternative route to the Orex-Saldanha line.

Steel Manufacturing in South Africa

Introduction
The South African steel industry accounts for 75 percent of crude steel production in Africa and 1 percent of world production. South Africa with an output of 9.5 Mt in 2003 is ranked as the 19th largest steel producer in the world, and seventh in terms of steel exports. Steel consumption in South Africa continued to increased up to the late seventies but due to structural imbalances in the economy and international sanctions, the economic growth rate declined during the eighties and consumption of steel products declined.

There are six primary steel producers in South Africa: Cape Gate, Cisco, Columbus Stainless, Highveld Steel and Vanadium, Scaw Metals and Ispat-Iscor to be renamed Mittal Steel. Ispat-Iscor is by far the largest, producing 7.2 million tons a year with a 79% market share. The remaining 21% is shared among the five smaller players. There are two distinct products: carbon steel, which accounts for 97 percent of the sectors output, and stainless steel. Columbus is the principal stainless steel producer. South Africa manufactures a wide range of steel and semi finished steel products.
The largest consumer of steel in South Africa is the building and construction industry, accounting for 23% of total consumption. Manufacturers of cables, wire products and gates consume 17%. Tube and pipe manufacture consumes 11% while plate and sheet metal works account for 10%. Packaging takes 7%, automotive sector 6% and hardware, furniture and railway sectors consume 4%, mining takes 3% and agriculture, electrical appliances, fasteners and roofing and cold forming account for 1% each. The remaining 15% is not allocated as per information from the South African Iron and Steel Institute (SAISI).

The effect of the shrinking manufacturing base
The drastic decline in South African steel consumption is due to the demise of the broad manufacturing base in South Africa. As a result the contribution of the value added by the manufacturing sector to the South African GDP has declined from 24% in 1981 contributing to the decline in the per capita wealth of the South African population.

Despatches of primary steel products to the different industrial sectors have been negatively affected by the demise of the manufacturing industry in particular and also the decline of industries such as mining, building and construction and the transport sector of Railways and Harbours.
Comparison of SA and World Crude Steel Production

A comparison of South African and World crude production growth rates compiled from data collected for the past 20 years shows marked differences in the trend of performance. Steel output in South Africa has grown at a miserly 0.02 percent per annum whereas global production has increased at a relatively higher but mundane growth rate of 1.1 percent per annum.

For purposes of looking deeper into the causes of the discrepancy between the two growth rates, it would be fitting to divide the data into two groups: pre-liberation (1984-1993) and post-liberation (1994-2003)

- **Pre-liberation and Post-liberation Periods**

  The pre-liberation growth rate for SA is 1.1% per annum while that of the world stood at 0.3% per annum which is almost the exact inverse of the growth rate discrepancy for the whole 20 year period. However, the post election period shows a global steel production growth rate of 2.83% compared with the 1.08% per annum in South Africa. This can be traced back to the time when economic sanctions were imposed on SA. As a result of that the growth rate was driven more by domestic demand than global.

  South Africa’s more robust pre-liberation growth rate relative to that of the world can be explained as a result of economic sanctions restricting exports, which meant that the growth rate was driven largely by sustained growth in domestic demand whereas world growth was rather sluggish in the Western democracies in the run-up to the end of cold war during the early 1990s.

  In contrast during the post liberation period, South Africa growth in crude steel production, which slightly slumped in the first few years of democracy but picked up a gear later on could not match worldwide growth in steel output buoyed by rampant growth in rapidly industrializing countries such as China and India.

Figure 4.2 World crude steel production growth rate, 1984-2003
Figure 4.3 World steel production growth rate 1994-2003

![World steel production growth rate 1994-2003](image)

Figure 4.4 World crude steel production growth rate, 1984-1993

![World Crude Steel Prod Growth Rate 1984-1993](image)

Figure 4.5 South Africa’s crude steel production growth rate, 1984-2003

![SA Crude Steel Production](image)
Crude Steel Production Cycles

The contrast between profiles of crude steel output in SA during the pre-liberation and post-liberation periods is sharply outlined in the graphical representation of the steel production cycle over the previous 20 years (Fig 4.8). From 1985 to 1994 SA’s steel production was completely out of step with that of the world. Since 1994, however the two cycles have become far more synchronous.
**Link Between Steel Production And the SA Economy**

From Figure 4.9 there appears to be some discernable relationship between the production of steel and the performance of the SA economy. Although the link may not seem to be very strong, the two curves vaguely correlatable. An upturn in economy has a delayed effect on steel production, which is understandable, as the effect will take some time to filter through. On the other hand a down turn in steel production seems to precede a downturn in the economy. This cooling off is picked up immediately as the volume of orders drop so that production is revised downwards even before the economy registers a downturn.

Figure 4.9 South Africa’s GDP and Crude Steel Production, 1985-2003
Conclusion and Recommendations

Introduction
In this chapter, a summary of performance of each of the investigated commodities is given. At the end the effect of the performance of each commodity to the general ferrous mineral industry is given. After this conclusion, recommendations based on the findings are given.

Summary

- Steel
The South African steel industry has undergone changes through the years. The major player, Ispat-Iscor (now renamed Mittal Steel South Africa), started as a state owned corporation, which evolved through the years into the formidable private steel producer it is today. Due to its unfair advantage, of being owned by, and special treatment it received from, the government, it has grown to dwarf the other local steel makers which were never state owned nor subsidised. The separation of the iron ore and steel making assets into Kumba Resources and Iscor, respectively, has had positive results as each could then focus on its core business. Today Ispat-Iscor is by far the largest steel maker in Africa. The South African steel industry accounts for 75 percent of steel production in Africa and 1 percent of world production.

The restructuring of Ispat-Iscor seems to be going ahead successfully. It seems to be succeeding in fashioning itself as the most viable and strongest steel producer in the region. Its takeover by the world’s second largest steel maker LNM bears testimony to this. The company’s pricing policy of Import Parity Pricing seems to have had both negative impacts on its consumers and gave it negative publicity. This is evidenced by the official complaints of excessive pricing and abuse of dominance lodged against Ispat-Iscor by DRDgold, Harmony and Cadac with the Competition Tribunal. The shrinking manufacturing base also appears to have had a negative impact on growth prospects of the industry in the short term, however, this is expected to change as the local manufacturing industry recovers and pulls itself out of recession.

The production growth rate achieved by the local steel industry over the past 20 years is quite small at 0.02 percent per annum compared to the global growth rate of 1.1 percent over the same period, given the fact that South Africa has all the raw material required for steel production. The fact that this has happened despite the higher growth rates achieved by industries like iron which is a major raw material used, signifies that SA has not seized the opportunity of an upturn in global steel demand as its competitors have elsewhere. The industry has been shedding jobs throughout this period in a country, which needs job creation so as to ensure economic growth. This is in sharp contrast to what other developing countries like China have been doing: creating jobs at a rate of 10 million per year by exploiting the higher local and global demand for their products.

Although there is link between steel industry and the economy within which it operates, in other words, what happens in one influences what happens in the
other, there was nothing stopping the steel industry from taking the lead to expand, create wealth and jobs and thus drag the economy along with it. But the conservative nature of the South African industry captains has meant that instead of an expansionary economy we had one that sheds jobs and limits the scope for growth. The other effects will be dealt with in the concluding remarks for the whole industry.

- **Iron**

Total iron ore production grew at a rate of 2.35 percent per annum over the period under study. Export sales grew at 5.14 percent per annum while local sales recorded a 0.05 percent growth. Local prices rose by 9.2 percent per annum while export prices went up 9.7 percent per annum. The value of the local currency dropped at a rate of 8.9 percent per annum over this period and thus negated any price increases in dollar terms. The total revenue generated from iron ore sales rose by 13.25 percent. Local sales revenue rose by 9.28 percent per annum while export sales revenue grew at 14.9 percent per annum over this 20-year period. More than 90 percent of exported ore went to European Union, Japan and China.

The local transportation of iron ore is done by rail. The local industry has not been able to increase its exports due to rail and harbour constraints, however Transnet is upgrading both these to ensure higher exports of iron ore. The industry has however indicated that the planned expansion will not be enough and has suggested that some extra capacity for iron export be created at the new port of Ngqura to exploit the rising global demand for iron ore particularly from China. The local iron ore industry has failed to exploit the increased demand for its product due mainly to infrastructure constraints brought about by poor economic intelligence, which might have failed to forecast and therefore anticipate this demand.

- **Manganese**

Production of ore declined by 0.89 percent per annum over the 20-year period. The local consumption of manganese ore grew at 1.68 percent per annum while exports declined by 2.72 percent per annum, till at a certain point in 1997 local consumption exceeded exports and the graphs are still diverging. This was made possible by the drive to locally beneficiate as much as possible before exporting. While the dollar prices rose by 2.28 percent per annum, rand prices rose at a rate of 11.63 percent for local prices and export prices went up 11.14 percent per annum over the period of 20 years. The meteoric rise in rand prices was due to the systematic weakening of the rand over this period. Revenue generated from local sales grew at 13.29 percent per annum while that from export sales went up by 8.4 percent per annum.

The transportation of ore is done by rail and no problems in this regard were experienced. The export facility in Port Elizabeth is seen as very old and needs some upgrading, but stakeholders have suggested that instead of that, a new facility be constructed in Ngqura. Reservations were expressed about the
economic viability of such a move but some players suggested that those hurdles would be overcome by creating a new facility for iron ore export there as well.

**RECOMMENDATIONS**

 Ø Steel

Since South Africa has all the raw material necessary for steel production, the local industry must be encouraged to exploit this to increase its steel production so as to increase its share of the global steel market.

The benefit of cheaper iron ore that Ispat-Iscor gets from Kumba can be extended to the steel giant’s local clients by way of Ispat-Iscor adopting a more benign developmental pricing model as opposed to its current Import Parity Pricing model which seems to have caused great pain and dissatisfaction, not only to its clients but also to the government intent on promoting local downstream beneficiation industry.

 Ø Iron

**Production**
The production of iron ore can be increased to meet the rising global demand for iron ore however; this must also be matched by a corresponding increase in steel production so as to optimise the economic benefit for South Africa.

**Consumption**
Local consumption of local iron ore produced can be increased promoting downstream beneficiation of ores in order to effect sustainability. The quality of exported material can also be improved by first adding some value to the ore before exporting.

**Prices**
The local iron ore industry is not so big as to influence prices all on its own, however, this can be done by joining other bigger global players. By adopting a unified approach to the annual price negotiation with iron ore consumers, the industry can fetch better prices for its product however, this approach may fall foul of WTO rules.

**Revenue**
Since revenue is a function of prices and quantity produced, the industry will improve its revenue position by getting these two variables right.
Transportation
Since the transportation of ore is beyond the industry’s control, the industry must unite and approach the government to negotiate an effective public–private partnership that will help resolve the industry’s transport problems.

The upgrading of both the rail and harbour infrastructure must assume some sense of urgency so as to enable the industry to exploit the current high demand for ore.

If capital is the constraining factor on Transnet’s side, then the industry can provide the capital to help expedite this upgrading but the government must provide some tax breaks for this in the same way as capital recoupment used in gold mining.

Manganese

Production
The manganese industry is very sensitive to production variations and therefore any change in production must be well thought as it could have both negative and positive consequences. If an increase in production can be absorbed by local beneficiation activities, this would be advisable. The downward trend of ore export and the upward trend of local consumption by beneficiation industry must be sustained.

Consumption
The increasing of local consumption of manganese ore is definitely advised in pursuit of the dream to beneficiate almost all or all manganese produced locally. This would help ease the burden of transporting the bulky ores, from both the rail and port infrastructure.

Prices
Prices of manganese ore are a function of the balance between supply and demand prevalent in the markets. Since South Africa owns more than 80 percent of the world known resource the local industry can do a lot to influence price movements. This can be done by reducing the production of ore for exports to such an extent that the industry becomes price setters. This is not something that can be achieved overnight but the industry can set itself this goal for the long term.

Revenue
Revenue will only be improved if the industry succeeds in improving the revenue input factors like production and prices.

Transportation
Since there is no dedicated line for manganese transportation to the coast it is recommended that one be availed so as to encourage export growth.

The mooted move of the export facility from Port Elizabeth to Ngqura must be seriously considered especially if it will accommodate iron ore export as well.
This would relieve the Saldanha Bay Harbour of some of the excessive demand put on it by the current high demand for iron ore.

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