

# MB 16<sup>th</sup> International Iron Ore Symposium

Vertical integration challenges & opportunities  
5 - 6 May, 2010



David Tucker, Managing Consultant, London

## Hatch Beddows

## Contents

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- **Hatch, Hatch Consulting & Hatch Beddows**
- Introduction
- Historic Perspective
- Challenges & Opportunities
- Conclusions

## Our organisation

- Hatch supplies business, process and technology consulting, design and engineering and construction, operations and project management to the mining and metals, energy and infrastructure industries worldwide
- Established 1955 and employee owned
- 8,000 highly skilled people serving clients worldwide
- US\$40BN of projects now under management in 80 countries

## Our values

- Safety
- Quality
- Innovation
- Sustainable development
- Effective risk management

**We deliver unprecedented and sustained results for our clients**

HATCH

## Hatch Consulting is the leading management consultancy dedicated to the metals and mining industries

- **Hatch Consulting** is the world's leading management consultancy specialising in the steel, metals and mining industries and provides high level support services, ranging from corporate and business strategy development through strategic market studies to implementation of new technologies, management and operating practices
- Hatch Consulting is organised into specialised practices by industry and service, combining to provide precise solutions, expertly delivered to the exact needs of each individual client
  - **Hatch Beddows** is the strategy and market development practice, specialising in steel and related industries, and providing strategy development and implementation services
  - **Investment and Business Planning** (IBP) provides economic, environmental and technical evaluations of minerals properties and processing facilities, due diligence, pre-feasibility and feasibility studies and related investment planning and appraisal services
  - **Performance and Risk Management** provides high performance management, asset performance enhancement and optimisation, process and facilities benchmarking, and risk management services
- **Hatch Corporate Finance** (HCF), a FSA-regulated joint venture company, provides corporate financial advisory and transaction execution services

## Hatch Beddows's experience spans the whole of the value chain from raw materials to finished steel to processed products for a comprehensive perspective

- **Raw materials and consumables**
  - Iron ore, pellet and sinter
  - Coking coal and coke
  - Metallics: scrap, pig iron, DRI / HBI
  - Ferroalloys: Cr, Mn, Ni, Si
  - Refractories
- **Semi-finished steel**
  - Slab
  - Billet and bloom
- **Long products**
  - Rebar
  - Merchant bars
  - Structural sections
  - Wire rod and wire products
  - Engineering bars
  - Rails
  - Grinding balls
- **Reversing mill / Steckel mill plate**
- **Strip mill products**
  - HR sheet / plate
  - CR sheet
  - Electrical steels
  - Galvanised sheet
  - Organic coated sheet
  - Tin mill products
  - Tailor-welded blanks
- **Pipe and tube**
  - OCTG and line pipe
  - Seamless and welded tubes
  - Hollow sections
- **Stainless steel**
- **Speciality steels and special metals**

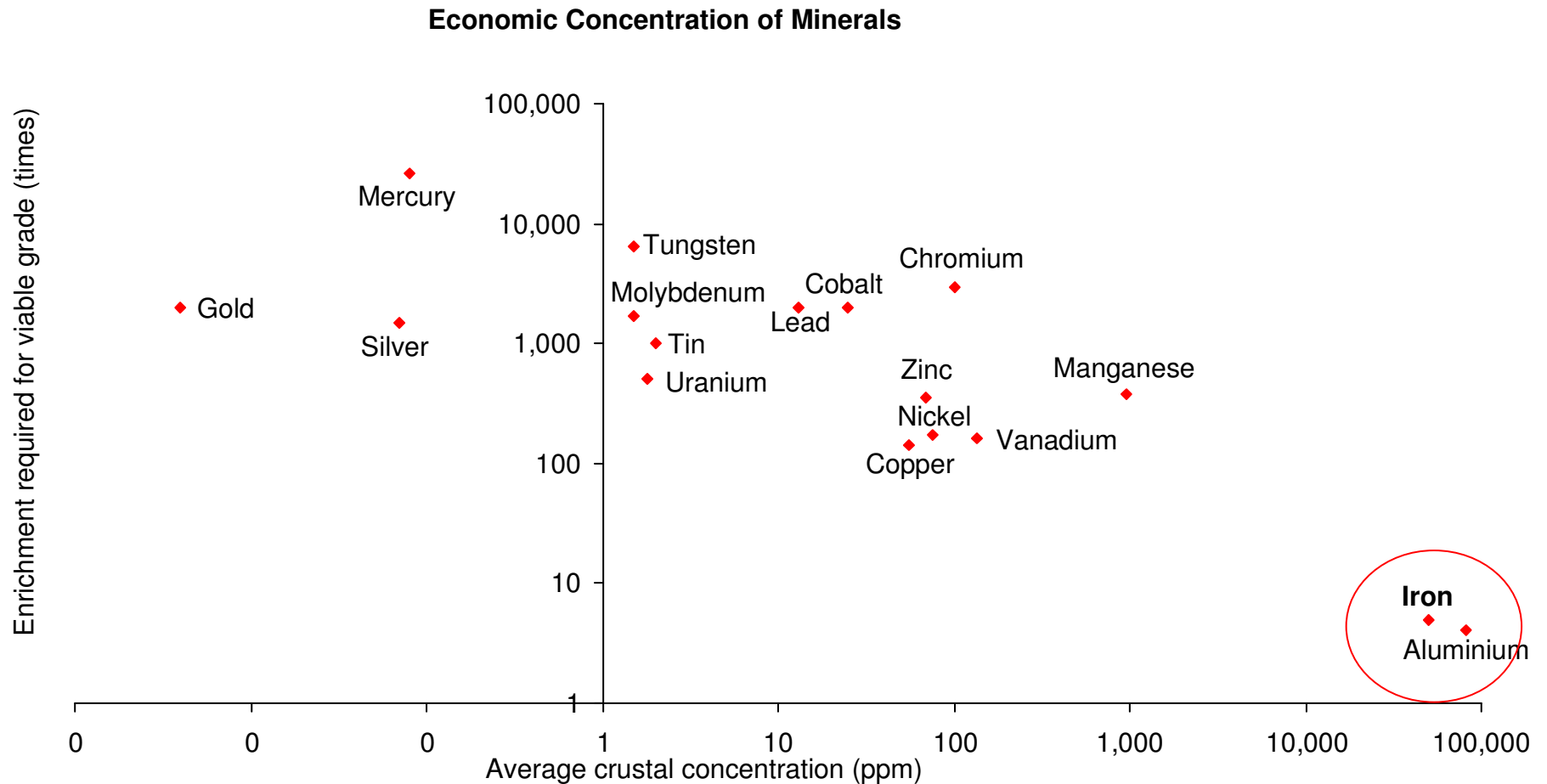
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## INTRODUCTION

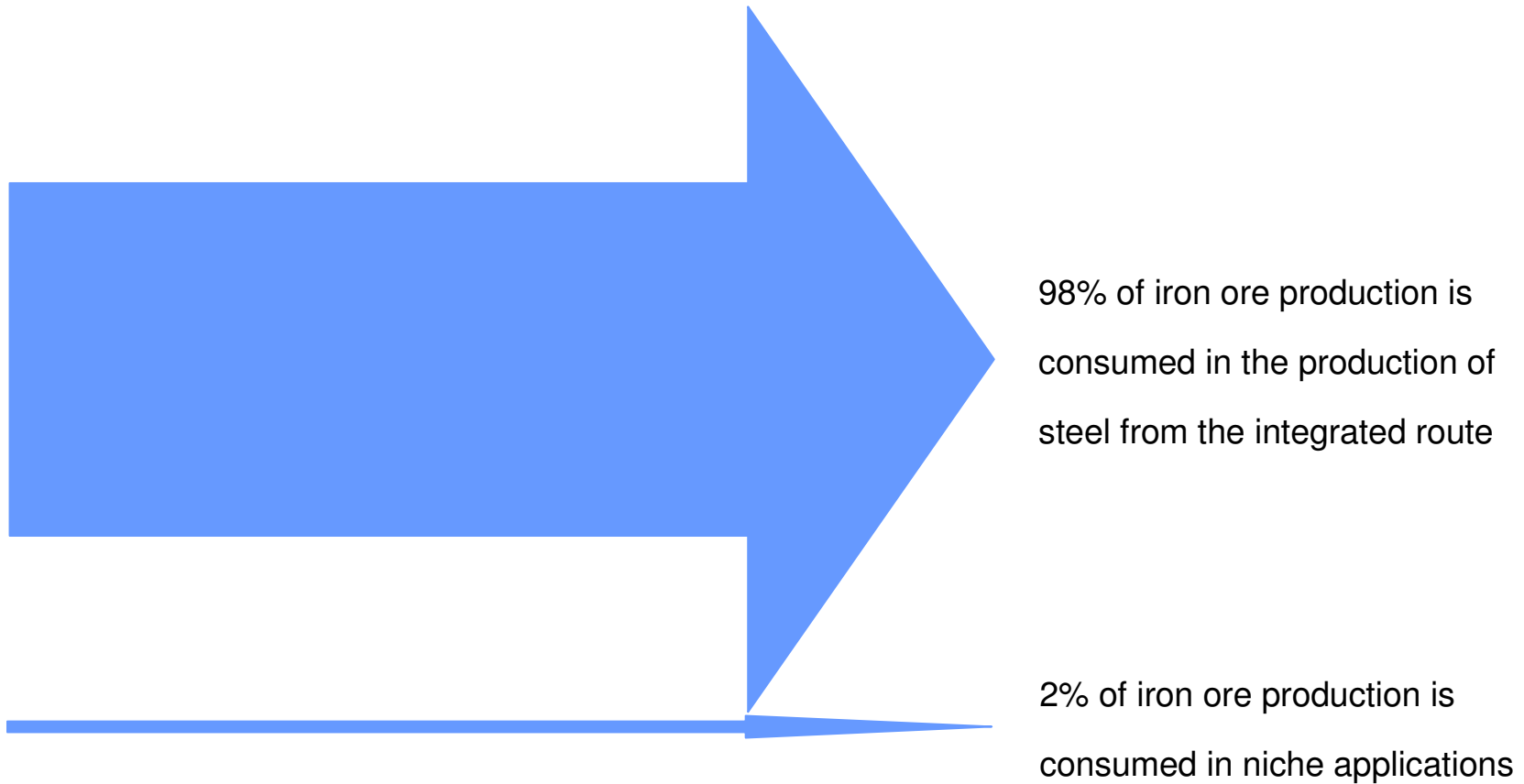
From an academic perspective iron is relatively abundant and requires little enrichment to reach economic grades compared to other minerals



Source: Camborne School of Mines, University of Exeter, Hatch analysis

INTRODUCTION

# The iron ore business is intractably linked to the fortunes of the integrated steel industry



**'Same boat, same crew' but different levels of industry attractiveness**

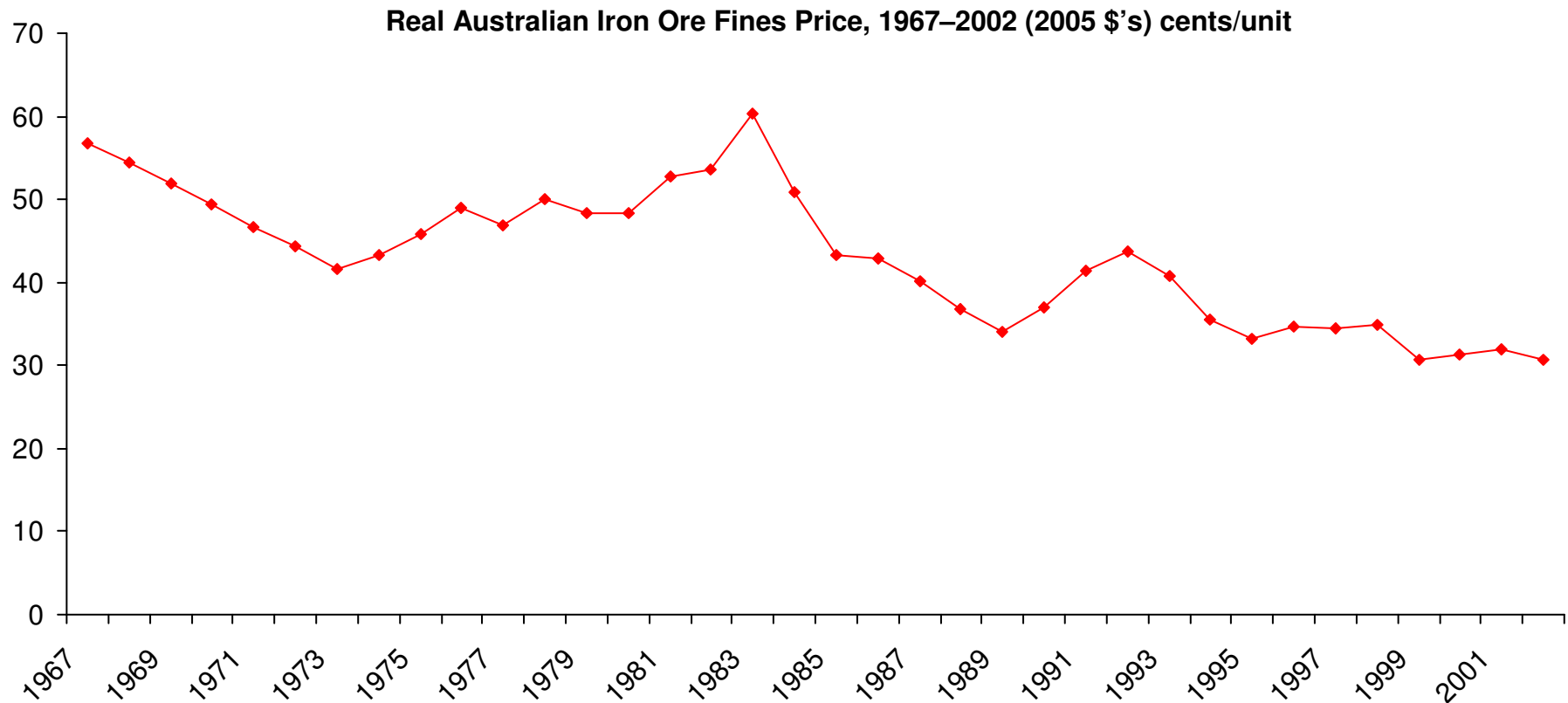
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HISTORIC PERSPECTIVE

**In real terms the iron ore benchmark prices fell at 1.4% CAGR between 1967 and 2002, whilst seaborne trade increased 3.3% CAGR**



Iron ore was not unique, falling real prices were typical for most commodities

Source: Abare, US BEA and Hatch analysis

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## Falling real prices drove business strategies to minimise cost

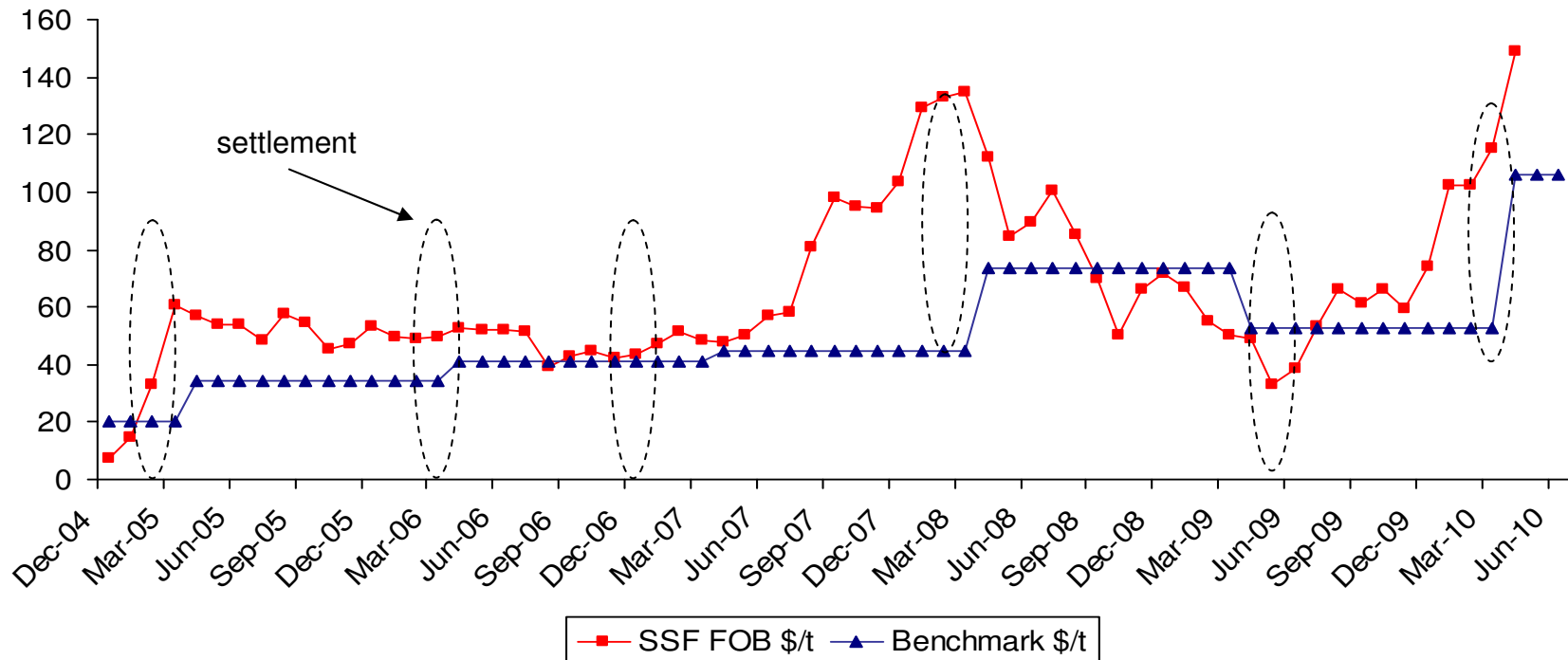
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- Efficiency
  - Consolidation to achieve economies of scale
  - Operational efficiency - productivity
  - Capital efficiency
- Divestment of non-core iron ore assets

HISTORIC PERSPECTIVE

The iron ore industry experienced a period of flux during the last decade with annual benchmark prices coexisting with spot prices

China spot Indian iron ore minus freight & actual Brazilian SSF FOB Asia Benchmark U\$/Mt



Source: Tex Report, UNCTAD, Drewry Shipping, SBB and Hatch

## HISTORIC PERSPECTIVE

# Demand, predominantly from China, has exceeded supply and driven up the price of iron ore

- Demand, predominantly from China, has exceeded supply and driven up the price of iron ore
  - Spot market was direct result of the Chinese mills seeking additional ore
  - Steel production was constrained by ore availability in 2007/8 and again in 2009/10
  - The fall in demand from Q4 2008
    - Caused miners to close capacity and shed workers
    - Added uncertainty to the numerous projects being promoted
- Globally steelmakers are investigating upstream integration with iron ore assets
  - Security of supply
  - Price participation
  - Iron ore supply and pricing is now a strategic issue

Perception that miners now hold a disproportionate share of the value created by the industry

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## CHALLENGES & OPPORTUNITIES

**There is no common agreed definition of Tier-one or World Class assets, but they are generally, large, long-life, high quality and low cost**

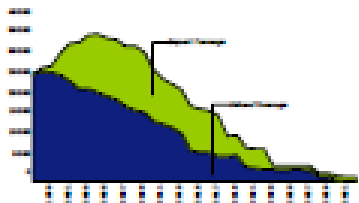
- Size
  - Reserves and Resource
  - Annual production
- Quality
  - Chemical
  - Physical
  - Metallurgical
- Cost
  - OP/UG
  - Ease of beneficiation
  - Greenfields or Brownfield's with access to existing infrastructure
  - Proximity to markets
  - Host country

**Tier-one assets are scarce**

CHALLENGES & OPPORTUNITIES

Mining differs from manufacturing in key regards, mineral resources are non-renewable, site specific and depleted over time

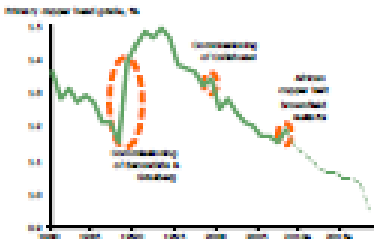
Depleting reserves



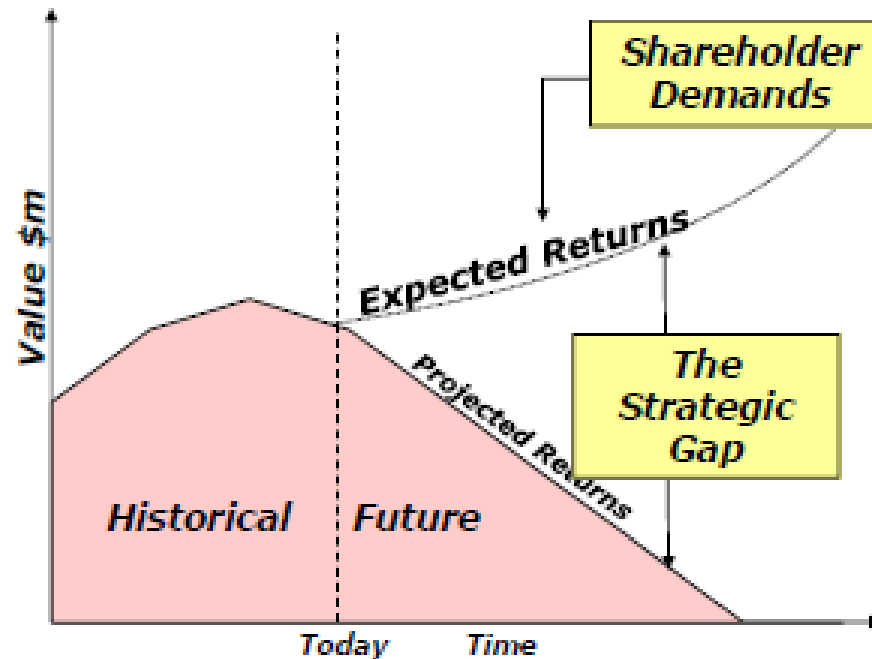
Increasing costs



Declining grades



Bridging the strategic gap

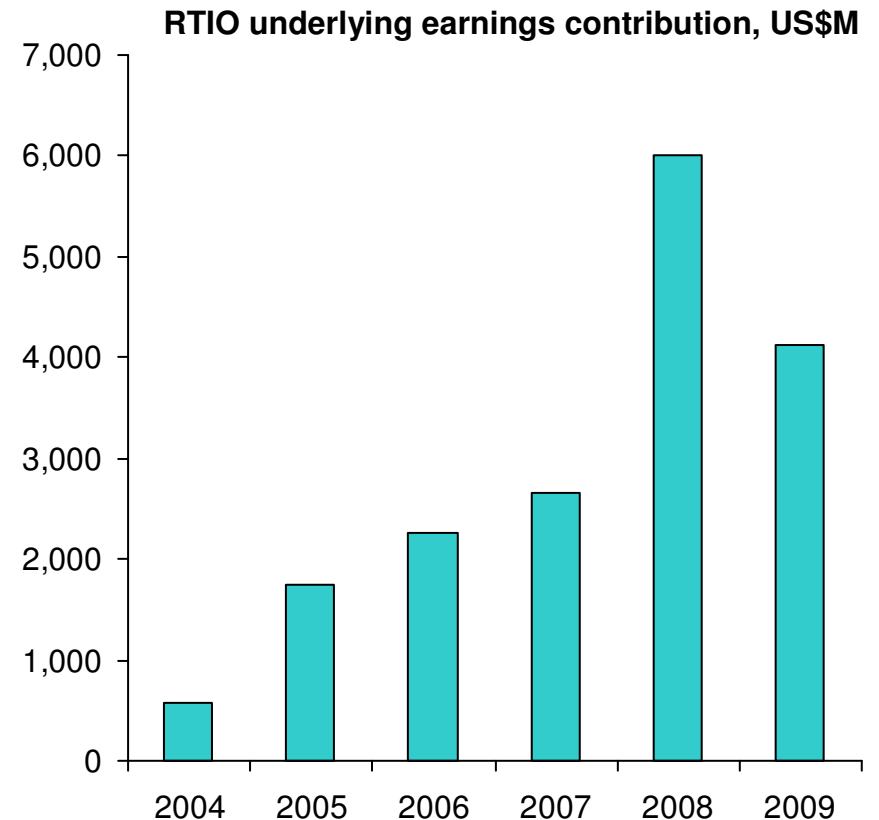


Source: Xstrata Company Presentations

## CHALLENGES & OPPORTUNITIES

# The scale and capital intensive nature of iron ore mining means that the major producers are best position to develop new tier-one assets

- This is not a homogeneous industry, marginal players coexist with highly profitable producers
- Export tonnage and profitability dominated by Vale, Rio Tinto and BHP-B
- These companies are making supernormal profits, largely on the basis of their resource base and depreciated infrastructure
- But these profits are also being reinvested in expansion projects to maintain market share
  - Rio Tinto Iron Ore invested nearly **US\$9bn** in capacity expansion since 2003

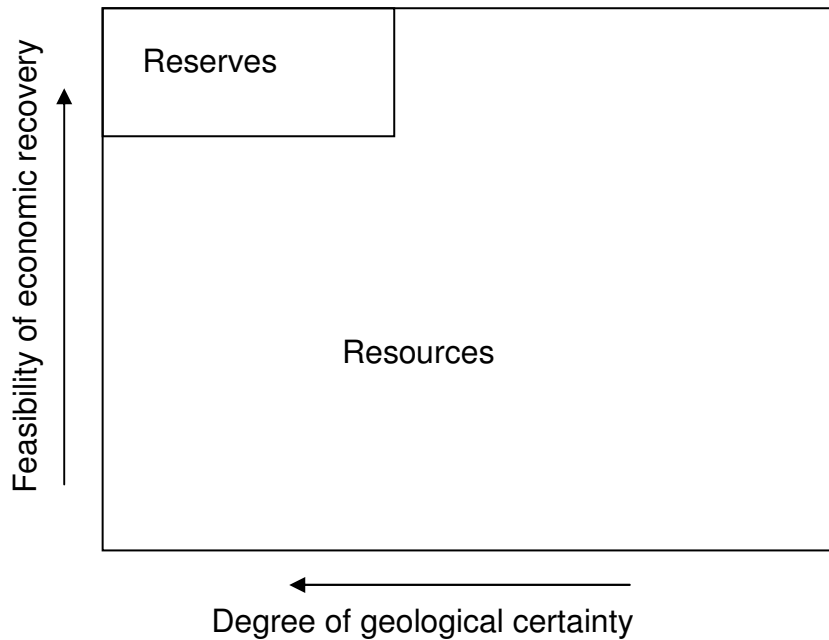


There is no shortage of companies with strategic intent and capital wishing to enter the iron ore industry

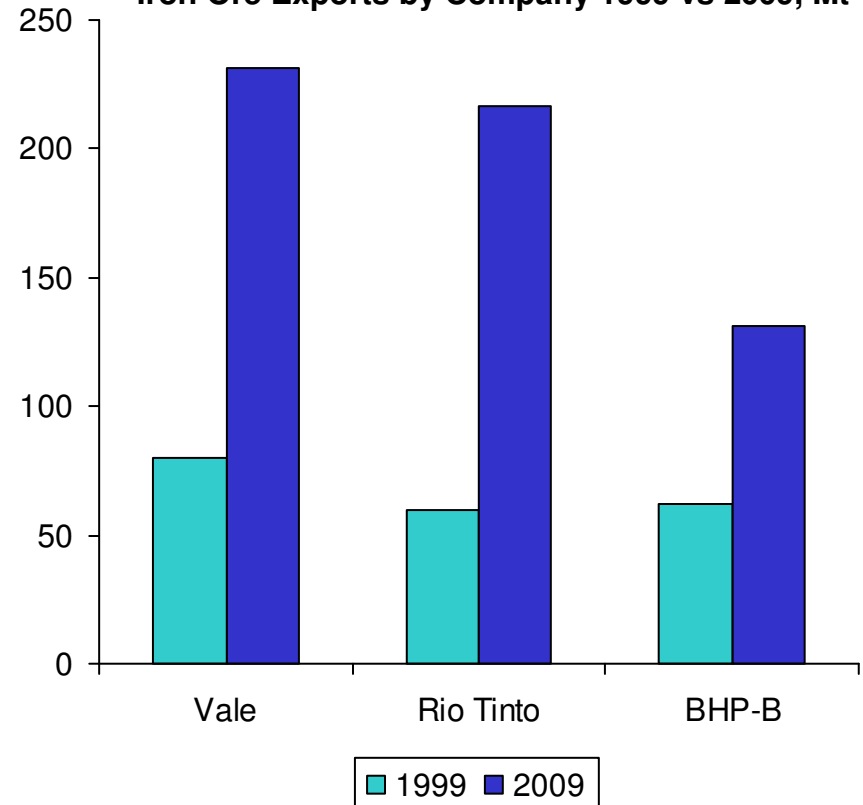
CHALLENGES & OPPORTUNITIES

**Producers have doubled or tripled production over the last decade and need to increase their reserves by the same factor**

Schematic Resource & Reserves



Iron Ore Exports by Company 1999 vs 2009, Mt

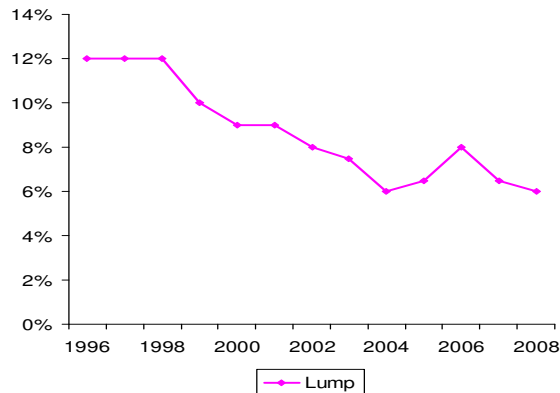


**A doubling of output requires a doubling of reserves to maintain the same development horizon. Noting that approval process mean that it can take five years to bring a new mine to market**

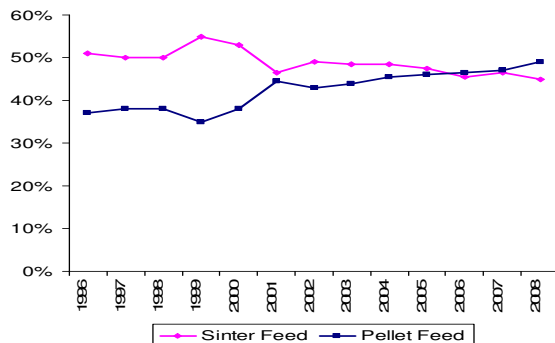
## CHALLENGES & OPPORTUNITIES

# One consequence of the sudden expansion of seaborne demand has been a reduction in chemical and physical grade

### Lump as % of total production



### SF & PF as % of total production

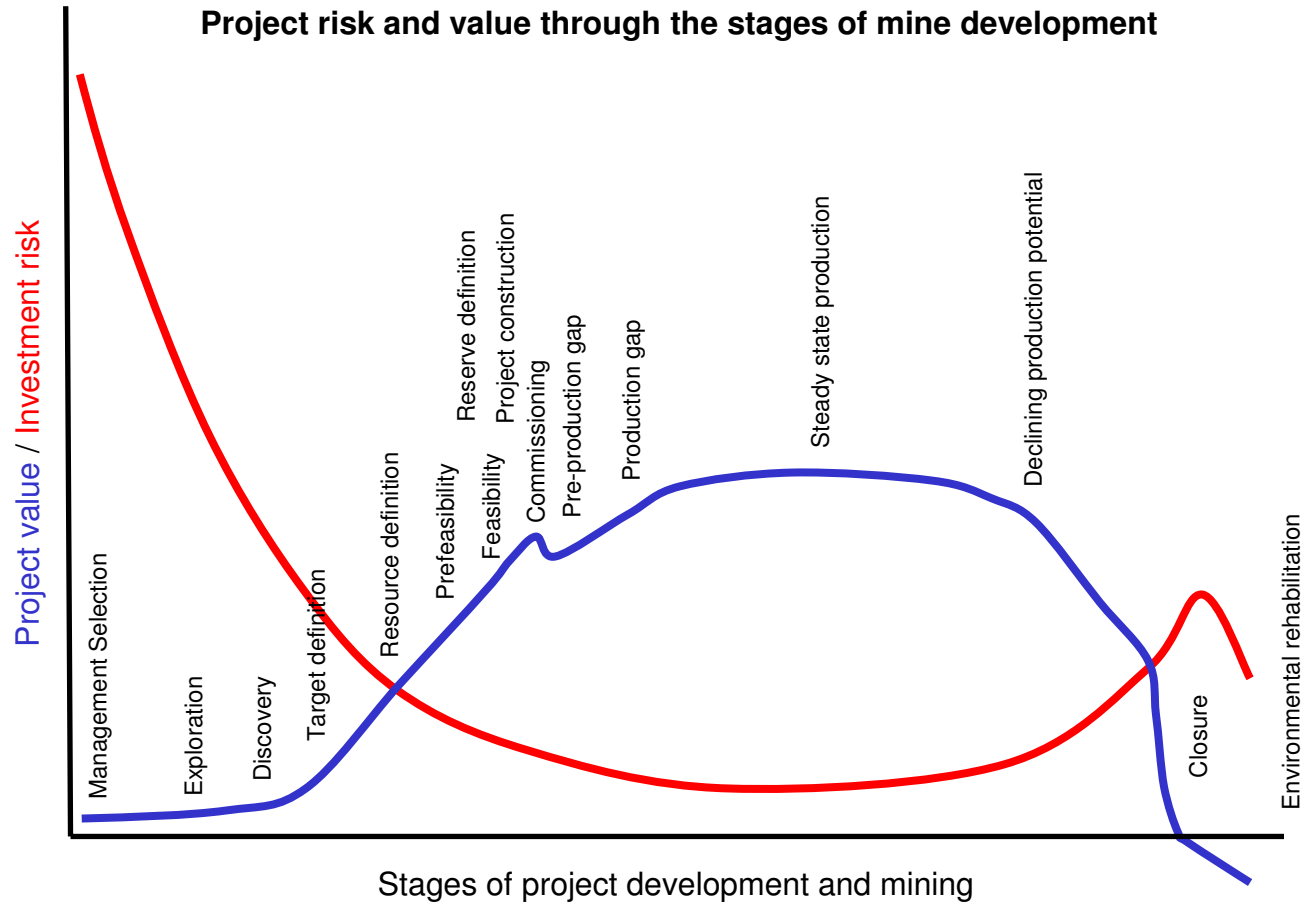


- Mining is not strictly a sustainable activity as it deals with extracting ore from a non-renewable resource
- One consequence of the sudden expansion of seaborne demand has been a reduction in chemical and physical grade
- Increasingly Pellet Feed is replacing Sinter Feed and Lump availability is also reduced (see charts)
- Reduced availability of natural sinter fines is a challenge facing the industry:
  - Investment in processing
    - Pelletising
    - Sintering
  - Investment in new iron making technology

Seaborne capacity has increased, in part, by decreasing grade. New capacity is increasingly based on ultrafine pellet feed material

CHALLENGES & OPPORTUNITIES

**Investors prepared to accept the associated risk, can look to enter projects early in their development**



Source: Diamond core resources (2004), AIM Mining Research Limited

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## Vertical integration, advantages & disadvantage from a steelmakers perspective

### Advantages

*Assuming the right asset, acquired at the right time for the right price...*

- Relieves an anxiety, security of supply
- Captures cashflow margin
- Favourable positions the company for the next downturn

### Disadvantages

- New business with new risks, requires new skills
- Assets may not be ideal...
  - quality
  - location
- Market valuation (highly regarded assets within a less appreciated industry)
- Assets capable of operation in a less benign pricing environment

**It must be the right asset, acquired at the right time, for the right price  
If successful likely to see a spin off to separate the raw materials business from steel**

## The critical success factor in mining is access to quality resources

- Mining is a different business from manufacturing
  - It is the site specific, extraction of non-renewable resources
  - This may have implications for what is considered an acceptable degree of concentration of tier-one assets
- World class mineral assets are scarce
  - Large, long life
  - High quality
  - Low cost
- Capital markets will not reward investment into mining unless there is a compelling strategy to demonstrably lower costs or address security of supply
- Investment involves the management of risks. These can be mitigated through
  - Using a defined review process and appointing specialist advisors

## Hatch Beddows Strategy Consulting

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