Agenda

- Recent trends for the bulks
- Snapshot of base case long-run forecasts
- 4 key trends to watch
- Why are these trends important?
- Conclusion
2014 - 2015: prices crashed due to over-investment in supply

CRU uses super cycles to justify expectations for long-run price trends

1. Super cycles typically take about 25 years peak to peak or trough to trough

2. High capital cost commodities (hard rock or bulks) have a wide amplitude, while less capital-intensive industries have a narrow amplitude

3. Super cycles come about because of an overreaction of investment following a price spike

**Price versus volume change**

Source: CRU
Lower costs also helped to drive prices down

CRU Business Cost Curve
x axis: cumulative production, Mt
y axis: Business Cost (normalised to 62% Fe fines, CFR China, $/t

Downwards pressure from lower oil prices, currency depreciation, lower contractor costs, reduction in headcounts, change in mine plans etc.

Are the cost reductions sustainable?

….this is critical for CRU’s price forecasts

Source: CRU
A recovery ensued in 2016, followed by sharp gains in 2017. Why?

**Iron ore price**

- Monthly price, 62% Fe fines, CFR China
- Average monthly price

**Hard coking coal price**

- Australian quarterly contract HCC
- Average quarterly price

Source: CRU
An improved demand side picture → stabilisation in global crude steel production…

Global crude steel production

…and higher steel prices and margins

- A slight increase in demand and expectations of production cuts in China drove steel prices higher

- Steel margins fattened despite the increases in iron ore and coking coal prices

Source: CRU, WSA
For iron ore = a Chinese import boom, not a demand boom, drove prices higher

Chinese crude steel production and iron ore consumption, 2016, y/y change, Mt

The result of a sharper cut in Chinese domestic iron ore production

Source: CRU, WSA
For coking coal = the Chinese government’s policies played a central role in price movements.

276 working day policy in China
Implementation
Global prices

Relaxation
Global prices

Operating new capacity
Permanently closed capacity
Operating capacity

China coal capacity, annualised, bn t

NB. Total capacity figures exclude idled capacity.

Source: CRU
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India will be the largest driver of steel demand growth

Global finished steel demand, Mt

- **2015**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2020**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2025**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2030**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2035**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2015**
  - North America
  - Europe
  - Russia & CIS
  - Middle East

- **2020**
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**China has not yet hit peak steel but it will no longer drive growth**

LHS: finished steel consumption, Mt (bars)
RHS: growth in apparent demand, % (line)

Source: CRU, WSA
Will the key markets for iron ore and met. coal miners change in the long-term?

Hot metal production CAGRs by region/country

Source: CRU
Supply/demand “gap” is very different when comparing the bulks

Gap analysis: met. coal market, demand and potential supply, Mt

- IRON ORE - no new greenfield investment is required in iron ore in the long term, i.e. there is no gap between supply and demand.
- This does not mean that no new projects will enter the market.

Source: CRU
Agenda

• Recent trends for the bulks

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• 4 key trends to watch: scrap generation and usage in China

• Why are these trends important?

• Conclusion
China’s construction industry has evolved dramatically over the past 20-30 years

The Shanghai skyline highlights one of many examples of the transition to modern construction methods:
The steel used in the 1980s/90s is now returning to the market as scrap

Chinese obsolete scrap generation and fund, Mt

An increase in scrap consumption in both the EAF and BOF steelmaking is forecast

Scrap rates in EAF production, kg/tls

Scrap rates in BOF production, kg/tls

Source: CRU
End of boom times for hot metal production and iron ore and met. coal demand

Global hot metal production, Mt

Fast growth and a slow supply response led to high prices

China’s hot metal production falls at a faster rate than crude steel due to increasing scrap use

This is a negative for the miners

What does this mean for steel producers?

Source: CRU, WSA
Agenda

- Recent trends for the bulks
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- **4 key trends to watch: influence of Chinese government on supply**
- Why are these trends important?
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Chinese domestic production is critical for the market balance (and price) for both bulks.

Iron ore supply exits by country, 2013 -2016

- USA
- Ukraine
- South Africa
- Russia
- Other Africa
- Mexico
- Iran
- Indonesia
- China

Production idled in Australia and Brazil (combined) in 2016 was well below China’s volume of exits.

Historical relationship between price and Chinese domestic production

Iron ore price vs. Chinese domestic iron ore production (2000-2016)

Source: CRU
Policies to reduce coal production lately have had a dramatic impact on coking coal prices

LHS: Yangquan coal production, Mt  
RHS: Yangquan coal production, m/m change, Mt  

There is high uncertainty over future policies. Met. coal is likely to be more impacted than iron ore.
Agenda

• Recent trends for the bulks

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• **4 key trends to watch: steel industry restructuring in China**

• Why are these trends important?

• Conclusion
Restructuring of the Chinese steel industry means a switch to medium-sized blast furnaces

Number of blast furnaces in China by size

- Outdated
- Environmentally un-friendly
- Inefficient
- …steel capacity is being, and will continue to be, closed

• A focus on productivity drives greater demand for higher quality blast furnace inputs

• This is a positive for producers of high grade iron ore products

Source: CRU
European blast furnace data demonstrates increased pellet rates aiding higher PCI use

x-axis: pellet rate, kg/thm
y-axis: PCI rate, kg/thm
Bubble size: working volume, m$^3$

Source: CRU
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• **4 key trends to watch: flattening and lower of industry cost curves**
• Why are these trends important?
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Industry cost curves are lower and flatter than pre-2013 levels…

- ...this is despite upwards pressure from oil and currency

What impact does this have on long-run price expectations?

Source: CRU
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Summary: what do these key trends mean for the bulks markets and for steel?

- Scrap → lower demand for raw materials, lower prices for raw materials, lower input costs for steel

- Chinese domestic mining industry → volatility (scenario analysis!)

- Rationalisation of Chinese steel sector (environmental trigger) → change in demand for different raw materials product segments

- Lower industry costs and a flatter curve → lower steady-state prices, an end to 70% EBITDA margins (iron ore), slower supply response, lower input costs for steel compared to early 2010s levels
Our value proposition

Recognition
We have a reputation as the foremost name in metals, minerals and fertilizers consulting and analysis

Independence
We are privately owned and not associated with any producer, consumer, financial community or other stakeholder interest in the industry.

Industry knowledge
Our business is mining, metals and fertilizers and we have been active in this field for over 45 years. You do not pay us to ascend the industry learning curve.

Our people
Our consultants and analysts are subject matter experts within your industry, supported by rigorous economic analysis.

Speed of response
Through CRU Analysis we have existing data and models that can rapidly be customised. Our team is dedicated to single client work.

Global presence
We have offices in the key regions – Europe, North & South America, China, India, and Australia.
Thank you for listening

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