The outlook for European steel and implications for raw materials

EU Iron Ore Insights, Berlin

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Hatch Beddows

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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$20bn 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 Beddows is the strategy and decision support practice of Hatch Consulting, providing strategy development and strategic decision support services to the steel and related industries

- **Hatch Beddows** is dedicated to the steel industry. We have extensive experience providing strategy development and strategic decision support services to steel and steelmaking raw materials companies around the world
- **Hatch Beddows** provides the following suite of services to its steel industry clients worldwide:
  - Corporate and business unit strategy development
  - Strategic decision support
  - Market analysis
  - Competitive analysis and marketplace positioning
  - New product and market development
  - Investment analysis, concept studies, and business cases
  - Business planning
- Our approach combines creativity, intellectual rigour, and detailed steel industry know-how supported by the Hatch Group's 8,000 professionals in 60 offices worldwide. Our experienced and knowledgeable staff maintain extensive contacts throughout the steel industry, are skilled in interview-based data and knowledge collection, combine valuable analysis with industry insights, and maintain an extensive industry knowledge base

Hatch Beddows' project 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, Mo, Ni, Si
  - Refractories
- **Semi-finished steel**
  - Slab
  - Billet and bloom
- **Long products**
  - Rebar
  - Merchant bars
  - Structural sections
  - Wire rod and wire products
  - Engineering steels
  - 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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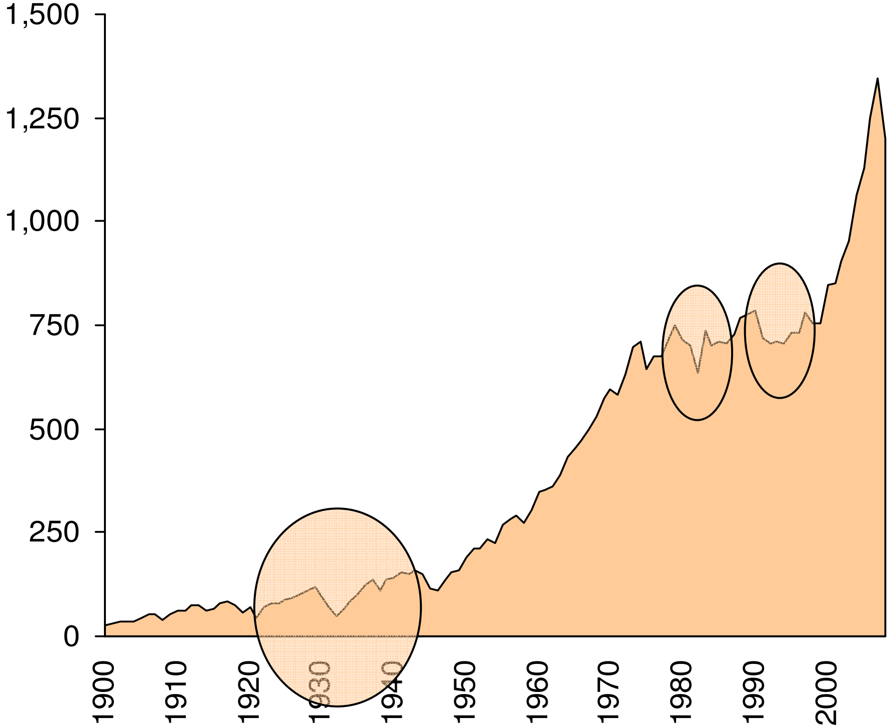
During the worst years of depression, global steel demand fell 58% from peak levels and it took seven years to recover back to its original levels in 1929

Global Steel Demand (1900-2008), Mt



Anatomy of Previous Steel Cycles

Period	% Decline in Steel Demand	Number of Years to Regain Pre-trough Demand
1929-1937	-58%	7
1979-1988	-15%	9
1991-2000	-10%	10

Source: IISI, Zimmerman and Hatch Beddows

What might the economic recovery look like? A “V”, a “W” or an “L”?

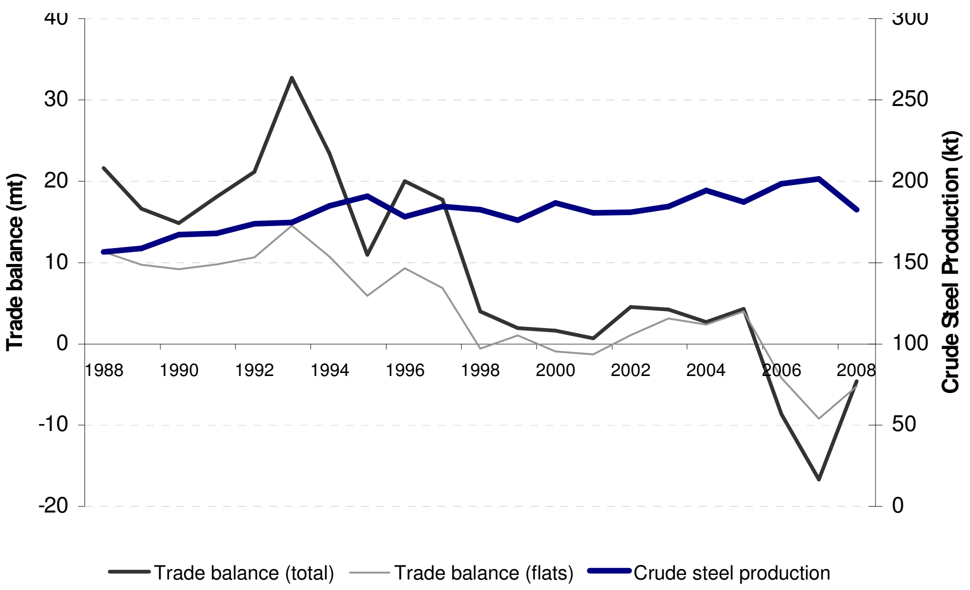
- The reasons for a prolonged downturn:
  - Banking crisis is not over : another 6-9 months? - $4 trillion of bad debts to be written off: another US$2bn to go
  - Consumers have damaged balance sheets: ‘forced’ buying will not help
  - Asset prices in all classes were inflated: not yet corrected
  - There needs to be a rebalancing from consumption to investment in the developed world
  - The political and administrative elites have substituted hyper-activity for intelligent activity

- The reasons for a rapid recovery:
  - The developing world demand is unique to this recession
  - Institutional investors are very “cashed up”
  - The price of debt has collapsed
  - Massive fiscal stimulus

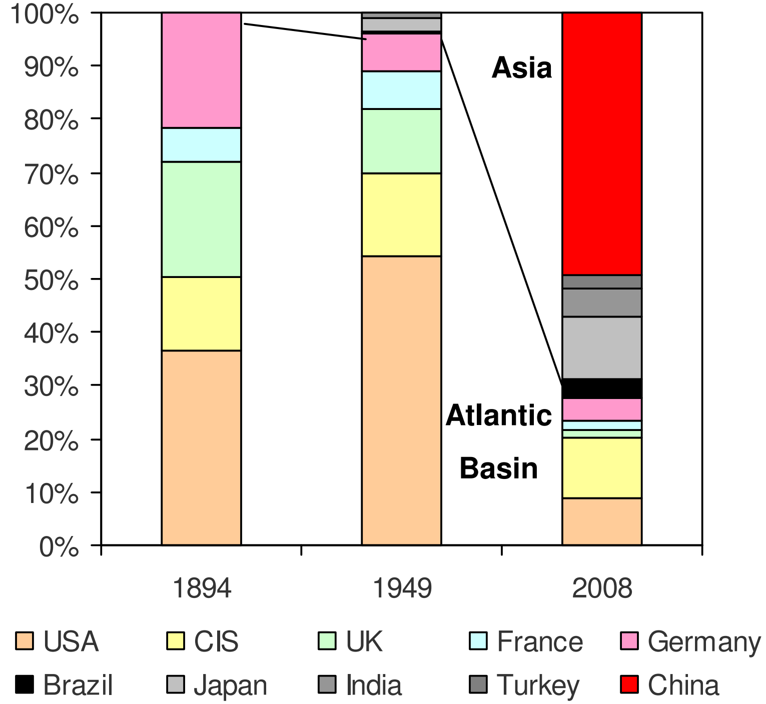
“Forecasting is always difficult…especially when it is about the future.” – Niels Bohr

European steel production growth has been virtually flat since 1996, net exports have deteriorated substantially across all products and its market share has shrunk

EU 25 Crude Steel Production and Trade Balance

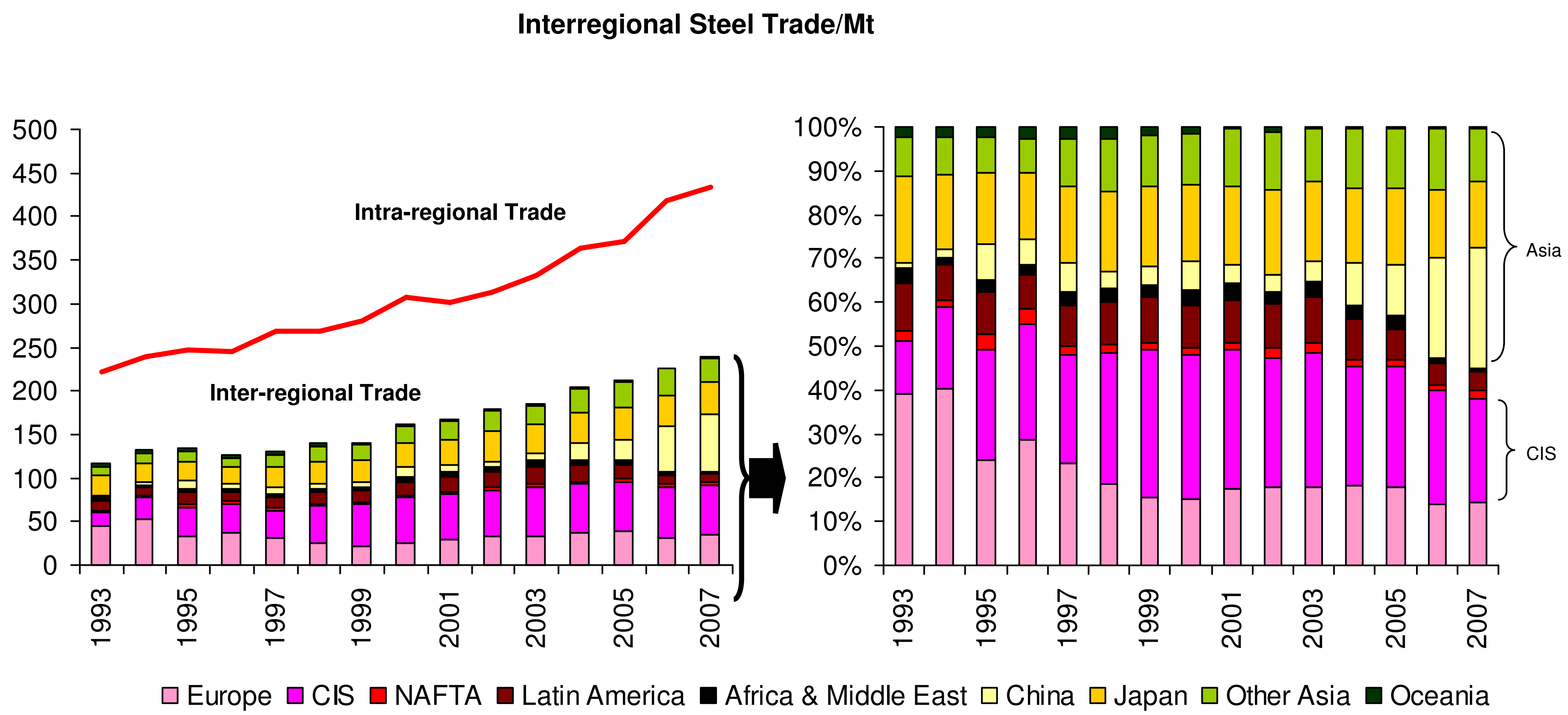


Steel production by region



Source: WSA, ISSB and Hatch Beddows

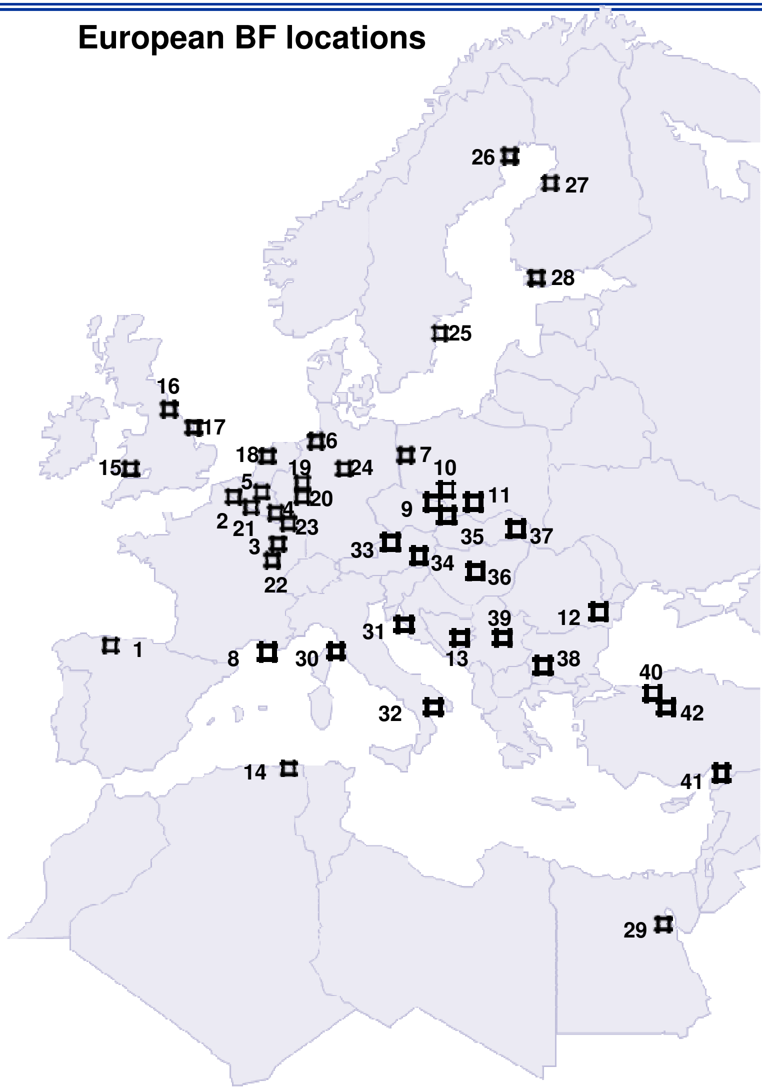
Steel globalization allows for 435 Mt or one tonne in three to cross a border and over 250 Mt to be consumed outside of its region of production – is resistance futile?



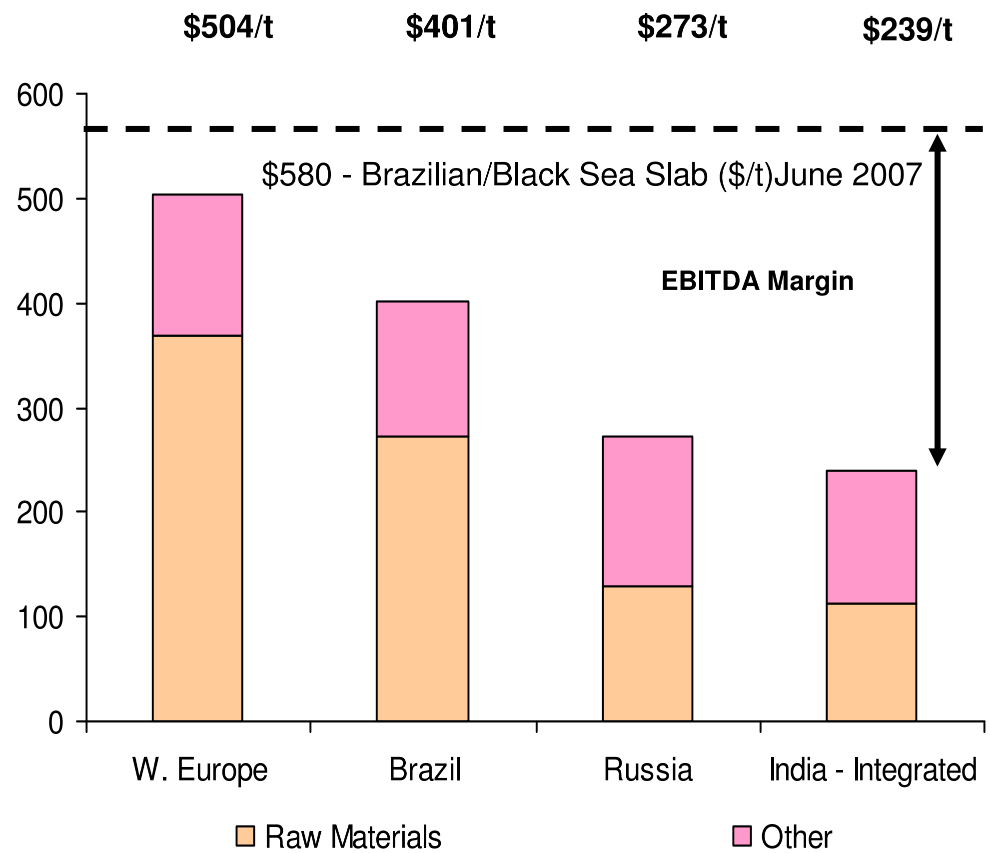
Source: IISI, ISSB and Hatch Beddowes

The steelmaking cost base is now also global and reveals the fundamental European problem

European BF locations

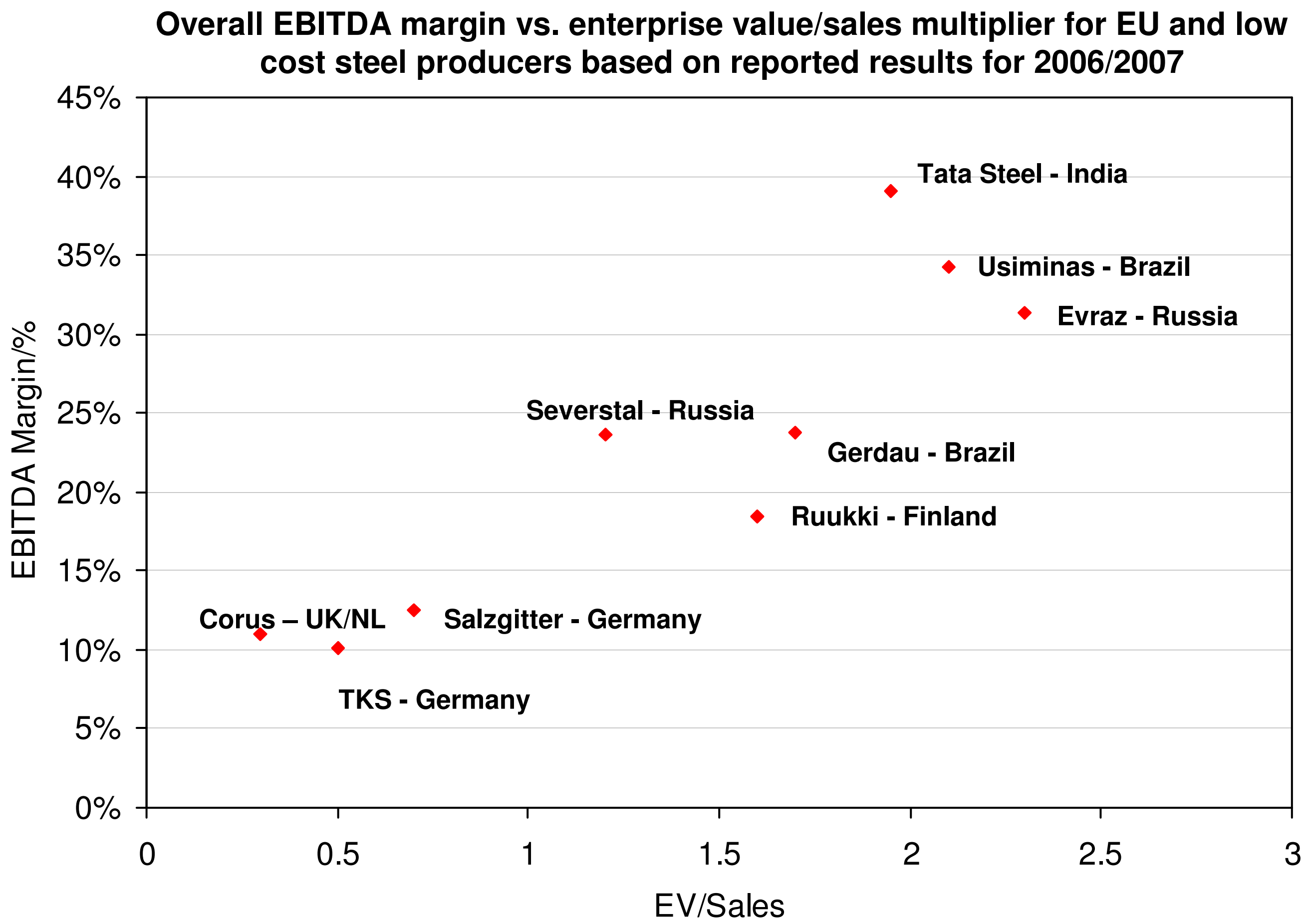


Cash costs ($/t) for slab, for W. Europe and other selected low cost regions



Source:Tex, SBB, McCloskey and Hatch Beddows

…which also shows up elsewhere!! Can European steelmakers ever resist?

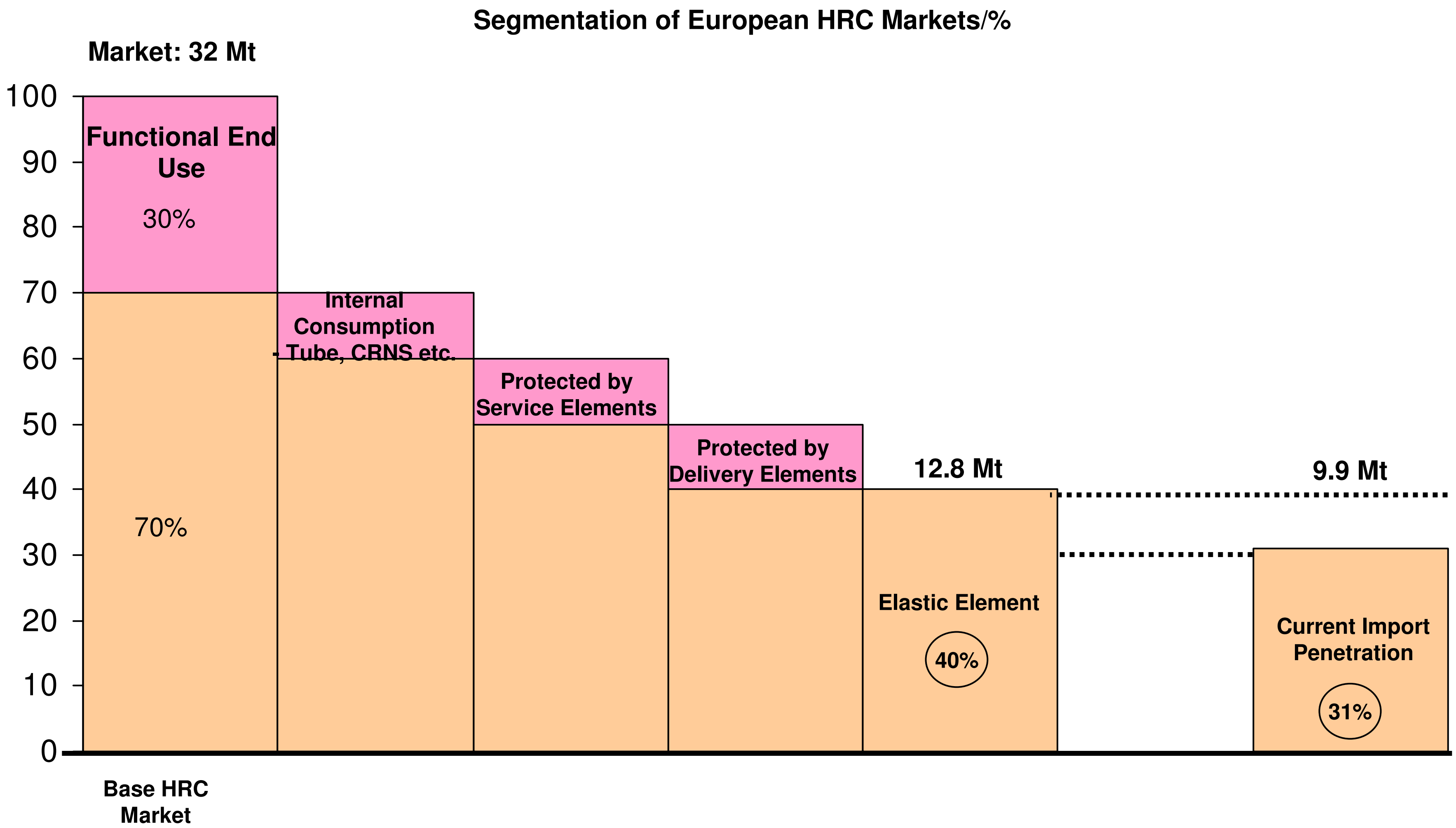


Note: Note: Enterprise Value ("EV") calculated as Market Capitalisation + Net Debt

Corus Group and Tata Steel before their merger

Source:Bloomberg and Hatch Beddows

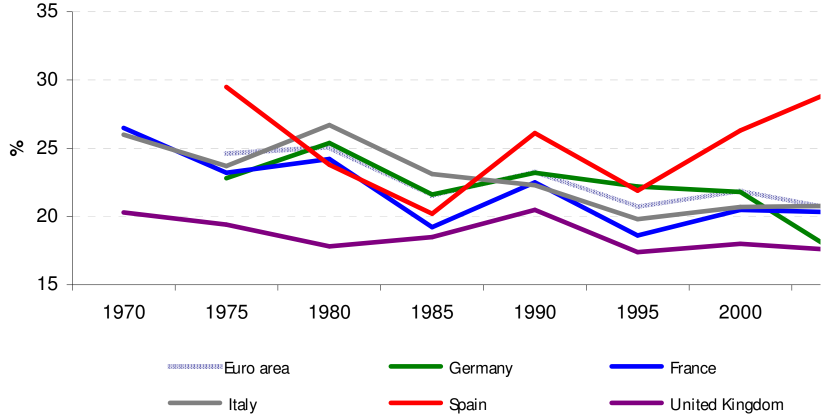
Those steel companies in mature markets need far more subtle competitive advantages



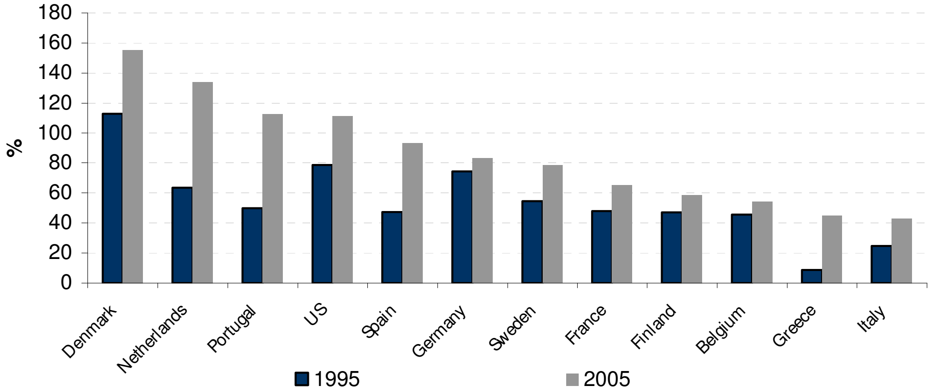
Source: Hatch Beddows

Four key macro-economic drivers put pressure on the European economy and hence steel demand - the net result will be static to decreasing demand and the need for substantial rationalisation

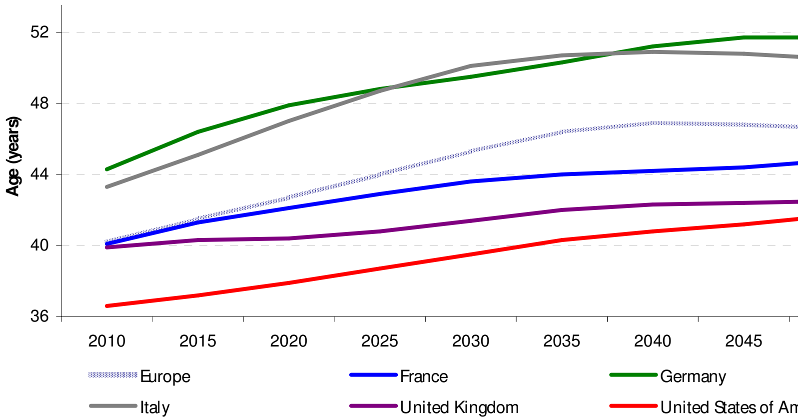
FCF (% of GDP)



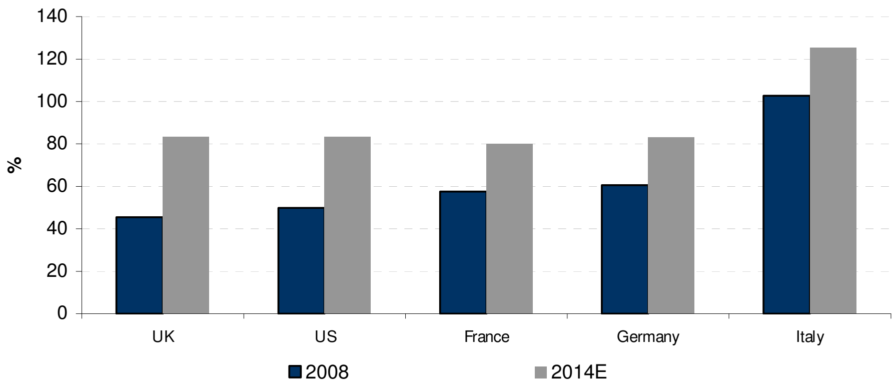
Liabilities (% of disposable income)



Median Age of Population



Net debt (% GDP)



Source: Economist, CIA, EC and Hatch Beddows

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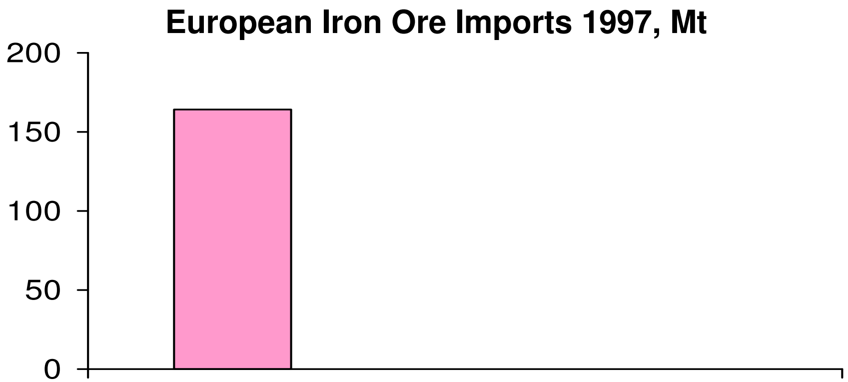
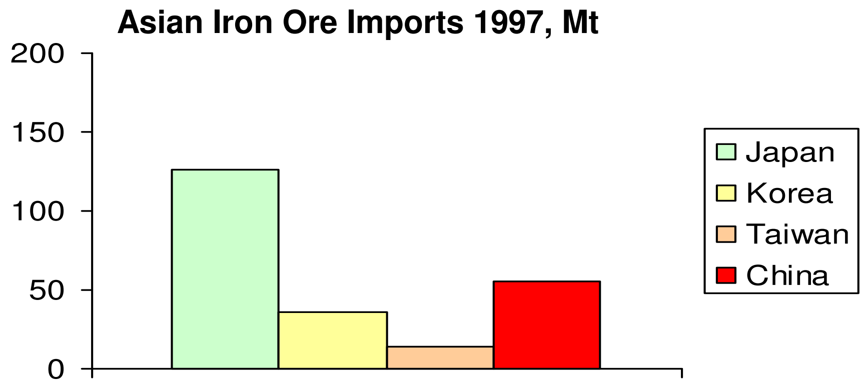
Europe can play a leadership role in the iron ore industry formulating policy on pricing, product mix and risk management

- Europe can play a leadership role in the iron ore industry formulating policy on pricing, product mix and risk management
- Risk management
  - As practiced by the steel industry, namely force majeure, discourages potential new entrants and investors
  - Potentially reinforces call for a hedging mechanism
- Shifting balance of power
- Pricing
  - Should there be a global price?
  - Should the benchmark price be determined by the CFR spot market in China?
  - Will the political involvement of CISA and the Chinese government in iron ore pricing have a detrimental impact on the industry.
  - Is it still attractive for steel makers to integrate up stream into raw materials?
- Availability of natural fines and lump

Historically there has been a relative balance in importance between the Pacific and Atlantic iron ore markets

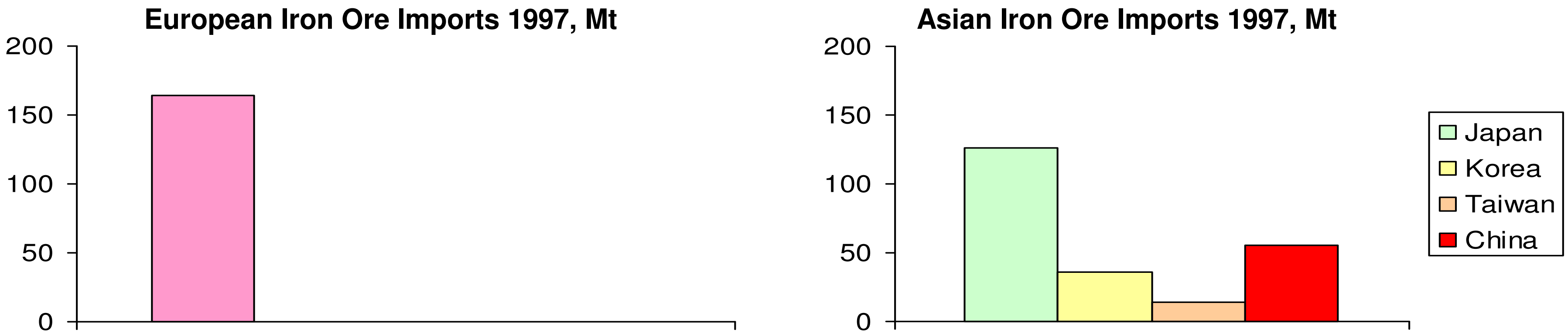


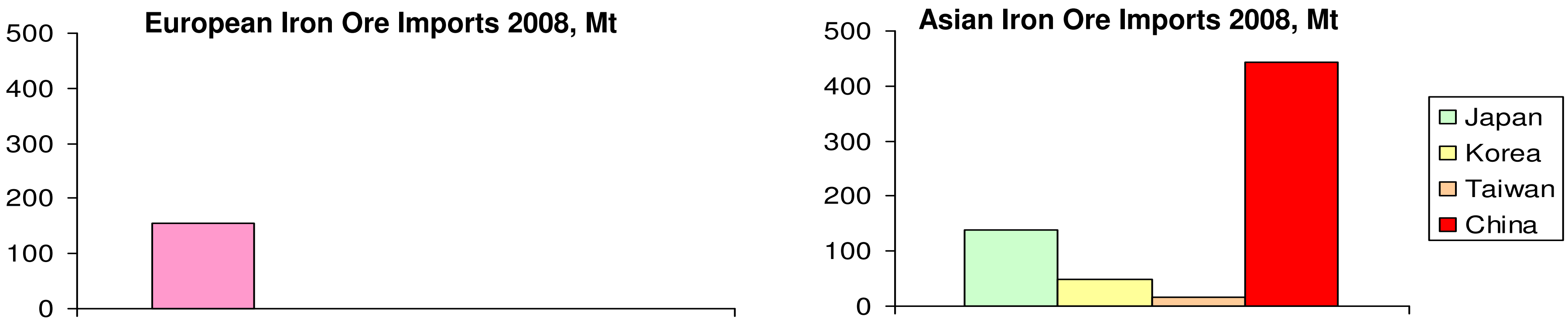


From 1995 – 2006 the benchmark price was set 6 times each in Europe and Japan

Source: UNCTAD and Hatch Beddows

Historically there has been a relative balance in importance between the Pacific and Atlantic iron ore markets. This has dramatically shifted East

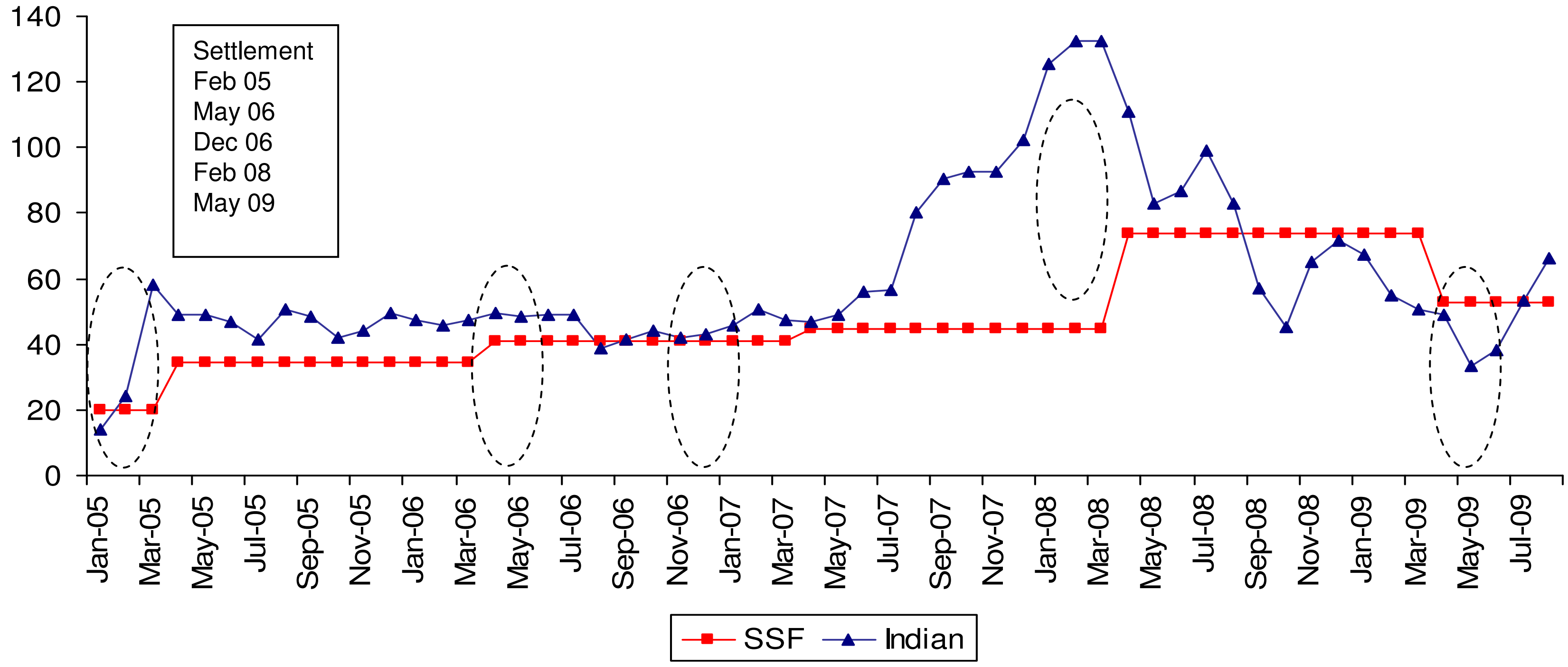




Source: UNCTAD and Hatch Beddows

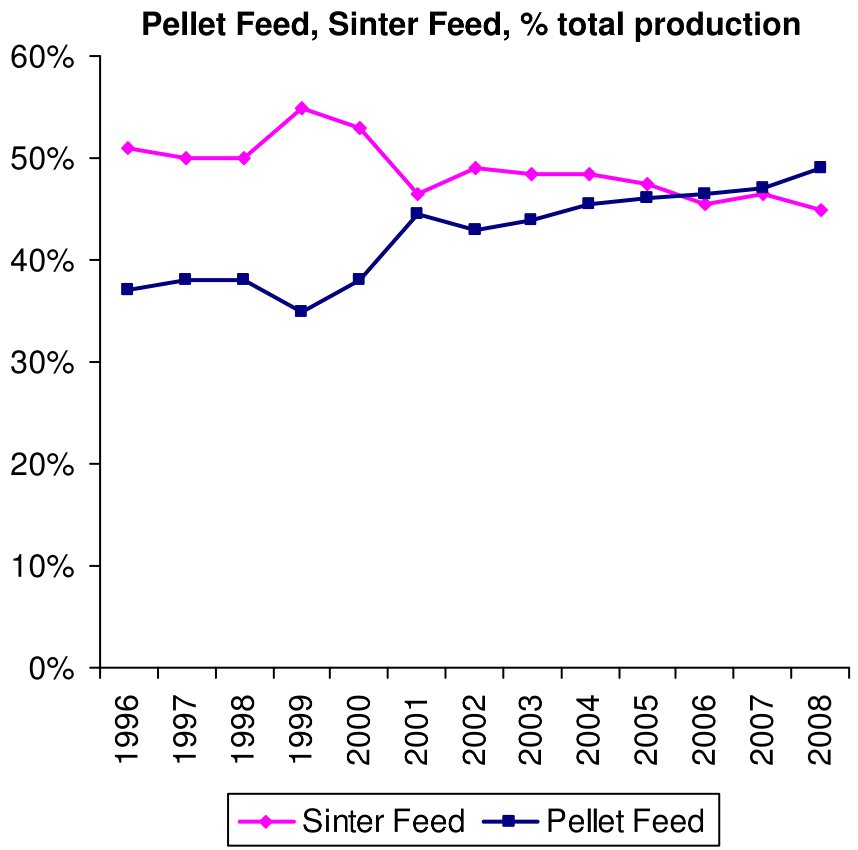
There is also a relationship between the Chinese spot import market and global benchmark settlements

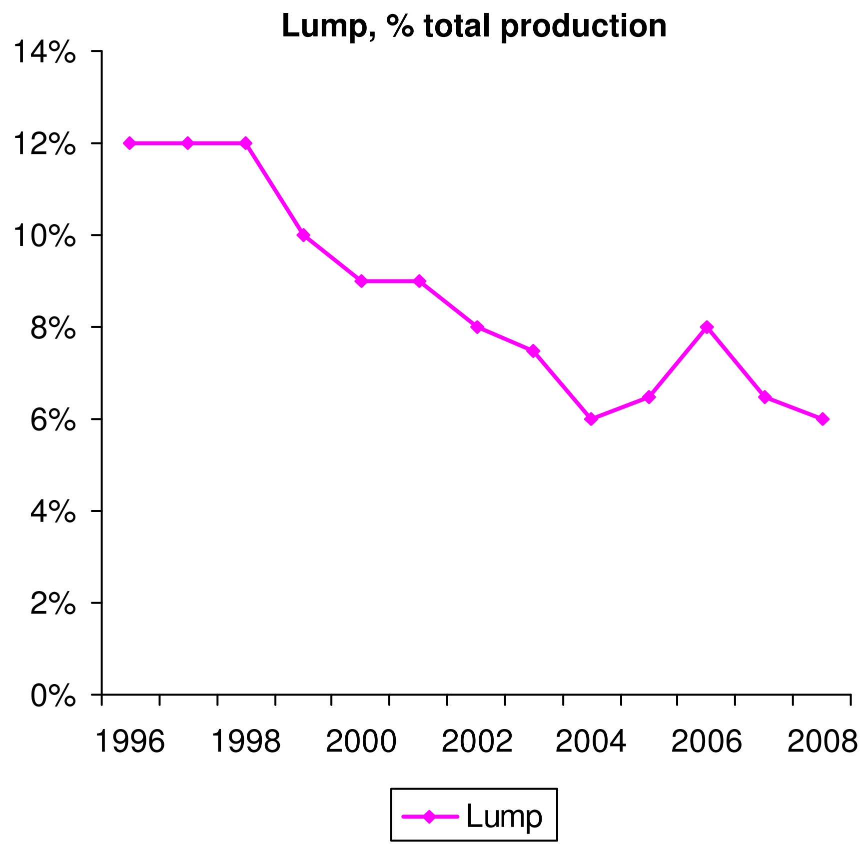
China spot Indian iron ore minus freight & actual Brazilian SSF FOB Asia Benchmark U$/Mt



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

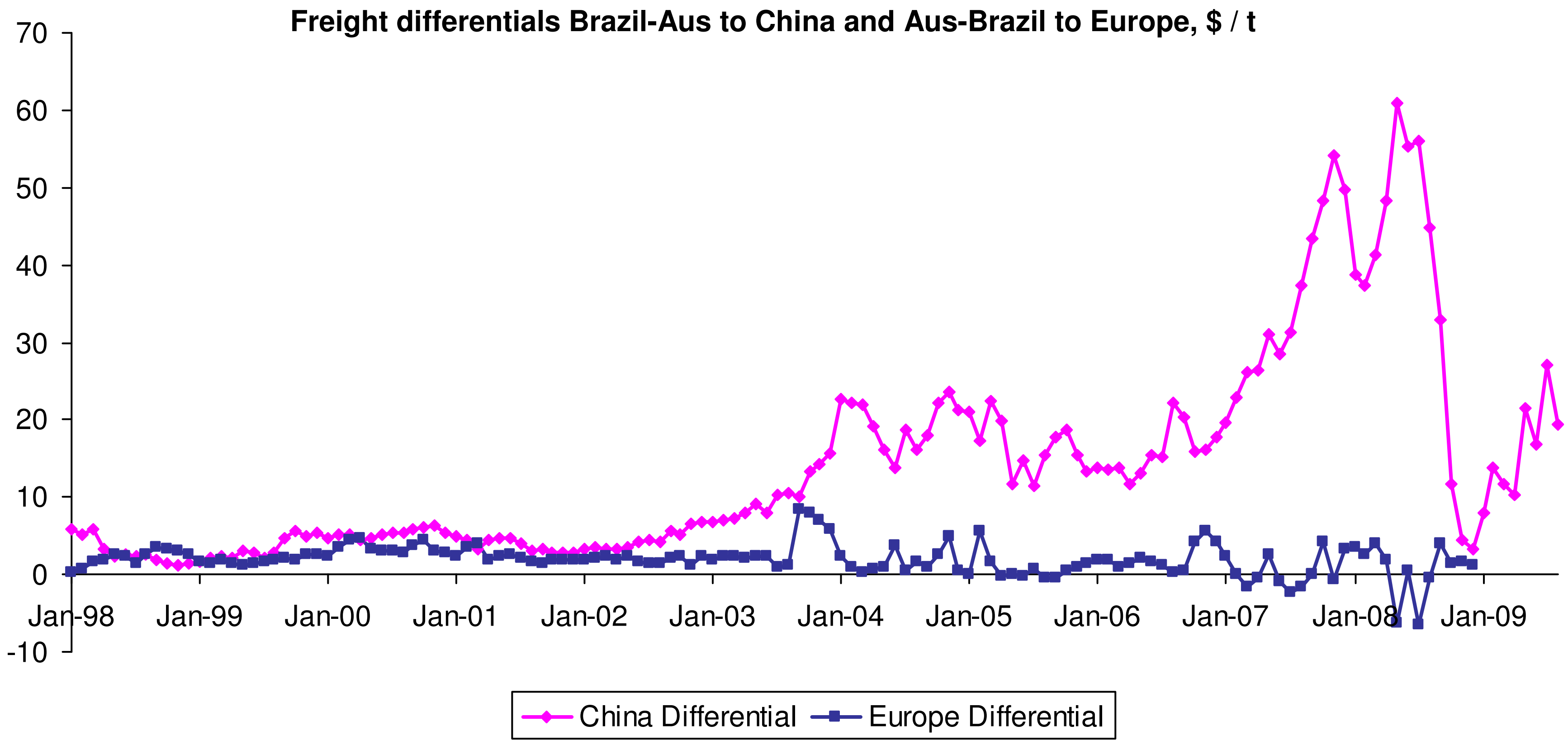
The tendency is for existing mines to yield less lump and more pellet feed over time. New projects are weighted towards concentrating magnetite ores and producing pellet feed. This challenges conventional burdening of BF's





Source: Hatch Beddows

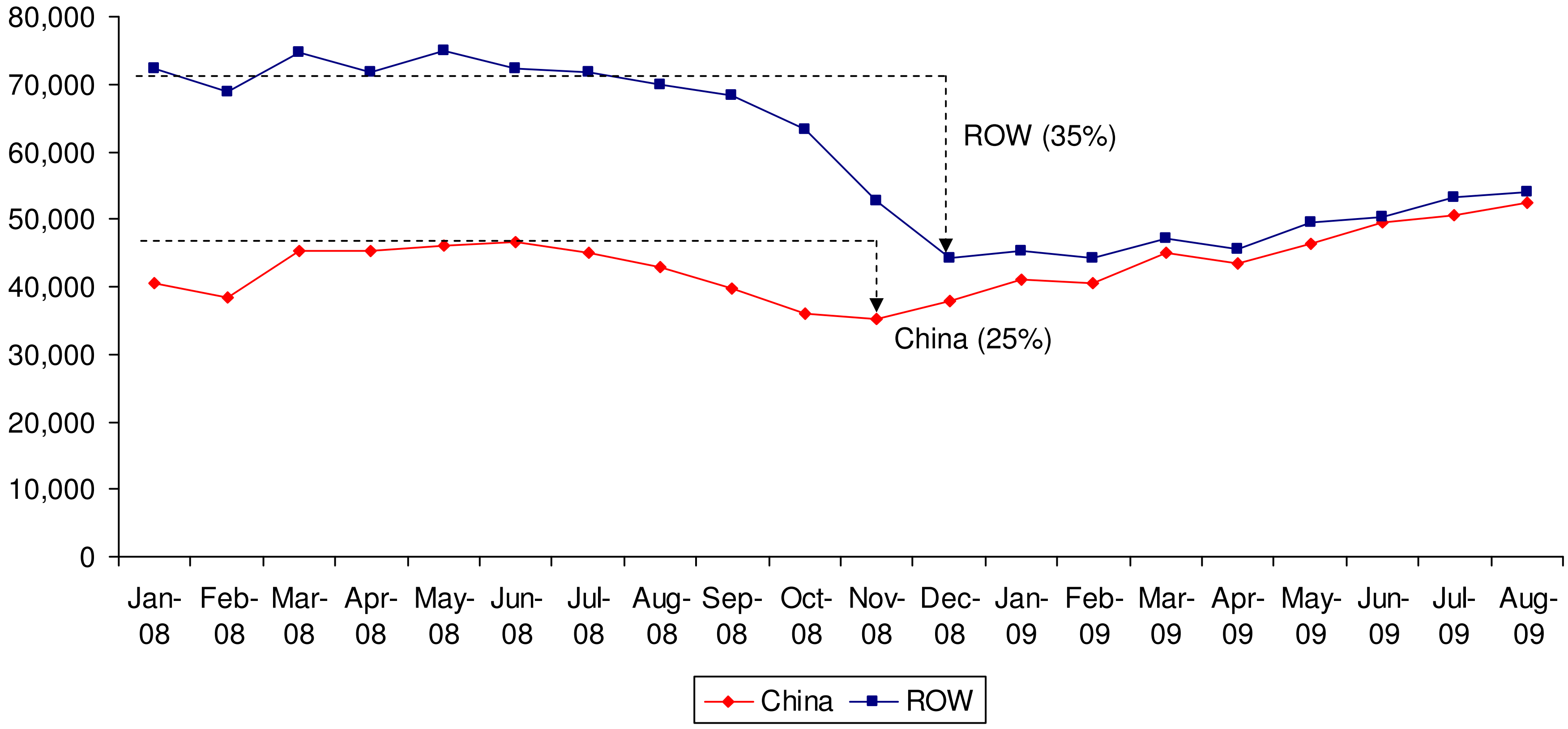
Freight is a major cost element for integrated steel producers. China's demand for iron ore has shifted pricing on the front haul leg significantly.



Source: UNCTAD, Drewry Shipping, Tex Report & Hatch Beddows

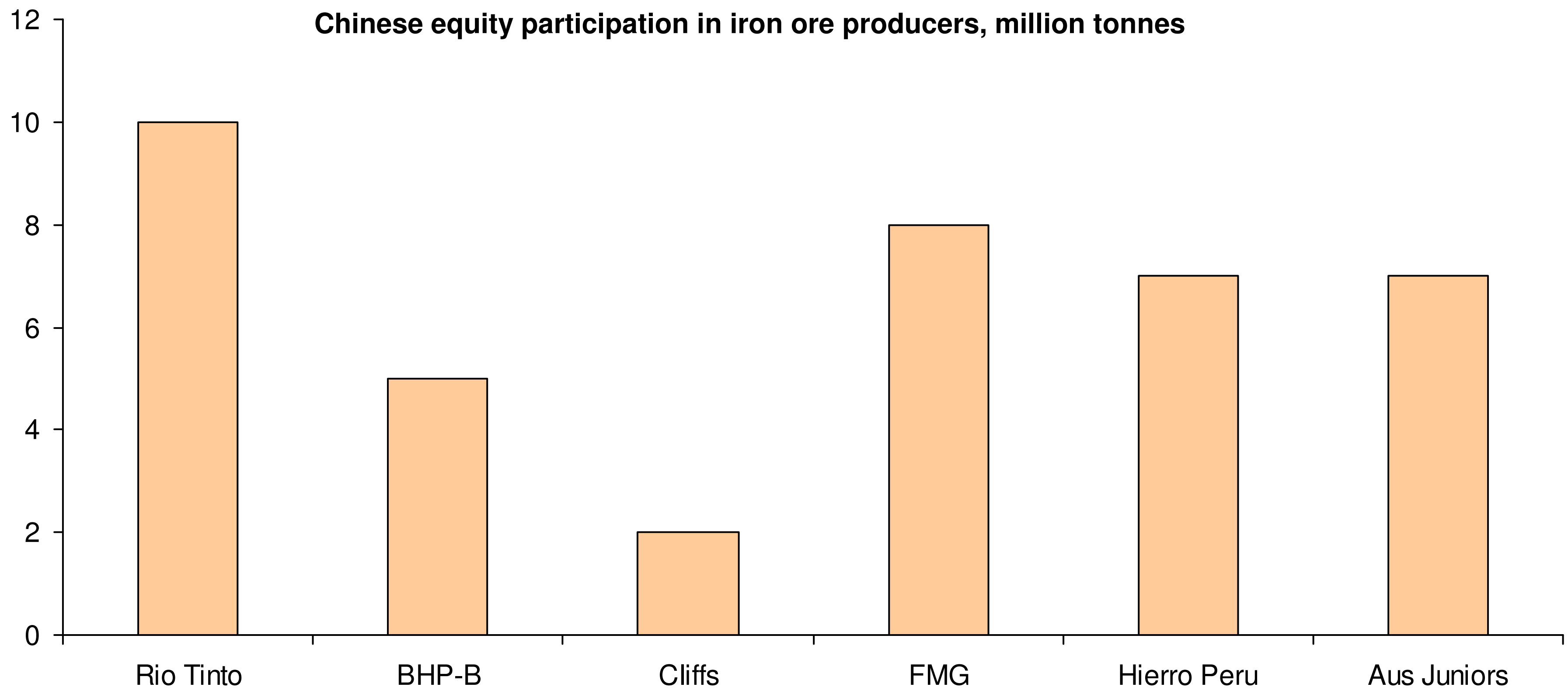
From the lows in Q4 2008 crude steel production in China has recovered 149% compared to a more modest 122% for Rest of World (ROW)

Crude Steel Production by month, million tonnes



Source: WSA, Hatch

Chinese participation in international iron ore producers currently accounts for less than 10% of 2009 imports. However Chinese funding may ultimately determine which of the +50 junior mining iron ore projects are developed



Forecast crude steel production with Chinese production peaking in 2009/10

Crude Steel Production, million tonnes

	2008	2009 f	2010 f	2011 f	2012 f
Europe	206	124	134	144	154
China	501	532	530	500	505
Others	620	444	485	526	568
World Total	1,327	1,100	1,149	1,170	1,227

Implied forecast for seaborne iron ore trade

Seaborne traded iron ore forecast supply & demand, million tonnes

Demand	2008	2009	2010	2011	2012	2013
Europe	138	115	125	134	143	153
China	444	583	560	486	551	559
Others	274	168	189	212	233	251
World Total	856	866	874	832	927	963
Supply						
Big 3	598	594	689	731	771	771
India	100	95	90	40	40	40
Others	184	218	250	266	276	293
World Total	882	907	1,029	1,037	1,087	1,104

Mkt Balance	26	41	155	205	160	141
%	3%	5%	15%	20%	15%	13%

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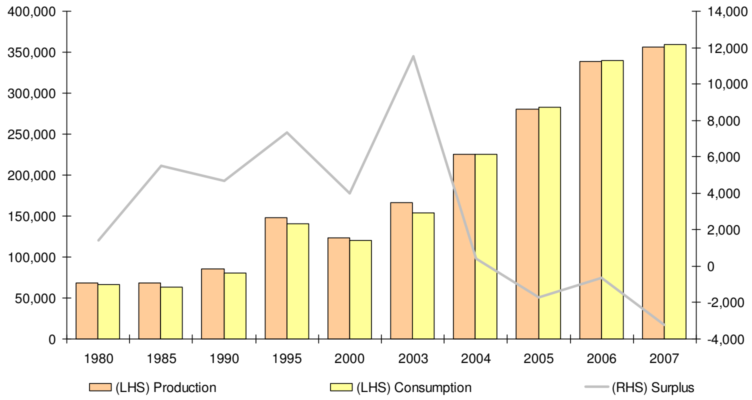
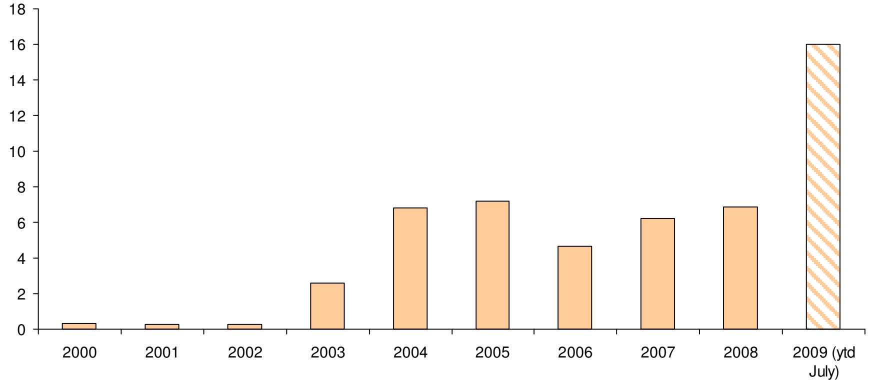
IMPLICATIONS FOR COKING COAL

China has been largely self sufficient in coking coal. This has changed to increasing reliance on imported coals. Further substitution through PCI is unlikely as rates are approaching best practice

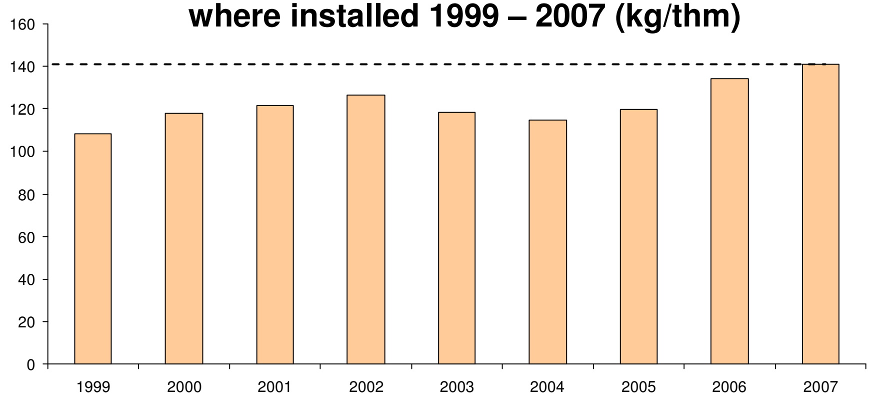
Chinese production, consumption and surplus of coking coal (kt)



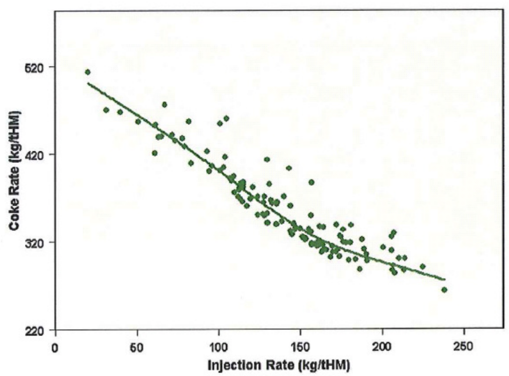
Chinese coking coal imports, 2000 – 2009, Mt



Chinese average Pulverised Coal Injection (PCI) rates, where installed 1999 – 2007 (kg/thm)



Relationship between BF Coke rate and PCI Injection rate



Source: IEA, Jellinbah Resources, CoalTech Pty, SBB, Tex Report and Hatch Beddows

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Summary

- European Steel
  - New post financial crisis paradigm suggests a return to over capacity and the need for further rationalisation

- Iron Ore
  - The seaborne industry is increasingly dominated by Asia and particularly China
  - Pricing intervention from the Chinese Government
  - Availability of traditional natural lump and sinter fines

- Coking Coal
  - China becoming increasingly dependant on seaborne trade
  - PCI substitution is reaching practical limits
  - Shift of Chinese Mills to coastal locations:
    - competitiveness of imported coals
    - large BF's need quality materials

Thank you

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