

Metal Bulletin

Examining carbon price and its implications

**Steel & The Environment - Carbon Abatement &
Trading, London**

29 – 30 September 2008



Mike Walsh, Director, London

Hatch Beddows



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
- 8100 highly skilled people serving clients worldwide
- US\$85 BN 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 leading strategy consulting service specialising in the global steel and related industries

- Hatch Beddows has unrivalled experience in the global iron, steel and related industries. We combine creativity, intellectual rigour and in-depth industry knowledge supported by Hatch's global reach and resources – 8100 high skilled people in 80 countries worldwide
- Hatch Beddows provides the following suite of services to its clients worldwide
 - Corporate strategy development
 - Business unit strategy development
 - Corporate development and restructuring
 - Competitive analysis and marketplace positioning
 - New product and market development
 - Investment analysis
 - Market analysis
 - Business planning

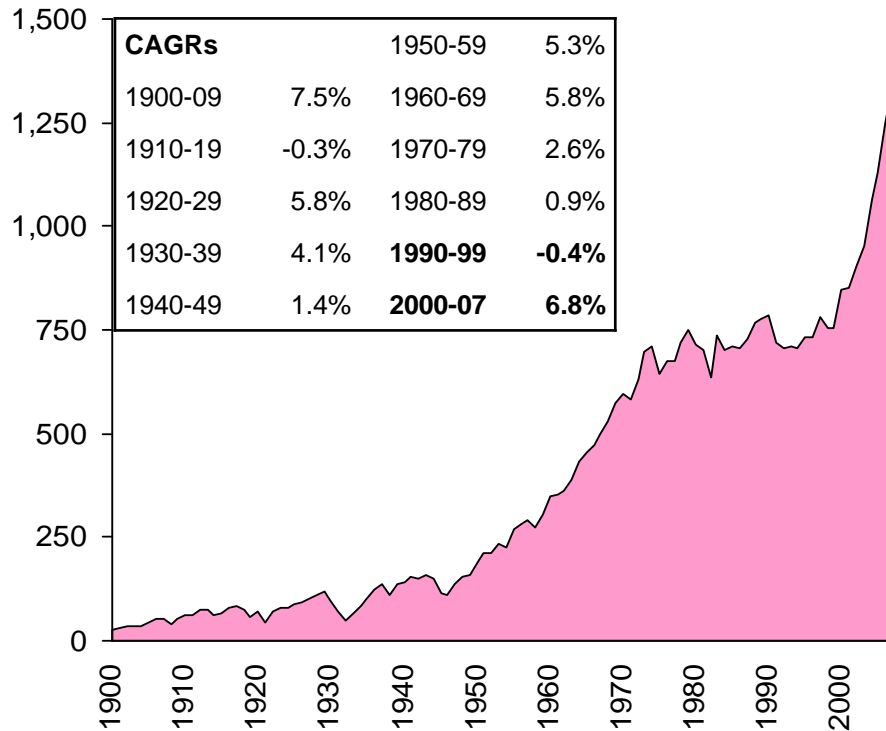
Hatch Beddows brings together a unique combination of commercial and technical knowledge and expertise to provide unparalleled benefits for its clients

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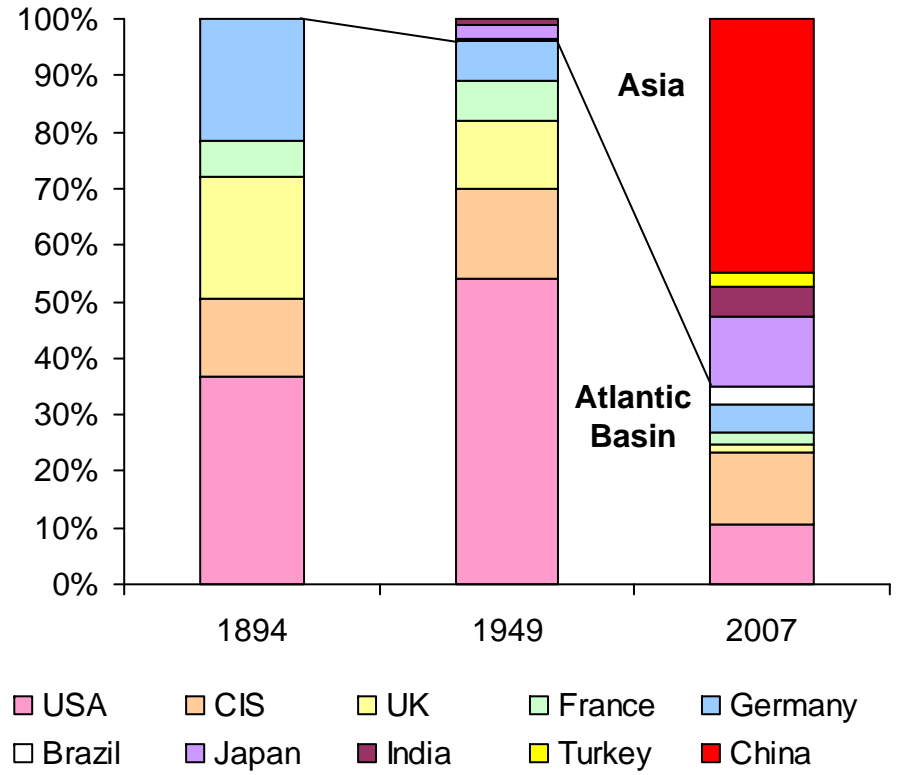
- **Global steel market**
- Carbon cost
- Scenarios

We all know steel is booming just like it always has – but production is no longer Atlantic based!!

Global steel production and growth rates

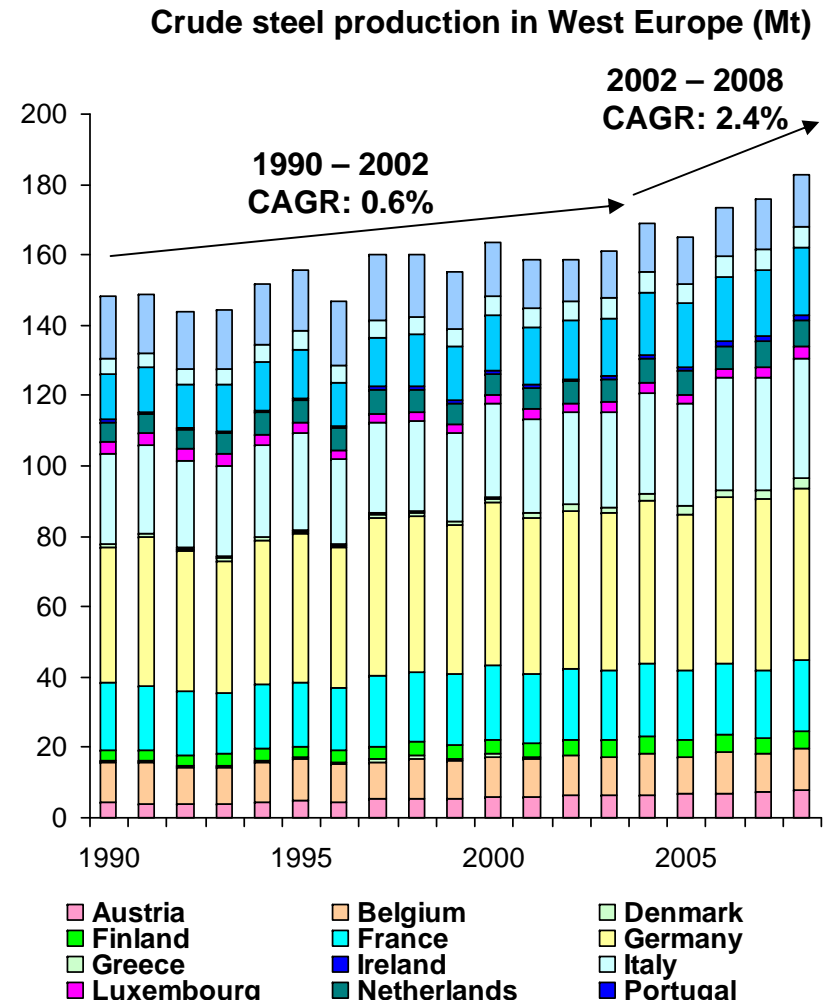
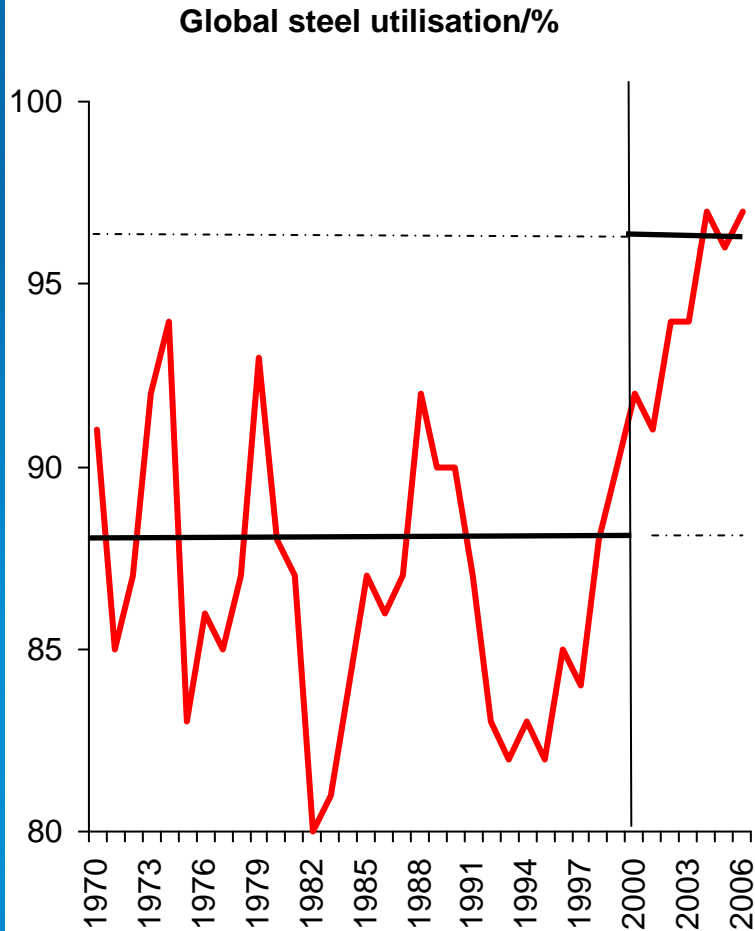


Steel production by region



EXAMINING CARBON PRICE AND ITS IMPLICATIONS - GLOBAL STEEL MARKET

It is therefore no surprise that steel mill utilisation is now higher than 95% and even West European steel production has grown four times faster than the previous decade



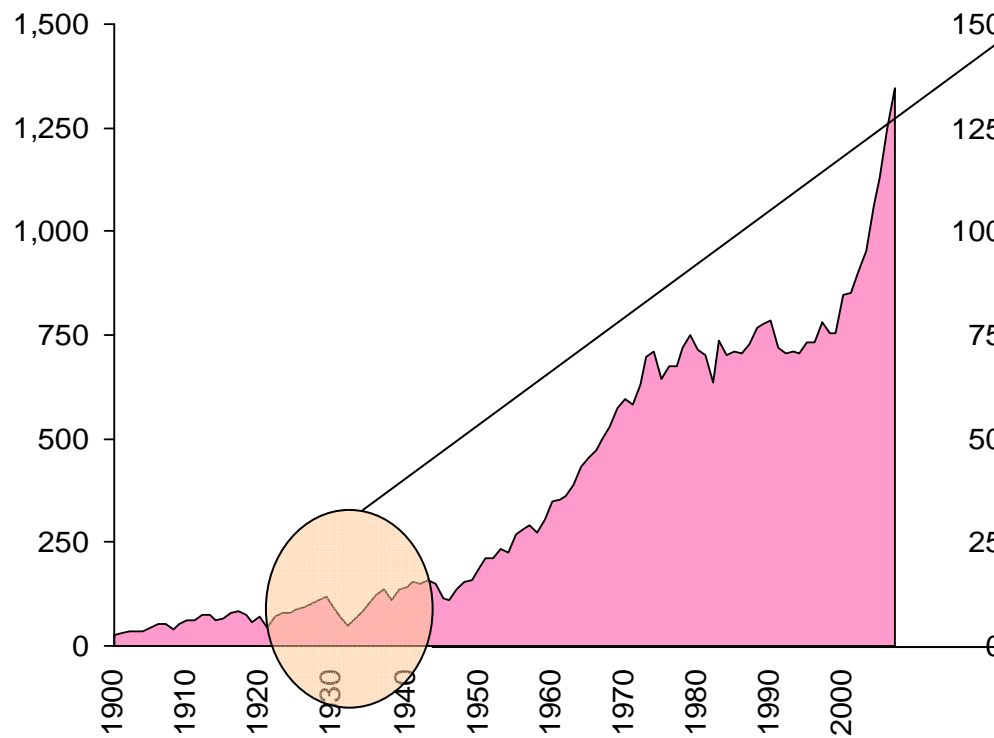
Source: IISI, OECD, ArcelorMittal and Hatch Beddows

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EXAMINING CARBON PRICE AND ITS IMPLICATIONS - GLOBAL STEEL MARKET

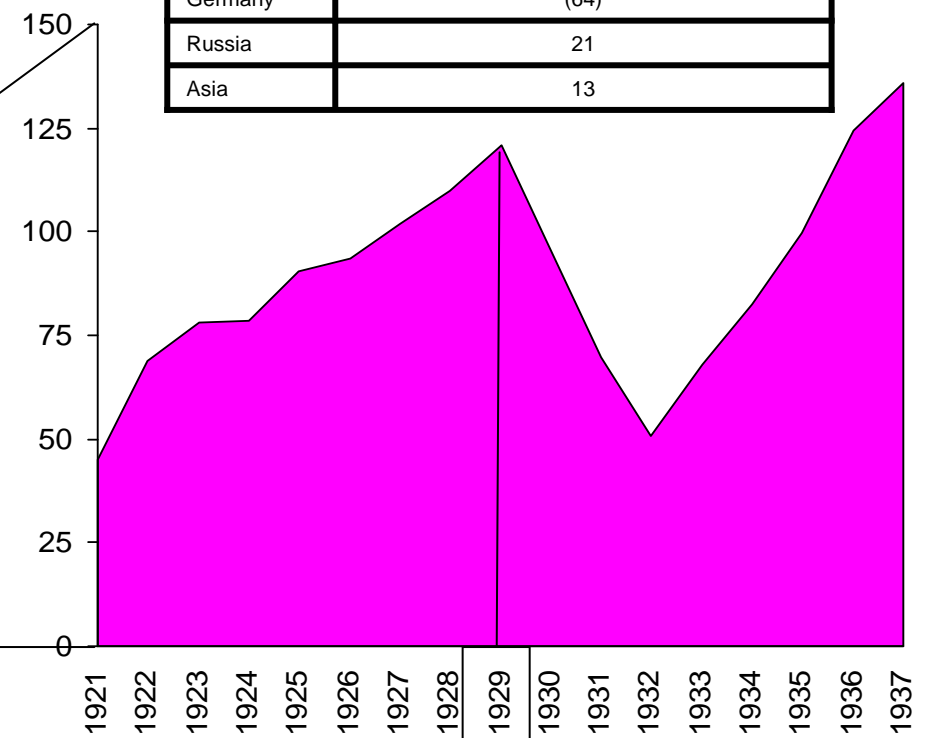
So what could derail the train? First and foremost, who knows what the short term markets hold in store?

Global steel production and growth rates



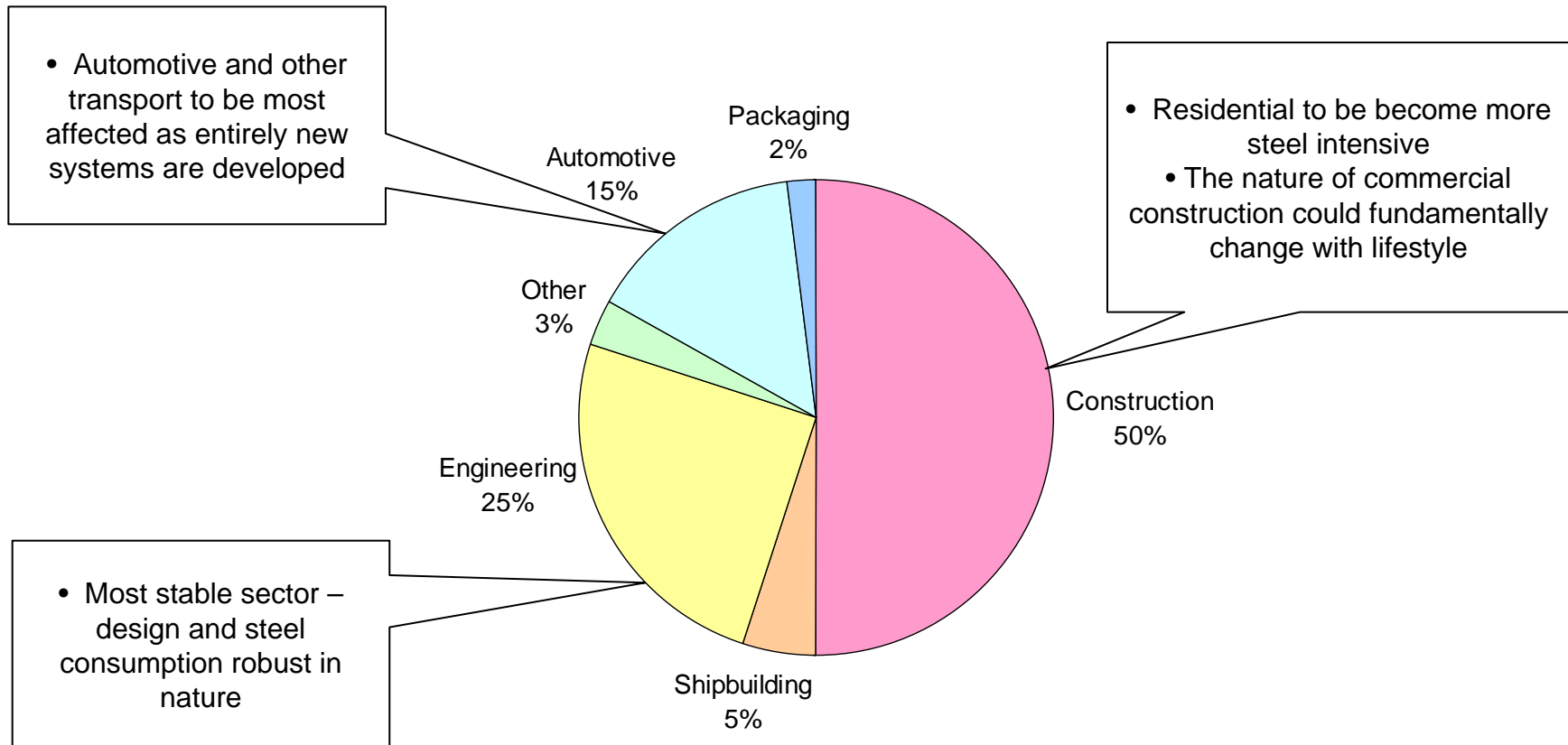
Global steel production 1921 – 1937/Mt

| | 1929 – 1932 Steel Production Growth/% |
|---------|---------------------------------------|
| USA | (75) |
| UK | (45) |
| France | (41) |
| Germany | (64) |
| Russia | 21 |
| Asia | 13 |



Environmentalism, in its widest sense, is the other great unknown for steel and indeed all materials! In the long term it will be the demand side that will be most affected with both positive and negative drivers

Current consumption of steel worldwide



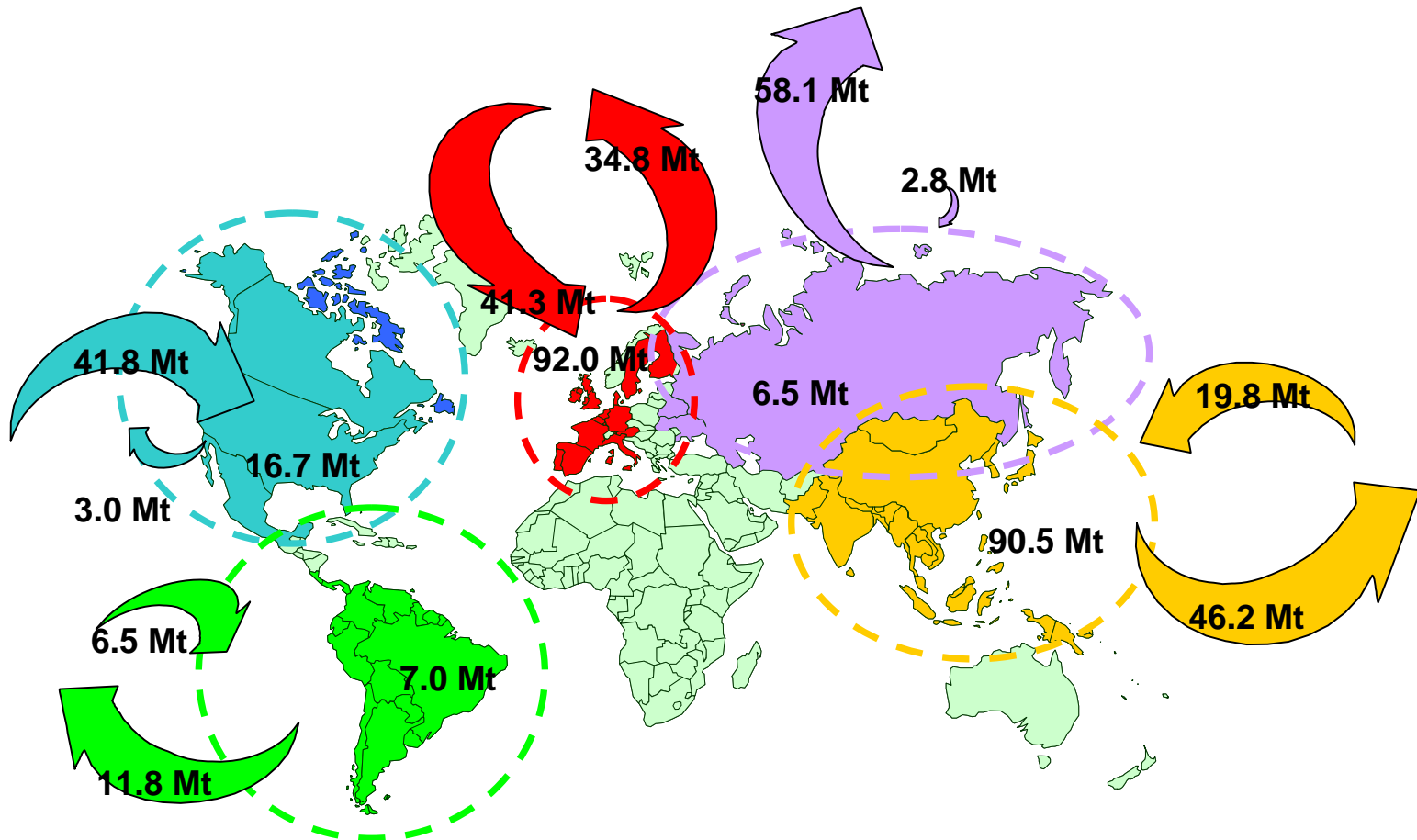
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EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

In the post Kyoto short term, the EU steel industry may have to incur a unilateral carbon price in its cost base for a product that is essentially commodity in nature and more globally traded than any other material

Global inter – regional steel and internal trade flows 2006



Note: Trade covers the ISSB definition of steel mill products

Source: ISSB and Hatch Beddows

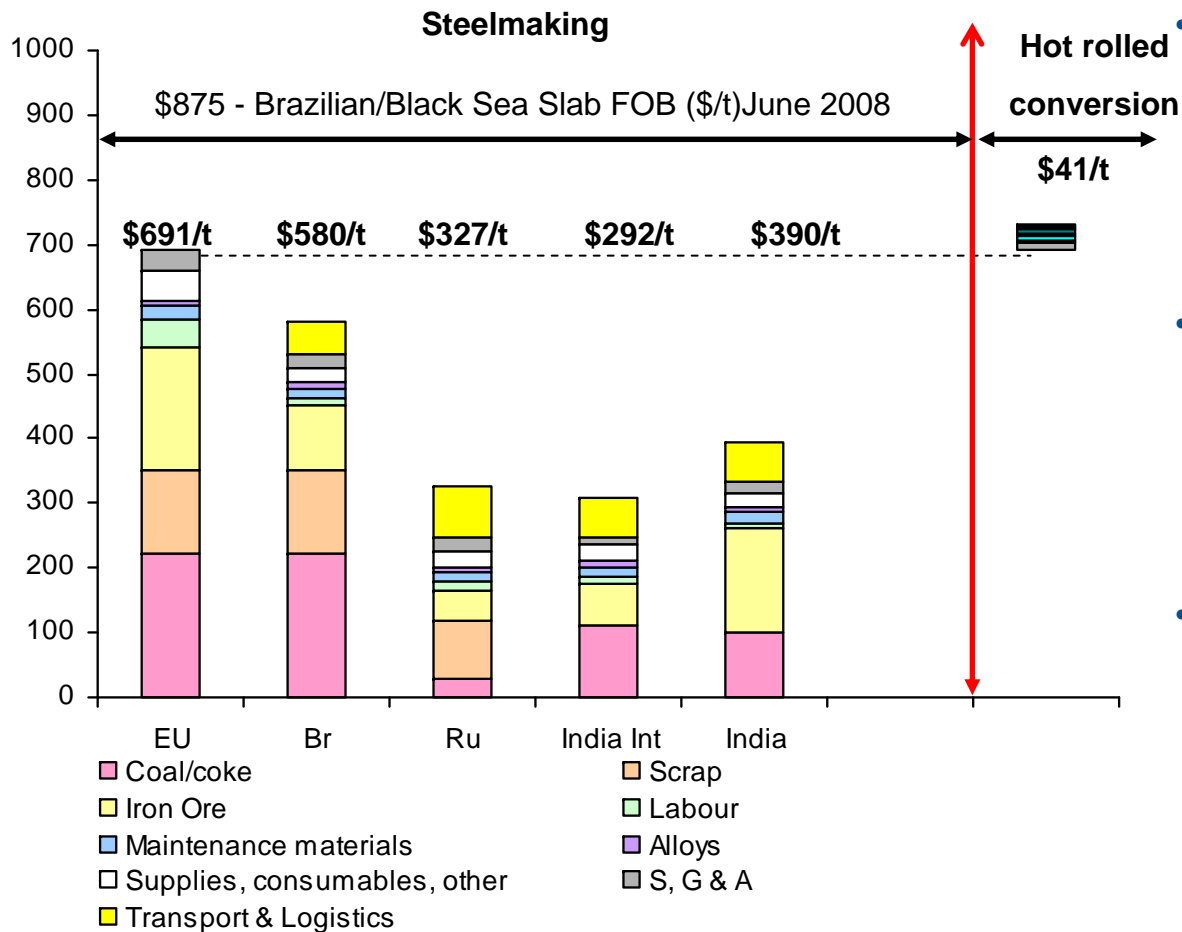
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EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

As far as the integrated steel industry is concerned – the cost base of slab production is the key driver for site IRRs and company profitability

Landed slab cash costs 2009 and hot rolling conversion (\$/t)

Strategic advantages:-



Brazil

- Iron ore: FOB market prices (\$130/t), only CSN has significant iron ore rights
- Coal/coke: No different than W. Europe (\$300/t)
- Freight costs at \$50/t

Russia

- Iron ore: Almost total self sufficiency on integrated Russian resources – ROM costs plus transport cost which can be a factor
- Coal: As above though distance plays greater part

India

- Iron ore: ownership only currently exists with SAIL and Tata. Others purchase at FOB market price, though acquisition from state may become option in future
- Coal/coke: Most use 50:50 Indian supply at FOB market price and CFR market price as per W. Europe

EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

An imposition of a further nominal €50 variable cost element for EU producers would have a very substantial effect in almost eliminating any EBITDA margins on local slab production for current market conditions

EBITDA gross margins for representative EU and Russian steelmakers with and without carbon costs

| | Current Cost Structure for Slab Production | | Proposed Cost Structure including €50 Carbon Costs for Slab Production | |
|------------------------------|--|--------|--|--------|
| | EU | Russia | EU | Russia |
| EBITDA Gross Margin/% | 13.6 | 59.1 | 4.3 | 59.1 |

- Given that 10 - 15% is an acceptable margin, the implication of such a reduction in cash flow would be extreme, where any kind investment, including essential maintenance, would be almost impossible

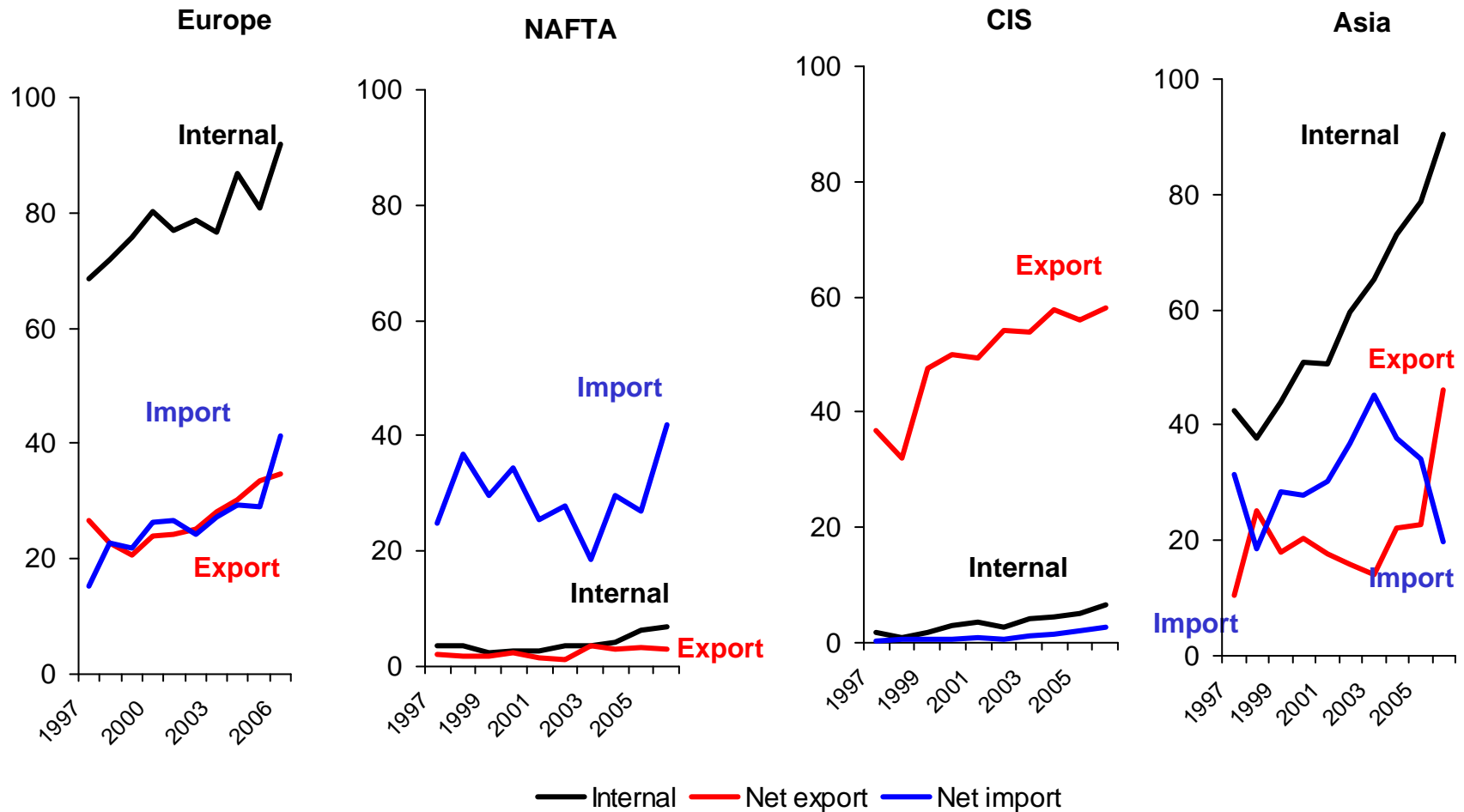
The analysis concerning the competitive impacts for finished steel products, actually consumed within a manufacturing value chain is necessarily different, immensely complex and beyond classic macro-economic and academic theory!!

- The ability to recover an additional €50 cost within the crude steel production component of all EU derived steel products will of course depend on a multitude of internal and external factors
- The main factor leading cost recovery is the ability of the European market to protect its own market from lower cost imports with products and services that for the time being at least must be purchased from within the European market
- Thus, various product markets are broken down by elements that define the fraction that remains necessarily European in origin. The factors are:-
 - Tactics to differentiate products
 - Internal consumption
 - Service elements
 - Delivery elements
- After the above elements are identified, the remaining fraction is the “elastic” element of the market
 - This is the fraction of the market that is exposed, first and foremost to price and is most vulnerable to 3rd country imports

EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

Steel trade and its drivers determine carbon leakage - 400 Mt of steel now crosses a border and over 200 Mt is consumed outside of its region of production – CIS and Asia also dominate trade

Regional internal trade, net exports and net imports/Mt

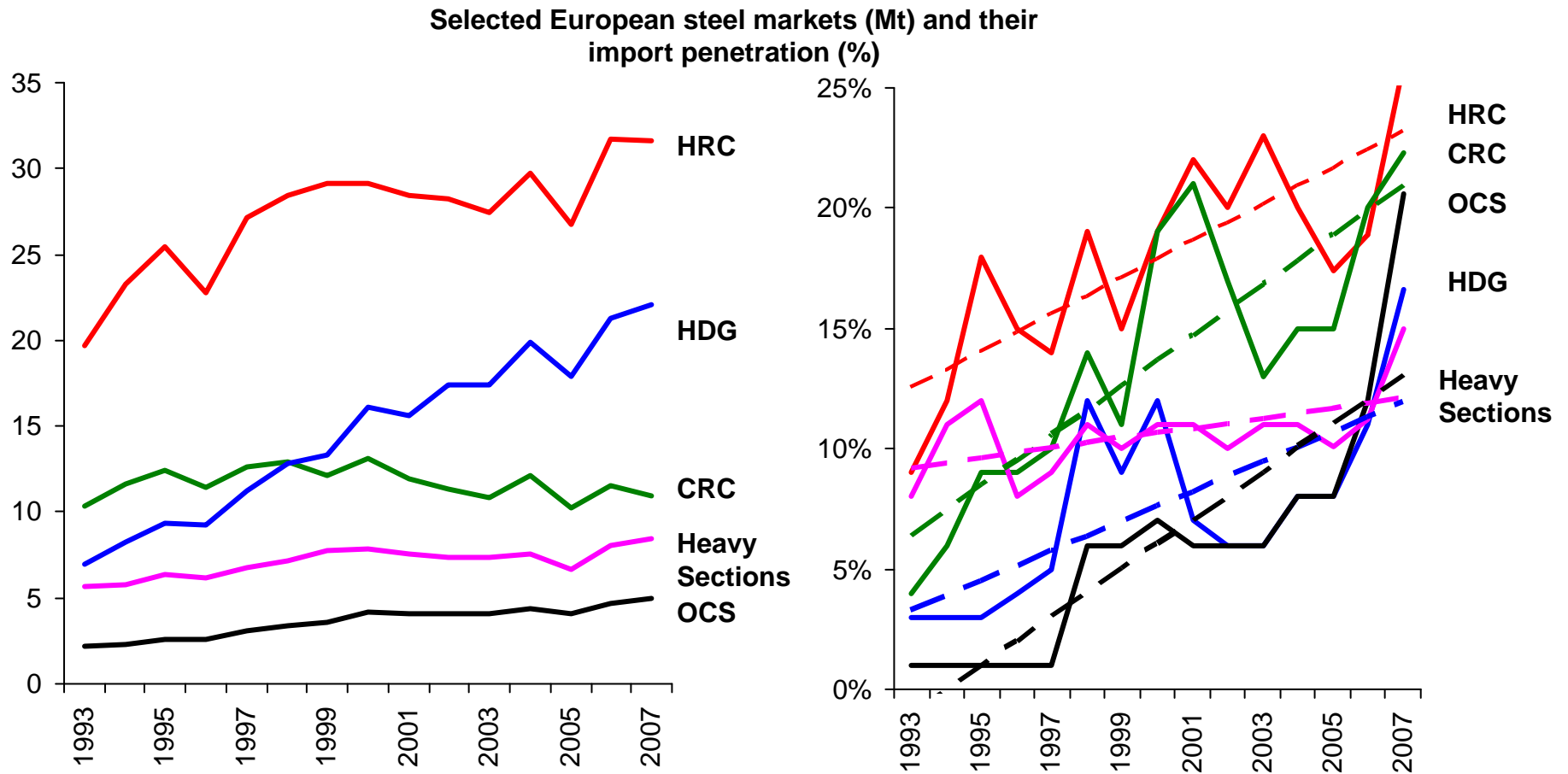


Source: ISSB and Hatch Beddows

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EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

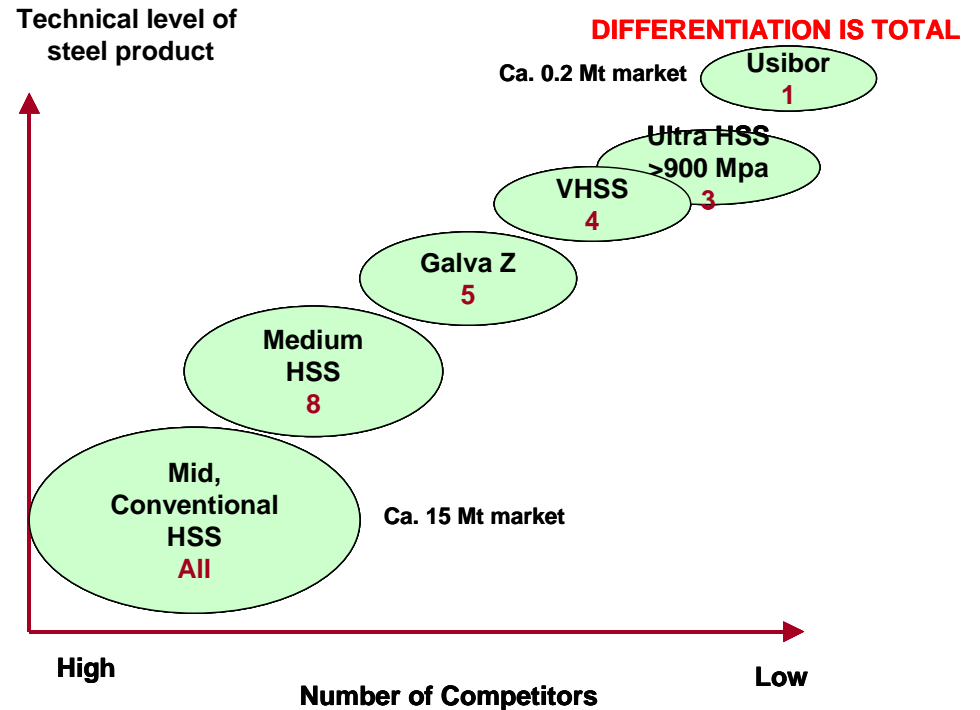
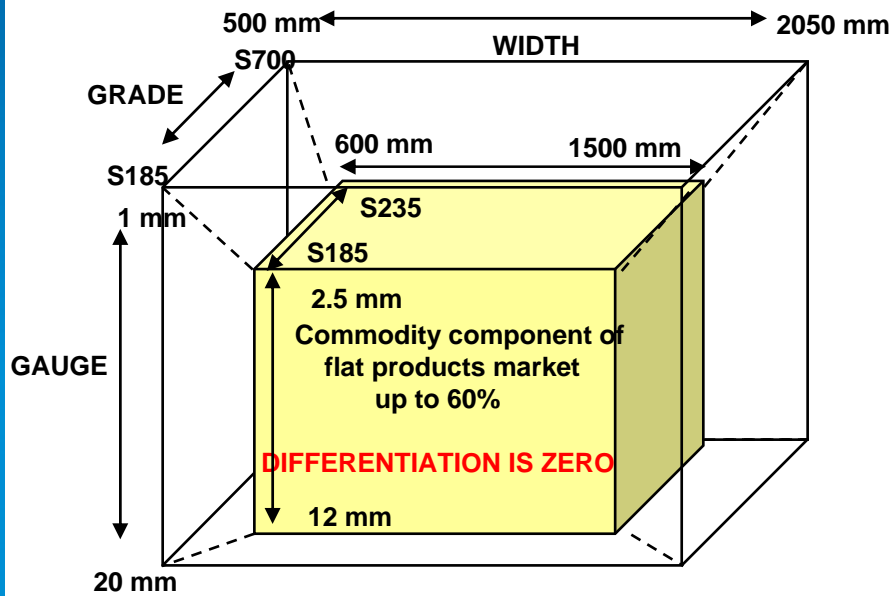
All European flat steel markets, no matter how sophisticated, now face evermore market 3rd country penetration – is there a limit?



EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

Steel products are either commodity or functional – despite what integrated mills may say, a lot of steel is commodity that can be manufactured by any producer in the region as well as many outside the region

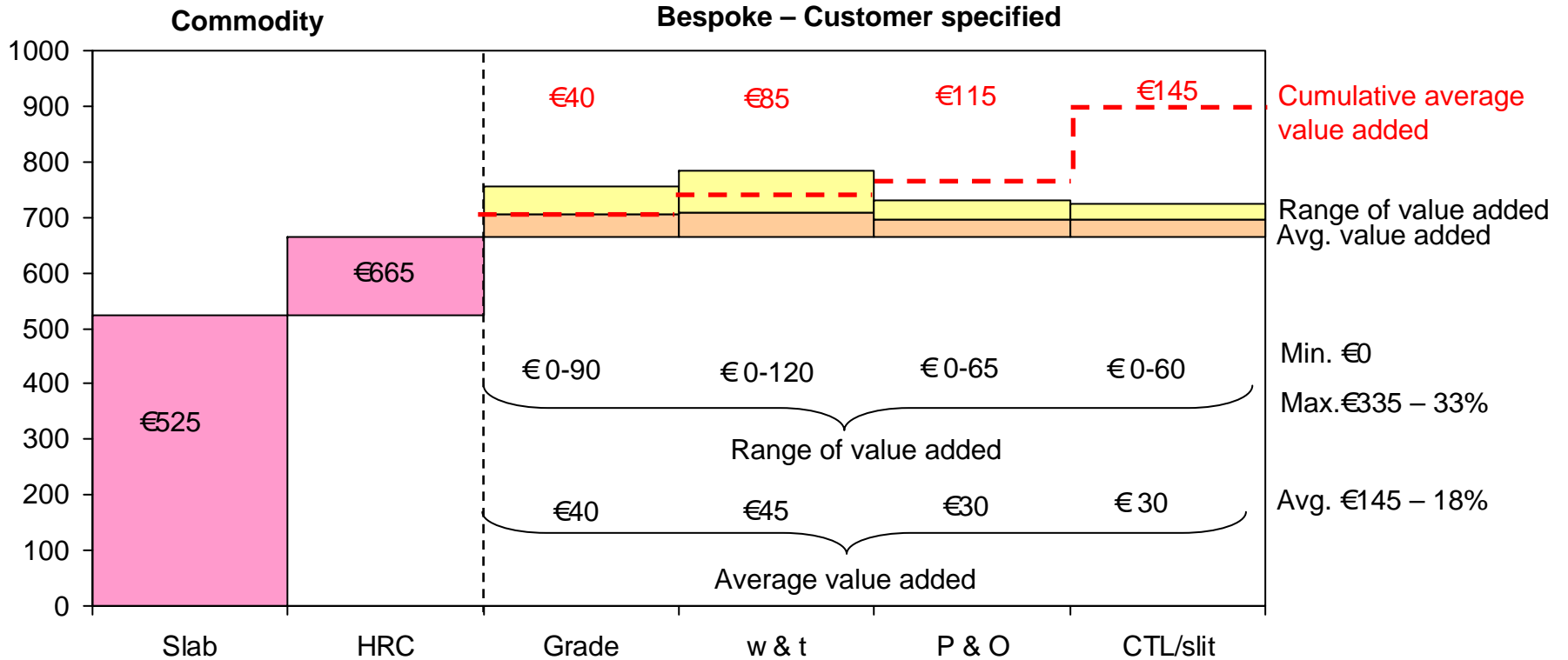
Schematics illustrating a) commodity nature of HRC products and b) competitive supply of functional automotive bodywork steels



EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

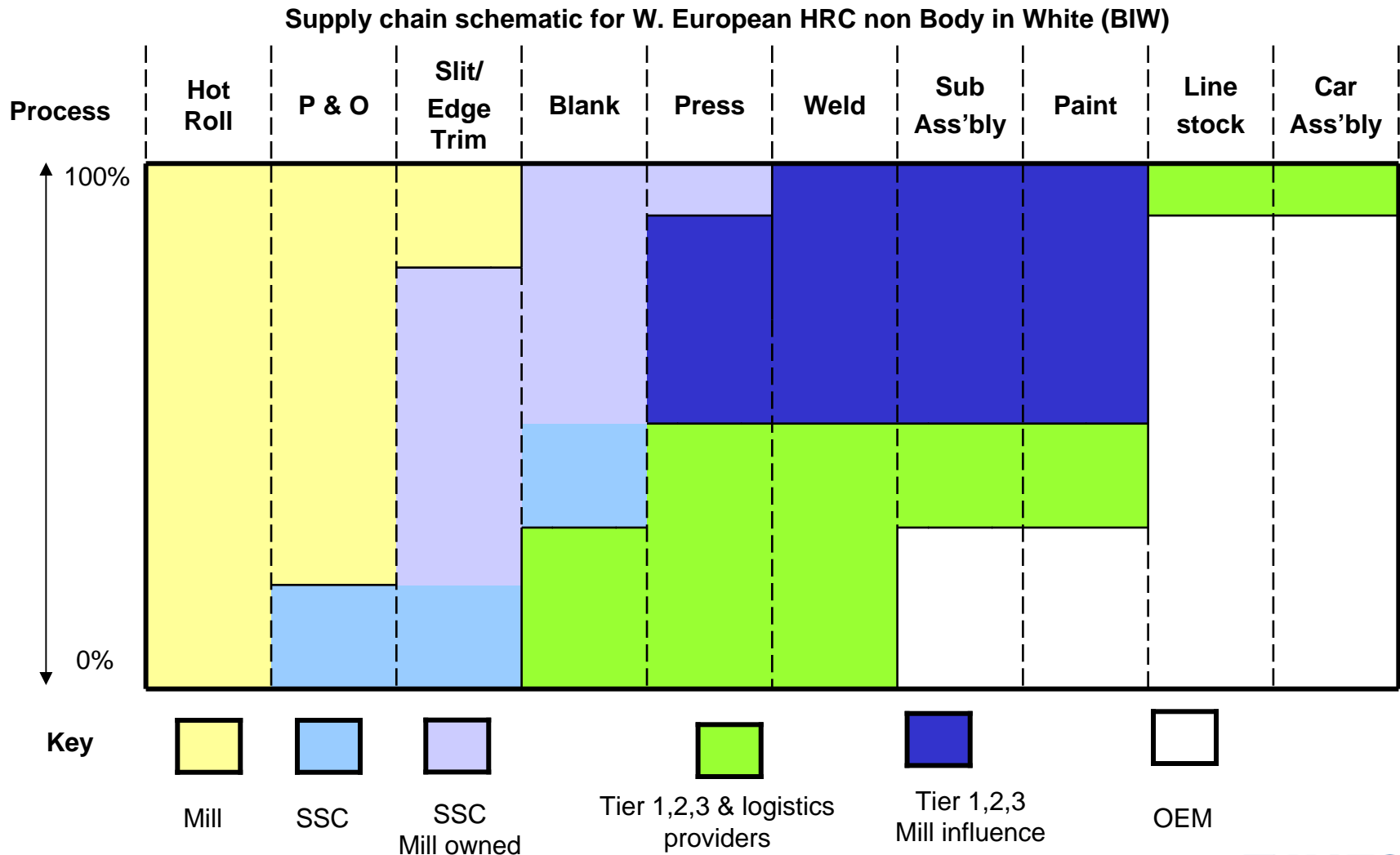
The oft quoted basis price is just that – the basis, with no steel traded at such a price – typical value added is for European commodity HRC is 18% and be more than 30%

Value chain for European HRC/€2007



EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

Europe also operates with very sophisticated supply chains that tend to specify European steel and its associated services such as JIT, consignment stock and VMI etc. – each process step is subject to import penetration



EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

European supply chains are also heavily influenced by downstream mill based integration which vary by company and by depth so distorting further the dynamics of price elasticity

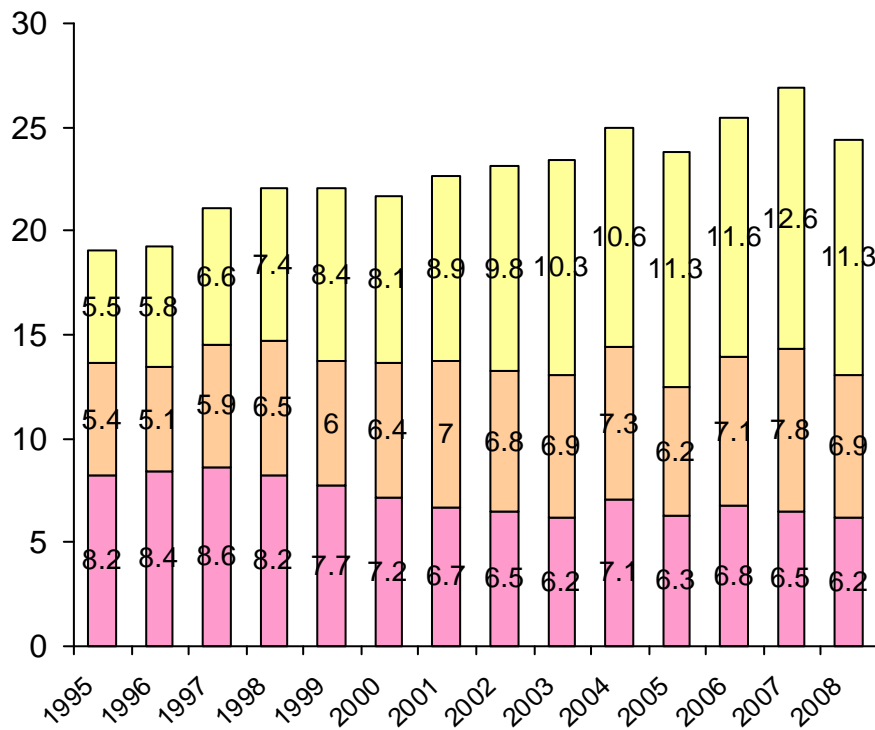
Sample European wire rod and wire producers

| | Rod Production/Mt | Wire Production/Mt | Fraction/ % | Wire Products |
|---------------|-------------------|--------------------|-------------|--|
| ArcelorMittal | 2.85 | 1.23 | 43 | Low quality, tyre cord, beadwire nails |
| Saarstahl | 1.40 | 0.30 | 21 | - |
| Corus (SRM) | 0.94 | 0 | 0 | - |
| CELSA (GSW) | 0.80 | 0.41 | 51 | PSC products |
| voestalpine | 0.45 | 0.18 | 40 | Fasteners |

EXAMINING CARBON PRICE AND ITS IMPLICATIONS - CARBON COST

The total steel consumption of the UK shows the changing nature of steel trade and the supply chain

TOTAL steel market in the UK/Mt



| Nature of steel | CAGR |
|--|-------|
| Steel contained in imported manufactured goods | 5.6 |
| Imported steel mill products | 1.9 |
| Steel mill products from UK mills | (2.1) |

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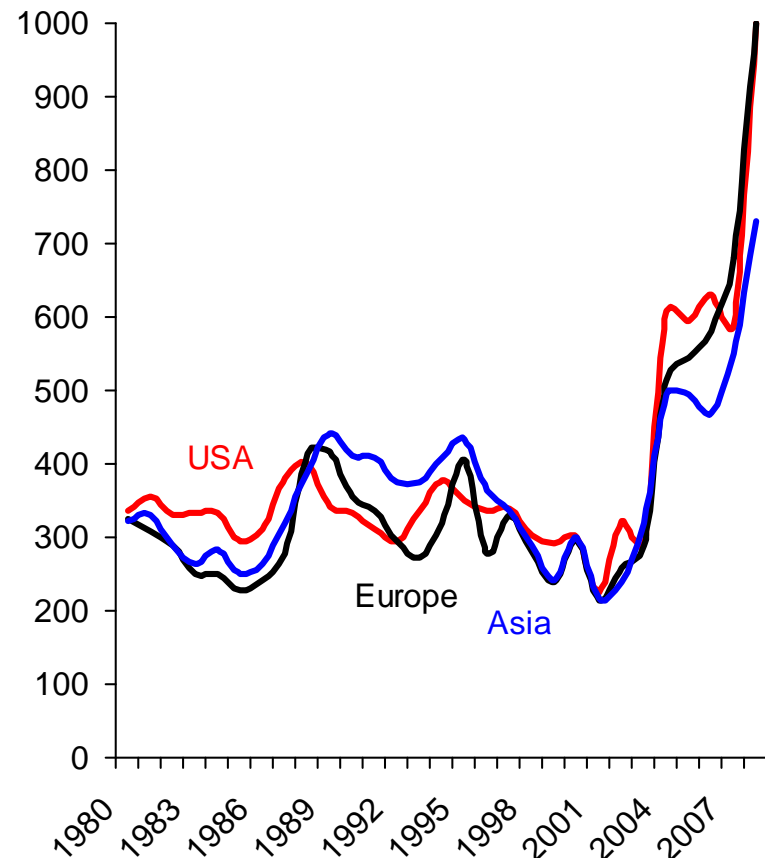
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EXAMINING CARBON PRICE AND ITS IMPLICATIONS - SCENARIOS

In the long term, regional prices for different steel products tend to follow similar trends driven primarily by the regional steel supply and demand balance

- In the long term, regional prices for different steel products tend to follow similar trends driven primarily by the regional steel supply and demand balance
- However, on a more short-term basis, different regional markets will be out of step with each other creating regional price differences or arbitrage
- The high capital intensity of steel production is such that large fixed costs constantly need to be recovered
 - This and the nature of blast furnace, BOS and hot rolling production etc. dictate that plants need to operate at near maximum levels to be economically viable
 - Further, any capacity in one region, in excess of its own market requirement will target a market where the price is most advantageous thereby increasing import penetration

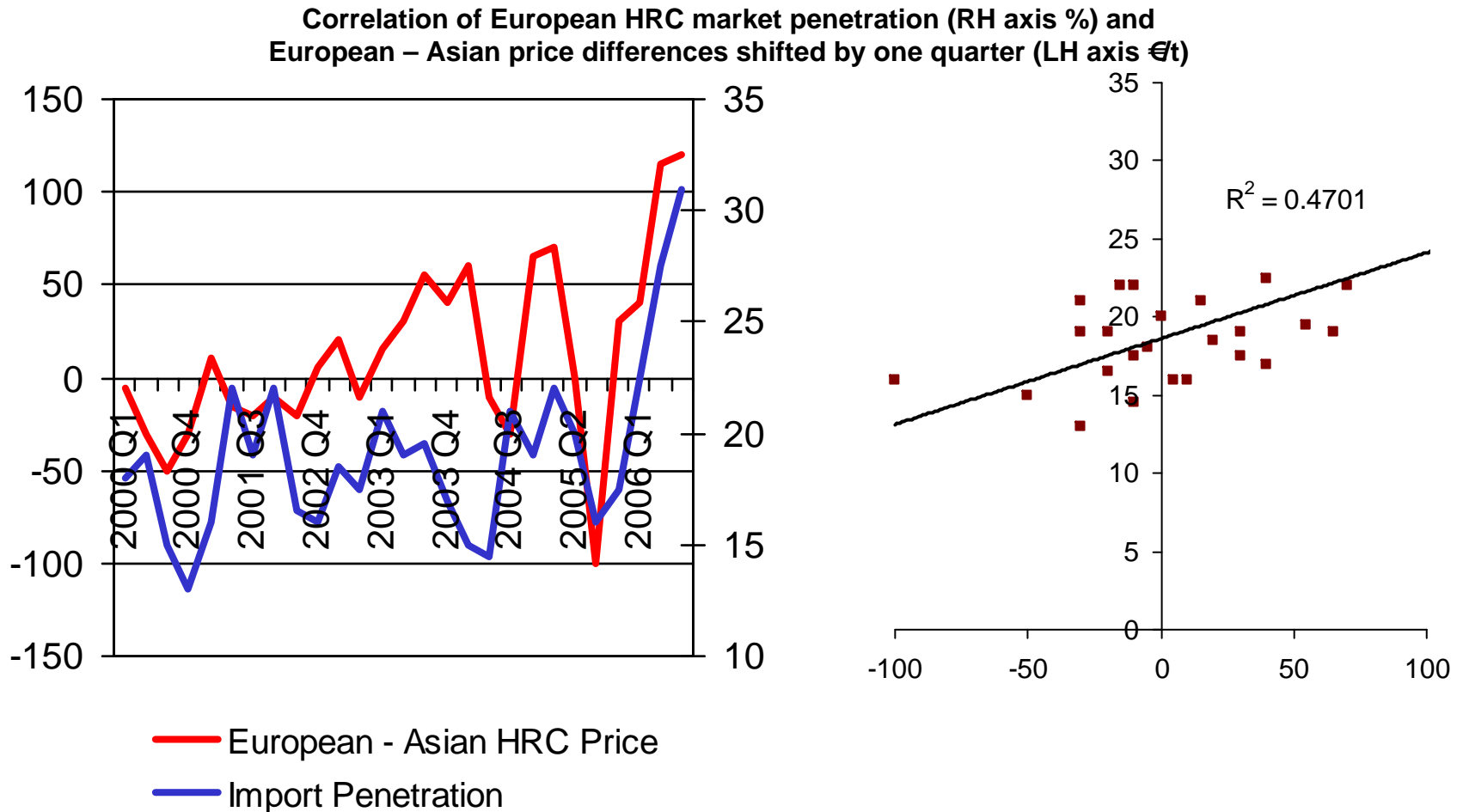
Yearly average HRC prices by region (\$/t)



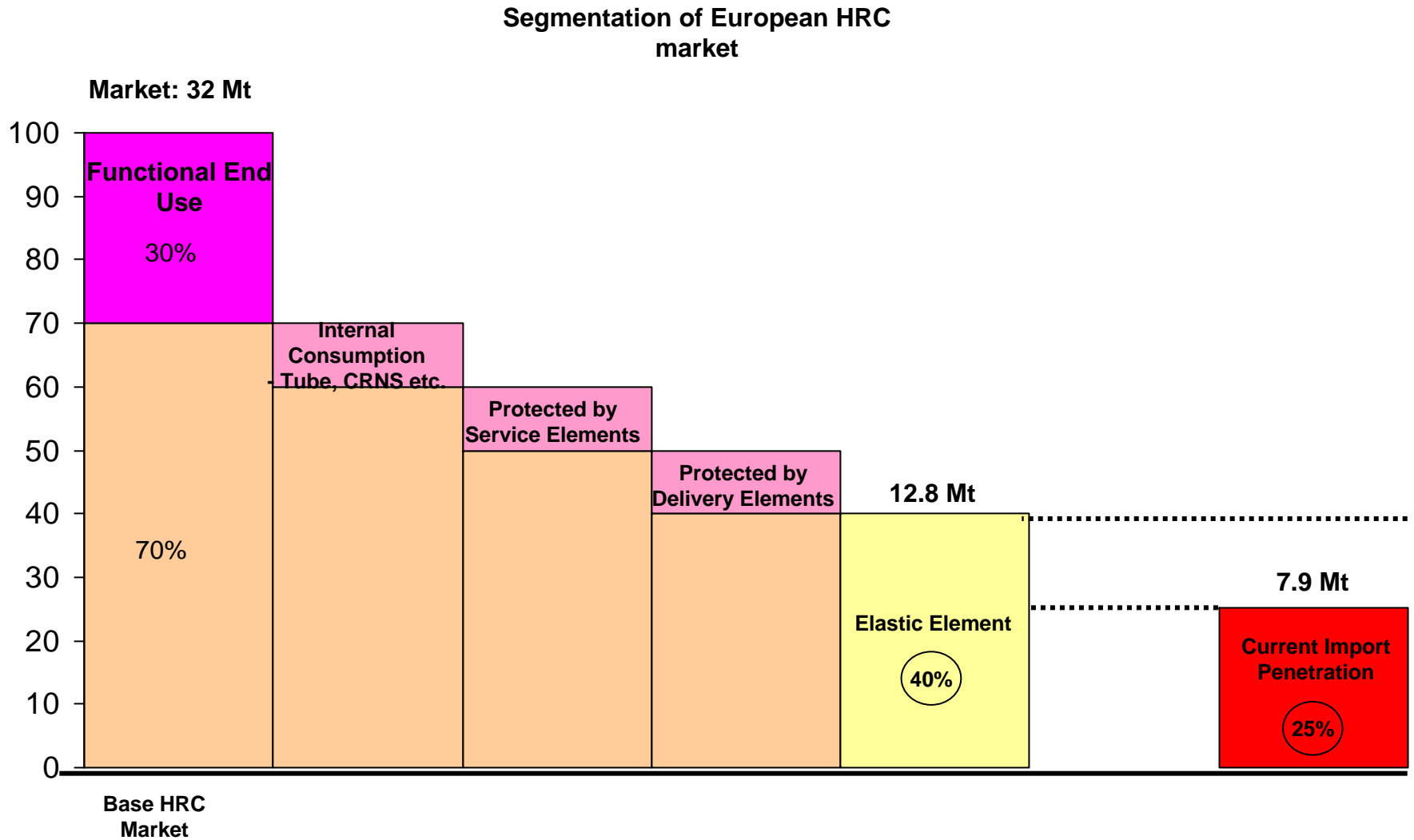
Note: USA: Midwest prices, fob mill. Europe: North European prices, ex-works. Asia: East Asian imports, c&f port.

EXAMINING CARBON PRICE AND ITS IMPLICATIONS - SCENARIOS

Regional price differences based on each regional supply – demand balance are correlated to import penetration – a €50 price differential can drive a 5% change in import penetration



The significant non commodity or functional steel fraction coupled to enhanced service and supply chain provides protection to imports



It is crucial to understand that the segmentation and structure of the European steel product markets is part of a dynamic process and is constantly evolving in a very complex manner

- It is crucial to understand that the segmentation and structure of the European steel product markets is part of a dynamic process and is constantly evolving in a very complex manner
 - Functional product capability of 3rd country producers is fast evolving as new plant is commissioned
 - Such new plant is typically manufactured largely to non-proprietary specifications by the main European plant OEMs (SMS (Germany), Siemens VAI (Austria) and Danieli (Italy)) that dominate European plant construction
- 3rd country markets are also evolving rapidly in their functional steel requirements – automotive, high rise offices, oil and gas plant etc. – that drive local producers up the quality curve faster than the developed markets
- This leaves the high service, logistical and delivery elements of the European market as the more robust protector of sales, though traders, overseas mills and other importers are beginning to address this with distribution assets being developed within Europe itself
- The EU industry's ability to recover additional cost through price under market demand growth or contraction conditions and higher or lower levels of 'protected' sales will differ

Scenario : “Defend prices” - For an additional cost/price of €50 within the EU, under this scenario, it is estimated that market penetration could rise by up to 5%, thereby costing the EU producers about 7.5 Mt in market share

Scenario : “Defend prices”

- A scenario is the defence of prices ahead of volume/market share
 - This scenario assumes that EU steel producers will apply the €50 additional cost to increase prices across the board with no mitigation
 - The consequence of this option will be an increase in the importer margin which could be used to “buy” increased market share
- Import penetration and regional price differences are reasonably correlated ($R^2 = 0.47$) and indicates, that all other things being equal, an additional €50 to the European price, in the event that European mills attempted to immediately recover an additional €50 in carbon cost would increase market penetration of the European market by about 5%
- It is estimated that any market share loss greater than 5% would be unacceptable to EU steel producers as this loss in production volume would commensurately reduce capacity utilization impacting the dissipation of fixed costs and service levels
 - It is assumed that no significant growth in exports to other regions would ensue
 - In this case, volumes would have to be protected as described in Scenario 2 above
- **For an additional cost/price of €50 within the EU, under this scenario, it is estimated that market penetration could rise by up to 5%, thereby costing the EU producers about 7.5 Mt in market share (i.e. 5% of the current market) approximating to €5.6 bn at today’s market levels**
- **This is equivalent to the loss of an average sized European mill**

The short and long term implications of an additional €50 variable cost to EU steelmaking will be severe

Short term

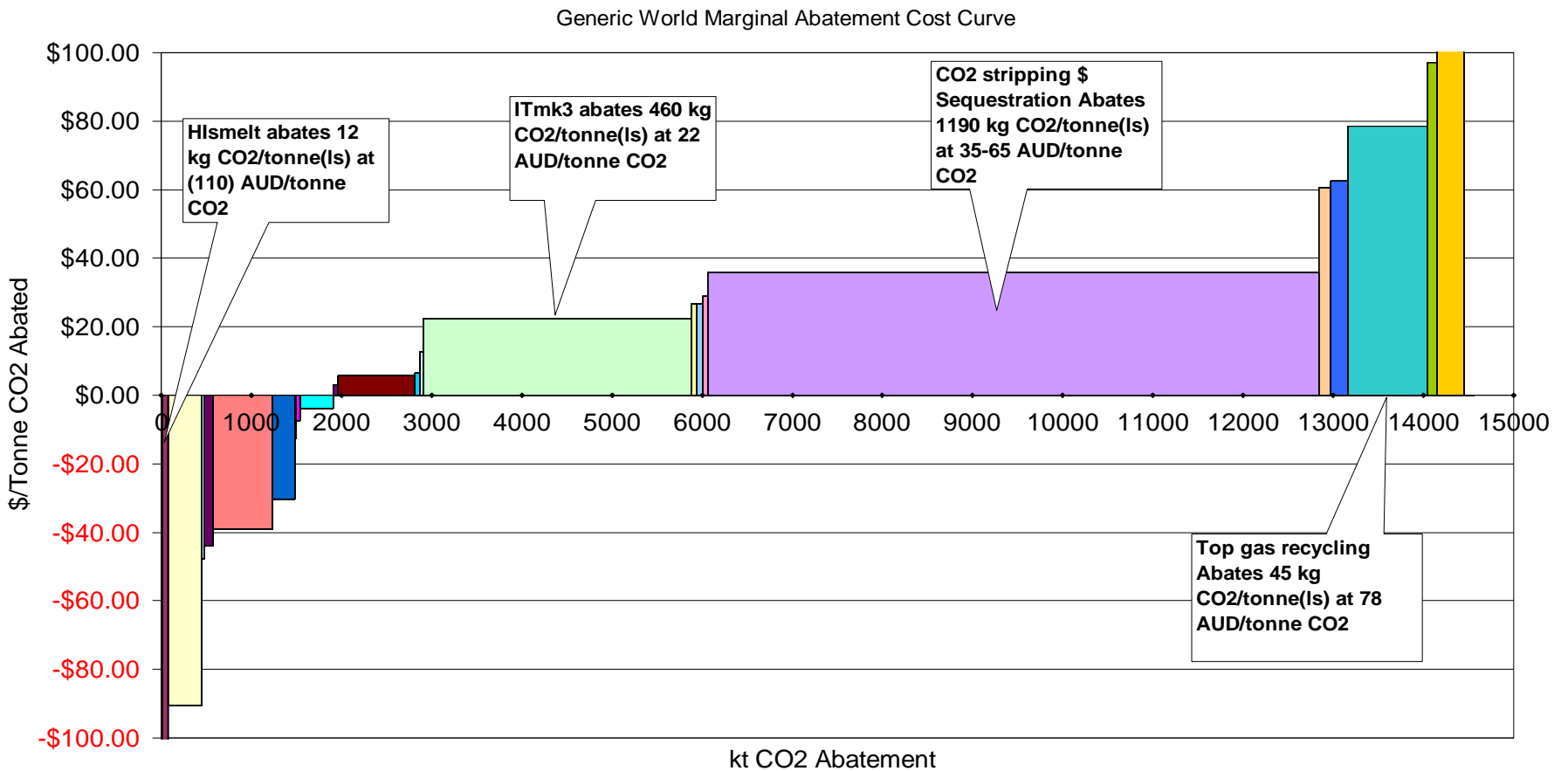
- The hard won profitability of the European steel industry will be impacted immediately by the imposition of such an additional unilateral cost
 - In spite of the differentiation developed over many years by the European steel industry, the cost of defending market share of raised prices would be untenable
- Such an additional unilateral cost addition is unprecedented within the steel industry and non-EU producers, most of which are non-Kyoto based will fully exploit this burden on what is already a very high European cost base
- Import penetration will rise and margins will be reduced by significant amounts

Long term

- Such an additional variable cost is almost certain to preclude the construction, expansion or upgrading of EU based steel making
- The consequences of which implies strategic reliance upon non-Kyoto and politically unreliable based steel production
 - Steel is the essence of ALL European manufacturing that encompasses low cost modular housing, the very latest hybrid automobiles and highly recyclable packaging amongst many other examples
 - The presence of a local steel industry to support such manufacturing and to develop the required technologies for a 21st Century Europe is vital
- In addition, there will be major negative responses from individual nations with regards to employment and other social issues.

EXAMINING CARBON PRICE AND ITS IMPLICATIONS - SCENARIOS

Whilst the effects of environmental issues are immensely complex outside of the steel works, within the steel works things are very different and are eminently measurable and manageable – stay tuned to see how Hatch can help!!



Thank you

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