

# THE STEEL INDUSTRY

Breaking the vicious cycle of overcapacity

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McKinsey & Company



Ladies and Gentlemen,

I am really honored to be invited as a guest to your conference. I am impressed by the presence and the representation of the conference in the way it is run.

So, I hope that I can be of relevance to you in the things I will talk about. It is a presentation about steel. But I would encourage you to take the passages I will talk about and almost read them as if they were for cable. No doubt they are not applicable. But in a way you can try to pick out bits and pieces that can be of relevance and see whether or not that helps. I will mostly be talking about steel and will make some reference to cable in the back end of it.

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# Agenda



- **Overcapacity in steel creates an ongoing price-cost squeeze**
- **Next to broad individual actions, an industry wide initiative is explored**
- **Cable industry is different, but steel experience can be of relevance**

In this presentation we will answer three questions:

What is happening in the steel industry?

What steps are taken in the steel industry to break its vicious cycle?

Are the lessons learned in steel applicable to cable?

As we answer the first question we will find out that the significant overcapacity is creating an ongoing price-cost squeeze and so declining margins.

# The steel sector has significantly under-performed in recent years

CAGR (as of 8/15/02)



Source: DataStream (world sector indices and company data)

In the last five years steel has significantly under performed. As you can see the total return to share holders is  $-9.0\%$ . This means that every Euro invested in steel has decreased in value by 9 cents in the last five years.

How can this happen?

## Six factors determine attractiveness of industry

High utilization of capacity

High entry and low exit barriers

Consolidated suppliers compared to customers

Differentiated offering

Regional confined markets

Steep cost curve

Let's answer this question by looking at the structural drivers of an industry. An industry is attractive, if the following factors are the case:

**High utilization of capacity:** There is little or no overcapacity

**High entry and low exit barriers:** It is difficult for competitors to enter the market and bad performers can easily leave the industry

**Consolidated suppliers compared to customers:** The level of power on the supply side matches or outperforms the buying power of customers

**Differentiated offering:** Products have specific characteristics or value added services, which makes the products distinctive

**Regional confined market:** Competition is limited to regional players

**Steep cost curve:** Substantial differences in cost level creates high margins for low cost level players

# Continuing overcapacity

- Attractive
- Unattractive

## Steel

High utilization of capacity



High entry and low exit barriers

Consolidated suppliers compared to customers

Differentiated offering

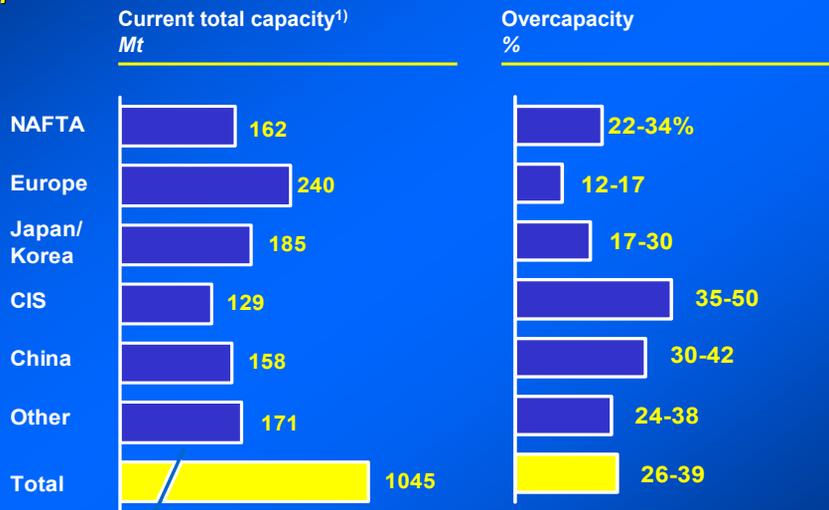
Regional confined markets

Steep cost curve

The low utilization of capacity is one of the root-causes of the under-performance in the steel industry. Steel has low utilization of capacity.

# Significant overcapacity exists in all regions

## Crude steel



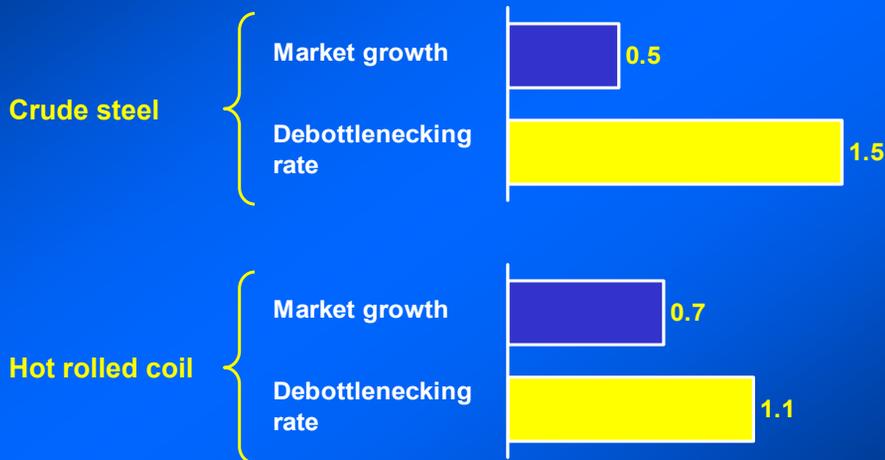
1) Based on J.F. King equipment database

Source: J.F.King; McKinsey analysis

The global overcapacity ranges between 26-39% and exists in all regions, especially in China and Commonwealth of Independent States (CIS). The overcapacity exists out of obsolete, uneconomic capacity and substantial 'opportunistic' capacity, some of which is needed and could be modernized or restructured easily.

# Productivity improvement has exceeded market growth

Percent per year



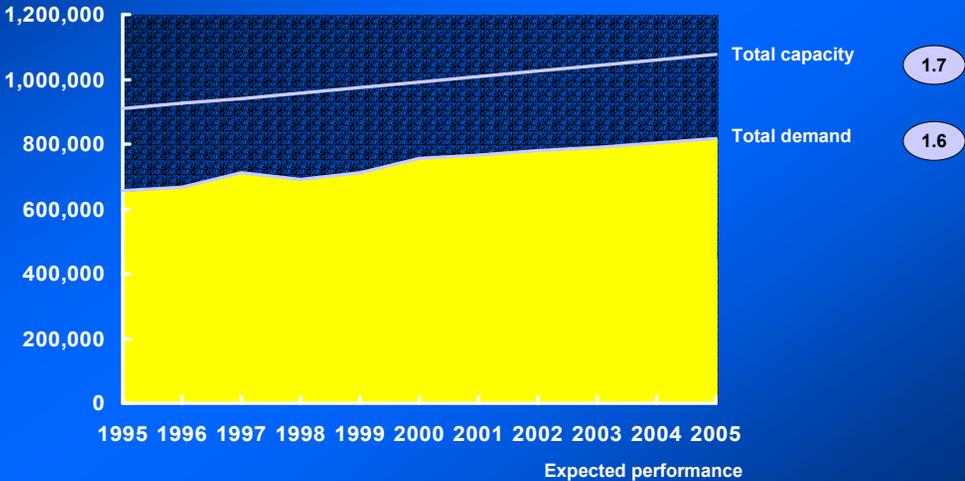
Source: IISI; McKinsey Steel Model; McKinsey analysis

On top of that, productivity is improved at a higher rate than the growth in demand, creating even more overcapacity every year.

# Without restructuring overcapacity is expected to continue

Global flat and long steel capacity '000t

CAGR 2000-2010 Percent



Source: J. F. King; McKinsey

When no actions are taken to restructure the capacity, overcapacity is expected to continue. Closure of 160-200 million tons of capacity worldwide is needed to create a capacity level that is sustainable.

# High exit barriers

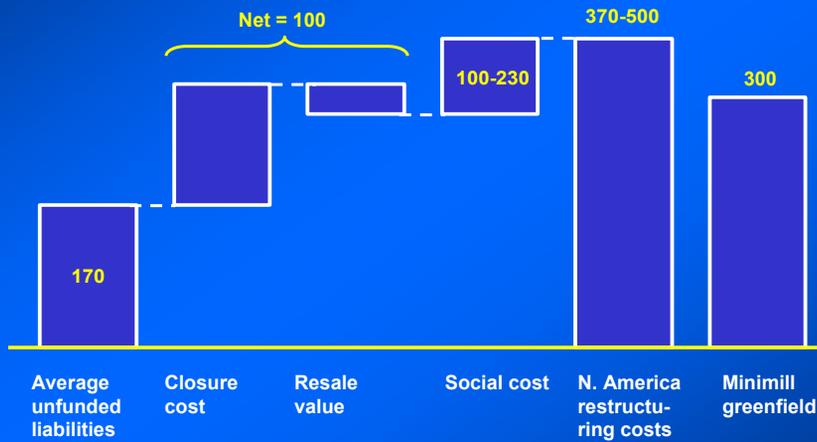
● Attractive  
● Unattractive



However closure is easier said than done.

# Capacity restructuring costs prevent exit

US \$/ton steel capacity



Source: Annual reports; press articles; McKinsey analysis

Take the US integrated sector as an example. Closing or restructuring existing operations will cost 370-500 US\$ per ton. This amount exists out of unfunded liabilities (e.g. pensions), closure cost (e.g. cleaning the ground) and social cost (e.g. redeployment). At that cost you can build your own minimill (which has a lower cost structure) ... and add some more capacity. In other regions, the nature and the size of liabilities can be different, but it is often cheaper to keep operating loss-making facilities, rather than to close them down.

## As well as government support and protection

	NAFTA	Western Europe	Eastern Europe	China	Middle East/Africa
Subsidies	✓	✓			✓
Bankruptcy/ creditor protection	✓		✓		
Restricted markets/trade quotas	✓	✓		✓	✓
Duties on import	✓	✓	✓	✓	✓

Source: 'Paying the price for Big Steel'; annual competition report of the DGIV; 1986-1996

Next to the closure cost, government support and protection prevents uneconomic plants from exiting to correct the imbalance.

For example:

- NAFTA/EU historic subsidies equivalent to \$30-35/ton, although this has stopped in the EU

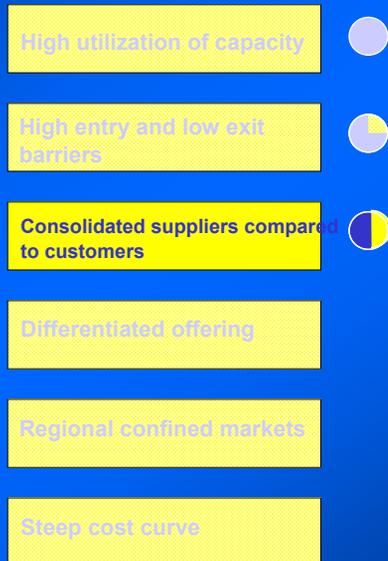
- US recently introduced \$1billion/year financing guarantees, and is threatening tariff/quota hikes

- Free trade agreements do not restrict, e.g. anti-dumping duties, which are expected to increase.

- 'Hidden' subsidies are also common through cheap electricity, cheap raw materials and state ownership.

# Getting consolidated, but less than customers

● Attractive  
● Unattractive



Source: Interviews McKinsey Experts

The high exit barriers create many players, but consolidation has started. However, the steel industry is less consolidated than its customers.

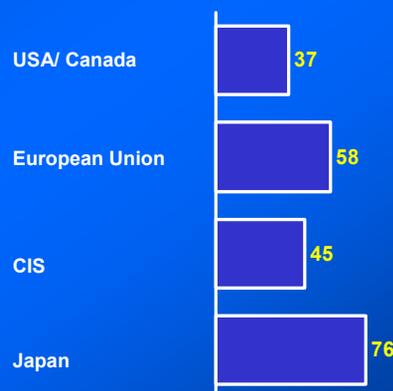
# The global steel industry is consolidating slowly ...

percent<sup>1)</sup>

Market share of Top 10



Top 5 by region



1) National Steel currently up for sale to US Steel

Source: Metals bulletin; James F. King

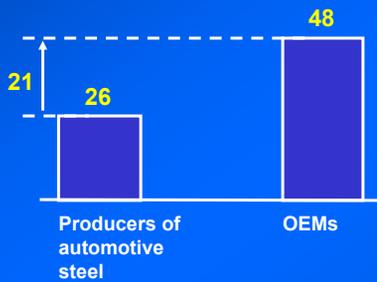
Globally there is still significant industry fragmentation, although consolidation is taking place slowly. Western Europe and Japan have developed true regional consolidators only recently (Arcelor, TKS, NKK, Nippon).

North America and Eastern Europe are still very fragmented. But even here consolidation efforts are taking place, e.g. US Steel and others trying to consolidate the North American integrated flat sector.

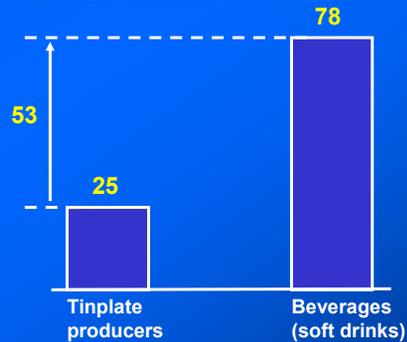
## ...while the main customer segments are highly concentrated

Global market share of top 4 companies, percent

### Automotive



### Packaging



Source: McKinsey analysis

Customers on the other hand are much more concentrated. For example, we would need to combine the top 8 steel companies into 4 to match customer concentration in automotive and 20 steel companies into 4 to match customer concentration in packaging.

# Very commoditized

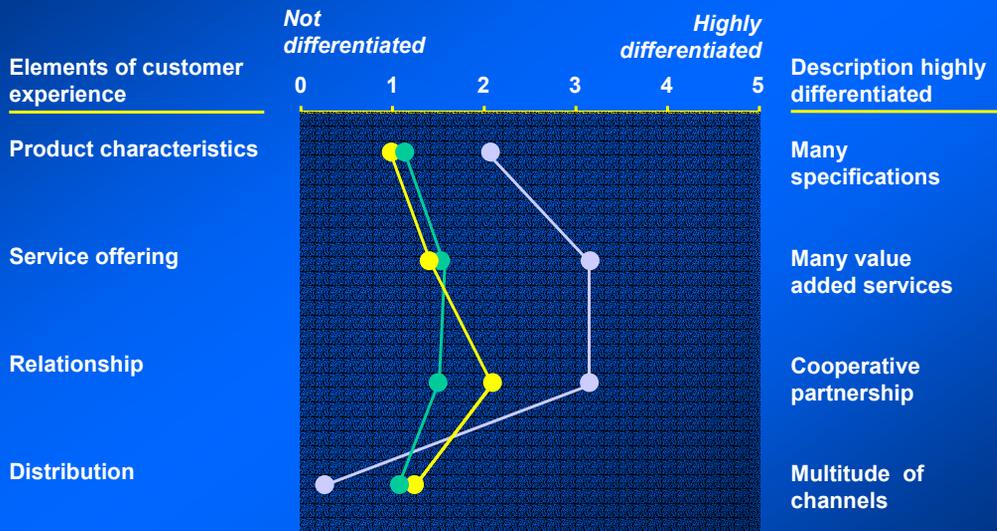
● Attractive  
● Unattractive



With all this competition it is important to differentiate your product from your competitors to create price premiums. However steel is in general a commodity.

# Elements of customer experience hardly differentiate

Automotive  
Building  
Packaging



Source: McKinsey steel practice

Within steel three major segments are distinguished: automotive, building and packaging. The customer experience is dependent on four elements: product characteristics, service offering, relationship and distribution. A product is highly differentiated if there are many product specifications, many value added services, cooperative partnership and a multitude of channels to distribute the product to the client. In steel most products are commoditized and only in automotive some differentiation is seen.

# Increasing globalization

● Attractive  
● Unattractive

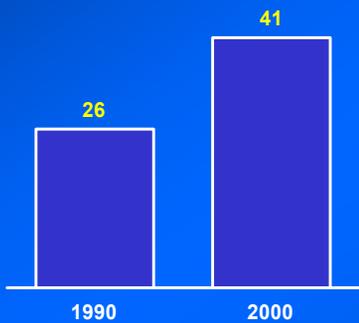


Competition is not only restricted to regional players. About 40% of the output in steel is exported.

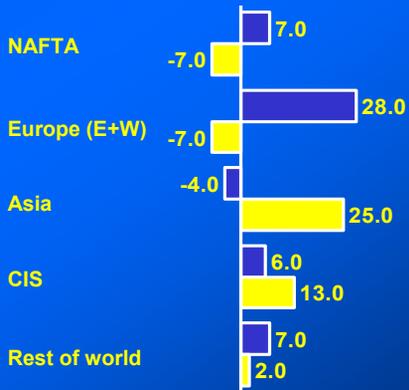
# Globalization, with growing inter-regional trade from low-cost regions, contributes to marginal cost pricing

Import  
Export

Export<sup>1)</sup>  
Percentage of output



Growth in interregional trade  
Percent CAGR<sup>2)</sup>, 1997-2000



1) Including intra regional trade  
2) Compound annual growth rate

Source: IISI; ISSB; McKinsey analysis

Trade has grown significantly in the last ten years. Not only within the regions, but also between the regions. The competition is taking place on a global scale. Low-cost regions as Asia and CIS are exporting their steel to Europe and NAFTA, which contributes to marginal cost pricing.

## Quite flat cost curve

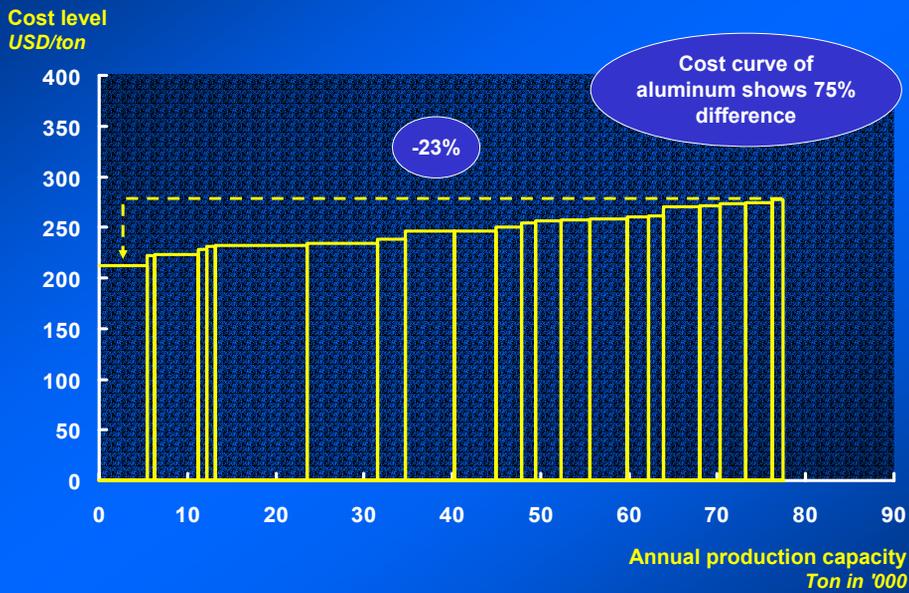
● Attractive  
● Unattractive

High utilization of capacity	●
High entry and low exit barriers	●
Consolidated suppliers compared to customers	●
Differentiated offering	●
Regional confined markets	●
Steep cost curve	●

Although there are some differences in cost level between the region. In general we can say that the difference in cost levels of steel producers is small.

## Difference in cost levels is small

West-European HRC cost curve 2001



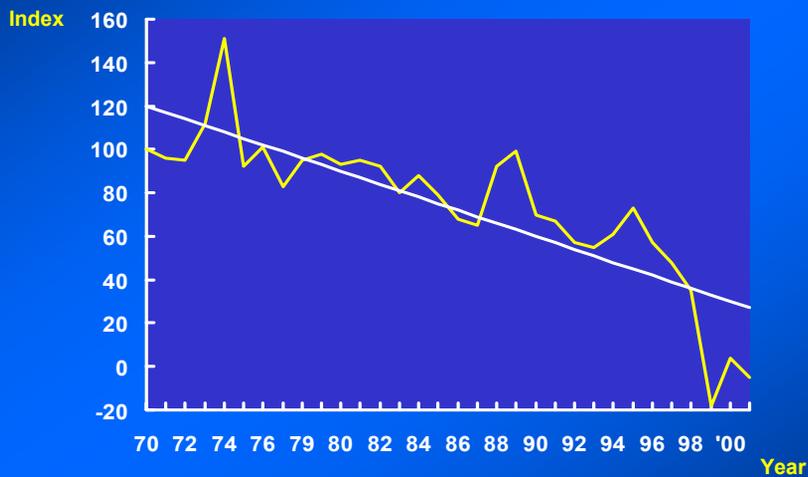
Source: James F. King

In this exhibit we have put the capacity of the different steel manufacturers in order based on their cost level. Every bar is an individual player in the market. As you can see there is little difference in the cost level of the different players.

Even if exactly all capacity is necessary (which is in steel definitely not the case), the margin attainable by a steel company will not exceed the difference between its own cost level and the highest cost level.

# Resulting in an ongoing squeeze between prices and costs

Margin index<sup>1)</sup>, Western Europe



1) 1970 = 100; Example calculated with: Iron ore 24%, coal/coke 16%, scrap 6%, power 6%, labour 24%, other 24%

2) Crude steel tonnages

Source: J.F. King; McKinsey analysis

The mentioned factors characterize the current crisis in steel as a vicious and permanent one, which results in an ongoing squeeze between decreasing prices and costs.

## Agenda

- Overcapacity in steel creates an ongoing price-cost squeeze



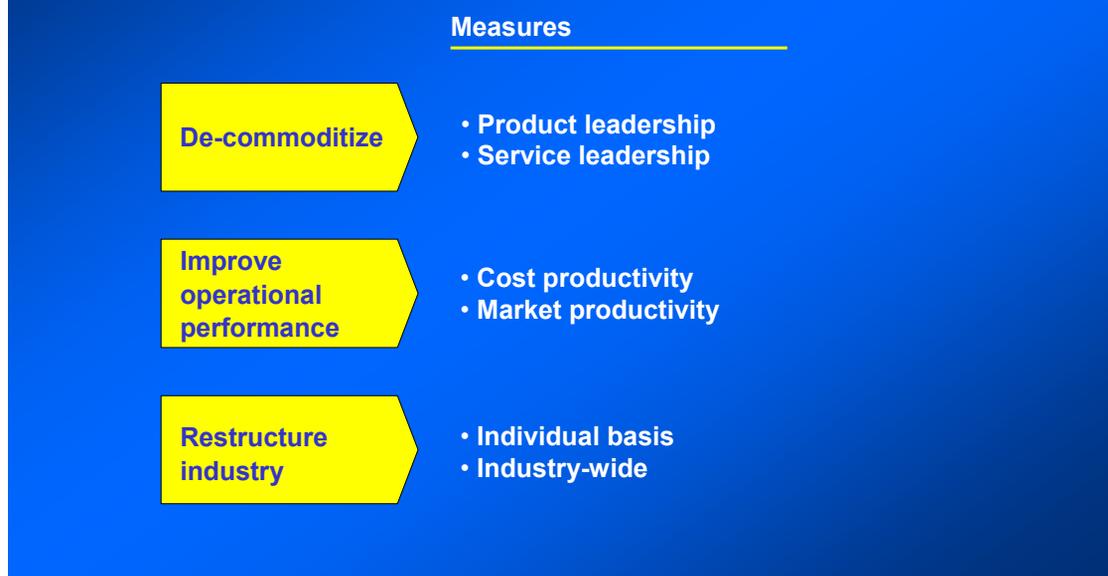
- Next to broad individual actions, an industry wide initiative is explored

- Cable industry is different, but steel experience can be of relevance

Now let us look at the question:

What steps are taken in the steel industry to break its vicious cycle?

# Three different types of action are taken to improve performance



Three different types of action are taken to improve performance:

## •De-commoditization

**Product leadership:** Specialization, attractive niche markets, high quality products, value communication, branding

**Service leadership:** Service-oriented operations, shortest lead times, highest flexibility, best technical consulting

## •Improvement of operational performance

**Cost productivity:** Lean manufacturing, e.g. waste reduction, reduction of total purchasing spending, reduction of fixed cost/unit by increasing throughput

**Market productivity:** Higher profitability per product/customer, tailored product and service offerings, higher average price/unit by improved pricing policy, better sales force performance by improved capabilities and incentives

## •Restructuring of industry

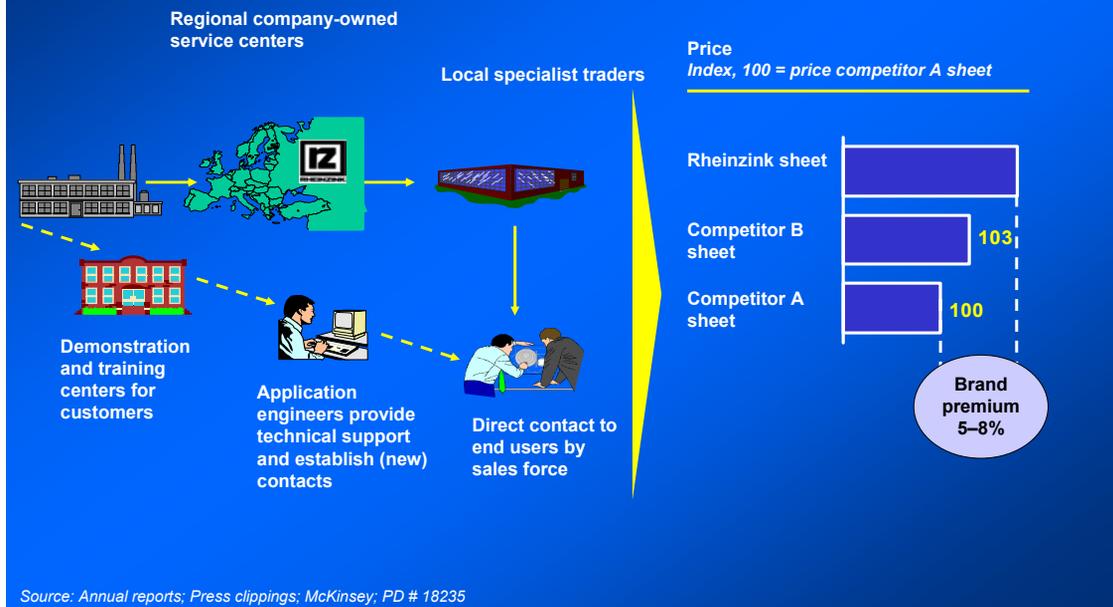
**Individual basis:** Merger and acquisitions of fellow players to create value and improve market environment

**Industry-wide:** reduction of capacity in mutual agreement

We will discuss some examples of the individual actions taken and then explain in more detail the industry-wide initiative.

Let us start with 2 cases demonstrating the issues involved in de-commoditization.

## Case study: Branding by improved access to customer



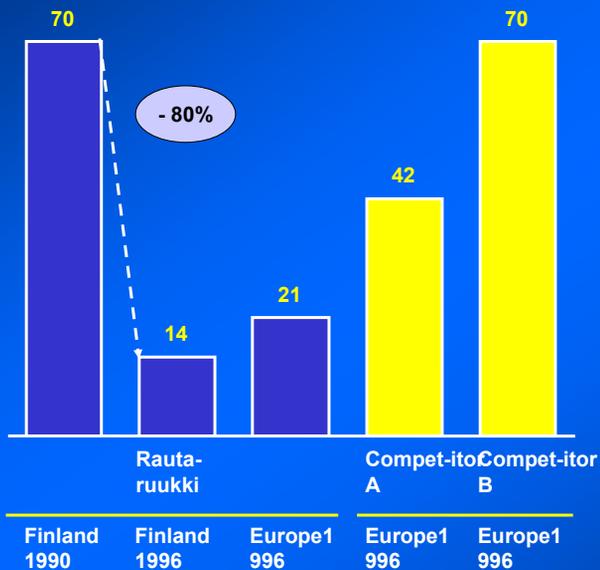
Rheinzink achieved a price premium of 5-8% by marketing productivity. It improved the access to the customers and created:

- Regional company-owned service centers with infra-structure (stocking, staff)
- Local specialist traders for distribution and stocking (exclusively Rheinzink)
- Demonstration and training centers for customers
- Application engineers provide technical support (also on site) and establish (new) contacts
- Direct contact to end users (architects and plumbers) by sales force

This resulted in a strong and early control over purchasing events due to strong and direct relations with all/most end users and a deep understanding of customers' true needs due to intensive technical support.

## Case study: Differentiation via service

Days from receipt of order to delivery



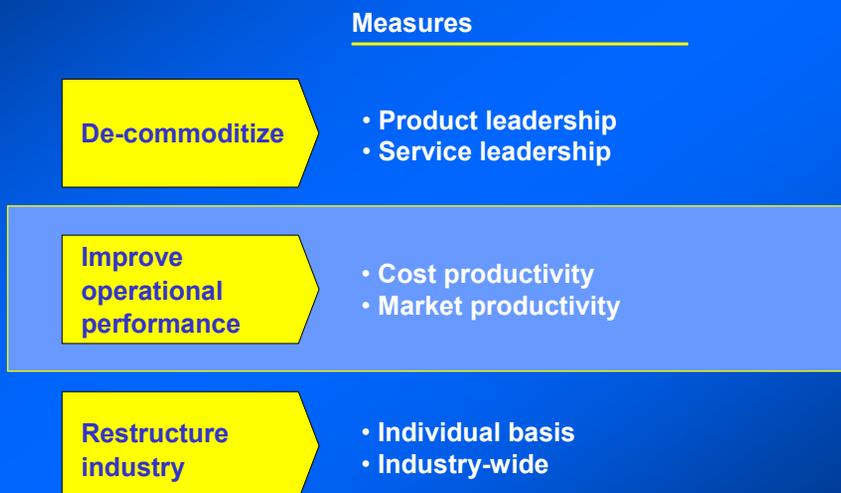
Superior delivery time and reliability allow Rautaruukki to earn a price premium of 3-5%

Source: Annual reports; Press clippings; McKinsey

An example of service leadership is Rautaruukki, achieving this by offering the shortest delivery times compared to competitors. Rautaruukki reduced the delivery time by 80% through:

- Increase in flexibility throughout steel mill
  - Small batch size
  - Roll changeovers in 12 minutes
  - 2,000 products offered; order size as small as 2 tons possible
- Increase in efficiency
  - Use of electronic data interchange with customers
- Improvement of transport logistics
  - Establishment of own transportation company with superior logistics

## Three different types of action are taken to improve performance

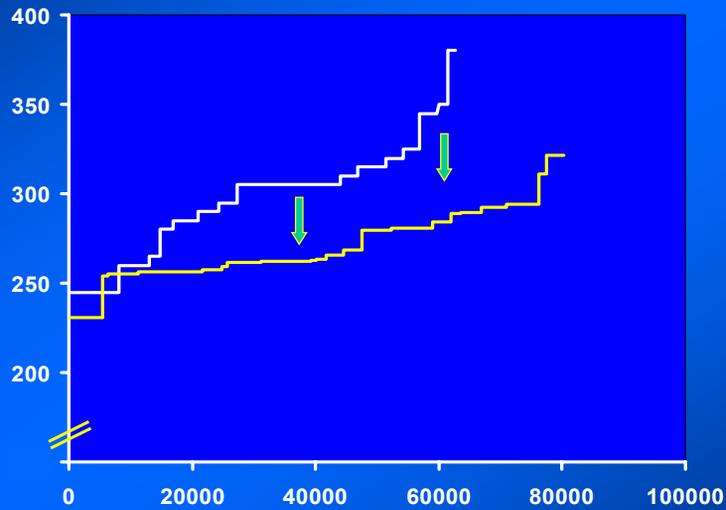


The second type of actions the steel players have taken is improving their operational performance.

We will discuss three examples of these actions taken.

# Case study: Industry-wide productivity improvement

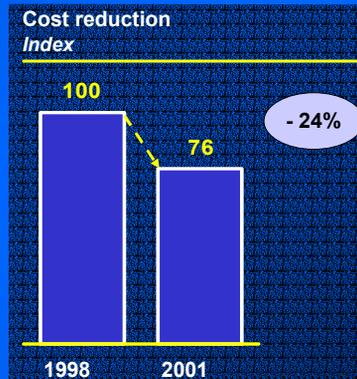
West-European HRC cost curve, 1990 and 2000



Source: James F. King, McKinsey steel practice

In the past ten years West-European HRC cost curve has lowered and flattened. This means that the whole industry has decreased its cost and the differences in cost level are declining.

## Case study: Productivity improvement by innovation



Source: Annual reports, press clippings, Harvard Business Cases, International Directory of Companies, McKinsey interviews

Nucor's success is based on the implementation of various transformational process innovations, which improved the cost productivity.

As of 1965

Action: Integrated backwards (from being a producer of building materials made of steel) into steel production by adapting a largely unproven technology.

Impact: Radically lower capital costs compared to integrated mills. It set off the minimill explosion

As of 1975

Action: Started production of steel decking, cold-finished bars, etc., traditionally a monopoly of integrated producers.

Impact: Drastically increased volumes of minimills. Started to threaten some of the big players

As of 1985

Action: Started production of steel sheets with a new, unproven technology, i.e. thin slab casting.

Impact: Dramatically lowered the minimum economic scale for sheet production. Substantially undercut integrated producers on fixed and variable cost. Vaulted Nucor into the top 5 U.S. steel producers

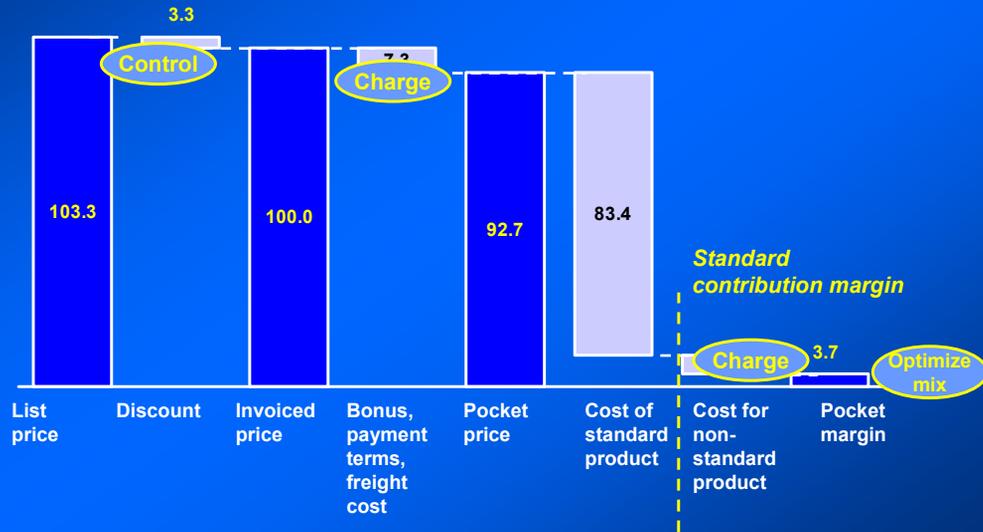
As of 1995

Action: Developed a process that will use iron carbide as a substitute for low residual scrap.

Impact: Depending on the scrap price it can lower raw material cost by up to 10%

# Case study: Improved pricing by understanding order profitability

Percent of invoiced price

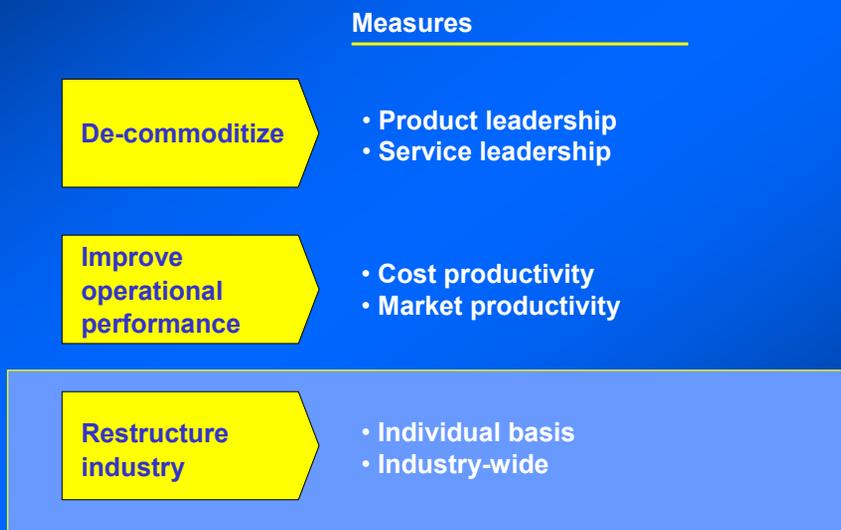


Source: McKinsey steel practice

In this case improved pricing delivered a bottom line impact of 4% of revenues. By understanding the true order profitability, the following issues were discovered:

- All the different pocket margin waterfall elements varied largely in size between different customers resulting in profit differences of 10-15% of sales between apparently similar customers
- The rebates and bonuses were all over the map and not linked to volume or anything else
- Freight costs, credit notes and payment terms were not taken into account by the sales force when assessing the attractiveness of an order
- Transportation costs were not fully recovered from the customer
- The company accepted many special products and did not charge for that and decided to introduce extras
- There was a huge opportunity to improve the customer and product mix

## Three different types of action are taken to improve performance

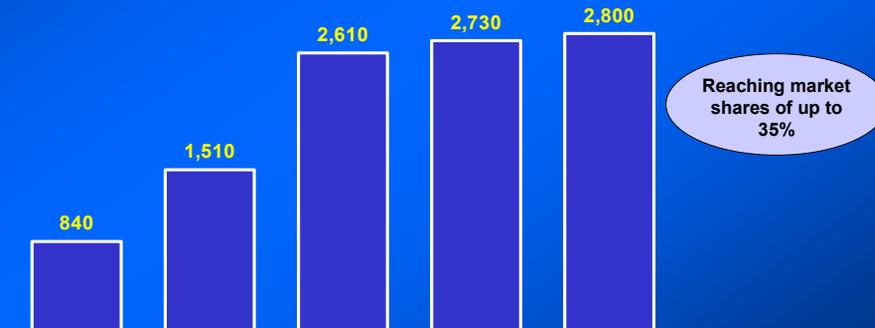


The last type of actions, I like to mention here, is restructuring the industry.

# Case study: Consolidation in stainless steel flat products

Melting steel capacity, kiloton/year

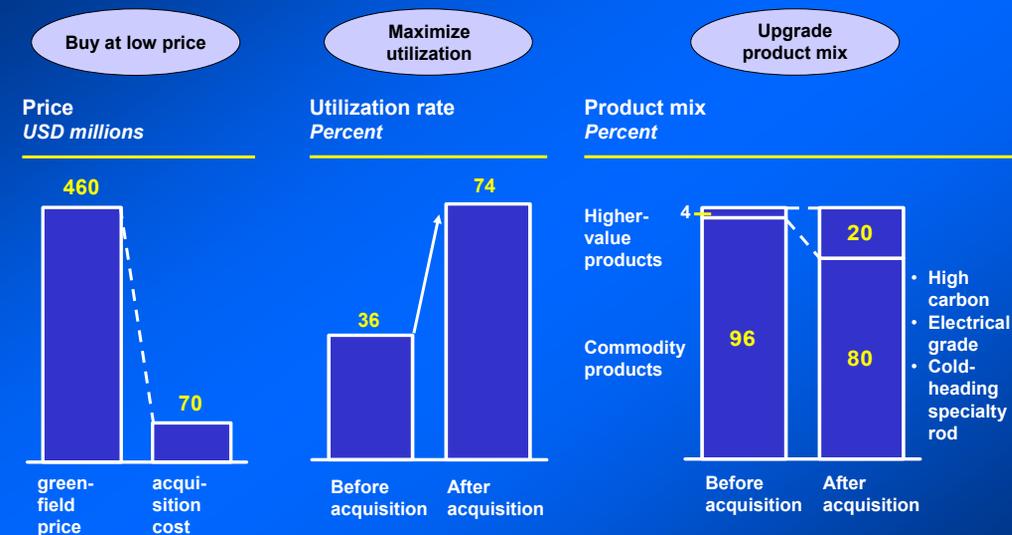
Acquisition  
New activity  
JV



Source: World capacity report James King; Press review; Annual reports

Krupp Thyssen Stainless is an example of consolidating in a specific segment. The company has focused on stainless steel flat products. From 1994 onward Krupp Thyssen has become step-by-step a leader in stainless flat.

## Case study: Consolidation creating improved utilization and product mix



Source: Annual reports; McKinsey

Ispat has grown by acquisitions and fast turnaround of undervalued assets to become the only truly global and strongest growing major steel producer in the world (8 locations in 7 countries within 10 years). Ispat buys at low price, maximizes utilization, and upgrades the product mix. As you can see in this example of the acquisition of CIL.

Ispat has a superior screening process for identifying potential targets and is extremely fast in increasing operating performance of acquired companies, which it usually buys at 15 - 20% of the money it took to build them.

# 'Industry management' options for the global steel industry



Free market solution



Government led solution

- Darwinian (survival of the fittest)
- MoU driving voluntary production restraints (1993 Aluminium MoU)
- Joint industry/government plan to create "virtuous cycle" of restructuring (Multilateral Steel Agreement)
- Broking agency for distressed assets (Treuhand)
- Production quotas and subsidised industry closures (Davignon plan)

Source: McKinsey analysis

One of the actions to break the vicious cycle is through an industry-wide action on global scale.

You could consider solutions from 100% free market to 100% government led (command and control by a world steel-government-bureau).

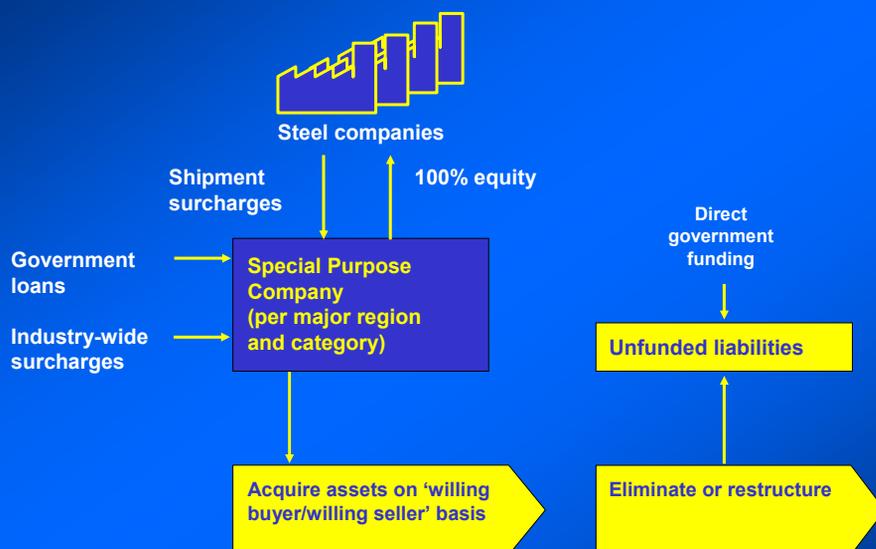
MoU Aluminium 1993: Aluminium producers responded to weak market conditions that had persisted since 1991 by cutting production. The Memo of Understanding between the governments of Australia, Canada, EU, Norway, Russian Federation and the US also contributed to increased market transparency and overall market confidence.

Treuhand: In the Treuhand model of privatisation, enterprises are sold by international tender to strategic investors.

Free-market solutions do not work. Companies might go bankrupt or there might be some temporary production restraint, but capacity is not permanently removed or demolished. Besides the fact that there is no world-government body with the powers to reshape this industry, it would be nearly impossible to do this on a fair and equitable basis.

Hence, the idea arises for a multilateral steel agreement (MSA), enacted by the industry, on commercial terms (for closures) and supported by the governments for social liabilities. Call it, not a free, but a **guided** market.

## MSA: create a special purpose company that buys and restructures overcapacity



Source: McKinsey analysis

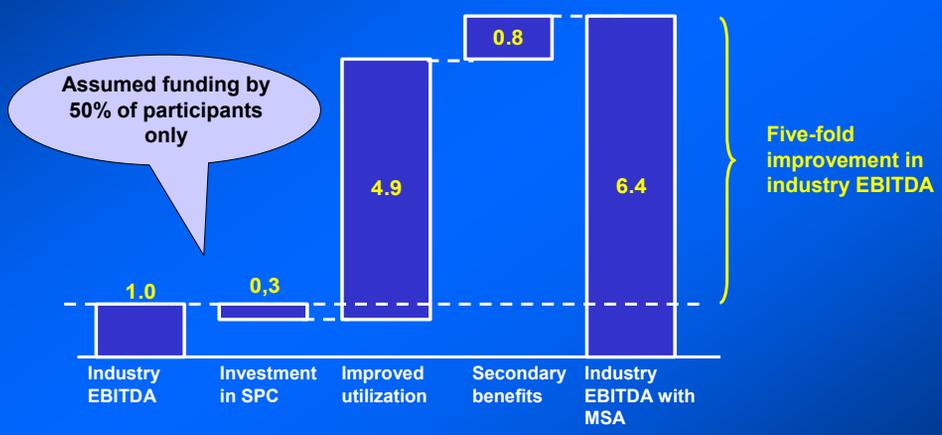
A multilateral steel agreement (MSA) is one option to jump-start the necessary industry restructuring. We developed our own proposal for such a MSA. In a nutshell:

- Commercially driven vehicles like special purpose companies (SPC) would be created on a regional basis to reduce capacity
- Uneconomic capacity is closed and opportunistic capacity restructured (1/3 to 2/3 closes)
- Financial liabilities will be split from restructured assets in proportion to closures. These excess liabilities are separated in a restructuring fund, which will be fully financed and liquidated over a 5 to 10 year period.
- Viable restructured assets are returned to initial investors. This might look complex, but the structures are needed for legal/financial compliance, and is really the most simple scheme we found so far. Our apologies for that!

Funding would be a joint industry-government effort. All companies contribute with some modest shipment surcharges (contribution to the industry liabilities). The players that want to participate in the SPC of their region, acquire equity through additional surcharges. Governments kick-start the process by providing debt-financing to the SPC, and will absorb some part of the social liabilities in the system.

# SPC investment is expected to create significant value

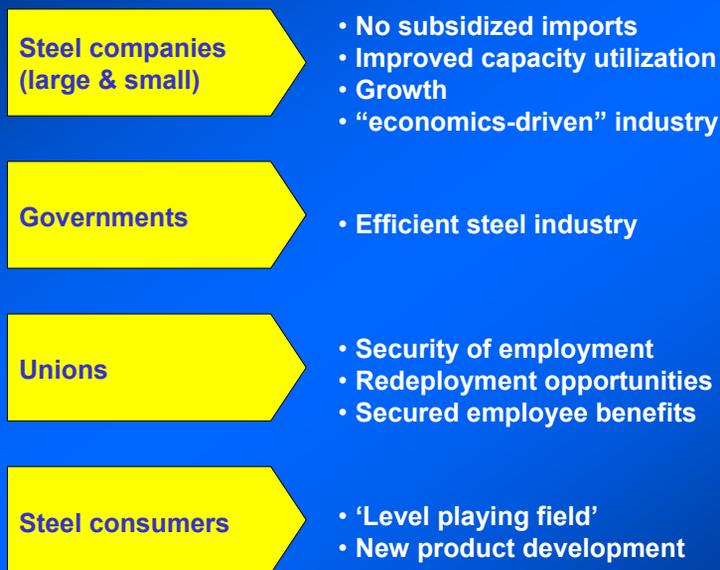
\$ billion, 2006



Source: McKinsey analysis

Let us now consider some of the benefits for the industry and the impact on the governments and other stakeholders. We truly believe that a win-win situation is feasible and that should not come as a surprise, if you consider the cost of “continuing as is”, without such a restructuring plan. First the industry profit pool increases significantly, as lower cost plants are now operated at much higher utilization levels. Closure of high cost capacity and avoidance of dumped prices and secondary benefits (e.g. tax-shields, reduced funding for other post employee benefits) are realized. Furthermore, the absence of subsidized imports should give a price protection on the downside. We used \$15/ton as a benefit; some industry observers are much more optimistic. These benefits will finally allow the industry to fund its social obligations, to reinvest adequately and to reward its shareholders.

## All stakeholders will benefit



Source: McKinsey analysis

From this it is obvious, that all steel-players benefit; even when certain companies (e.g. niche players) are not directly involved in the SPC, the improved industry dynamics benefit all. SPC-founders benefit further through faster growth as they lead the consolidation.

Let us look at broader stakeholders’ benefits. They avoid bankruptcies and will benefit from more stable industry conditions:

Governments avoid social and environmental chaos

Workers see some job losses, but with redeployment opportunities and more longer-term security regarding social benefits

Consumers will initially resist this, so they need to be convinced of its merits: A level playing field for all and an industrial supplier base with the means to innovate and improve quality of products and services

A further benefit will come through increasing consolidation, not only on a regional level, which is a must, but also on a global level.

# Several legal challenges need to be met

## Legal challenges

- Agreements to reduce production volumes or capacity are anti-competitive and therefore against WTO principles
- Company-specific price, volume and capacity plan information may not be shared by competitors
- Regional competition authorities will review M&As

Source: Interviews with legal experts

Of course there are several legal challenges to be met. Possible actions to meet the mentioned legal challenges are:

**For WTO principles:** Three actions can be taken:

Governments to sign waiver recognizing steel crisis as a platform for multi-lateral discussions,

emphasize non-exclusionary aspects of solutions and

focus on motivating government support for MSA proposals

**For sharing company-specific information:** Information transparency, aggregation, and information preparation for negotiations to be managed by independent third parties

**For regional competition authorities:** Ore and aluminium suppliers and key customers are far more concentrated

## Agenda

- Overcapacity in steel creates an ongoing price-cost squeeze
- Next to broad individual actions, an industry wide initiative is explored



- Cable industry is different, but steel experience can be of relevance

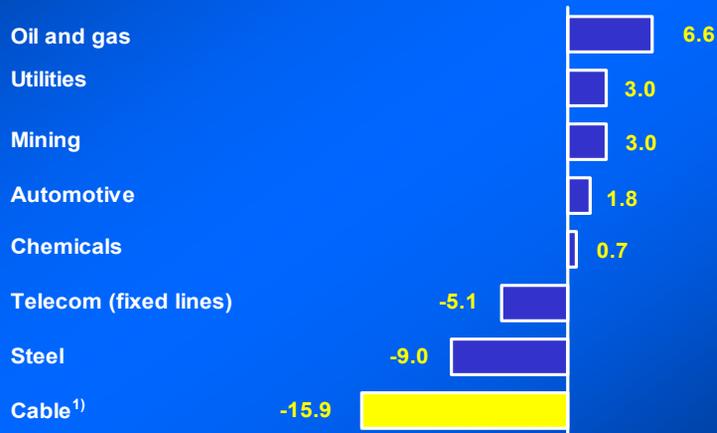
Finally, let us talk about the question:

Are the lessons learned in steel applicable to cable?

# Cable industry has also under-performed in recent years

CAGR (as of 8/15/02)

Total return to share holders 5 years  
Percent



1) Based on data of 8 large cable makers (e.g. Corning, Draka, Furukawa, Sumitomo, Superior)

Source: Datastream (world sector indices and company data)

The cable industry has also not performed well in the last five years. A dollar invested in cable over the last 5 years has lost more than 16%. So you are faced with an even harsher situation and a bigger challenge to do things.

# Will cable face the same vicious cycle as steel?

High utilization of capacity

- Overcapacity exists, levels differ per product segment and region, and significant stocks in some

High entry and low exit barriers

- In general there are lower entry and low exit barriers, but will capacity go away?

Consolidated suppliers compared to customers

- Suppliers are often fragmented, while customers are more consolidated?

Differentiated offering

- The products still offer room for differentiation, but can you seek other dimensions as well?

Regional confined markets

- Markets are primarily regional, but trade is increasing

Steep cost curve

- For non-specialist products the cost curve is relatively flat in any region?

Let us take a look at the structural drivers again. With respect to the cable industry, you can see the comments to each of the 6 criteria on the right side of the slide.

## Most actions taken in steel appear applicable to cable

### De-commoditize

- Can you maximize your product leadership by e.g. branding, specialization, improved quality, product innovation?
- Can you offer extra value added services to your client?

### Improve operational performance

- Are you achieving ongoing annual reduction in costs/ unit?
- Have you improved the true customer specific profitability per product/order?

### Restructure industry

- Can you pursue consolidation more aggressively/creatively?
- Will you explore other, industry-wide initiatives to break the current cycle?

Although there are differences in steel and cable, the type of actions taken in steel can apply to cable. Have you covered all the opportunities in your industry?

Thank you very much!