



Metal Bulletin's 10th International Galvanising & Coil Coating Conference

Global Market Outlook for Production & Consumption

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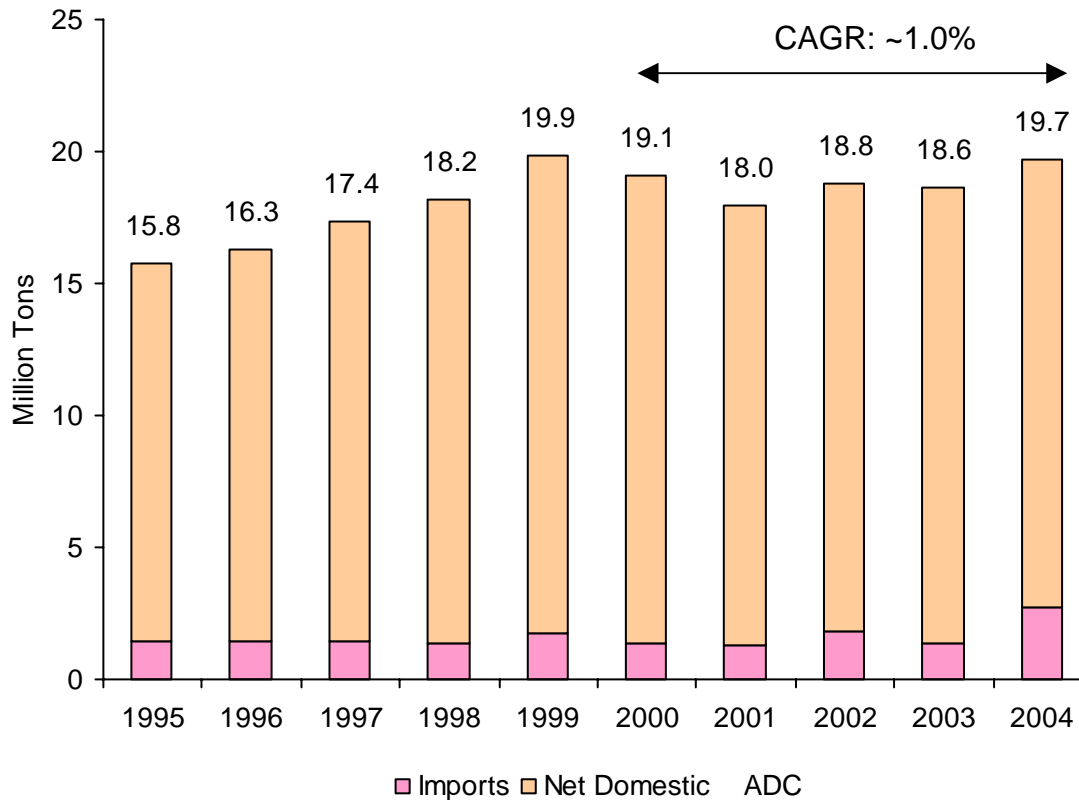
Hatch Beddows

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The US market in galvanized sheet is now steady, mature and post Mittal Steel is in stasis

US galvanized sheet consumption

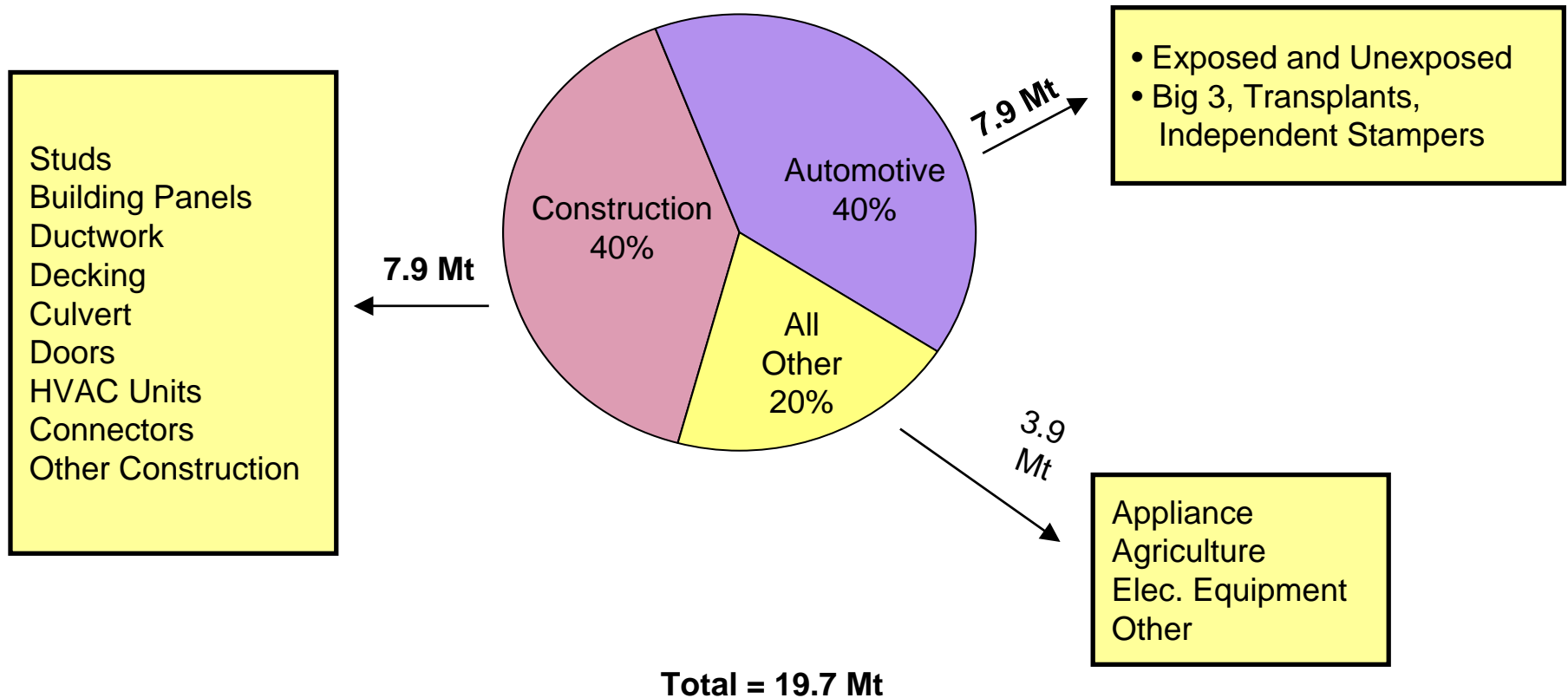


- Growth in the 1980s and early 1990s was about 5%
- US HDG capacity grew by 8 mt in the late 1990s and consequently a significant surplus of capacity exists
 - The current capacity overhang may not be absorbed before 2010 at 10% import penetration
- Import surge in 2004 was primarily due to an increase in supply from India

Source: AISI and Hatch Beddows

US galvanized sheet consumption has been driven by the automotive sector and a variety of construction applications

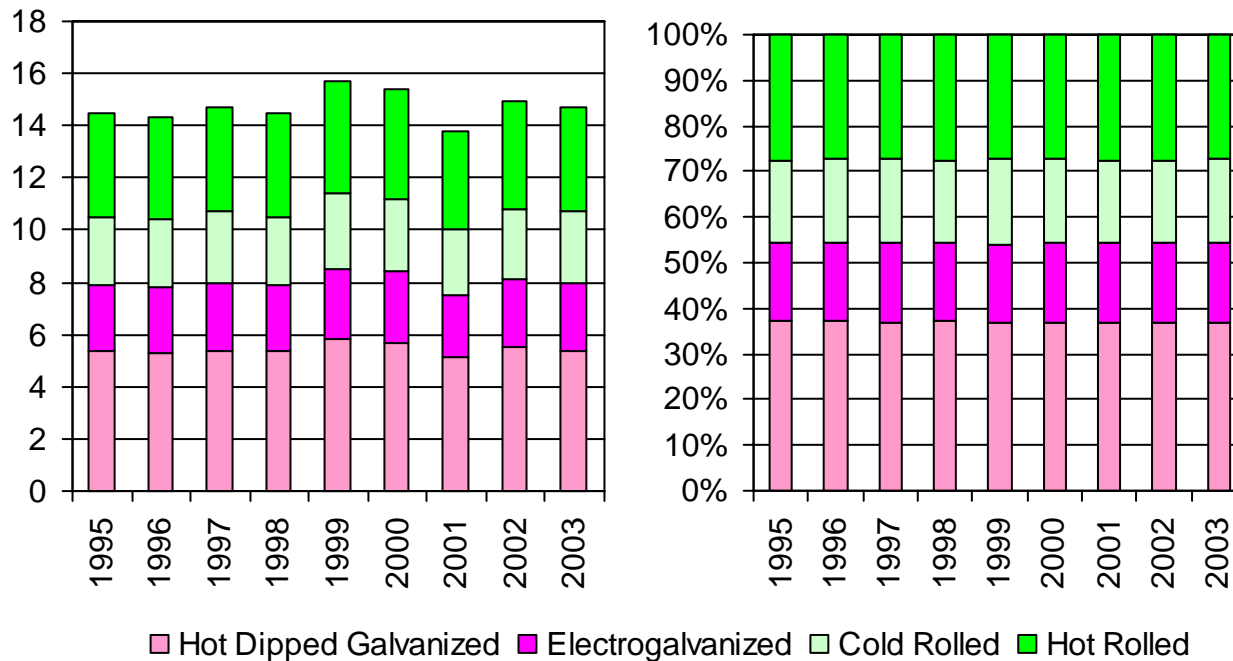
US HDG consumption by end-user sector (2004)



Source: AISI and Hatch Beddows

For the automotive industry the steel product breakdown remains broadly constant

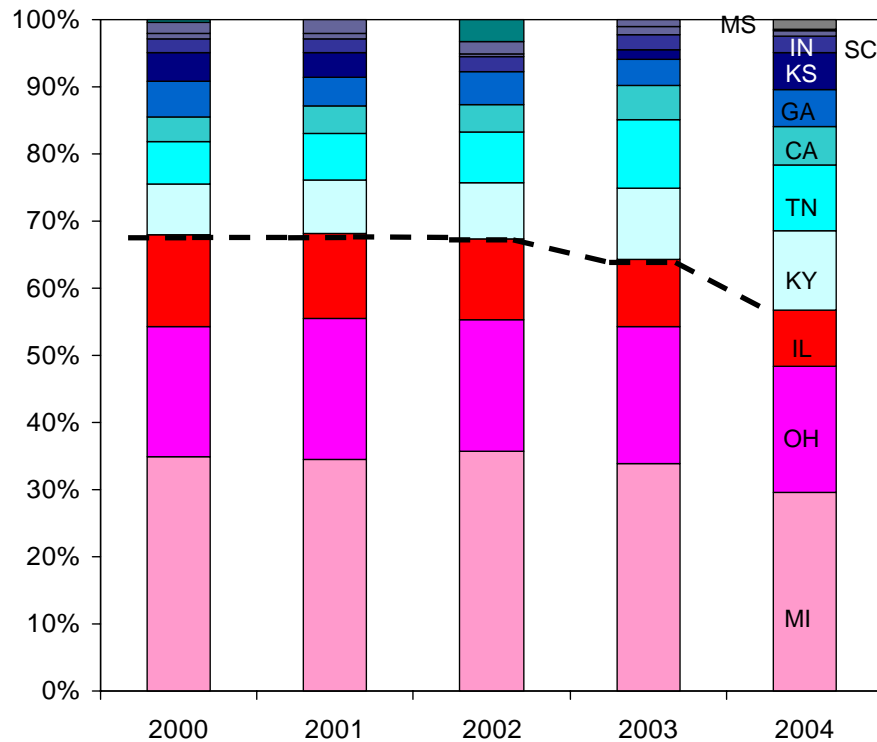
US automotive consumption by steel product (2004)



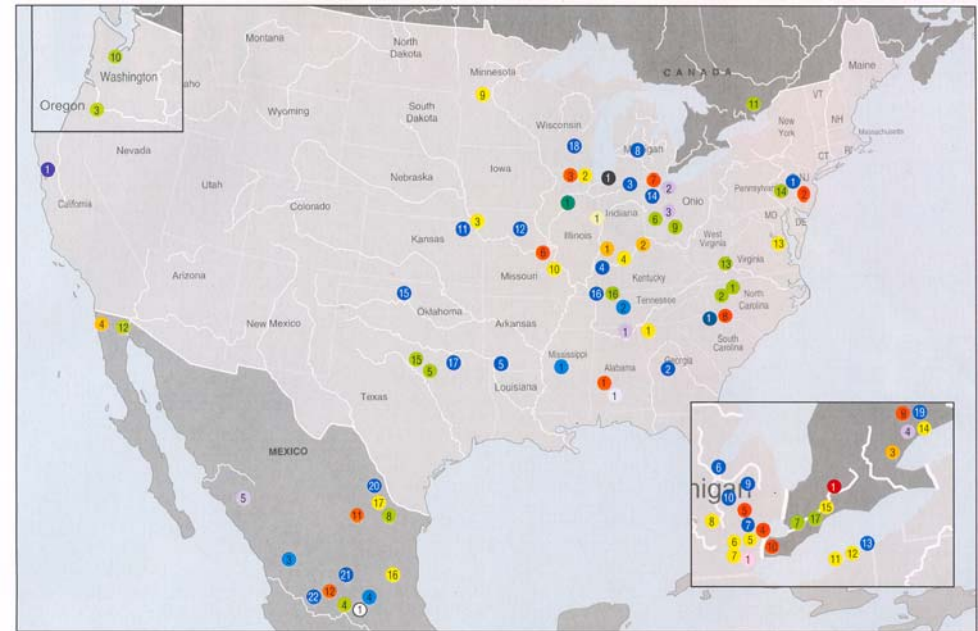
Source: AISI and Hatch Beddows

However, there is an accelerating shift in local auto quality galvanized consumption as US production moves south from the big three states of Michigan, Ohio and Illinois

US automotive production by state



US automotive production sites



How analogous is this to the boom of Central Europe?

What could be the consequences?

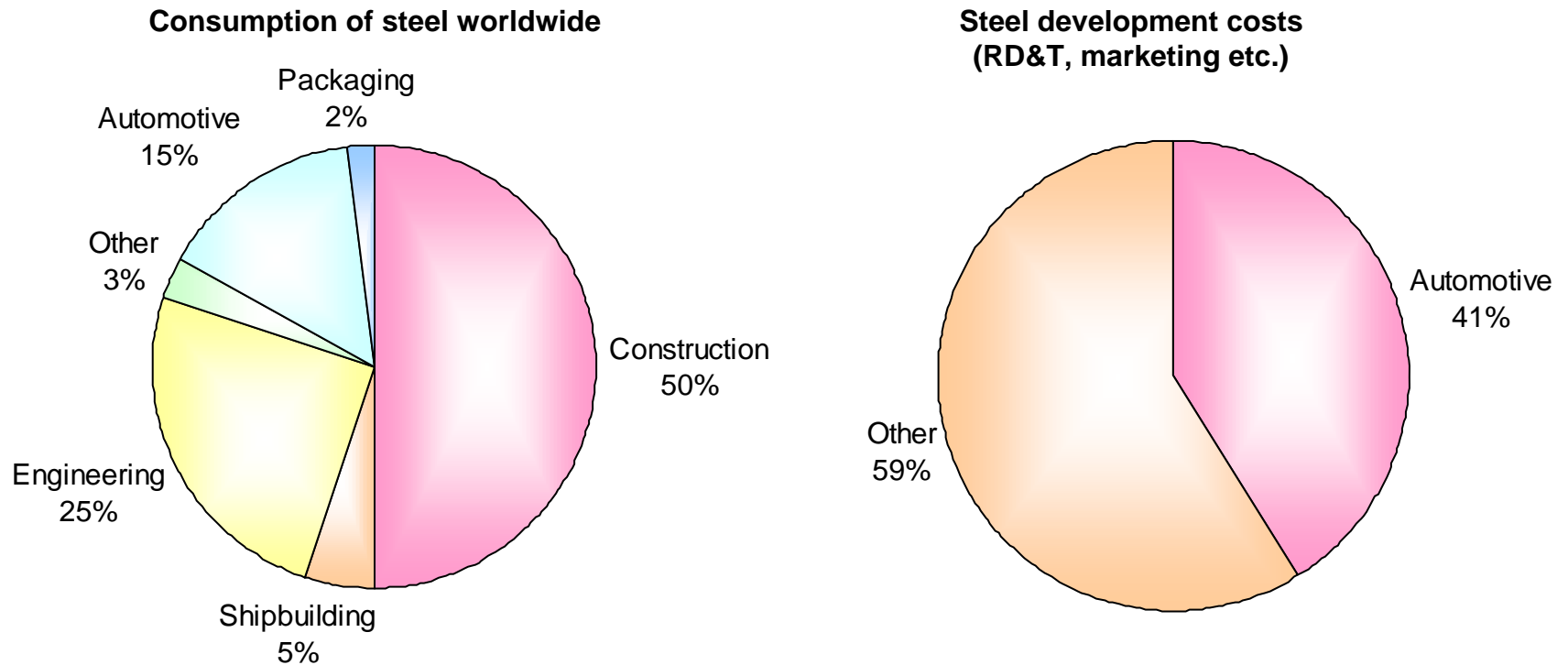
Source: AutoNews and Hatch Beddows

SeverCorr is a response to this migration and could be an interesting catalyst for further technical change

SeverlCorr

- Innovative mini-mill development aimed at auto quality coated flat rolled - Yet to start construction
- Joint venture between John Correnti (ex. Nucor CEO) and Severstal
- Located in Mississippi (USA), where there is increasing OEM activity and no local supply
- US\$700m capital spend for 1.5mt production, expandable to 2.5mt for a further US\$100m
- Initially targetting 15% of shipments for automotive, but plans to grow substantially
- SMS/Demag EAF and Hot Mill
- VAI Cold Mill Complex
- Able to make IF-ULC grades
 - LMF, Vacuum Degasser, 6 stand HSM up to 74" wide
- One North American mini-mill is already producing non-exposed panel auto sheet
- Ability to produce exposed sheet is due to
 - Virgin iron units (75% DRI), operating practice, casting speed and yield
- Severcorr has secured an offtake contact for auto qualities with a Japanese trading house

Automotive markets get too much attention!

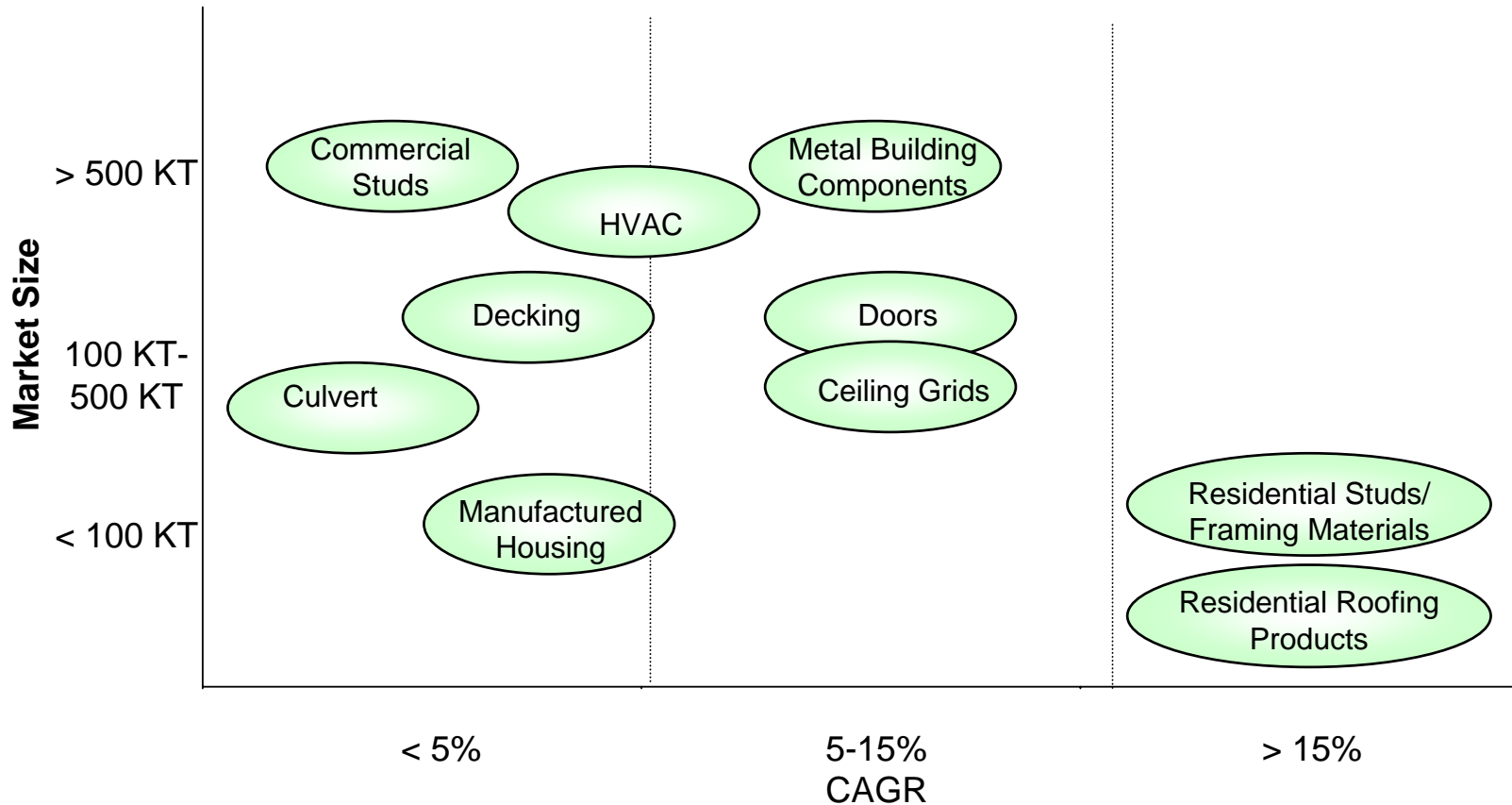


How big would construction consumption be with a similar development effort as automotive?

Construction related applications include a wide variety of market sizes and growth trajectories

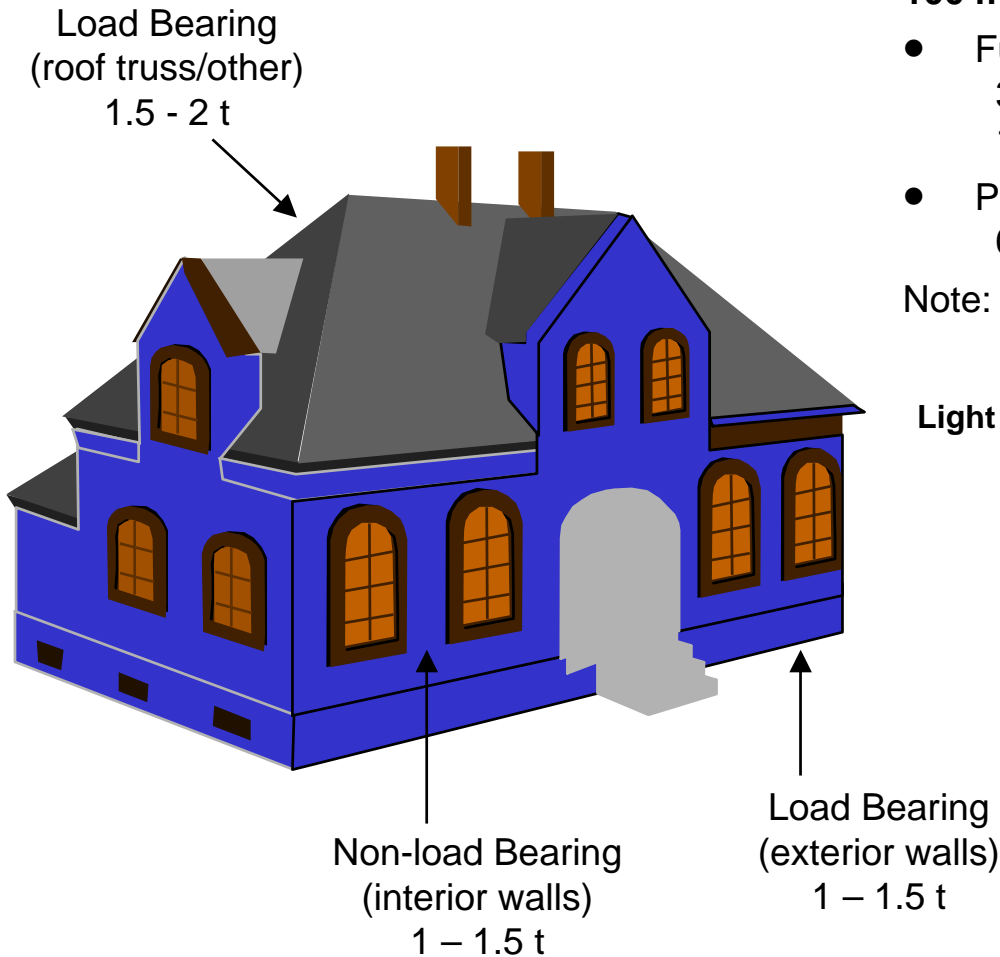
Example: USA

US market data



Source: AISI and Hatch Beddows

Residential steel framing applications include load and non-load bearing studs, floor joists, roof trusses, roofing materials, etc. which all consume galvanised product

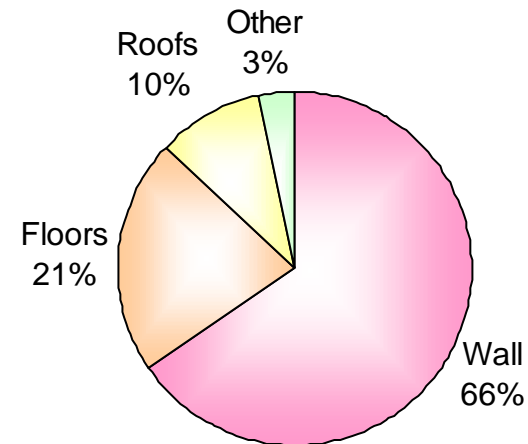


100 m² home

- Fully steel framed ("maximum")
3 t load bearing
1.2 t non-load bearing
- Partially steel framed ("minimum")
0.5 t non-load bearing

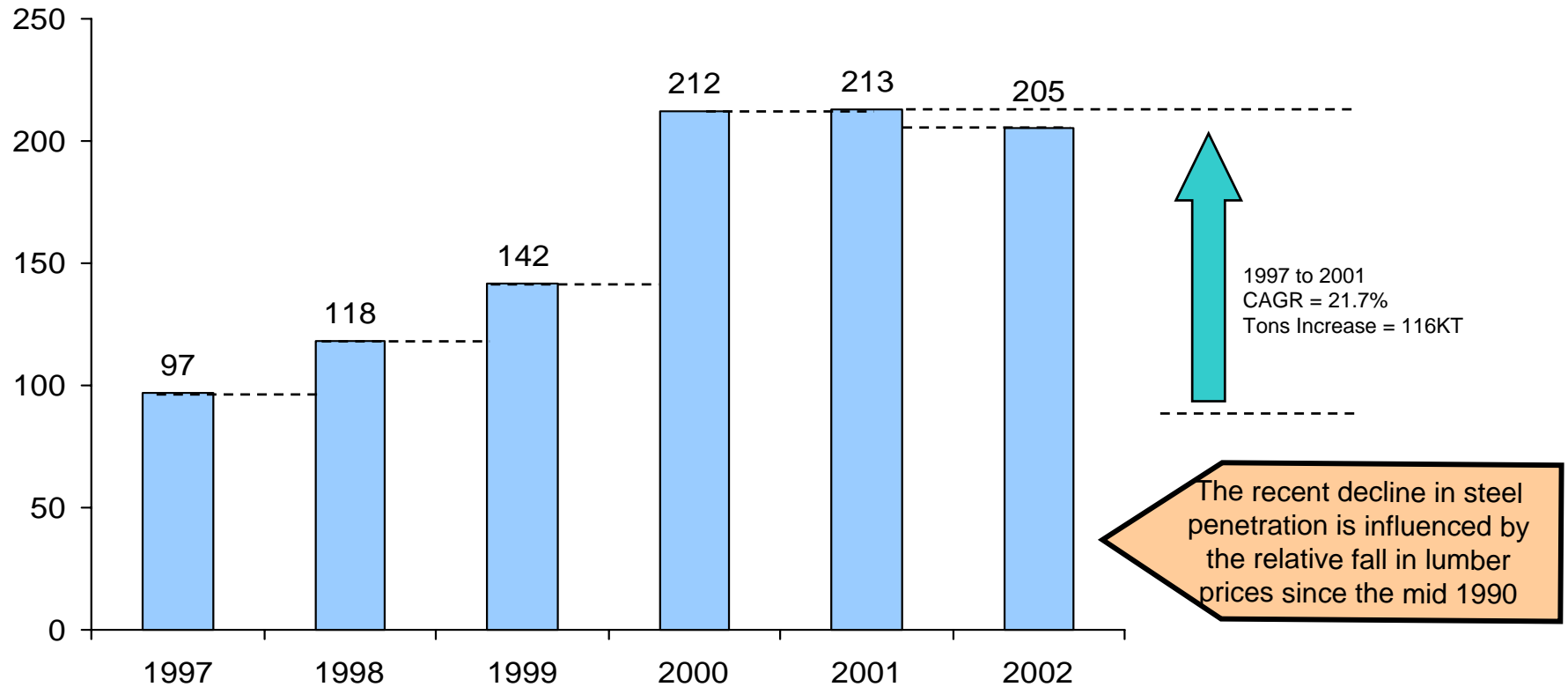
Note: Framing includes studs, lath, bead, truss plates, and other materials

Light Gauge Steel Framing shipments by application in US



US shipments of light gauge residential steel framing grew at a rate of 21.7% from 1997 to 2001 on the back of the Steel Framing Alliance initiative

Total shipments of residential light gauge steel framing (kt)



Source: Steel Framing Alliance and Hatch Beddows

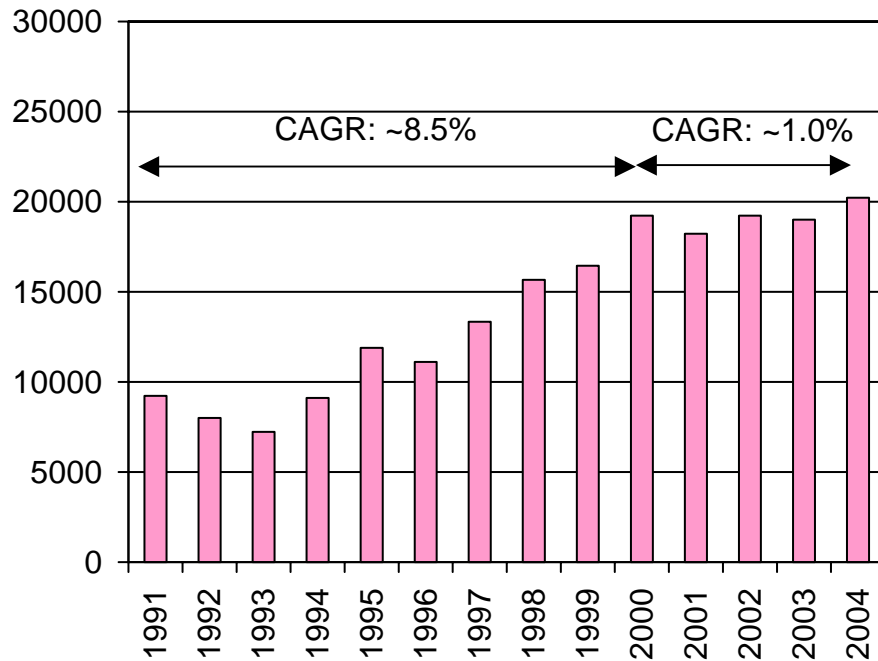
Note: "Shipments" based on figures reported by the Steel Framing Alliance

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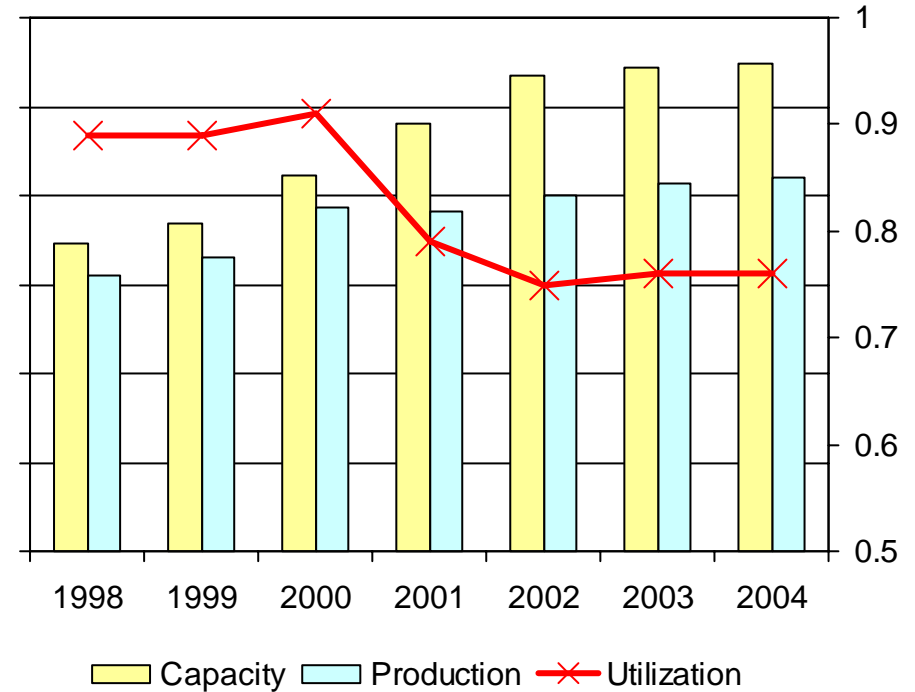
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A US style investment glut around in the late 1990s has created an overcapacity of about 6 Mt

EU HDG consumption/kt



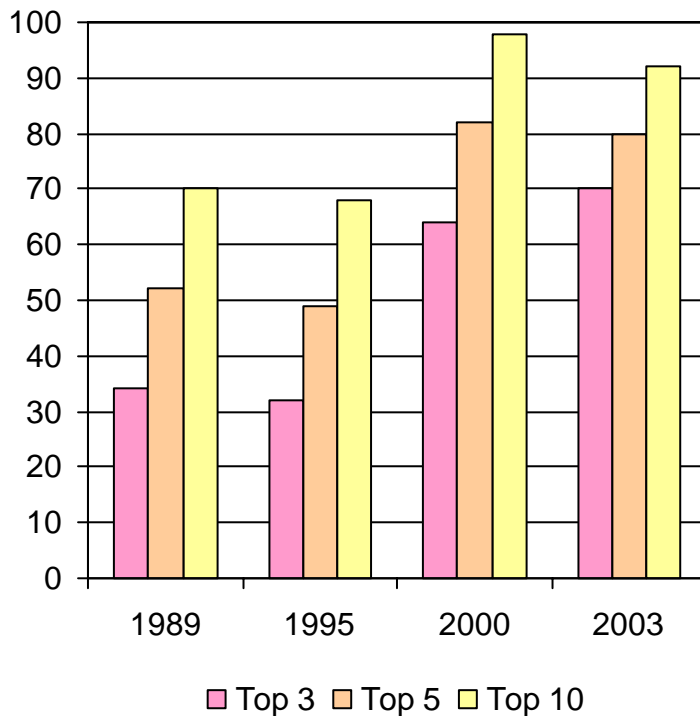
EU HDG capacity, production and utilization/kt



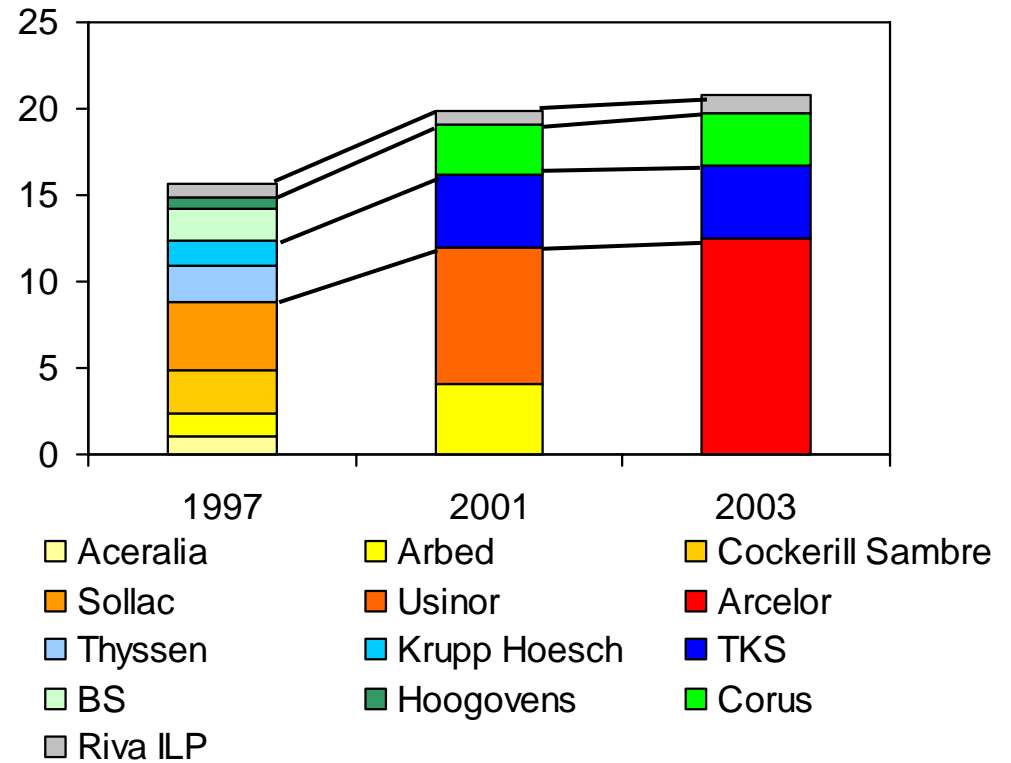
Source: EU, MB, James King and Hatch Beddows

...despite this capacity consolidating heavily over the same time

EU HDG capacity consolidation/%

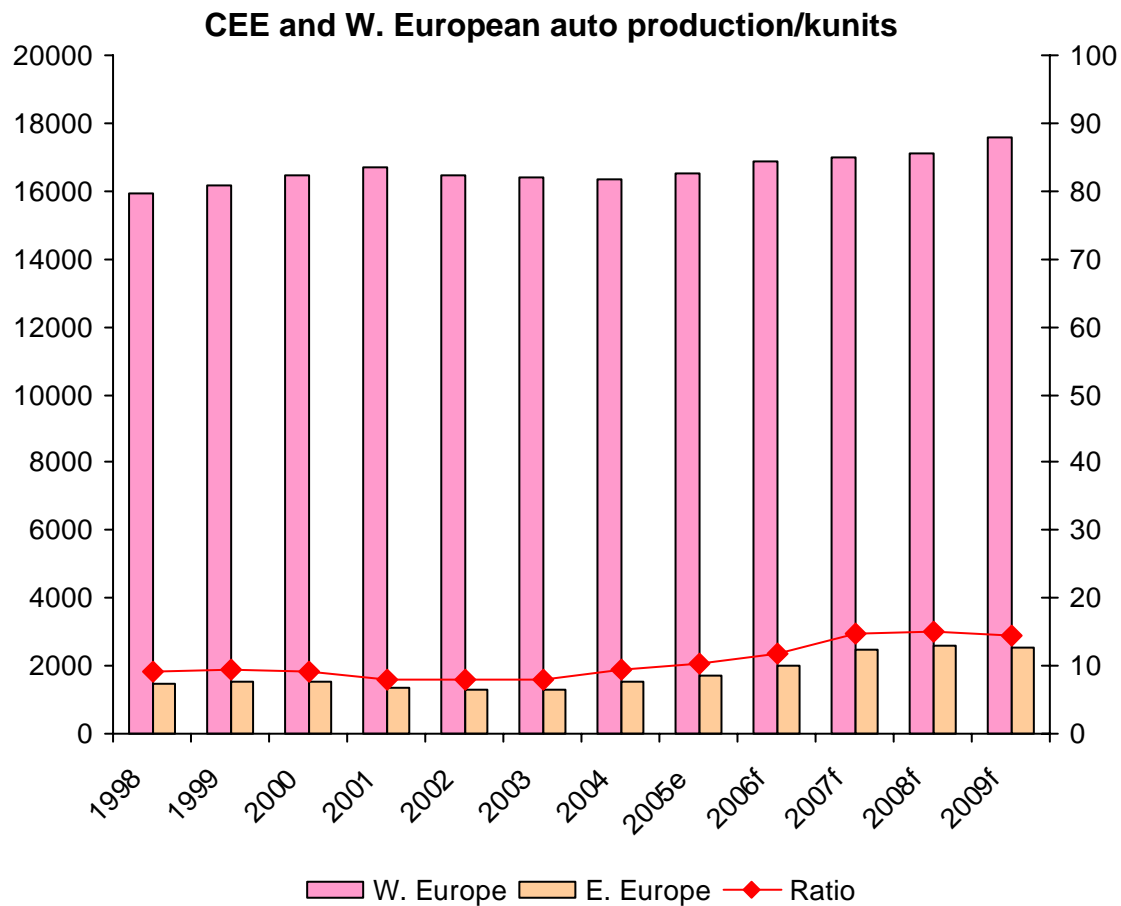


EU HDG capacity consolidation by company for the present top four/mt



Source: James King, CRU and Hatch Beddows

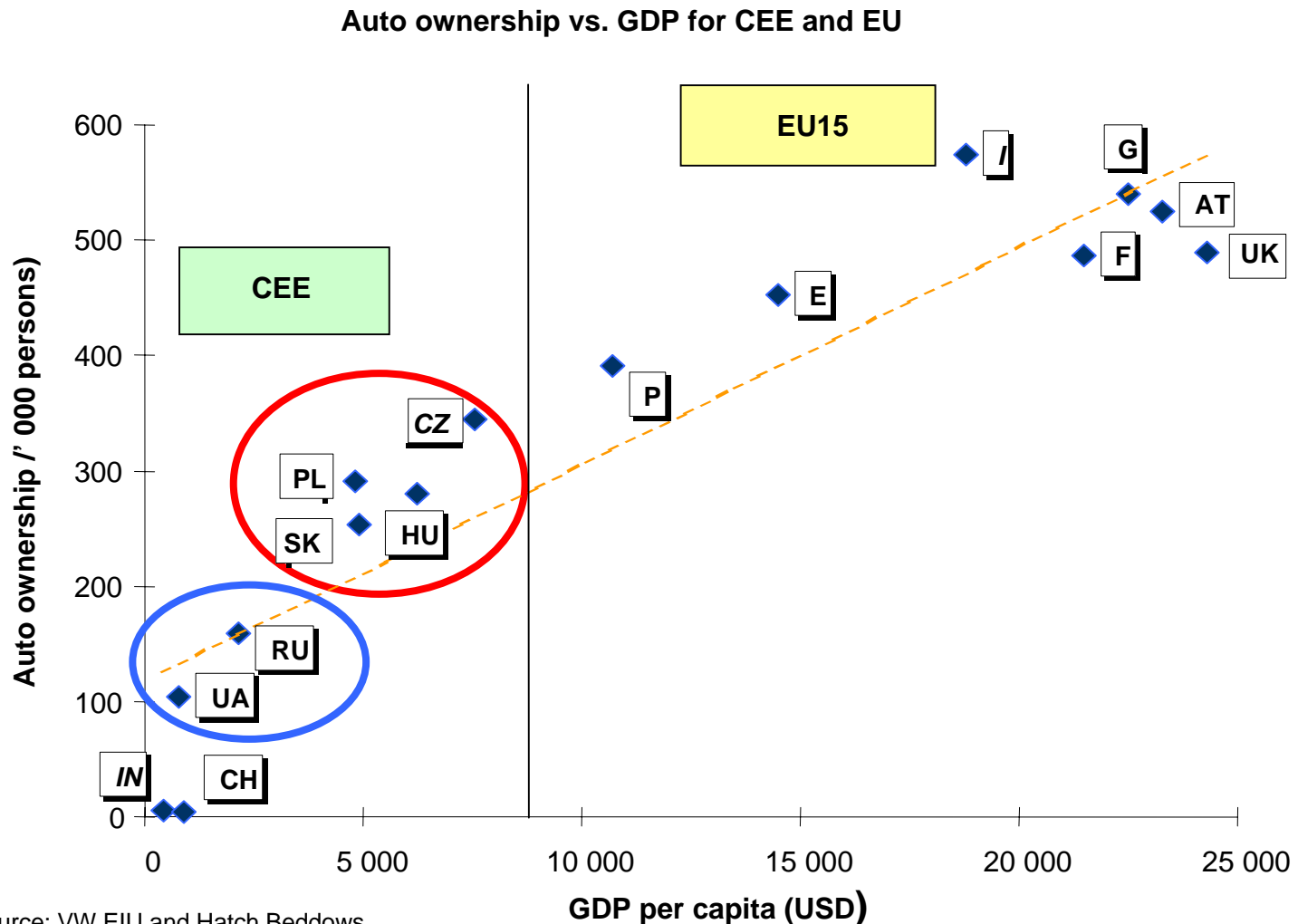
Central Europe has been the great automotive growth story but don't write off W. Europe altogether - Central Europe will still only be responsible for less than 15% of total European production in 2009



- Plants are indeed closing in W. Europe e.g. Rover – UK, Russelsheim – Germany?
- Nonetheless, W. European production is expected to remain at least static
 - C. European automotive growth is broadly additive to W. Europe
- In contrast, C. European production of white goods, packaging and other consumer goods is much more substitutational
 - W. European capacity for these products is disappearing in favour of C. Europe

Source: JDPower, AutoNews and Hatch Beddows

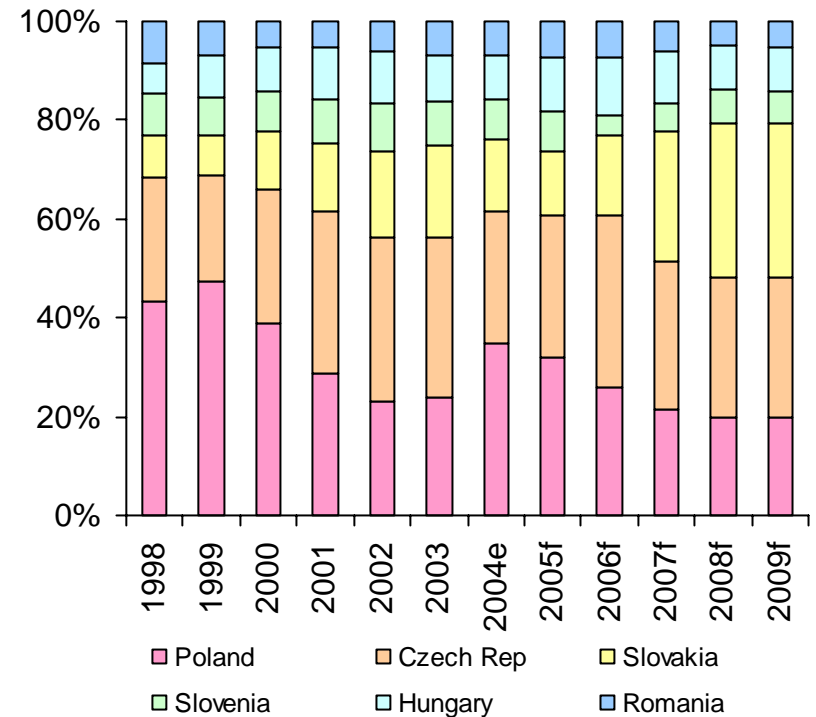
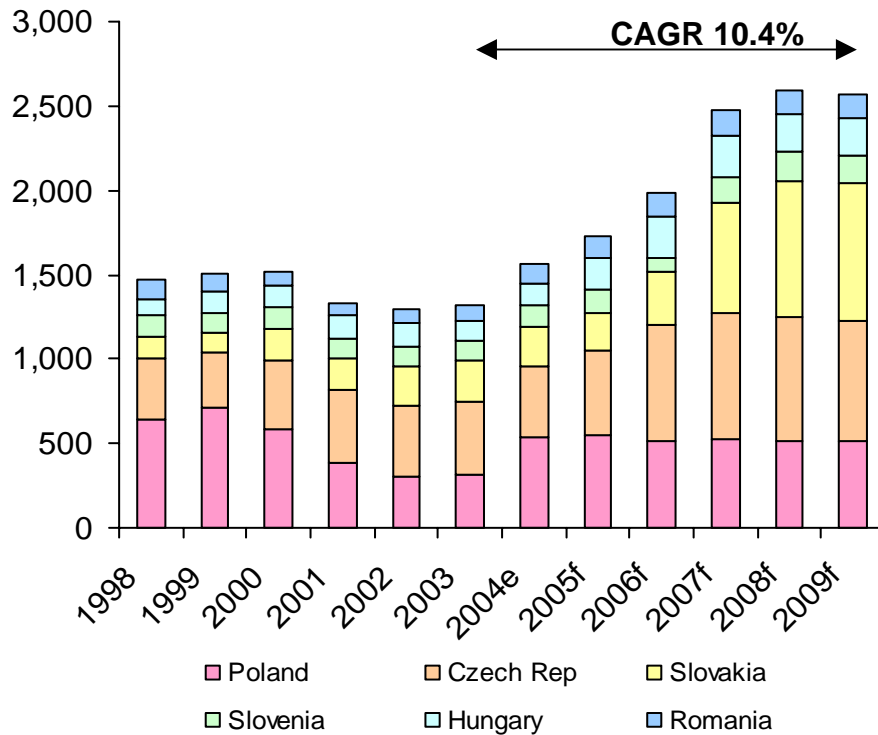
The main reason for the growth of automotive production into the region is the ability to exploit higher growth potential than in mature Western markets. Low cost manufacturing is also a factor



Source: VW,EIU and Hatch Beddows

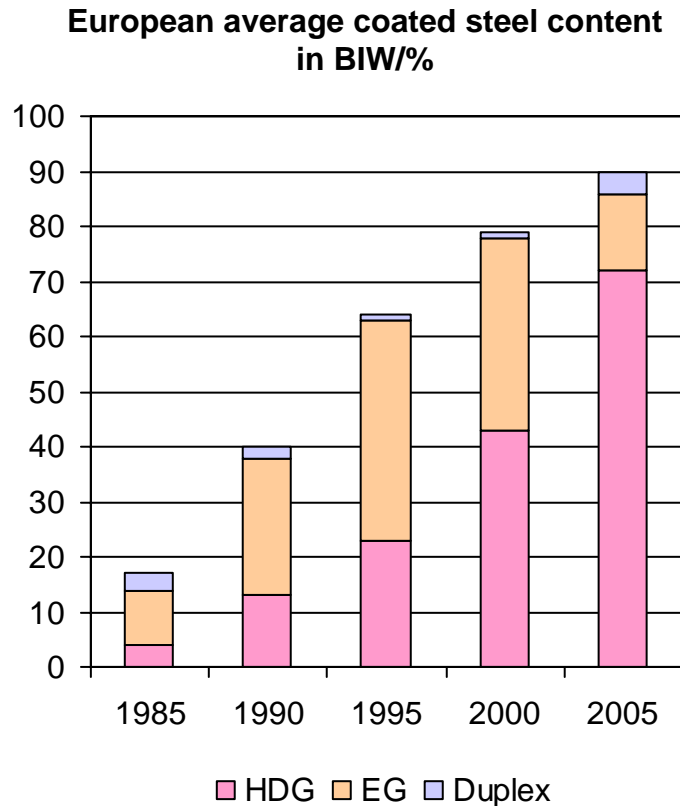
Central European automotive growth is a well documented story that has essentially run its course through 2010, with the possible exception of 1 – 2 new plants

CE auto production/kunits



Source: JDPower, AutoNews and Hatch Beddows

The last 20 years has seen the almost complete conversion of BIW pressings to coated steel – in addition HDG now dominates coating technology over EG

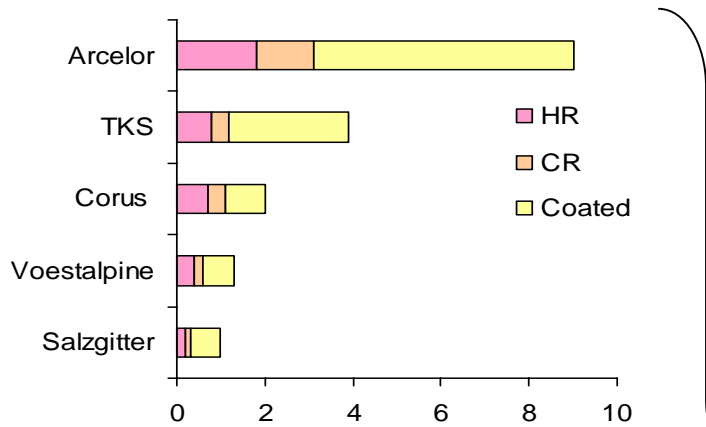


Source: Arcelor, BMW, industry and Hatch BeDDows

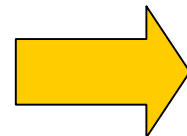
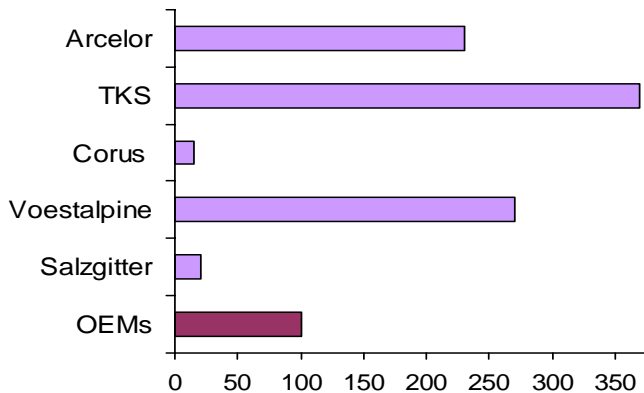
- European trends show:
 - electrogalvanised demand diminishing
 - hot dip products (Zn, Zn/Fe) increasing
 - specific preferences (minority) persist: e.g. Opel – Zn/Ni, DC – duplex
- Extremes still exist e.g. Ford Fiesta 69% coated, BMW Mini 91% coated
- Further penetration of coated BIW pressings towards 100% is not expected - only slight creep is forecast as new models are developed
- There is a developing story in pre-coated steels as led by DC

Steel supply to the fragmented European automotive industry is now consolidated and somewhat stable - though USSK and Mittal Steel are intending to enter the mix

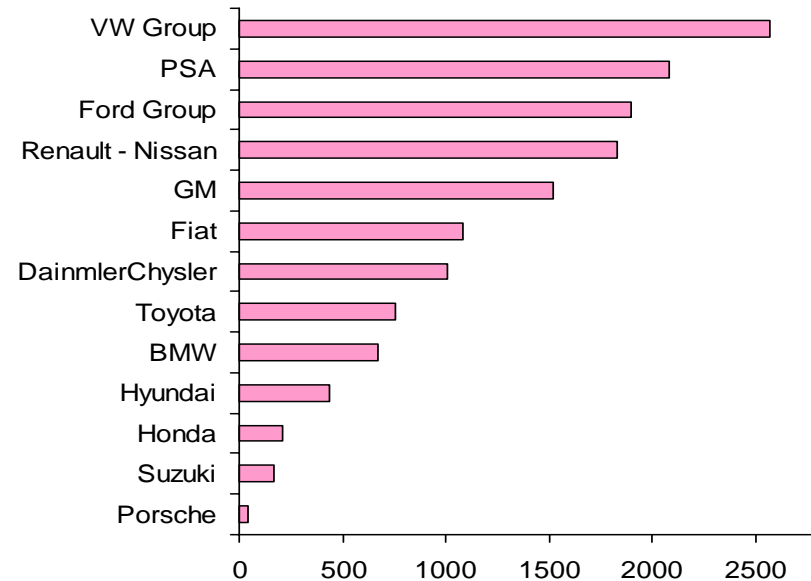
European automotive shipments/mt



European TWB shipments/kt

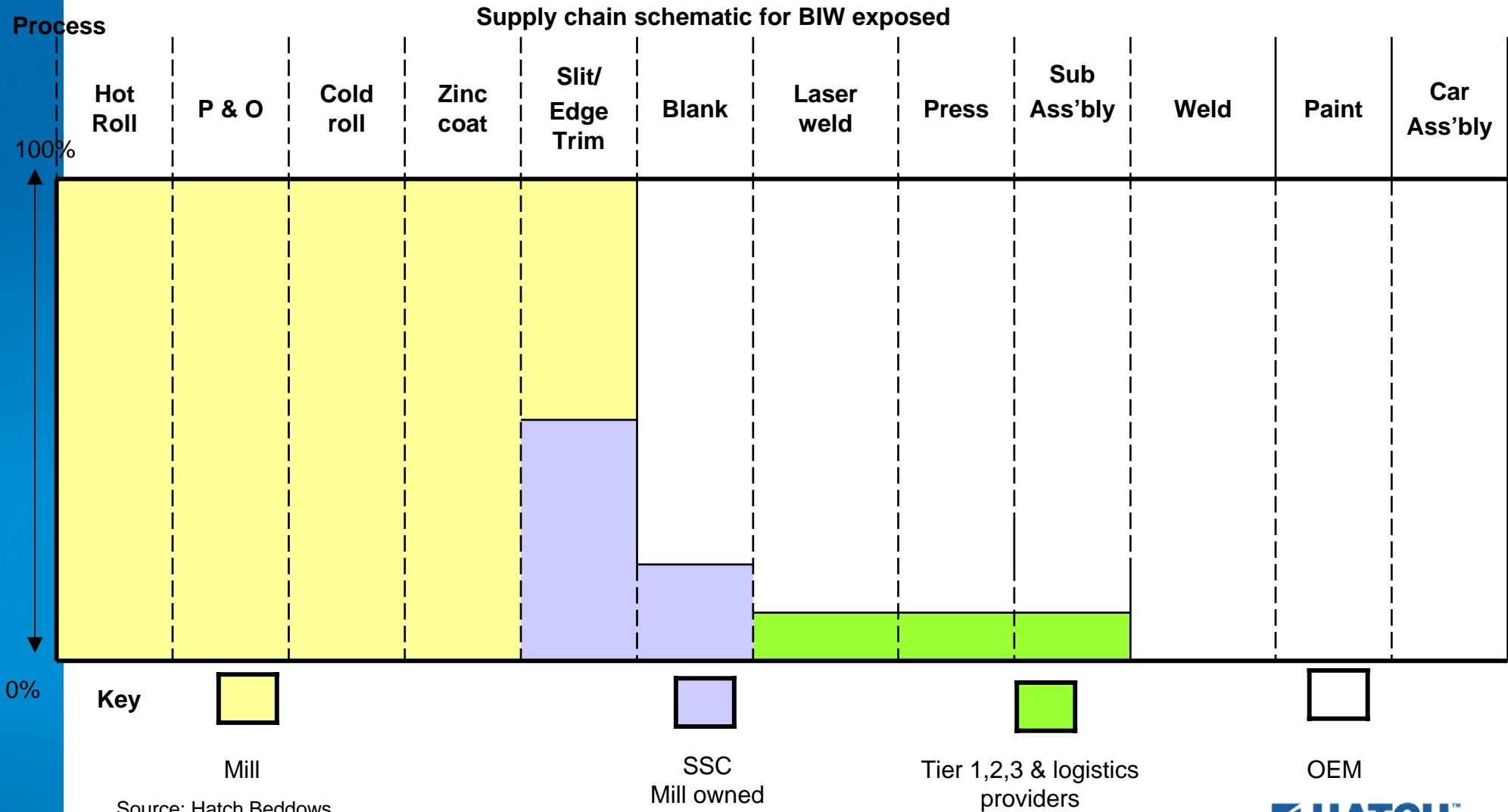


European automotive group production/kunits



Source: Companies, industry and Hatch Beddows

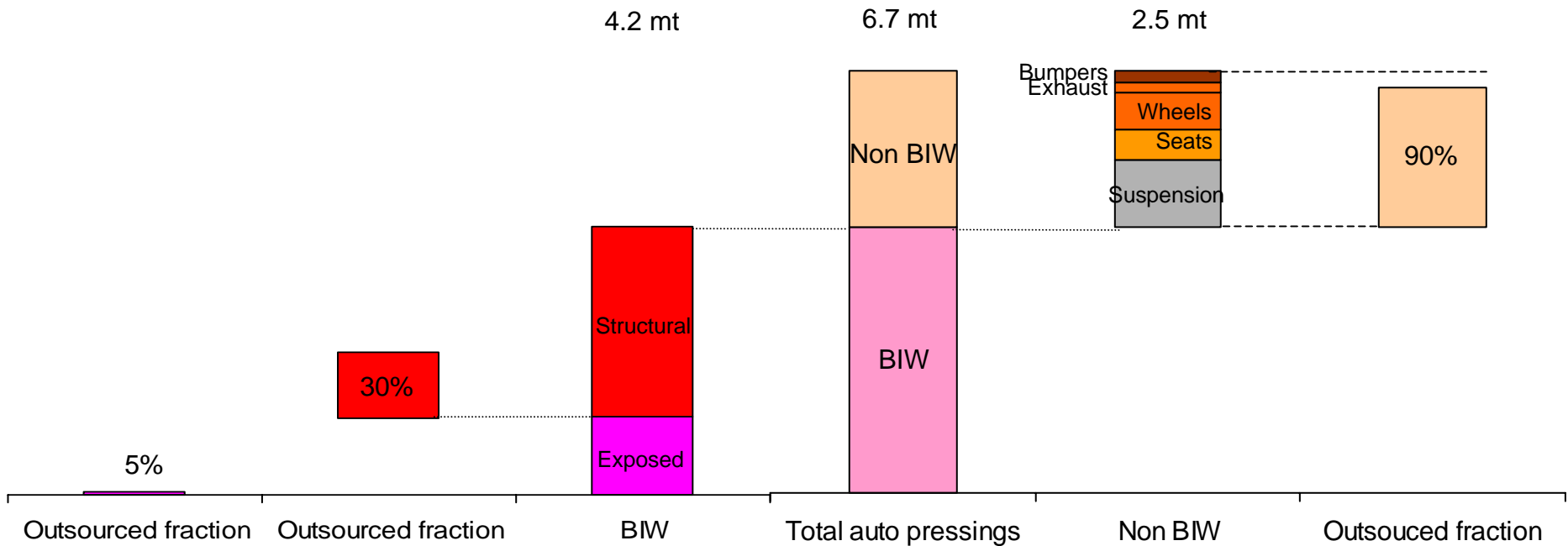
The coated steel is supplied through a mature and well developed supply chain



Source: Hatch Beddows

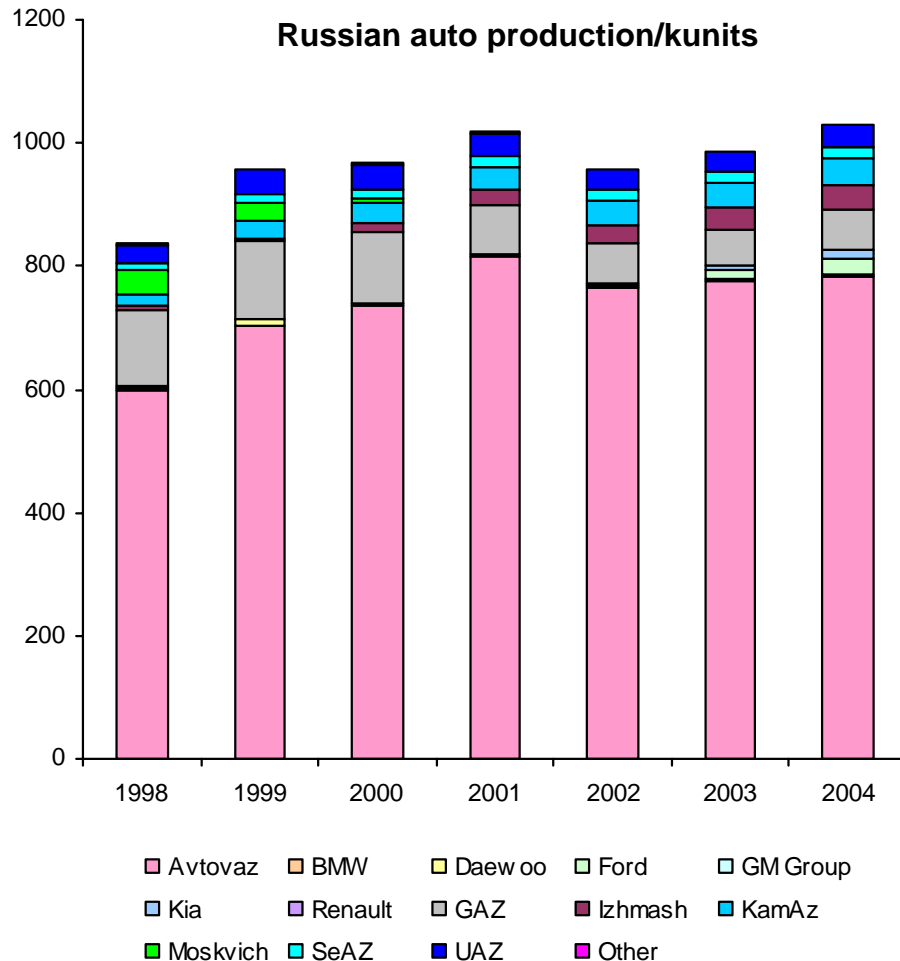
Within the steel supply chain, just over half of all W. European automotive pressings are performed in-house, but BIW exposed pressings remains core competence of the OEM

W. European outsourcing intensity (2004)/mt(net)



Source: Industry and Hatch BeDDows

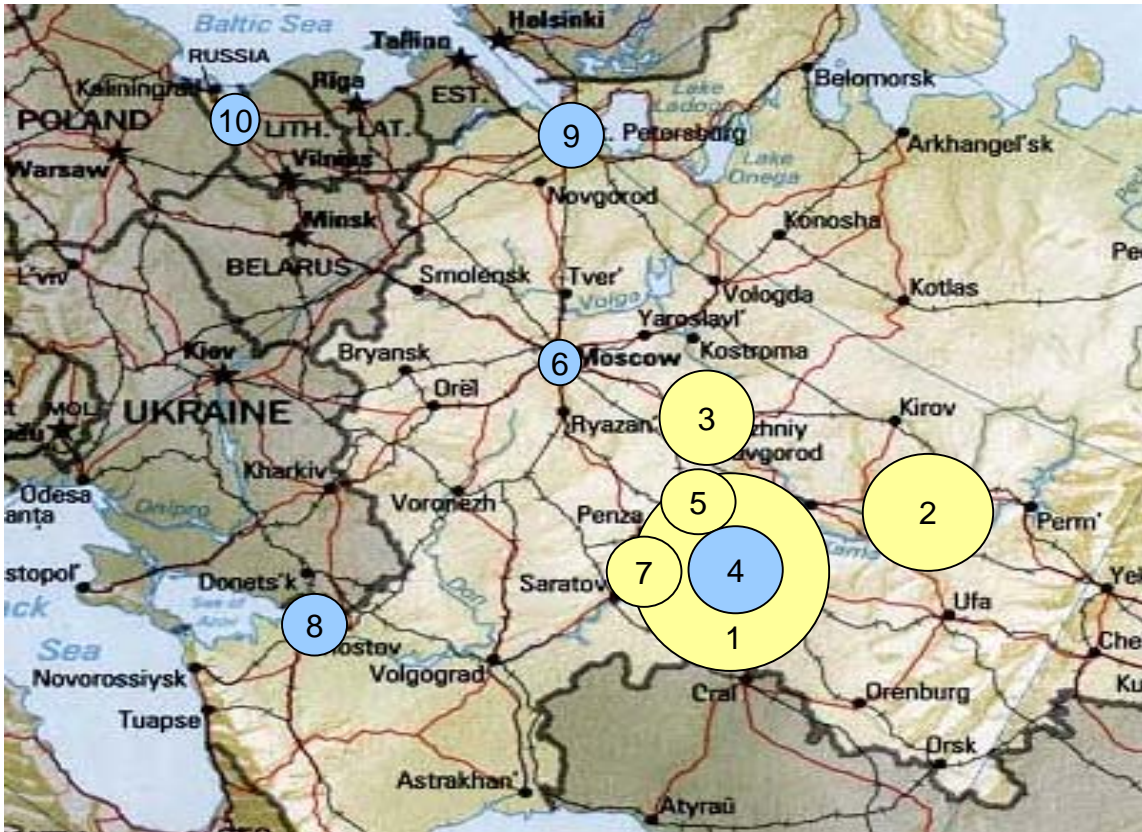
The exciting opportunities for European automotive applications lie in Russia where production stands at around 1 m units but is still dominated by the Russian producer AvtoVaz



- The Russian automotive industry has a strong domestic production scene coupled to a high growth and potentially large foreign transplant element
- Russian tariff regimes, as it enters the WTO, on parts, CBUs and used cars will play a larger role than normal in determining the role of FDI production
- Major upgrades to Russian models regarding Euro III/IV levels (emissions, crashworthiness etc.) will be necessary in next 5 years

Source: JDPower, AutoNews and Hatch Beddows

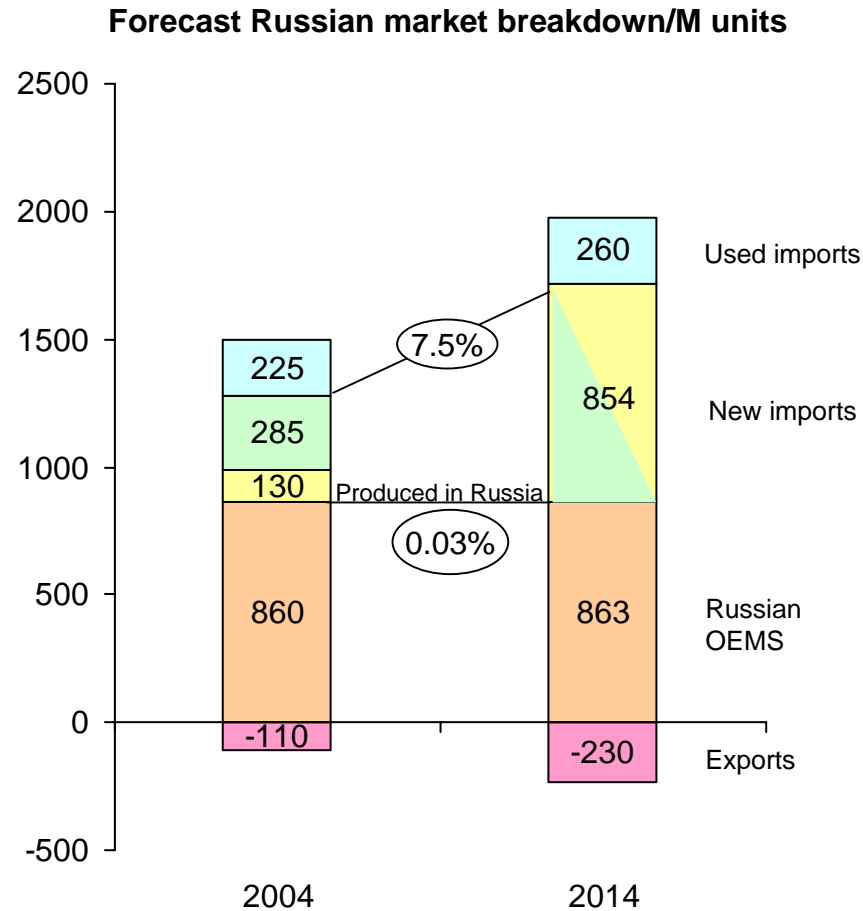
Russian auto production is clustered around the Togliatti area. Apart from GM Avtovaz, the transplants are dispersed around European Russia



Map Number	Company
1	AvtoVAZ
2	IZH-Avto
3	GAZ
4	GM –AvtoVAZ
5	KamAz
6	Avtoframos
7	UAZ
8	TagAZ
9	Ford
10	Avtotor
Russian	
Foreign transplant	

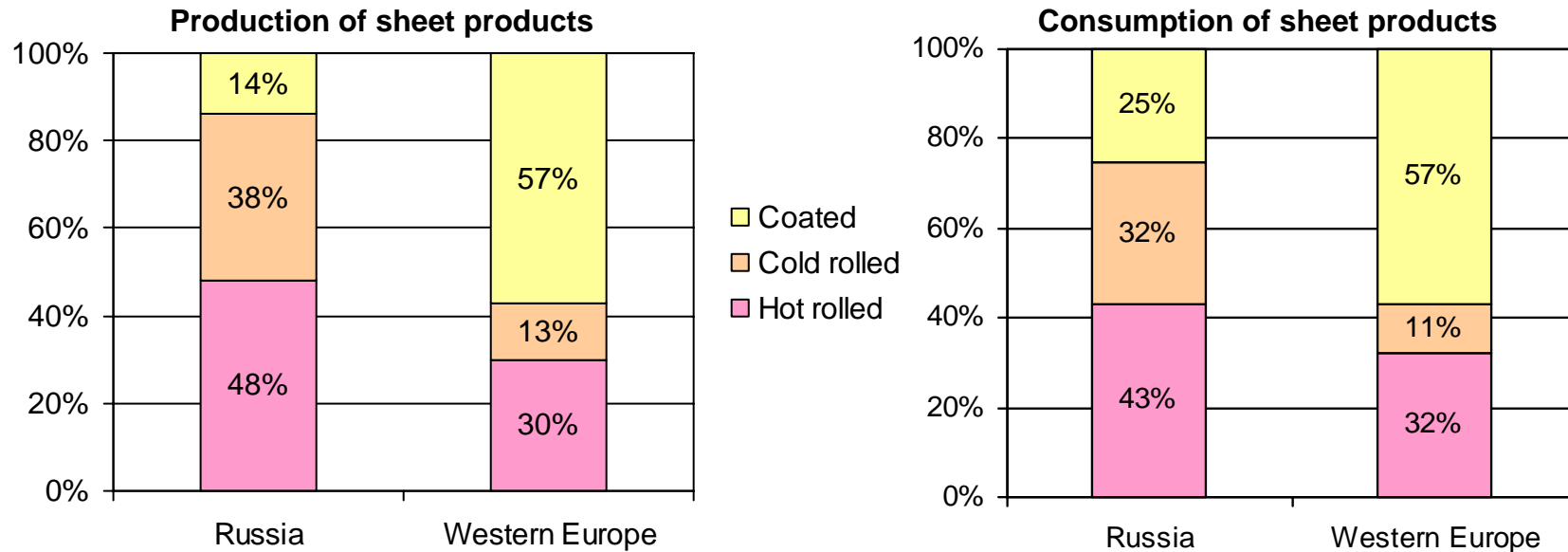
Size of circle indicates unit production

Russian OEM production is large but is forecast to be flat – all growth in the Russian auto market is expected to come from foreign production and imports



Source: Daimler Chrysler, Global Insight, ASM Holding and Hatch Beddows

Russian steel supply and demand is much more biased to lower value products than in Western Europe

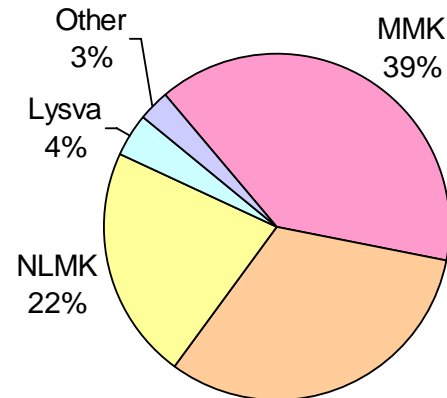


- As the industry modernises, Russian producers will continue migrating into more technically challenging and higher-quality products, such as downstream flat products. This migration will be driven largely by consumer demand
- Russia has some key advantages which bode well for further migration of production down the value chain:
 - Demand for steel products has been growing, generating cash for capital improvement projects
 - Heightened GDP per capita ratios are providing more disposable income, driving demand for consumer goods
 - The pace of foreign direct investment in Russia is increasing, bringing with it higher quality standards

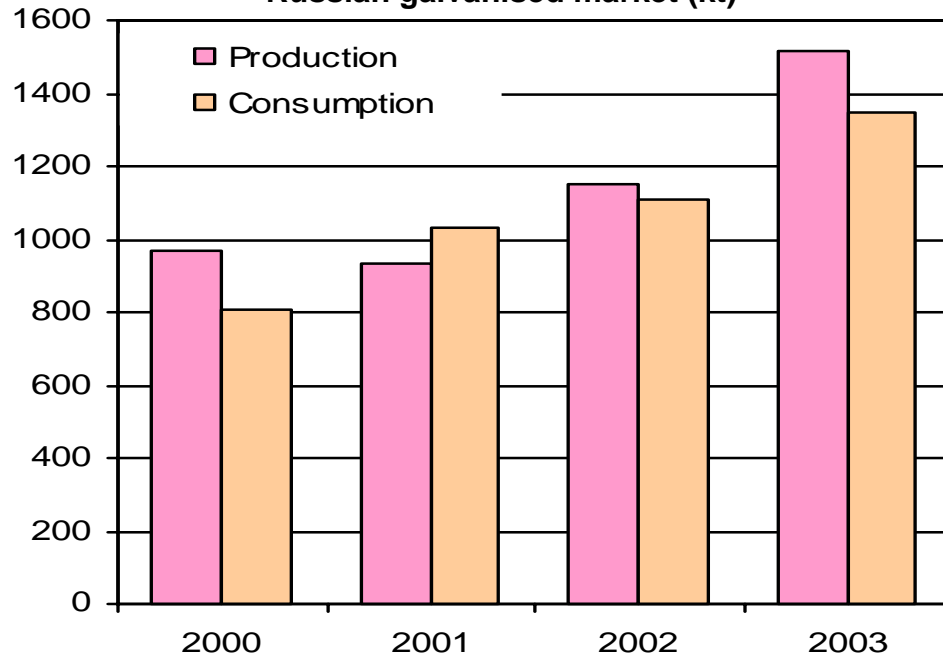
Russian production of galvanised is dominated by the “Big 3” but is mainly of non auto quality at this time

- From current levels of around 1.3-1.4 Mtpa, Russian consumption of galvanised products is expected to reach 2 Mt in 2010 and 2.8 Mt in 2015 as industry usage of coated steels grows

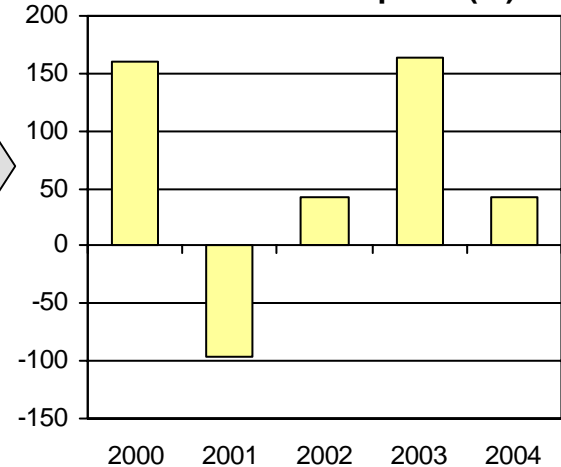
Russian galvanised output by company



Russian galvanised market (kt)



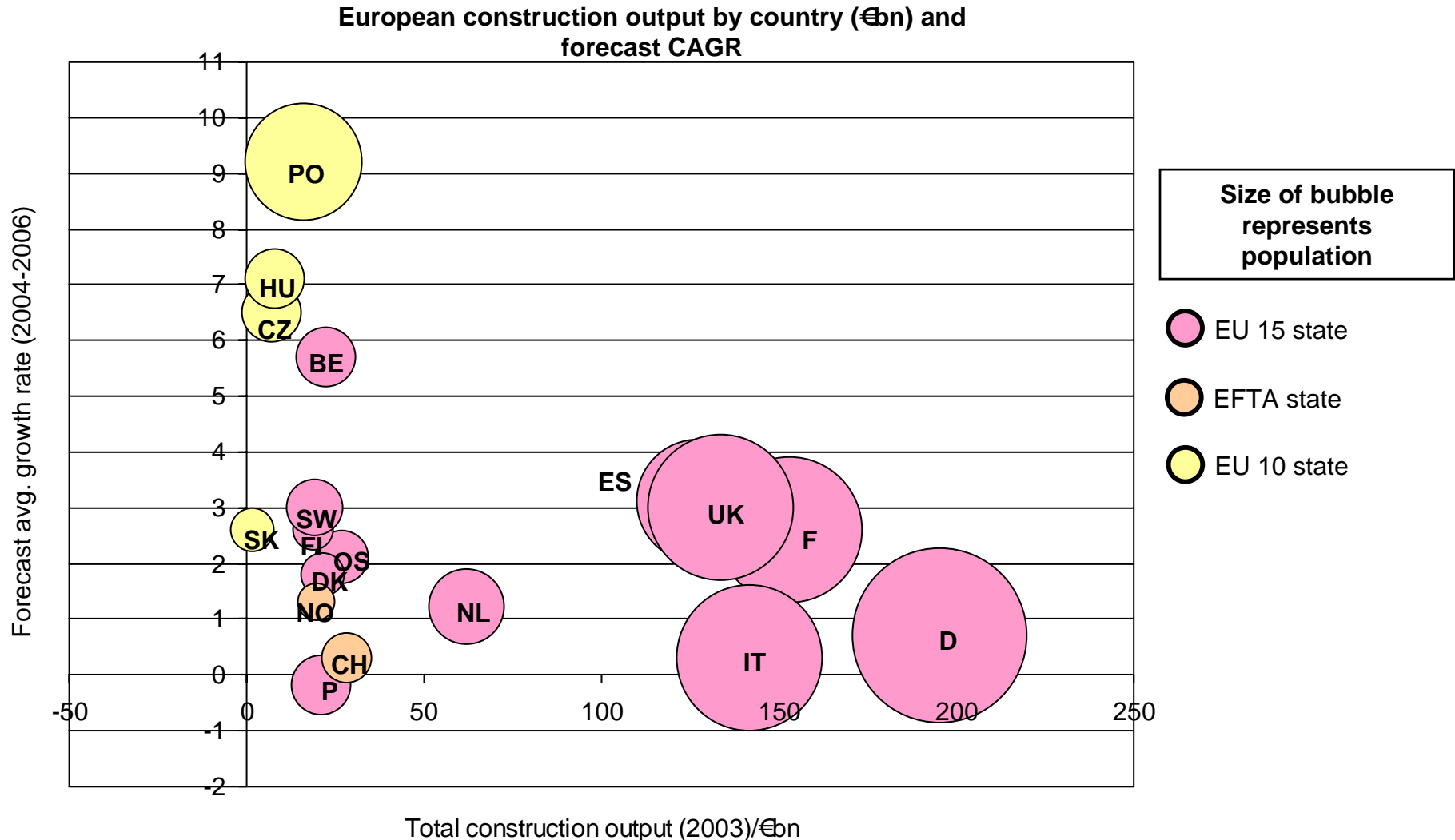
Galvanised net exports (kt)



The Russian market for automotive HDG is small but growing rapidly on the back of three major projects

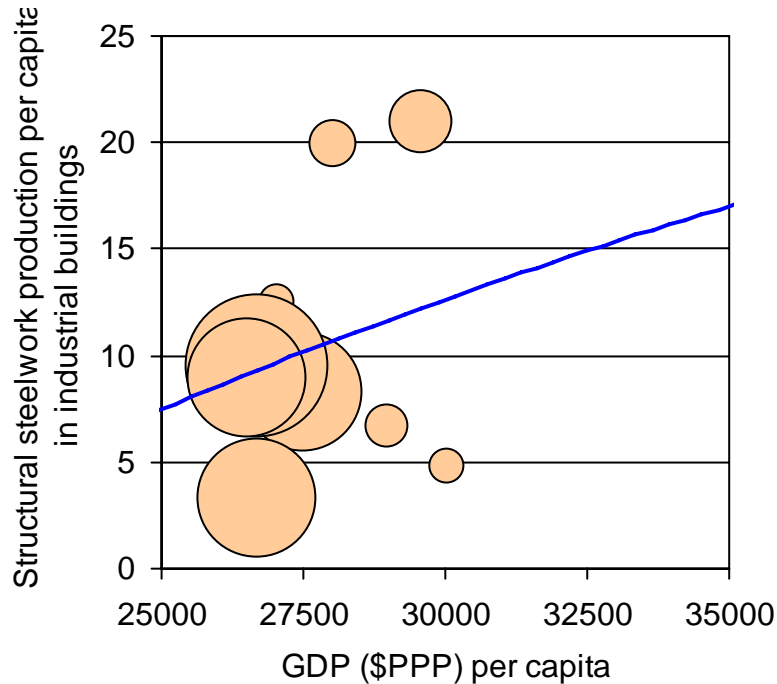
- The Russian market for automotive HDG is small but growing rapidly:
 - Total consumption of galvanised steel in Russia is about 1.0-1.2 Mtpa. Of this, only about 10% (about 100 ktpa) is automotive HDG. The remainder is galvanised steel for construction applications
 - Russian consumption of automotive HDG is growing for two reasons:
 - 1) Existing Russian automotive producers are converting some cold rolled steel components to HDG
 - 2) New joint venture automotive producers in Russia are expected to use a high proportion of HDG
- The Russian market for automotive HDG is currently under-served by Russian producers:
 - The Russian producers of HDG – Severstal, Novolipetsk (NLMK), and Magnitogorsk (MMK) – are currently focused on the production of galvanised steel for construction applications
 - NLMK may be producing some automotive-quality HDG, but not enough to meet domestic demand. Russia's remaining requirement for quality HDG for automotive applications is likely imported
- In order to displace imports and supply the rapidly growing demand in Russia for automotive HDG, all three Russian HDG producers are planning, or in the process of installing, new HDG capacity:
 - Severstal is in the process of installing a new 400 ktpa HDG line in a joint venture with Arcelor ("Severgal"). The line will produce automotive quality HDG and will target both the Russian and export markets
 - MMK has plans to install a new 400 ktpa HDG line, similar to that of Severgal, which would target the high quality galvanised market in both Russia and export
 - NLMK plans to double its HDG capacity from 500 ktpa to 1 Mtpa, although much of this will provide feedstock for its colour-coating line which NLMK plans to increase in capacity from 140 ktpa to 600 ktpa

In contrast to the automotive market, the European construction market is extremely complex due to it primarily remaining a collection of national and local markets each reacting to extremely varied strategic drivers

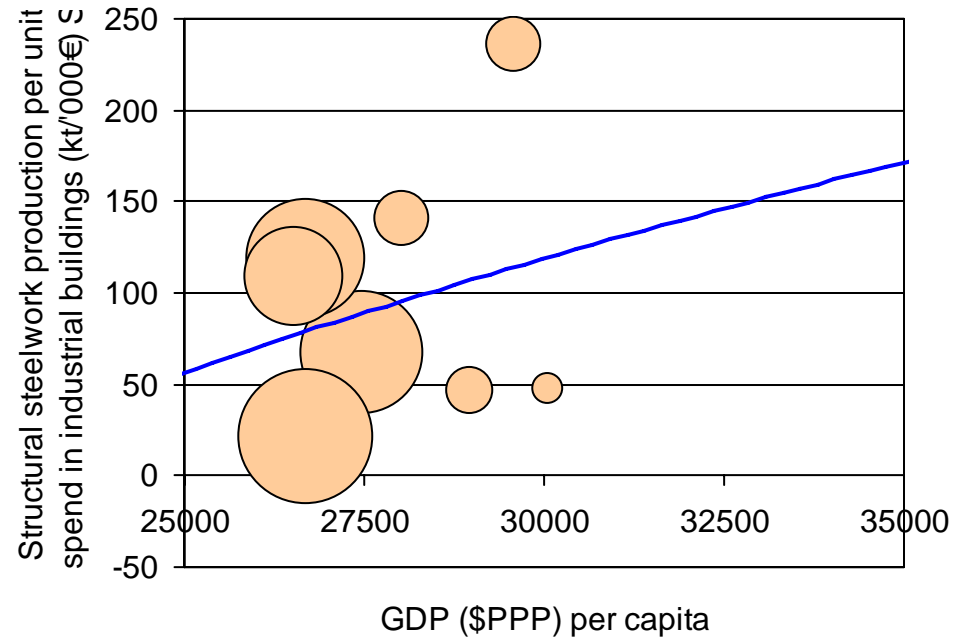


National differences in specific consumption of steel in construction applications are huge – therefore the potential for galvanized is equally huge

Structural steelwork production per capita and unit spend in industrial buildings and GDP (\$PPP) per capita



Size of bubble represents population



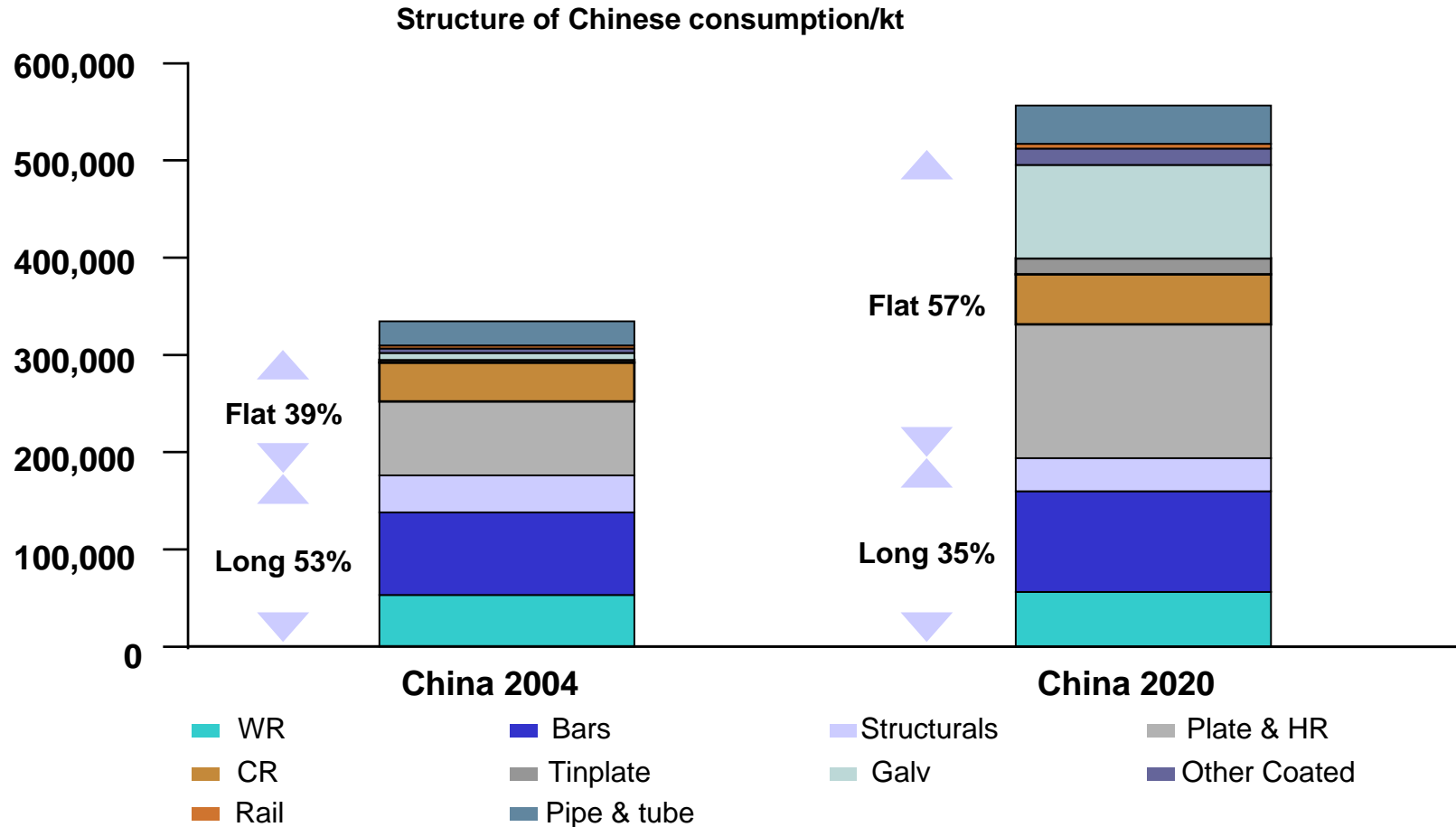
Size of bubble represents industrial building spend

Source: EIU, ECCS, Euroconstruct and Hatch Beddows

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As Chinese industry matures, it will create similar demand to that in the EU and North America



Source: Hatch Beddows

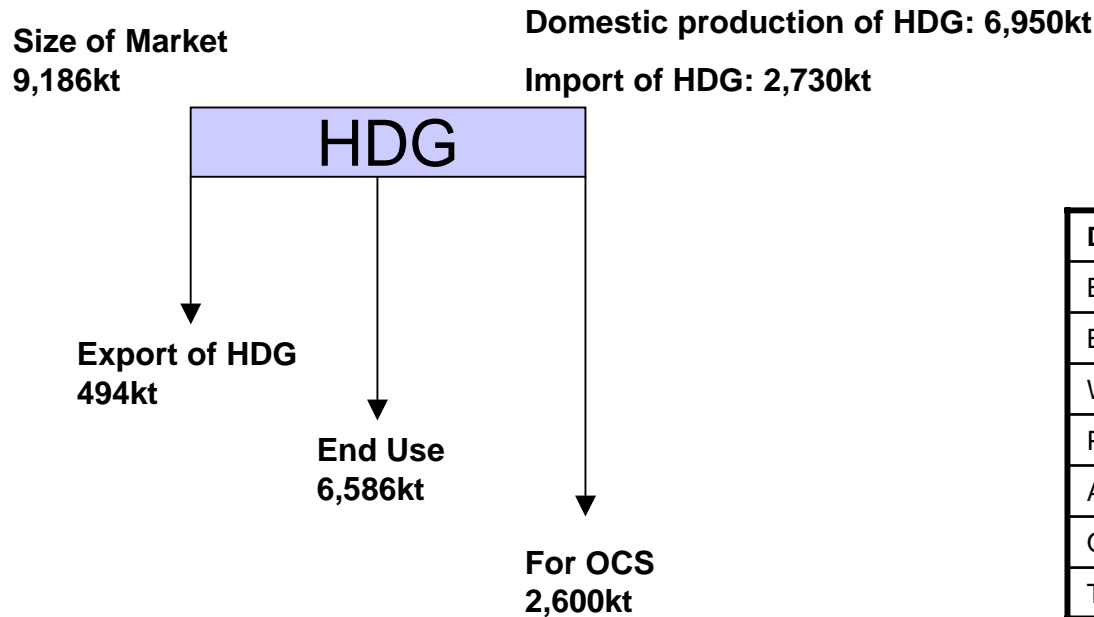
Consumption patterns will evolve as the economy matures and consumer goods become of increasing quality and importance

- CRC, Tinplate, Galv, Other Coated (High Value Products) will be an increased proportion of consumption; rising from 16% in 2004 to 32% in 2015/20
- This forecast is derived from NA and EU patterns
- This increased technical and market complexity will need investment
- This will be most efficiently deployed if it coincides with consolidation to reap economies of scale
- This evolving market also requires sophisticated distribution and processing capability

- Results will be:
 - Consolidation within China and between China and the rest of the world
 - Technology transfer based deals with non-Chinese producers

The emerging focus in the Chinese industry is value added product development, distribution and consolidation to achieve a world best industry

Although Chinese HDG capacity exceeded 18mt in 2004, domestic supply is only about 7 mt and accounts for only 3/4 of total demand



Domestic HDG Production	
Baosteel Group	1150kt
Benxi Iron & Steel	330kt
Wuhan Iron & Steel	200kt
Panzhuhua Iron & Steel Group	330kt
Anshan Iron & Steel	730kt
Others	4210kt
Total	6950kt

- Around 28% of the HDG consumed in China is used by OCS manufacturers
- Only three suppliers can produce thin gauge HDG
- Few, if any, of the galvanising lines are running at full capacity

Source: Custom stats, companies and Hatch Beddows

However, there is still another 15mt HDG of capacity be added in 2005-06, almost doubling the current national total!!

New HDG projects to be added in 2005

No	Company and Project	Location	Cap (Kt)
1	Xinqinglu Steel Sheet	Shangdong	200
2	Guangzhou Group	Shangdong	100
3	Zhoucun Galvanizing Sheet	Shangdong	100
4	Fujian Kaijing	Fujian	600
5	Baotou Steel	Inner Mongolia	450
6	Changzhou Huagang	Hebei	170
7	Lantian Sheet	Hebei	150
8	Tangshan Hentong***	Hebei	1800
9	Tangshan Steel	Hebei	450
10	Wuhan Steel	Hubei	1050
11	Maanshan No.2 Galvanizing	Anhui	300
12	Baosteel No.2 Galvanizing	Shanghai	800
13	Guangzhou JFE	Guangdong	400
14	Huaya Iron and Steel	Zhejiang	250
15	Longsheng Sheet	Zhejiang	300
	Total		7120

*** Tangshan Hentong, a Sino-US JV is currently operating a 600,000tpy HDG line. It also has a 150kt CR plant. Besides its 1.8mtpy HDG ambitious, it also has plans to expand its CR capacity.

Tangshan Hentong does not have any further upstream facilities

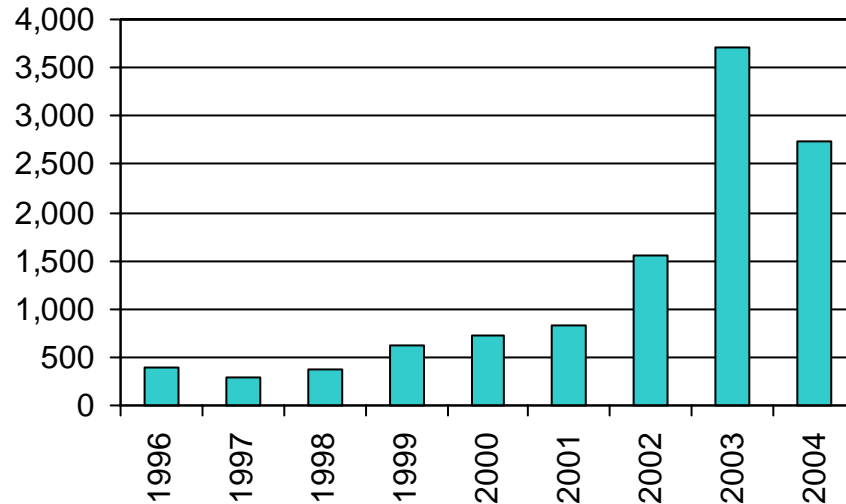
New HDG projects to be added in 2006

No	Company and Project	Location	Cap (Kt)
1	Lianyuang Steel	Hunan	300
2	Benxi Steel	Liaoning	800
3	Fuzhou Ruilian	Fujian	500
4	Yingkou LNM	Liaoning	400
5	Longtai Galvanizing	Shangdong	240
6	Rizhao XingYe	Shangdong	50
7	Qingdao Handan Steel	Shangdong	150
8	Tiantie Group	Tianjin	600
9	Shagang Group	Jiangsu	1000
10	Capital Steel	Beijing	600
11	Tangshan Steel	Hebei	200
12	Tonghua Steel	Jilin	200
13	Maanshan Steel	Anhui	1000
14	Shenyang Sujiatun	Liaoning	500
15	Huaigang Group	Jiangsu	200
16	Shangyu Shengban	Zhejiang	600
17	Dongyang Coating	Shangdong	200
18	Guangzhou Steel JFE No.2 GI	Guangdong	400
19	Guangzhou Steel Nansha GI	Guangdong	400
	Total		8340

Source: Public news agencies, CMC, SBB, MB and domestic websites.

In the short to medium term, China will still need to import around 2mt of high quality HDG products annually

Chinese Imports of HDG, (kt)



Chinese Imports of HDG in 2004

Sources of HDG Imports (kt)	
Japan	880
Taiwan	582
South Korea	482
India	211
Kazakhstan	79
Brazil	89
Germany	60
Others	347
Total	2730

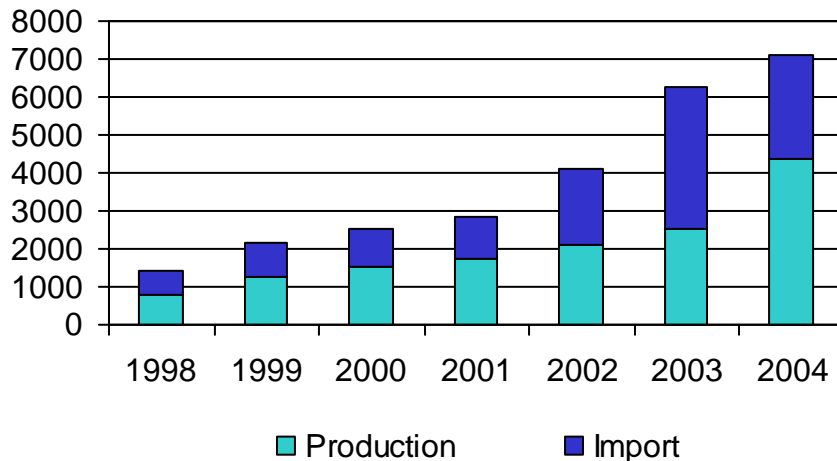
- Chinese HDG imports peaked in 2003 at 3.7mt, due to high demand growth in China
- Imports from India has increased rapidly in recent years. In Jan-Apr. 05, China imported 206kt HDG products from India, up 38% year-on-year.
- A big jump in domestic HDG capacity in 2004 caused HDG imports to fall substantially

Source: Customs data

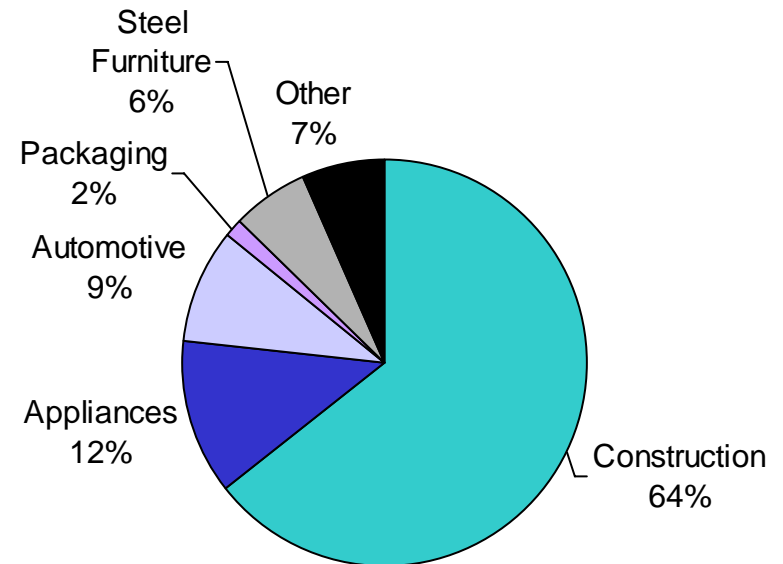
The construction sector accounts for nearly 64.5% of the total HDG consumption

- In total, the construction sector accounts for nearly 64.5% of the total HDG consumption
 - Nearly 85% consumption focus on products with thickness above 0.5mm
- Street furniture (benches, bus shelters, bins) are applications that are starting to use more galvanised steel, reason being that the material can withstand weathering between (irregular) repainting

Chinese HDG consumption in 1998-2004 (kt)



Chinese HDG consumption by sector



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Summary

- The US
 - Mature market, developing its own CEE Auto model in the South East
 - Response could be led by technological change as is usually the case with the US
- Europe
 - West and Central Europe – a closed story for now??
 - Construction could be the way forward – Corus, Arcelor, Ruukki, IISI etc...
 - Eastern Europe – Russia (and Ukraine) are the natural home for European steelmaking
 - huge opportunities in downstream also
- China
 - Extremely complex and difficult to predict
 - Huge HDG over capacity expected, though still a shortage of high quality material – Exports!!

Thank you!

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