



Growth in China and its impact on the global raw materials market

Platts SBB Steel Raw Materials Europe Conference 2012



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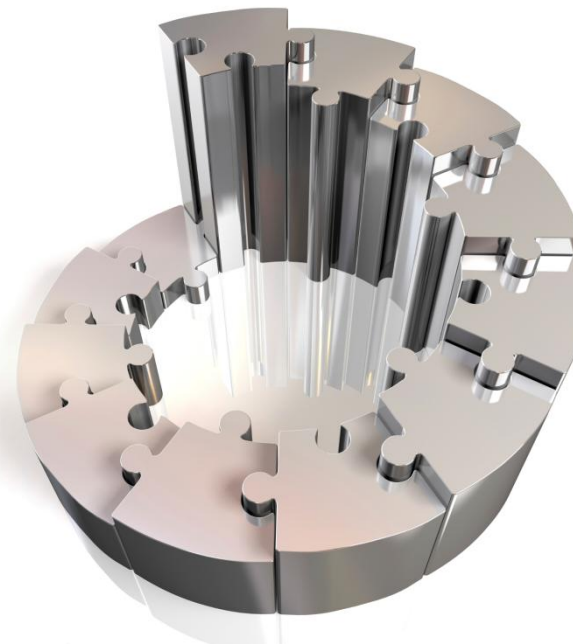


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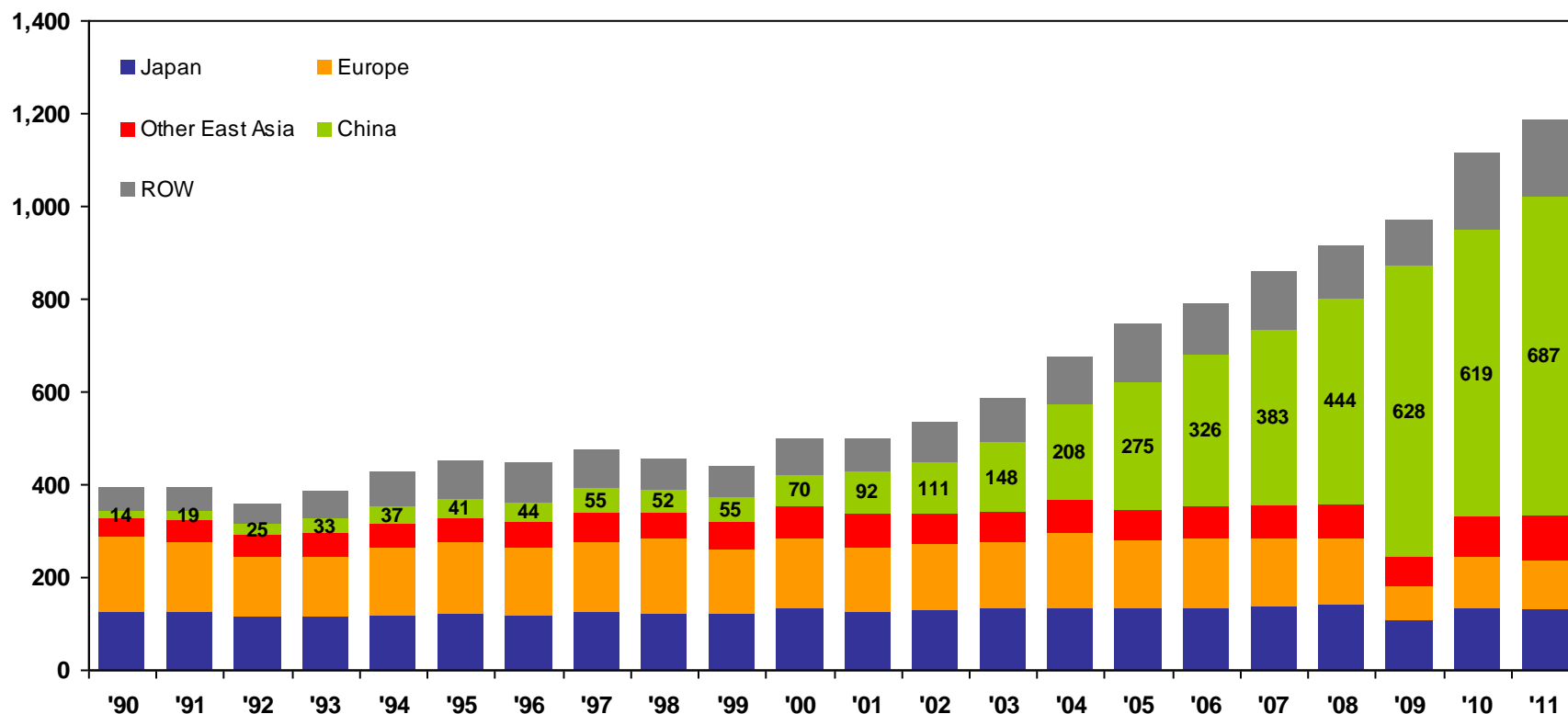
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China has an important impact on both demand and supply of iron ore. With regard to demand, it has increased its share of the global seaborne iron ore market from ~5% in 1990 to ~60% today

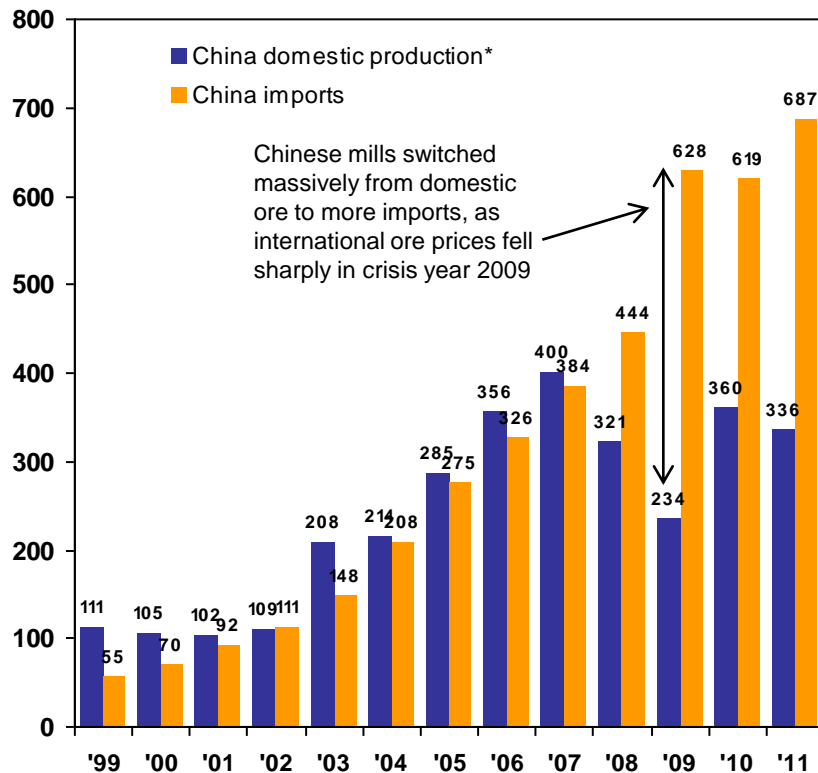
Imports of iron ore (mln tonnes)



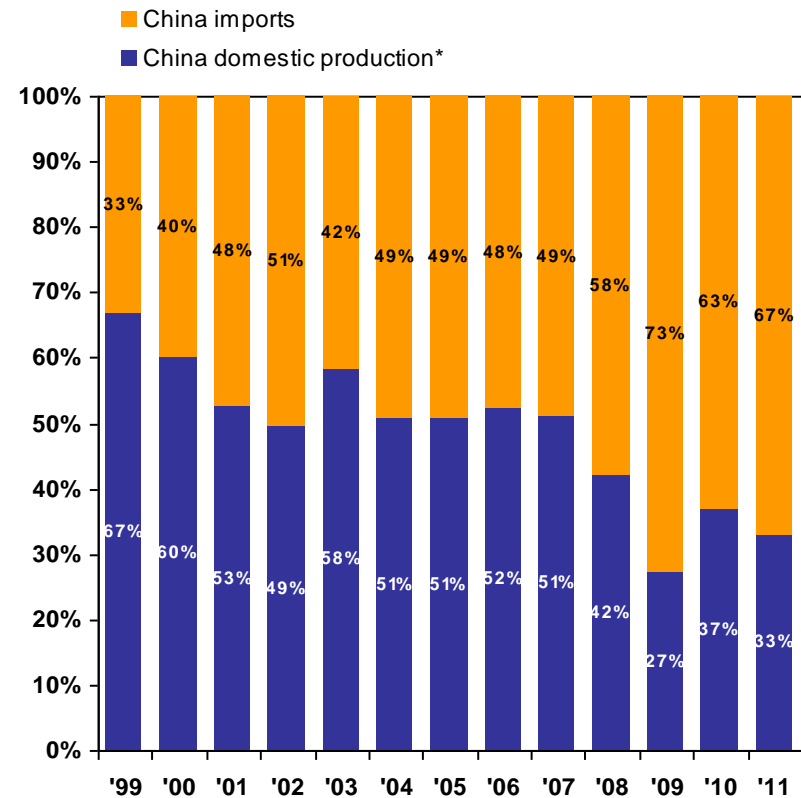
Source: WSA, CLSA Asia-Pacific Markets, Tex Report, SteelConsult

In addition to being the world's largest importer of iron ore, China is also one of the largest producers. Its impact on the global supply/demand balance is compounded by volatile switches between domestic supply of ore and imports

Chinese consumption of iron ore by origin (mln tonnes)



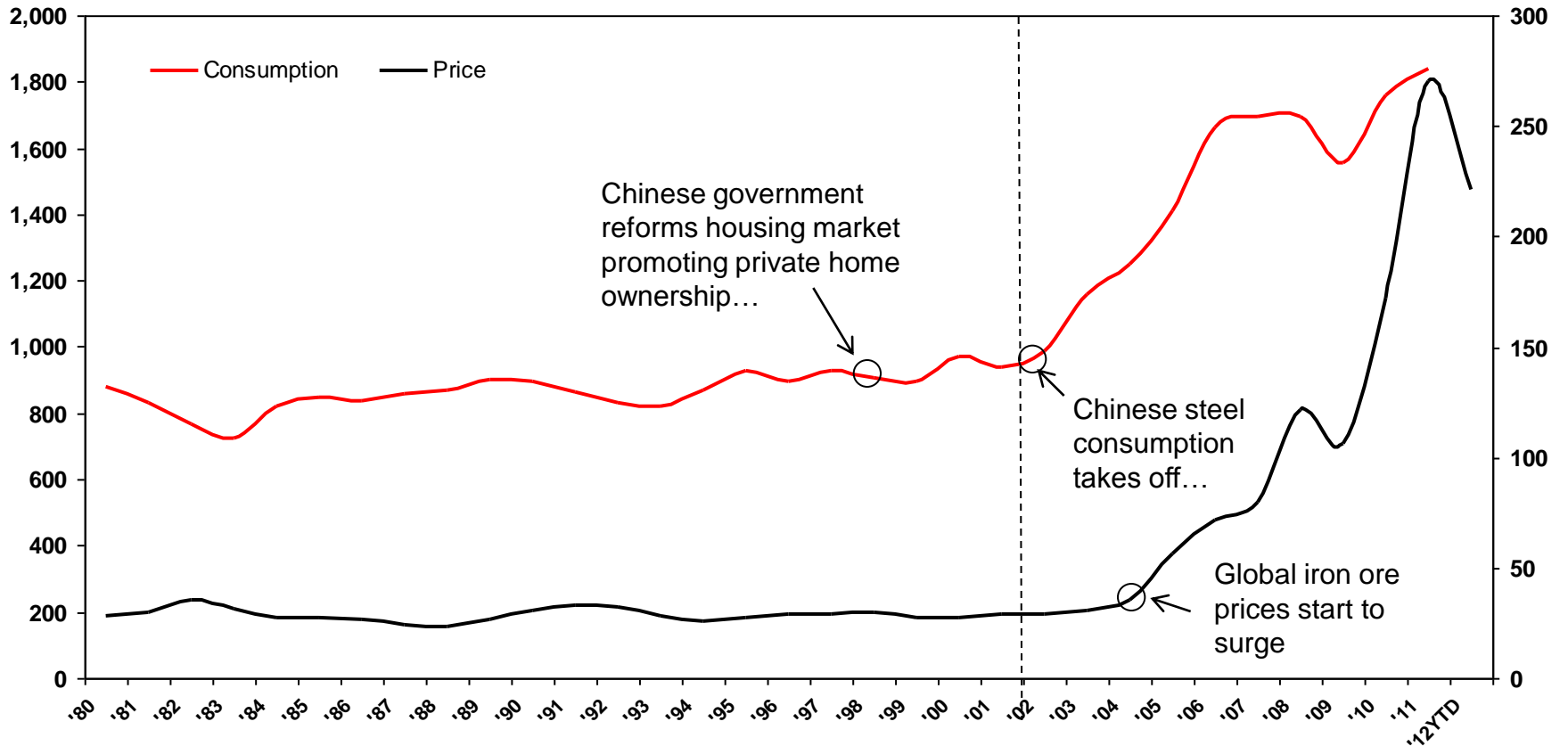
Chinese consumption of iron ore by origin (%)



Source: WSA, CLSA Asia-Pacific Markets, Tex Report, SteelConsult
Note: * rich ore equivalent

Between 1970-2002, the world had plenty of iron ore mining capacity. In 2002 and 2003, world mining capacity could still cope with rising Chinese demand, it was only from 2004 that prices started to surge, as a direct impact of booming Chinese steel production

Global consumption of iron ore (mln tonnes)



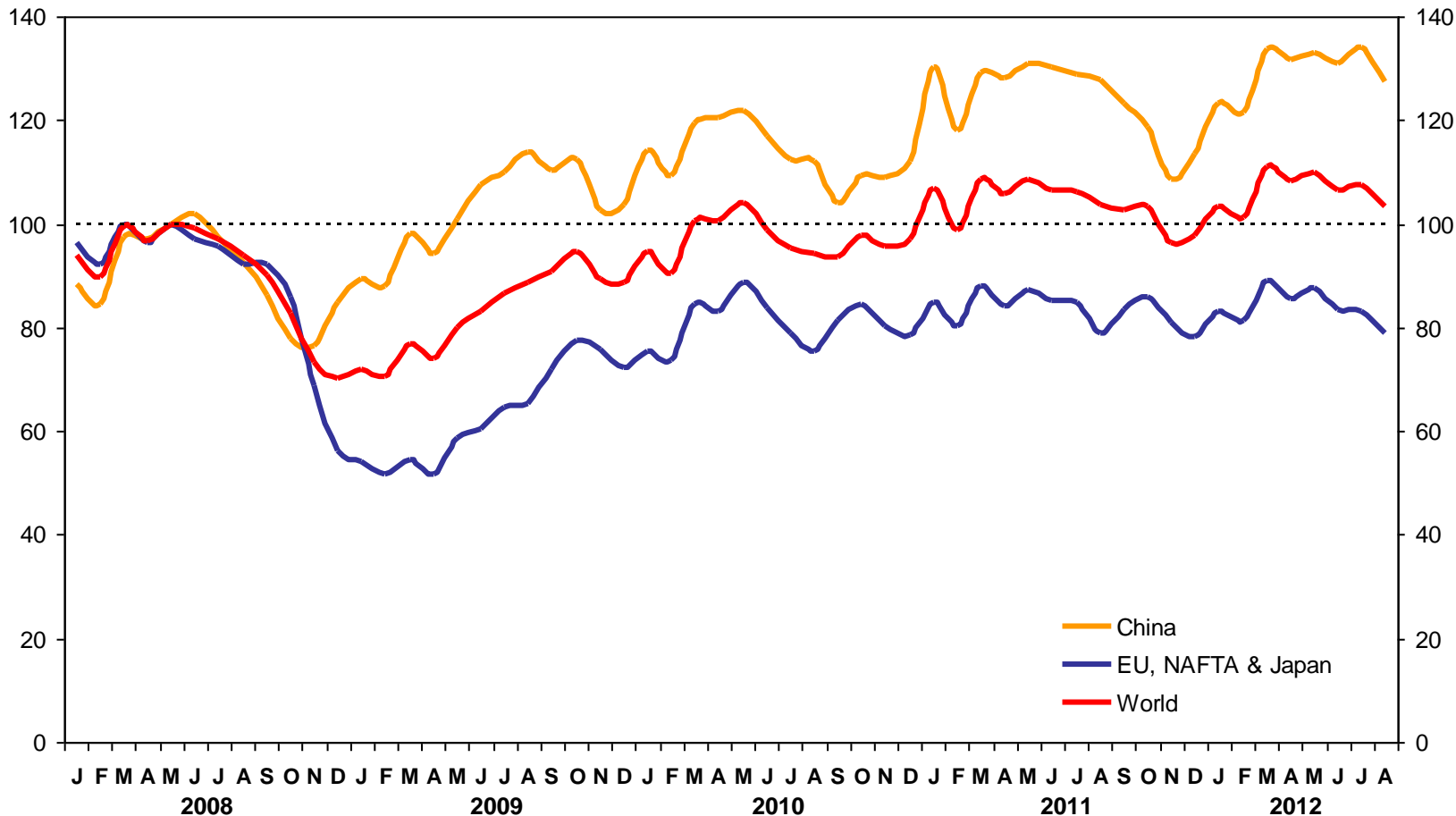
Source: Tex report, SBB, SteelConsult analysis

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In contrast to the mature markets, Chinese steel output has continued to rise firmly, but production fell sharply in August and further production cuts seem likely

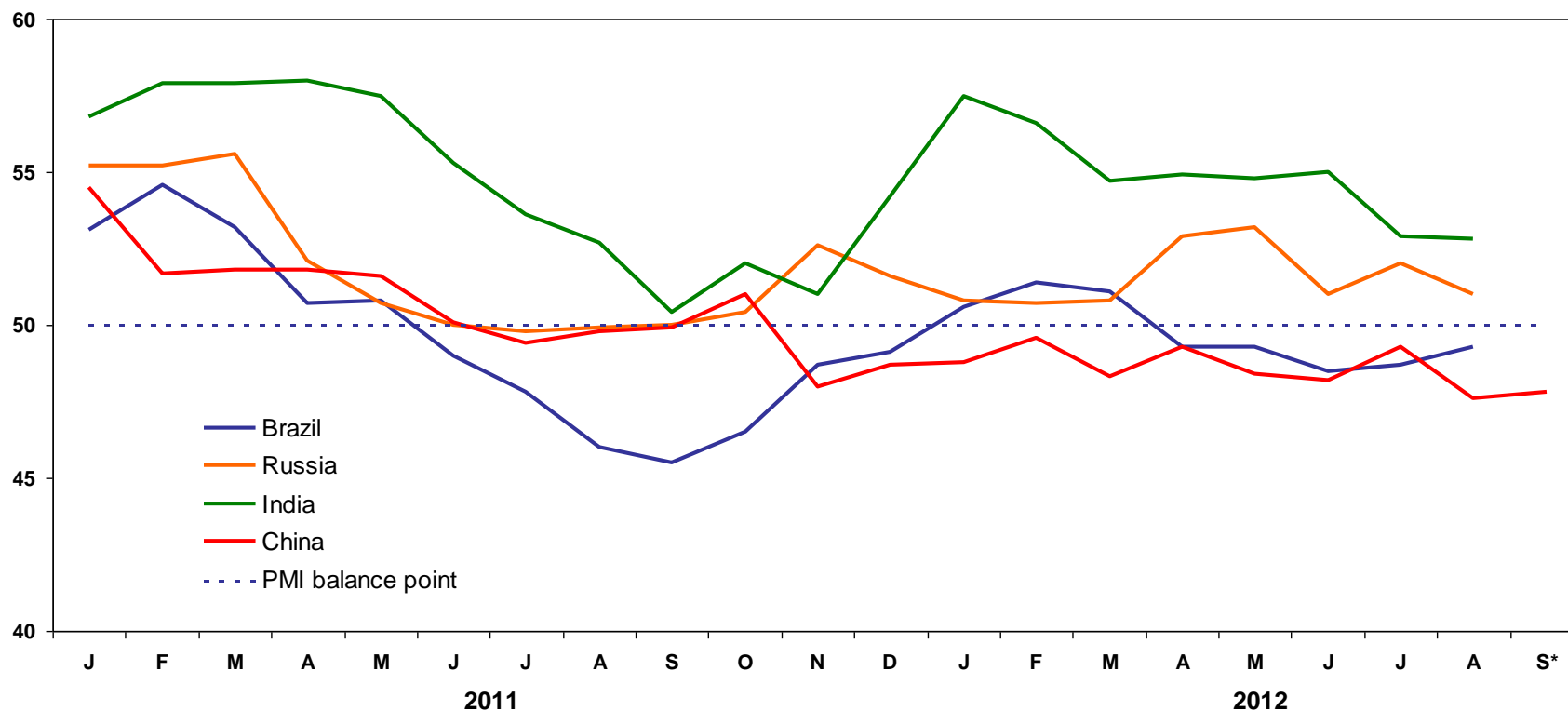
Crude steel output, index (May 2008 = 100)



Source: WSA, SteelConsult

Chinese Manufacturing PMI continues to struggle below 50, showing the weakest performance of the BRIC countries

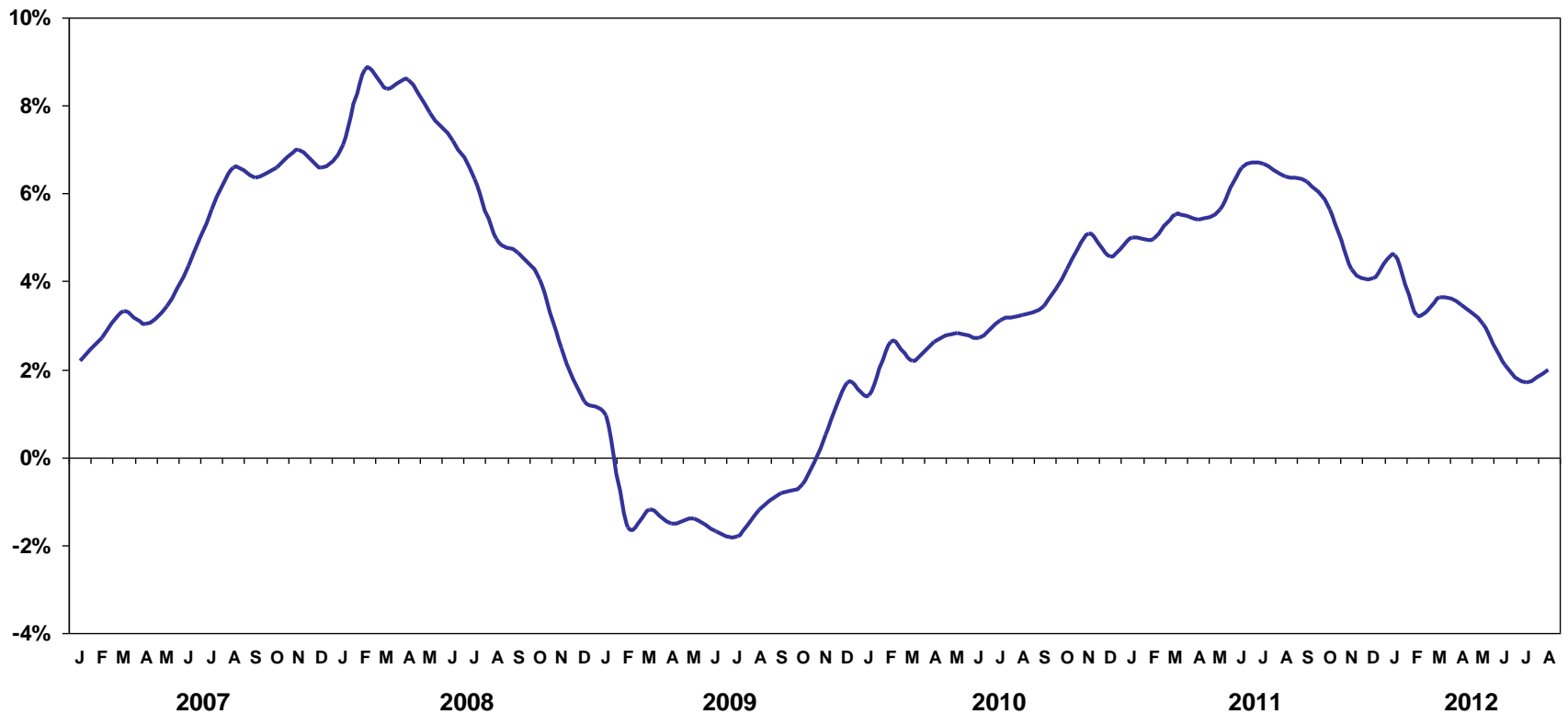
Manufacturing PMI Index



Source: Markit, HSBC
 Note: * flash

Inflation in China has fallen to 2%, but remains a point of concern for the Chinese government

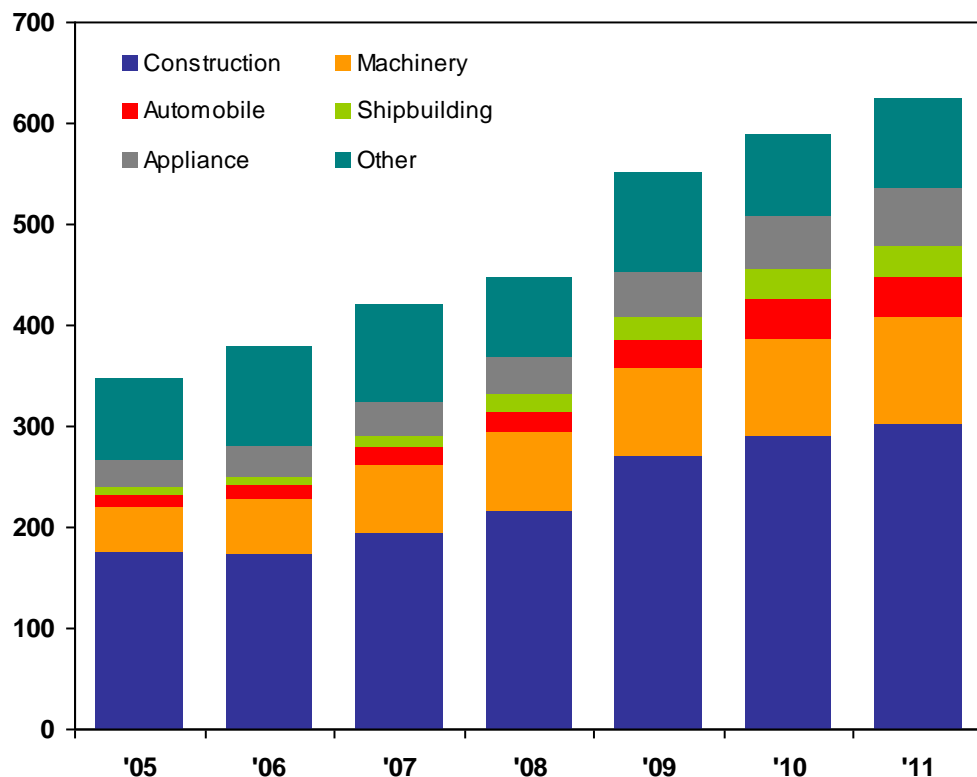
Inflation rate China (consumer prices, YoY% change)



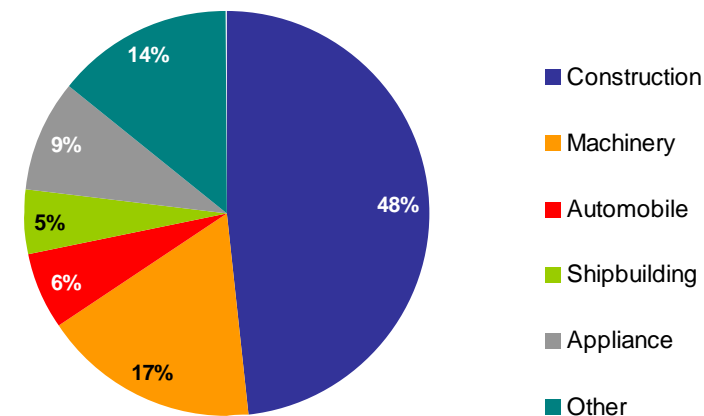
Source: EIU

China's steel demand is mainly driven by the construction sector, which accounts for almost 50% of total consumption

Steel consumption China by sector (mln tonnes)



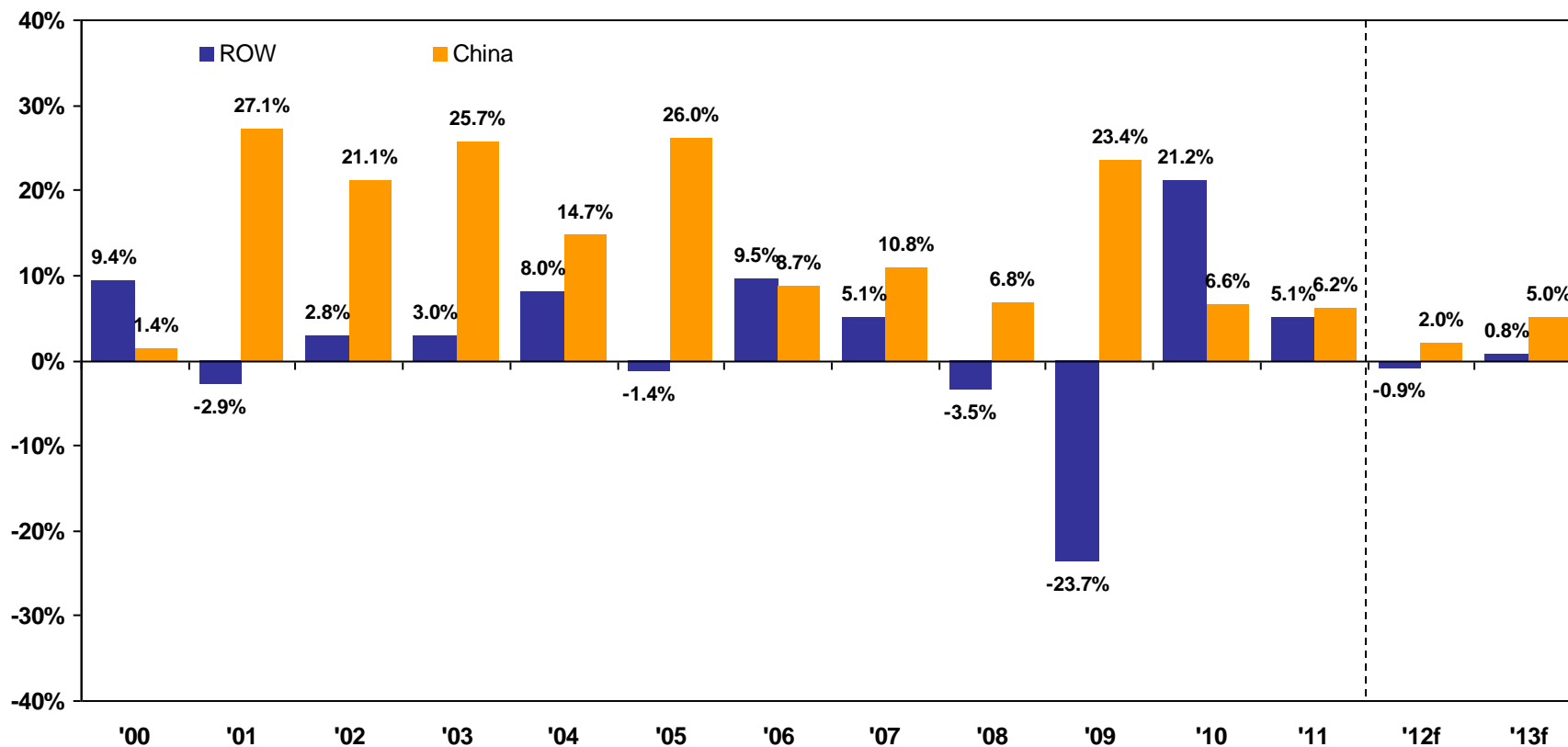
Steel consumption China by sector, 2011 (%)



Source: CLSA Asia-Pacific Markets

As construction and shipbuilding activities slow down in China, demand is expected to cool down to 2% in 2012 and 5% in 2013, though remain well above growth levels in the Rest of the World

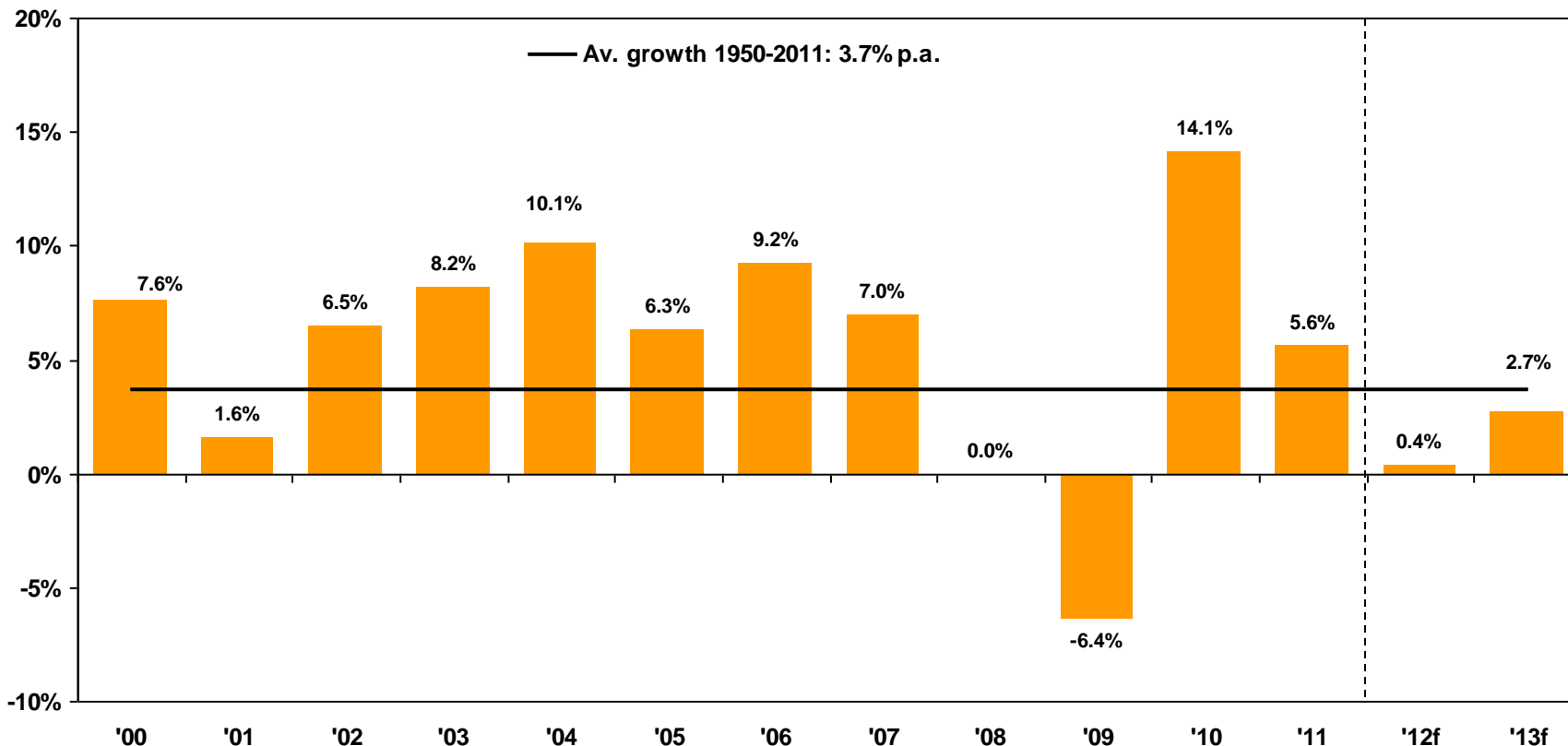
YoY growth in steel consumption (%)



Source: WSA, SteelConsult

Global steel consumption is expected to increase by only 0.4% in 2012, and 2.7% in 2013, well below its long term growth rate

YoY growth in global steel consumption (%)



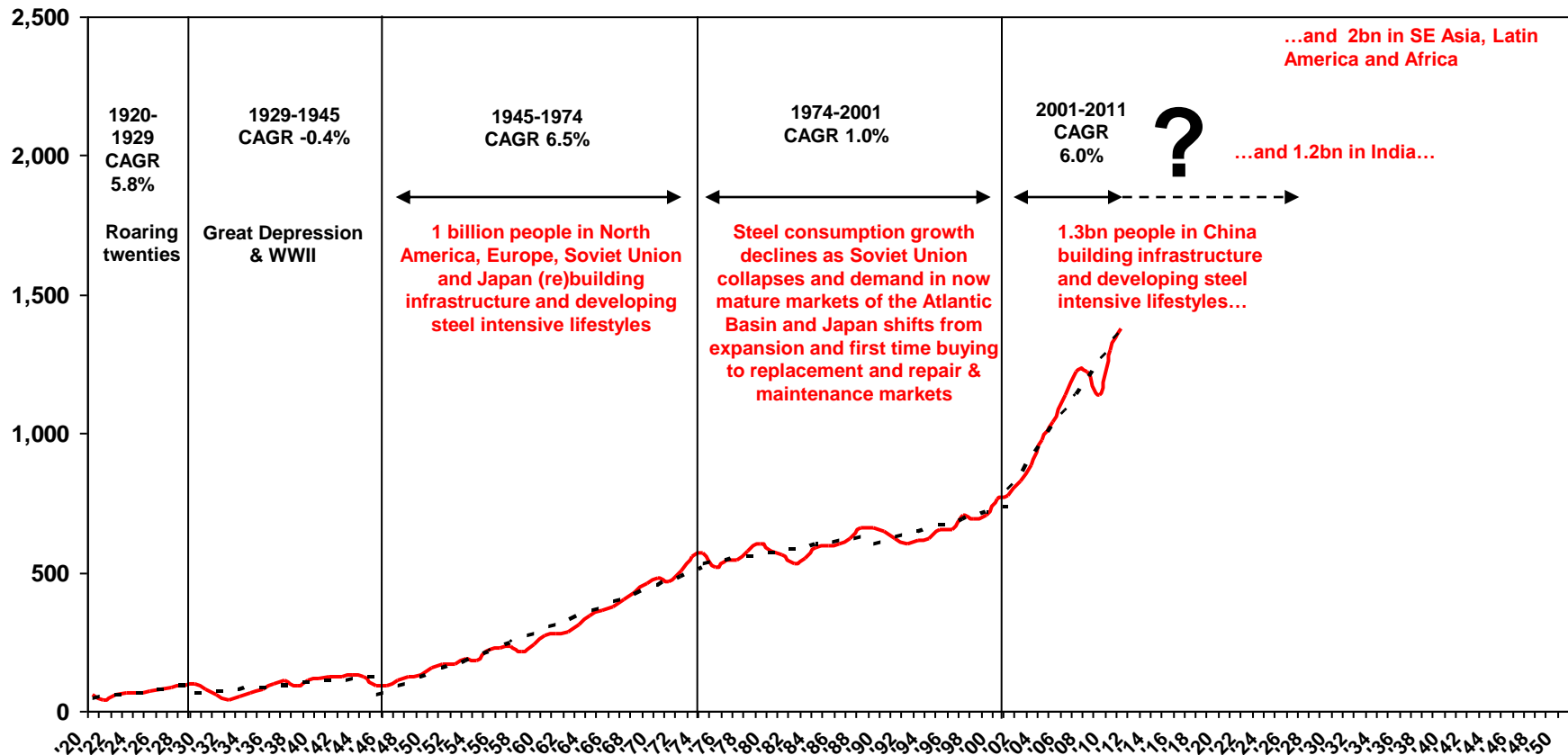
Source: WSA, SteelConsult

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The growth in global steel use seen before 2000 was driven by the development of 1bn consumers in North America, Europe and Japan... since 2001 growth has been mainly driven by 1.3bn consumers in China. How much further growth potential does China have?

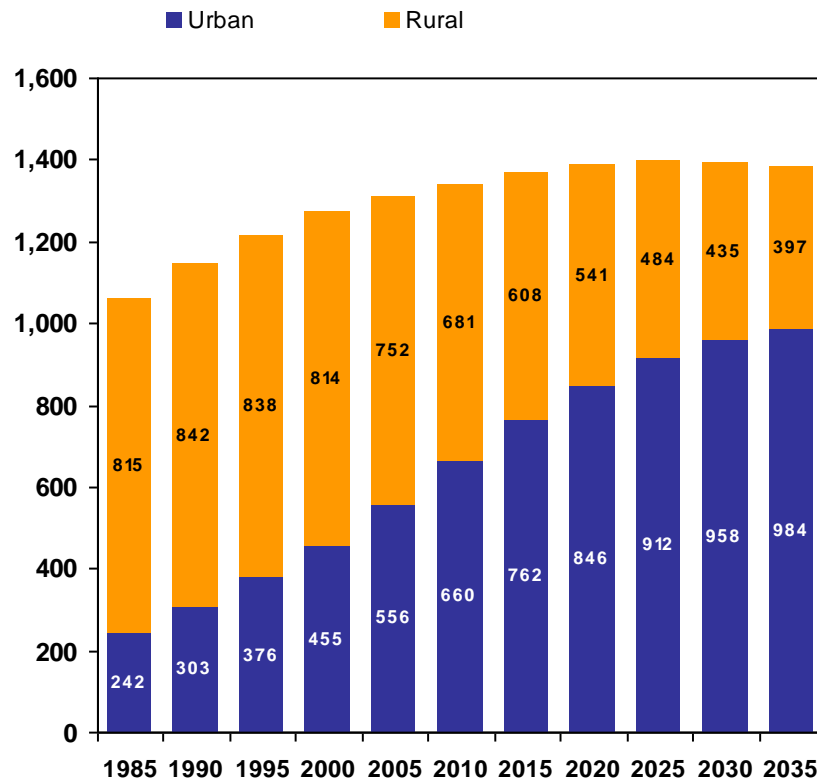
Global consumption of finished steel (mln tonnes)



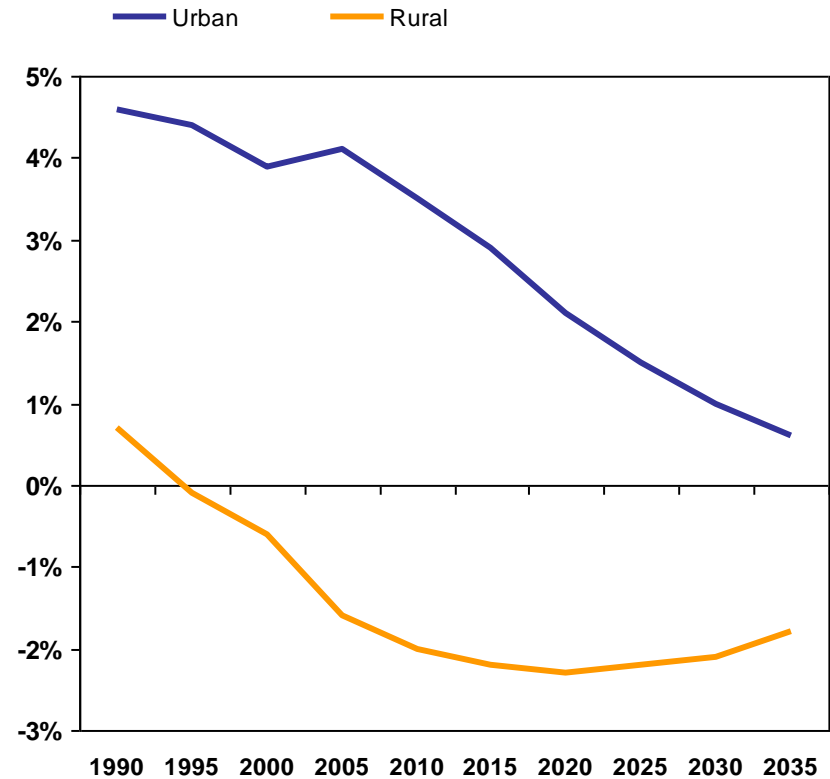
Source: WSA, USGS, SteelConsult analysis

A number of fundamentals suggest Chinese steel consumption still has some way to grow. Urbanization, for example, will continue over the next decades, though, since 2010, at an ever declining rate

Urbanization China (mln people)

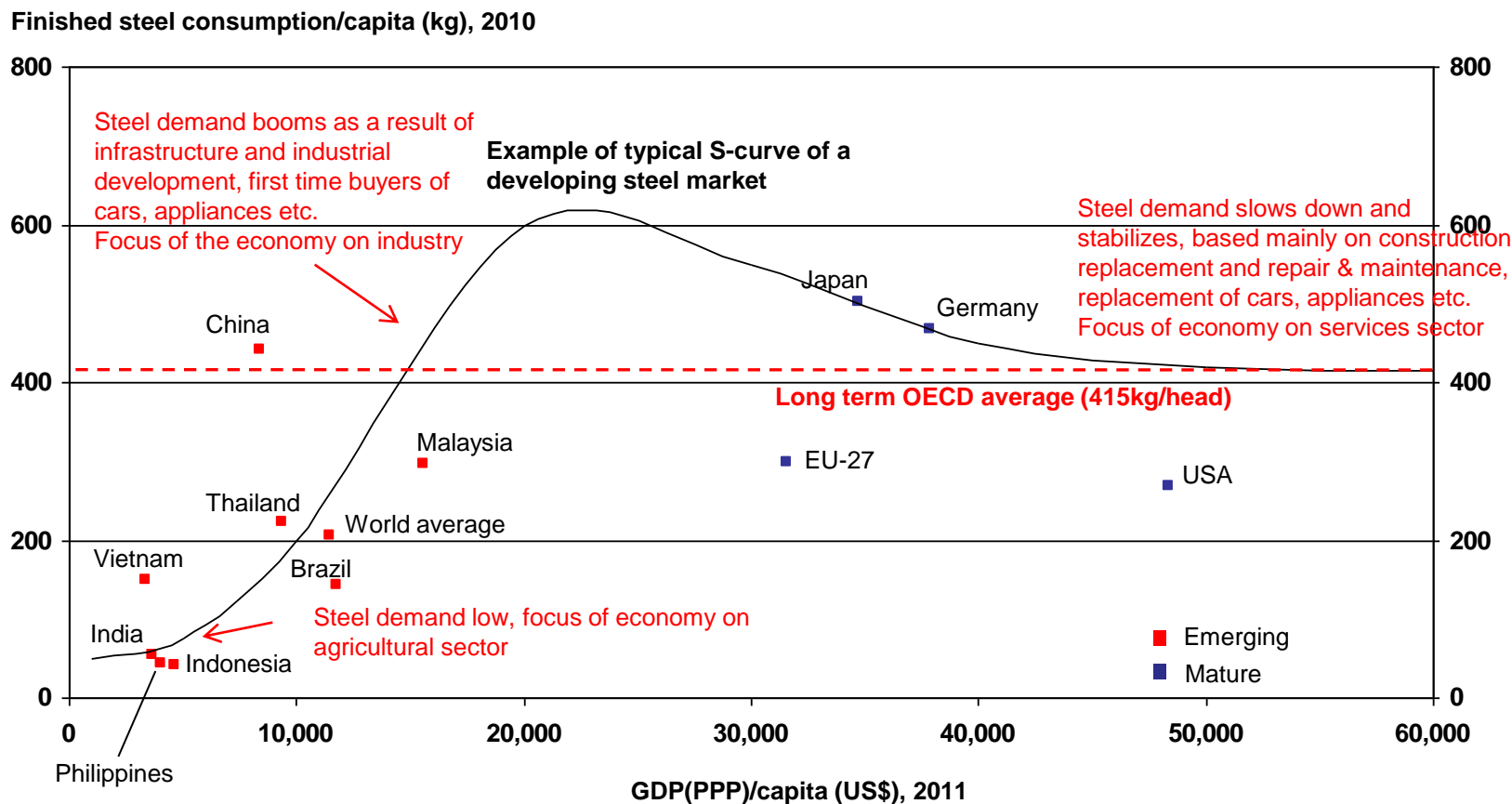


Population growth China (average YoY growth, %)



Source: United Nations Population Statistics

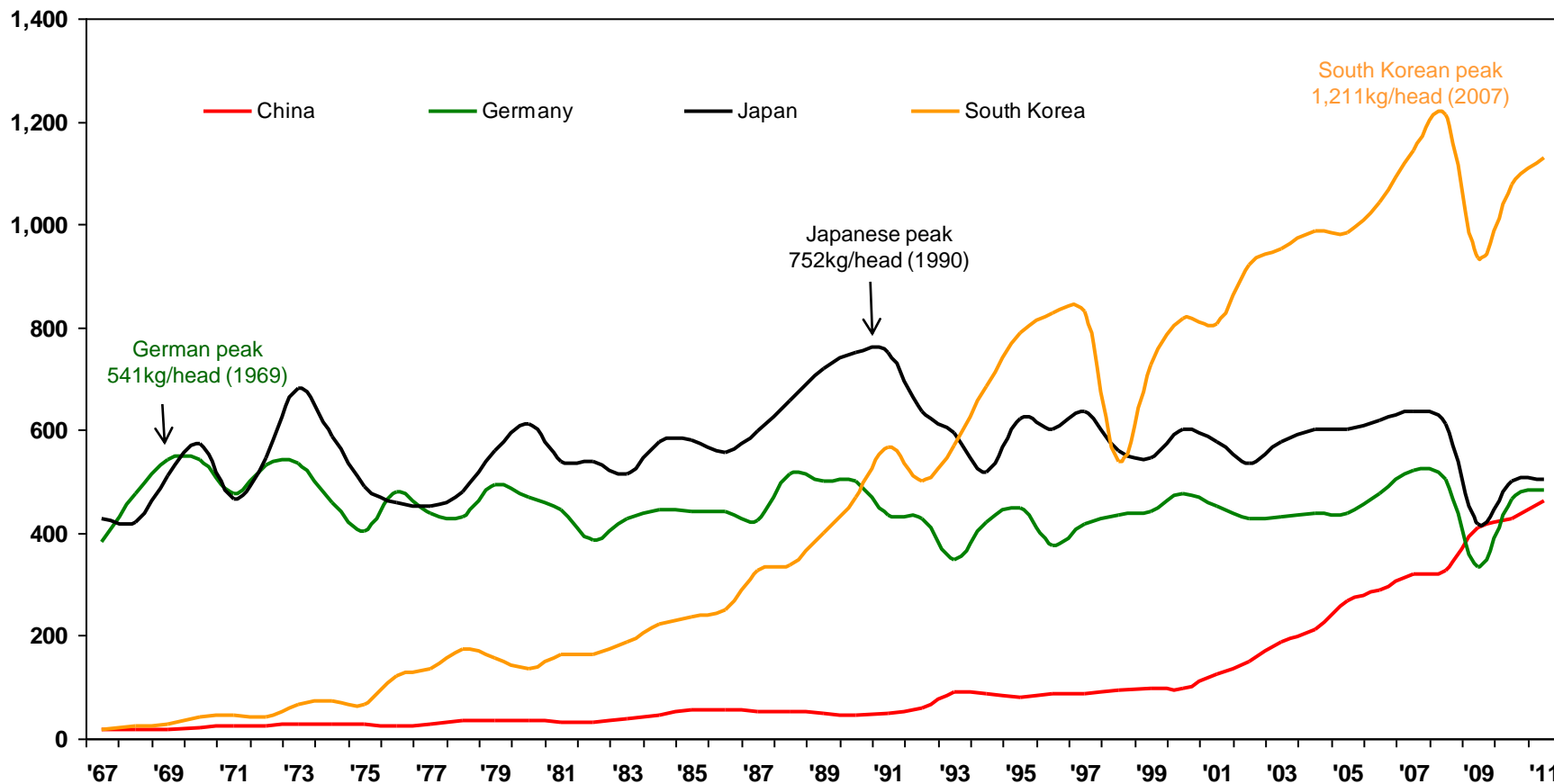
Steel markets typically develop along an S-curve. The shape and peak of the curve varies considerably by country...



Source: WSA, CIA, Tata Steel Construction Centre NL, SteelConsult

How far has China progressed with its economic development and when and at what level will its steel consumption peak? Other now developed countries peaked at 550-750kg/head in the past

Consumption of finished steel per capita (kg/head)



Source: WSA, SteelConsult analysis

May China peak at similar steel consumption levels as other countries in the past? Weight reductions imply a significant downside impact...(1)

- Important weight savings are well known to have been realized in the use of steel in cars (thinner gauges, lower losses, new technologies (hydroforming/TWBs)), beverage and food cans (-30% over the last 30 years as a result of thinner gauges, concave bottoms, curved necks, rims etc.), and many other products.
- In addition, considerable savings have also been realized in the use of steel in construction, which accounts for about half of Chinese steel demand. Indeed, over the last decades steel intensity in construction has been reduced by three factors:
 - Better steel grades
 - Better design, fabrication and application of steel products
 - And better design of buildings and structures
- **Better steel grades:**

High strength (and thus thinner) steels, weldable steels, less impurities. Indeed, high strength rebar used today has a yield strength of 500 MPa compared to 250 MPa in the 1950s, roughly implying a 50% reduction in weight required.

May China peak at similar steel consumption levels as other countries in the past? Weight reductions imply a significant downside impact...(2)

- **Better design, fabrication and application of steel products:**
 - **Rebar and mesh wire rod:** longer lengths, fit for purpose, superior rebar patterns with more grip, use of pre-stressed rebar, less overlap required, weldable qualities, prefab products with lower scrap losses, better cement qualities requiring less reinforcement/m³ and less m³ to be reinforced.
 - **Sections and merchant bars:** longer lengths, fit for purpose, asymmetrical shapes, parallel flanges instead of tapered, sharp corners, less overlap in application, welding instead of rivetting, prefab with lower scrap losses.
- **And better design of buildings and structures:**
 - Better/optimized design of buildings and structural strength, better understanding of behaviour and robustness, better understanding of wearing and fatigue, less “overspecification” for safety precaution. Especially for (high rise) buildings and structures using sections and merchant bars, but also for reinforced concrete.

The Eiffel Tower, for example, today could be built using only a third of the steel (wrought iron) used in 1889

- The Eiffel Tower, for example, today could be built using only a third of the steel tonnage (wrought iron) used in 1889*.



Eiffel Tower: 319m high,
7,300tonnes of steel (wrought iron)



ArcelorMittal Orbit: 115m high,
1,400tonnes of steel

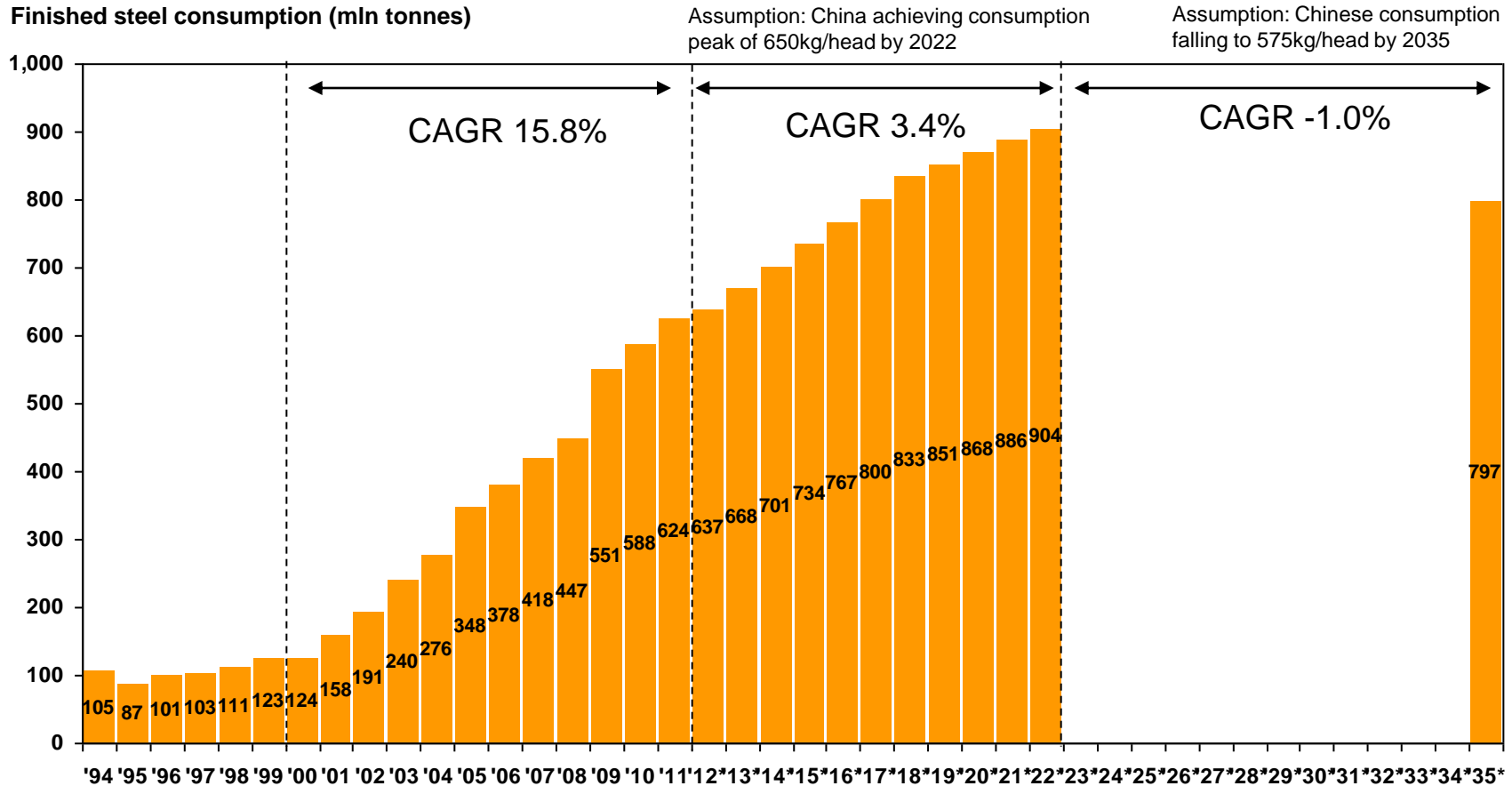


- However, the most substantial weight gains in the use of steel were already booked before the 1945-1975 period.
- Furthermore, weight gains in steel are often partially compensated by extra weight elsewhere (larger dimensions for longer durability, more focus on design, aesthetics and prestige, rather than mere functionality).

May China peak at similar steel consumption levels as other countries in the past? On the other hand, the high penetration of steel in various Chinese construction segments suggests a considerable upside compensating for lower steel weight

- Whilst considerable weight savings have been realized over time in the use of steel, the steel intensity of construction in China is still relatively high from another perspective, as China has a high proportion of high rise buildings, which require more steel on a relative basis.
- Indeed, high rise buildings consume upto 5 times as much steel per square meter of floor as low-rise buildings.
- Furthermore, China uses significantly more steel in the residential construction sector, which has more high rise apartment buildings, and accounts for 34% of total Chinese construction related steel consumption.

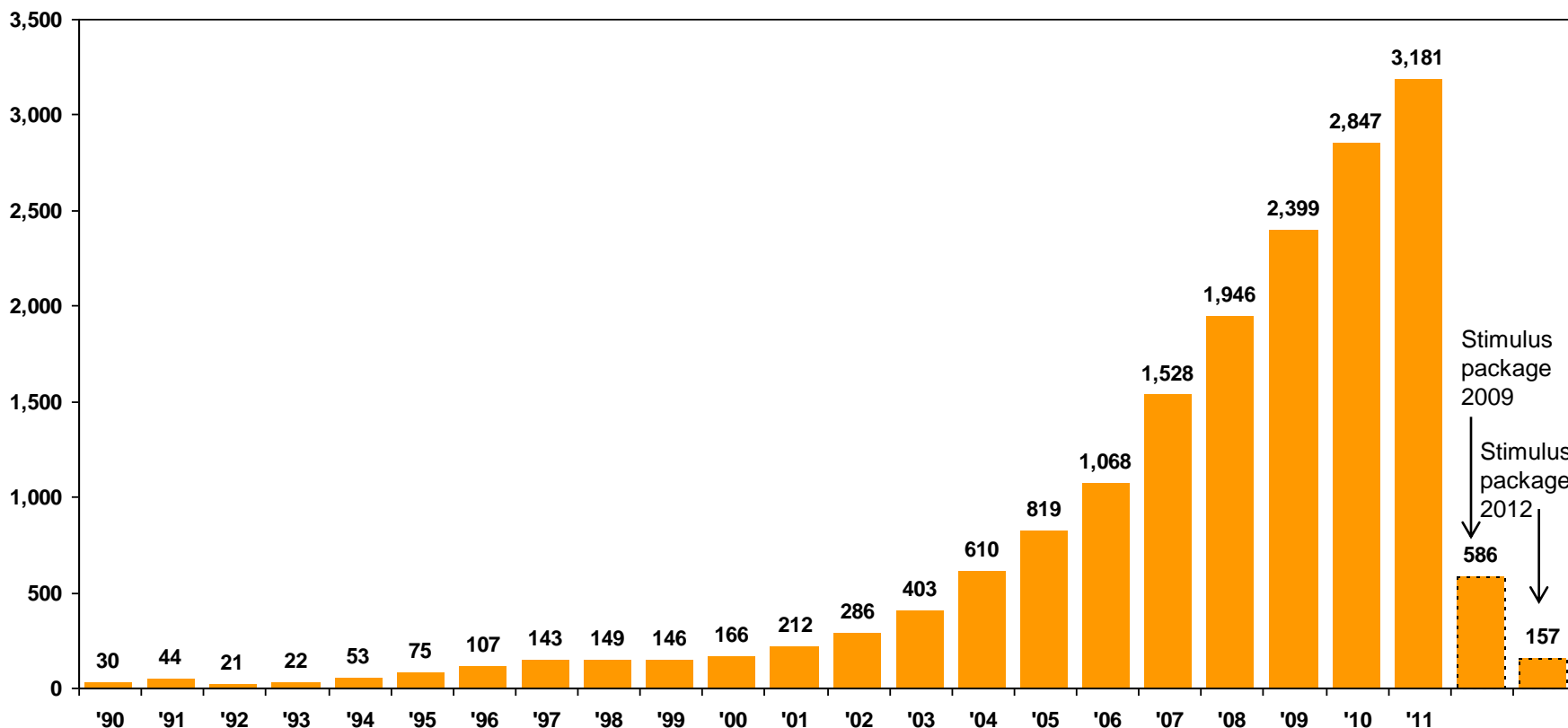
The Chinese steel market is to continue to grow, though more slowly in the next decade, and is expected to peak at ~900m tonnes in the early 2020s



Source: WSA, SteelConsult

China has over US\$3 trillion of foreign reserves. Though these are only partially available, they still provide a considerable buffer for potential further stimulus, if and when required

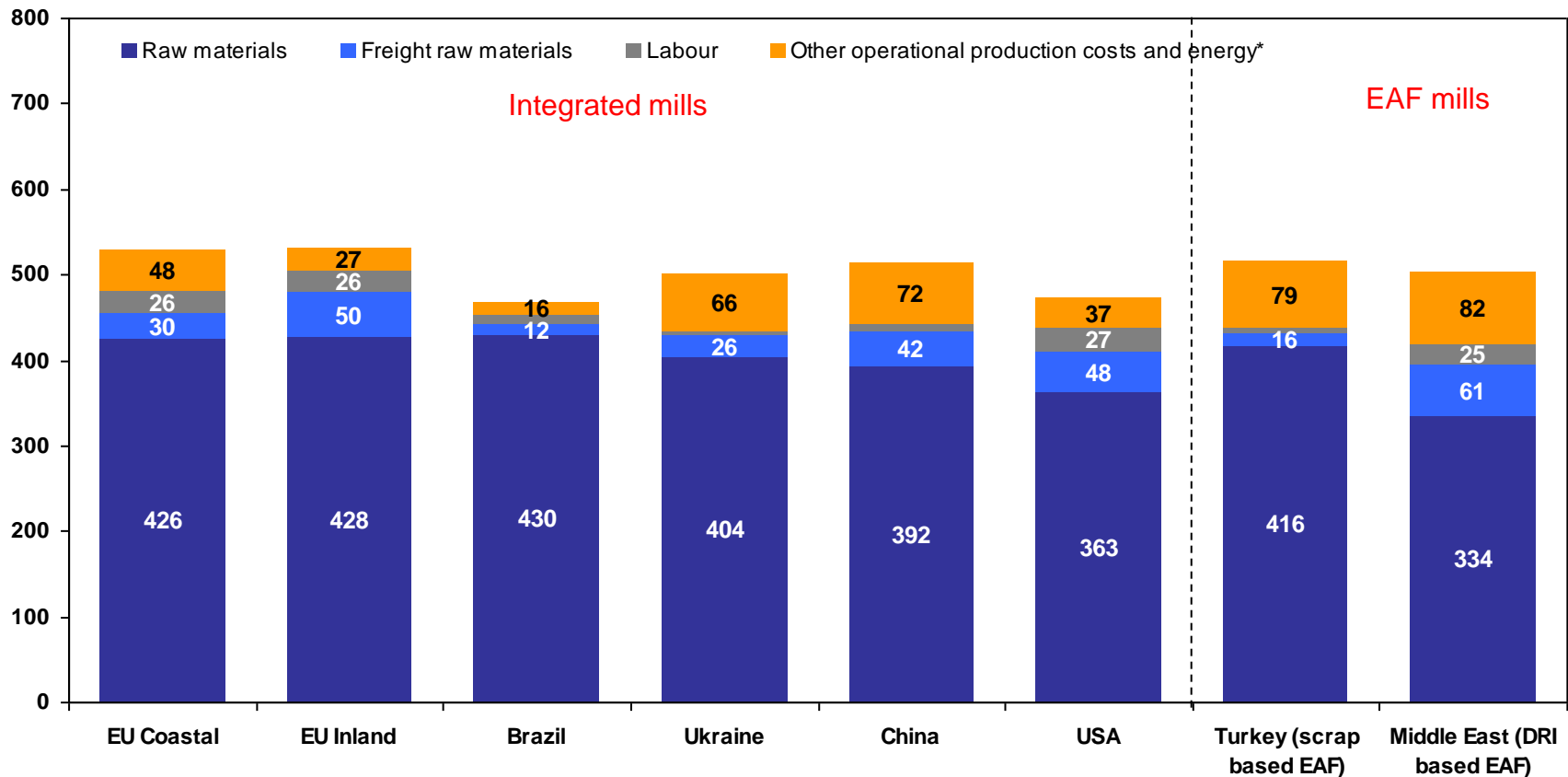
Foreign reserves China, US\$bn



Source: IMF, China State Administration of Foreign Exchange
 Note: Excl. gold, end of year figures

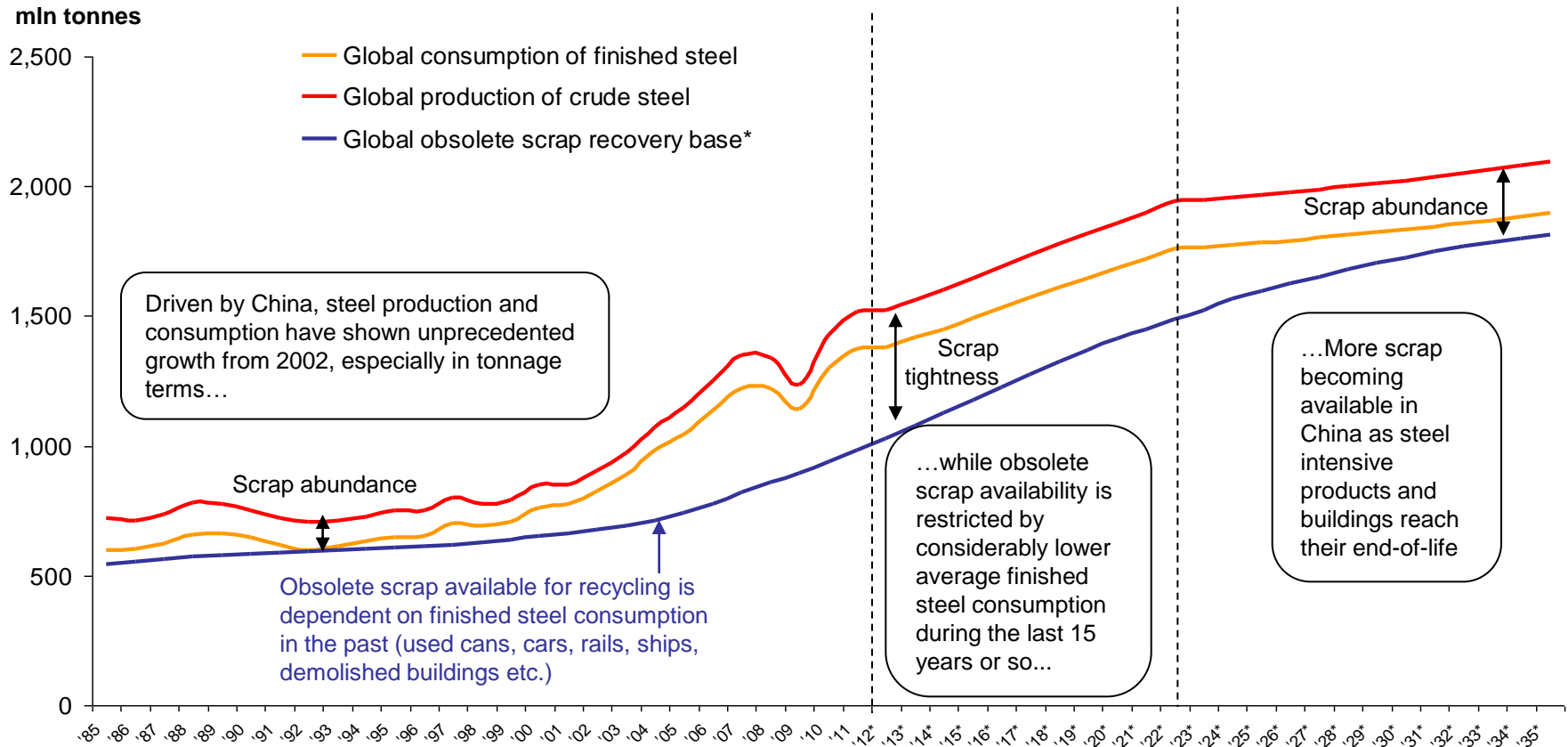
Chinese steel mills are competitive in their own domestic market, but not sufficiently competitive to be major structural exporters of steel to the world market. Chinese steel production is likely to develop in line with domestic demand

Operational production cost/t slab/billet, US\$/t, 2012 Q1-Q3



Source: SteelConsult analysis
Note: *including credits for offgases

Current scrap availability is dependent on steel consumption in the past. Due to China's rapid surge in steel output in the last decade, the world is facing tightness in scrap. More scrap will become available once China's scrap cycle catches up with steel output

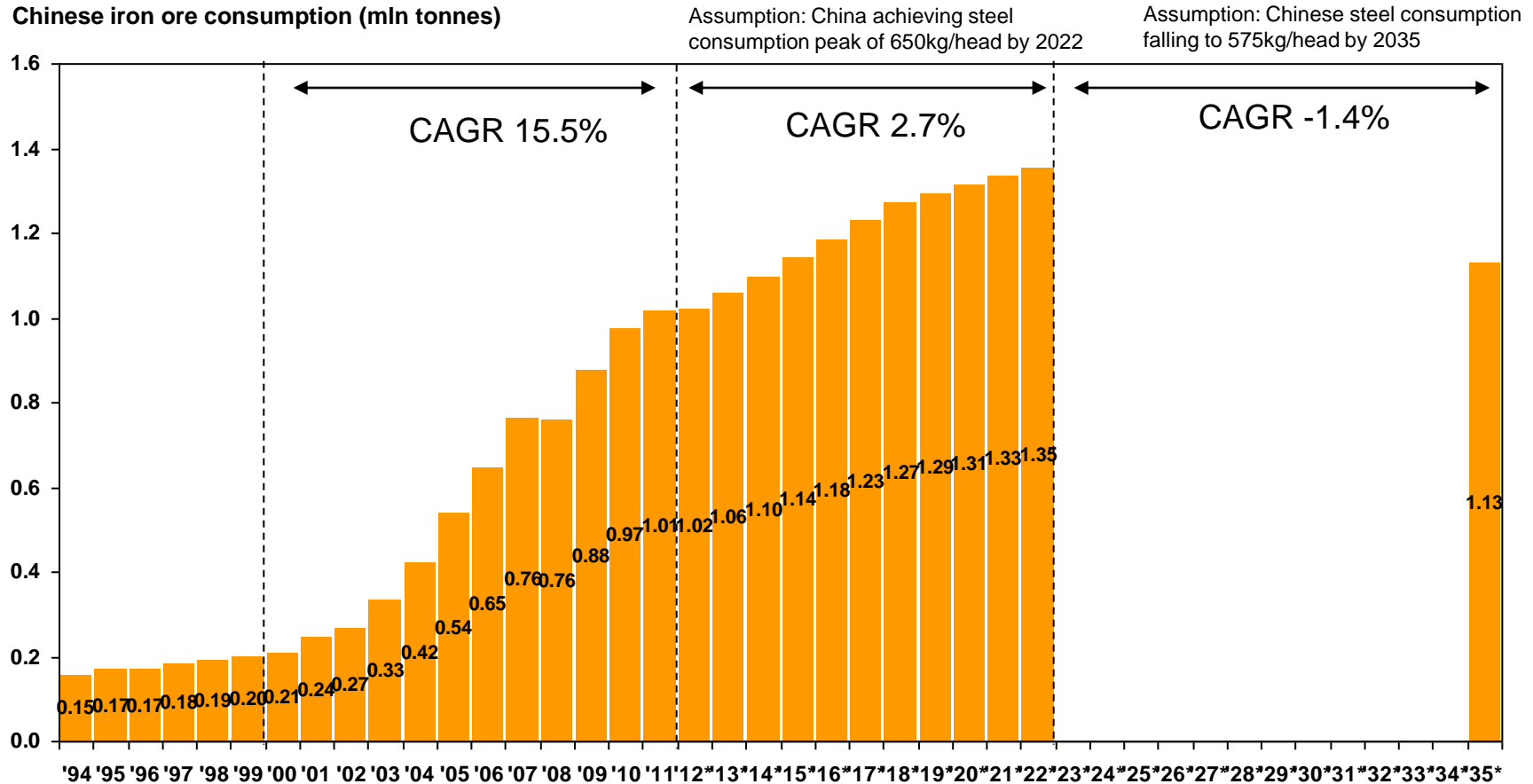


Source: WSA, SteelConsult analysis

Notes: *Calculated as moving average of finished steel consumption during previous 15 years, indicative only

Though steel production growth will slow down and EAFs and BOFs will likely gradually use more scrap over time, the Chinese steel industry is expected to still require some 350m additional tonnes of iron ore over the coming decade

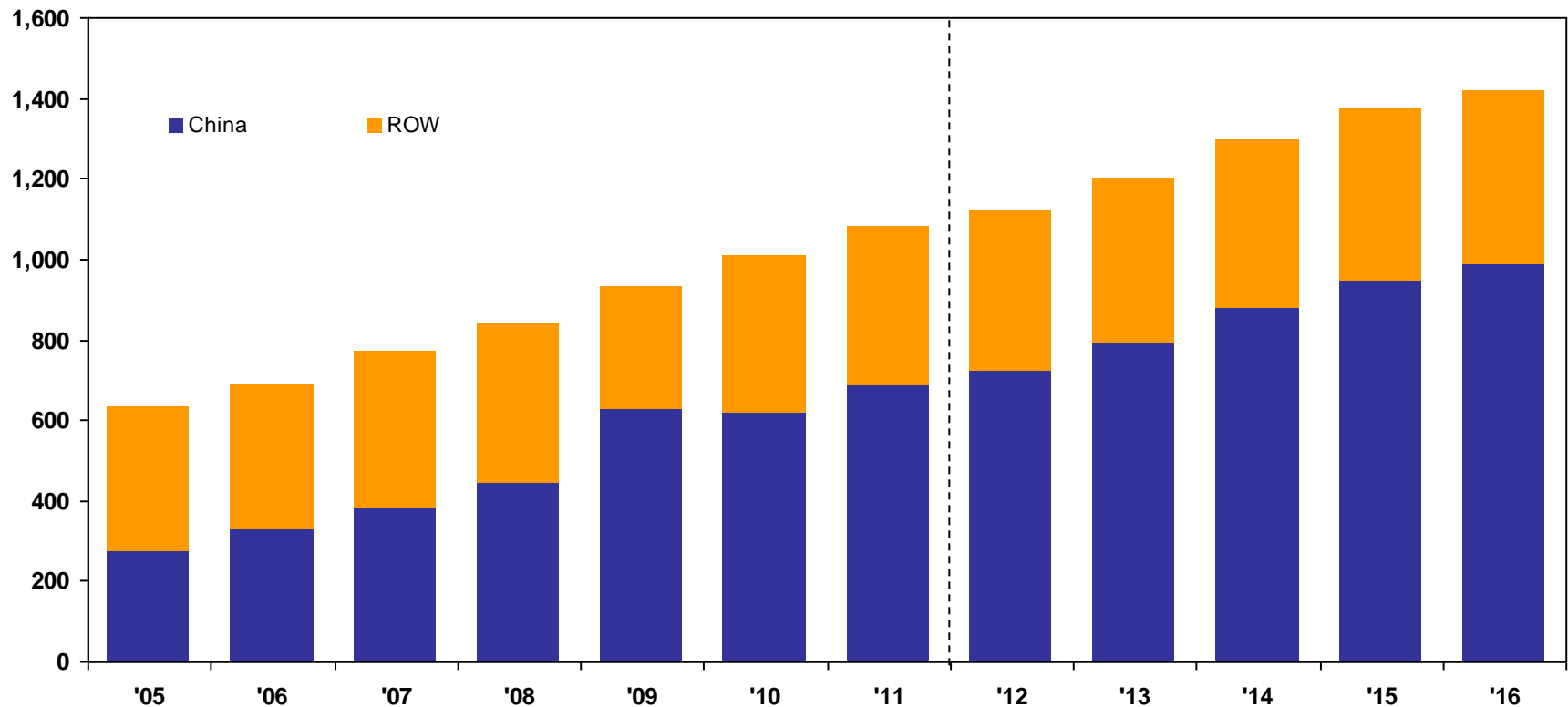
Chinese iron ore consumption (mln tonnes)



Source: WSA, SteelConsult

Most of the extra volumes will need to be imported from overseas, with total Chinese ore imports forecast to reach almost 1bn tonnes in 2016

Seaborne imports of iron ore (mln tonnes)



Source: CLSA Asia-Pacific Markets, SteelConsult

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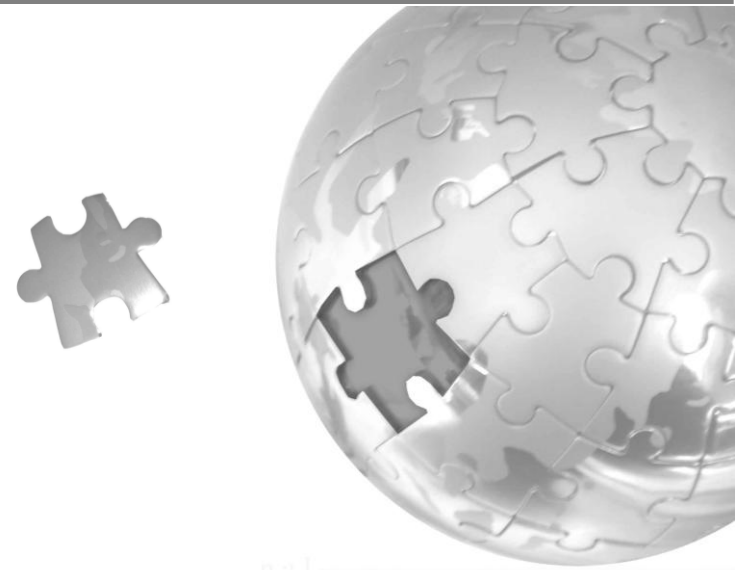
Conclusions

- China has likely already entered a period of slower growth in steel consumption. The country's steel demand is expected to grow by only 2% in 2012 and 4.5% in 2013. After recording growth of 15.8% between 2000 and 2011, growth in the next decade is expected to fall back to ~3.5% per year, on average. This still represents 280m tonnes of extra steel demand, and ~350m tonnes of extra iron ore demand, most of which will need to be imported.
- Like other, now industrialized countries in the past, Chinese steel consumption will inevitably slow down and then peak, which we estimate to happen at a level of ~900m tonnes in a decade from now, and then gradually decline.
- China is not sufficiently competitive to become a major exporter of steel on a structural basis, and except for some relatively modest net exports, will see steel production develop in line with domestic demand. However, European mills, and their raw materials suppliers, may still on occasion be hit by temporary exports of excess steel from China. Any small imbalance in China will translate to large tonnages hitting the global market. A 10% reduction in capacity utilization in China equals the entire amount of overcapacity in the CIS in the early nineties, after the collapse of the former Soviet Union, at any point in time.

Conclusions

- China will increasingly generate scrap over the next few decades. Whilst part of it will likely be processed by domestic BOF mills, which today have relatively low scrap rates, and by possible new EAFs, a considerable part will likely be exported, gradually easing tightness in the global scrap market.
- A slowdown in China will have mixed consequences for EU steel mills. Gradually declining global raw materials prices in the coming years will be a relief to EU mills, who export very little to China, and who are currently sandwiched between weak sales prices for their own products, and high purchase prices for their raw materials.
- On the other hand, there may be an increased risk of regular flares of Chinese steel exports targeting the EU market. Furthermore, some EU mills, especially the quality leaders, may be hit by a loss of volume by declining exports to China of high quality steel intensive products, in particular top end German cars and machinery. Both factors would impact on European demand for steelmaking raw materials.

Thank you for your attention!



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