Observations on the global and Asian ferrosilicon markets

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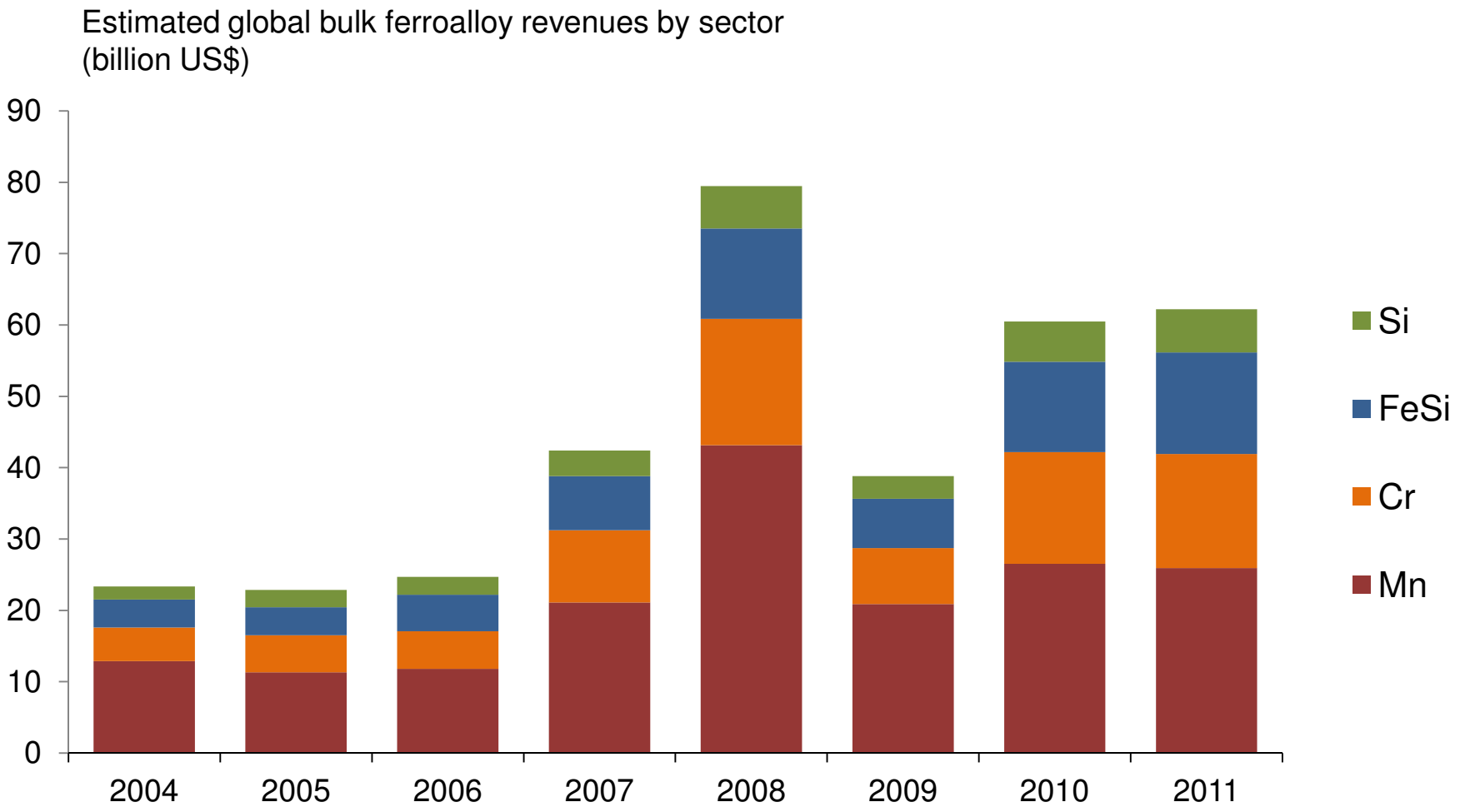
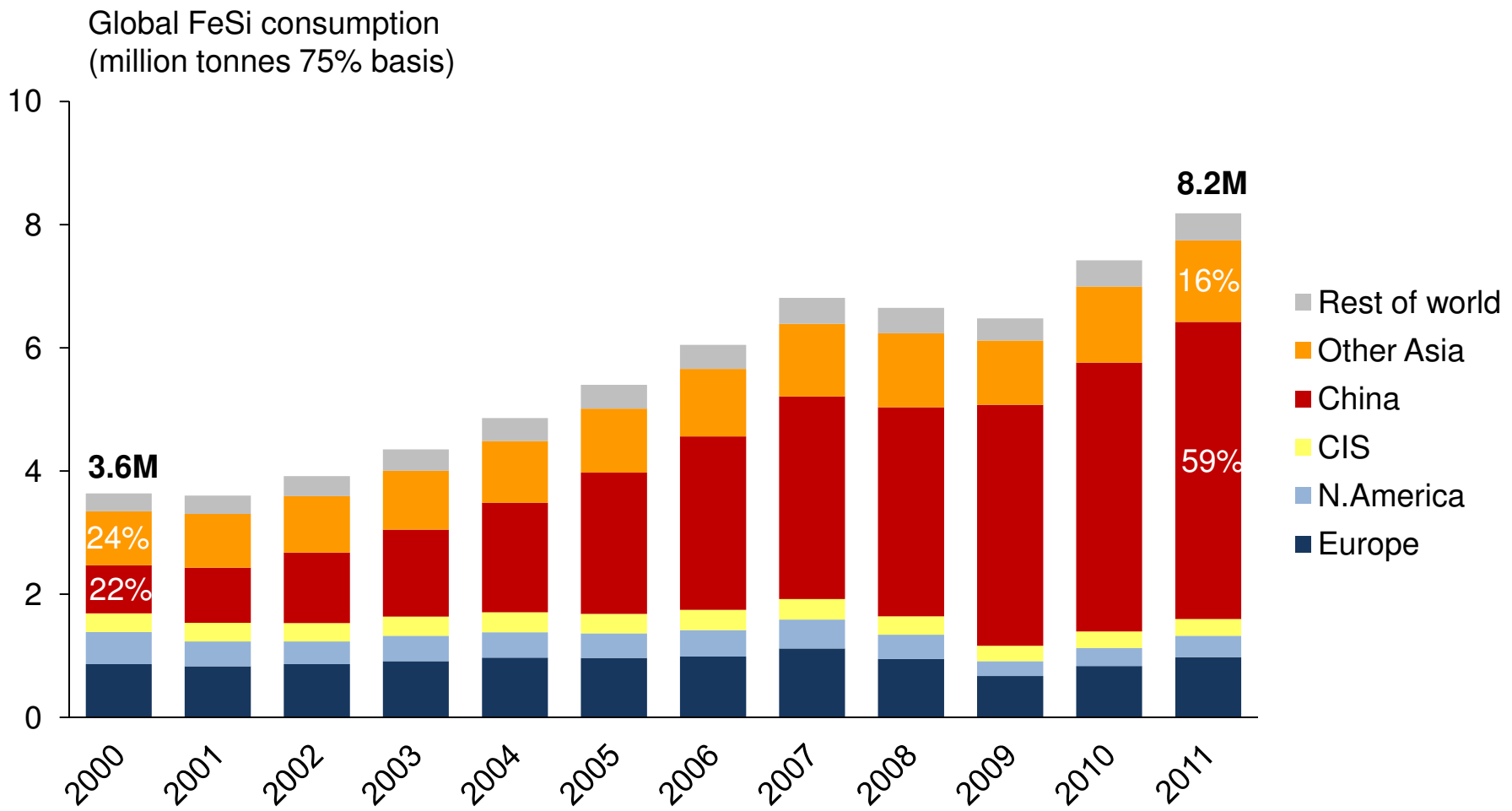
What is ferrosilicon?

- A ferroalloy of iron and silicon (FeSi), normally ~75% Si
- Used extensively in molten crude steel as a de-oxidising agent
- Also used to add electrical conductivity and corrosion-resistance properties to steel
- Average Si content of steel is 0.3%. Many individual grades are much higher in Si – stainless steel (up to 1% Si), electrical steels (up to 7% Si)
- Around 70% of global FeSi output is used in steel
- Other important applications are for de-carburising molten grey iron for the production of foundry castings and for producing magnesium metal in China

FeSi global revenues were $14bn in 2011, accounting for 23% of revenues in the bulk ferroalloy sector



Global FeSi demand was 8.2Mt in 2011. Asian share has risen from 46% in 2000 to 75% in 2011



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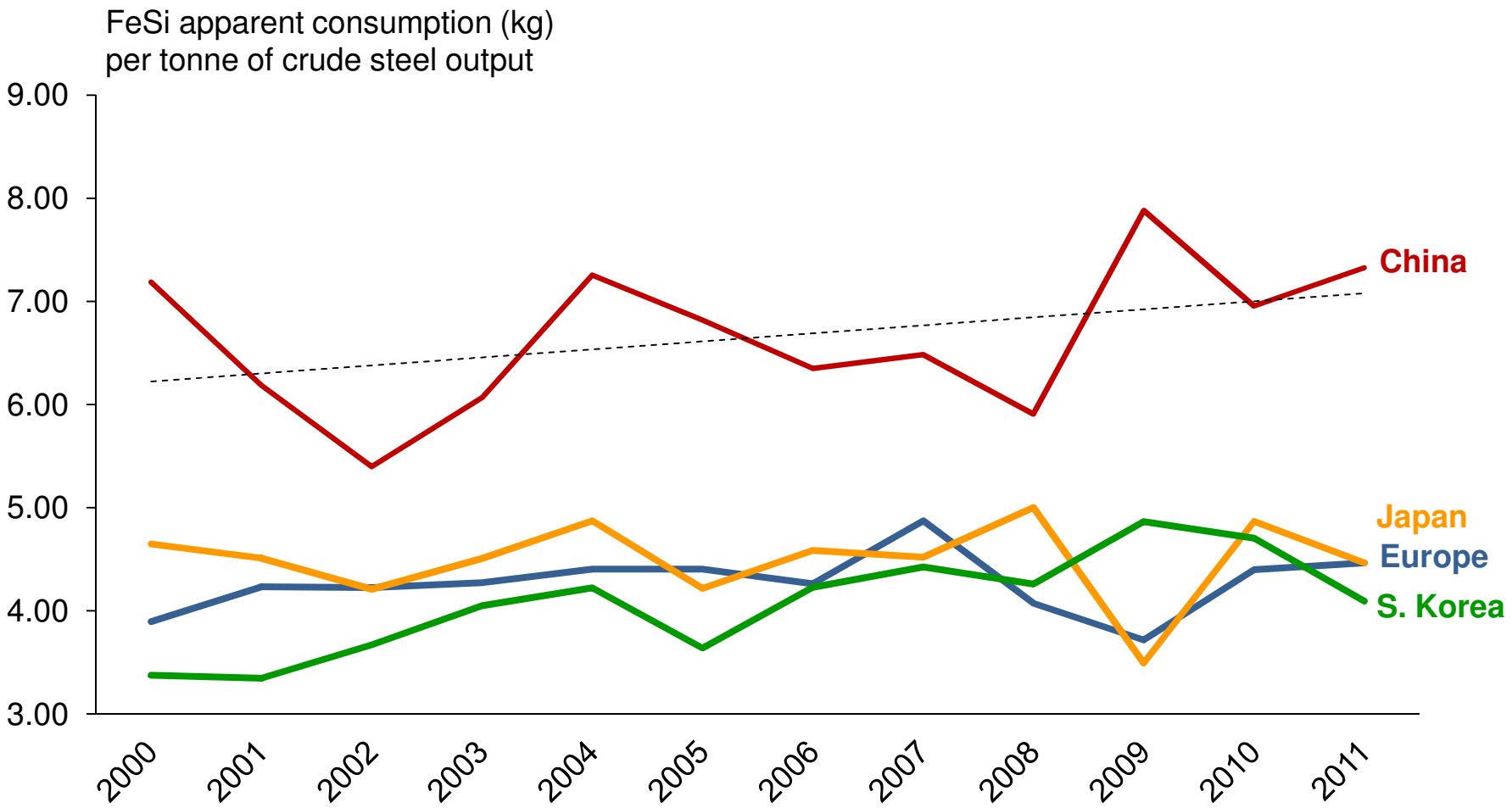
Consumption of FeSi per tonne of steel in China is 75% higher than in developed countries – and rising



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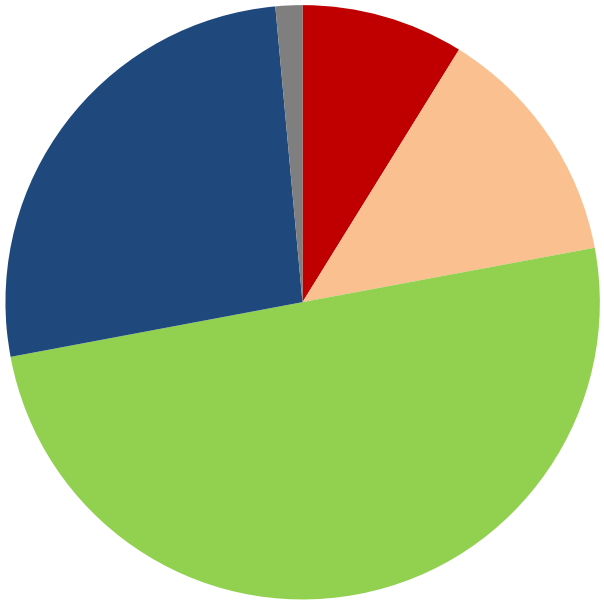
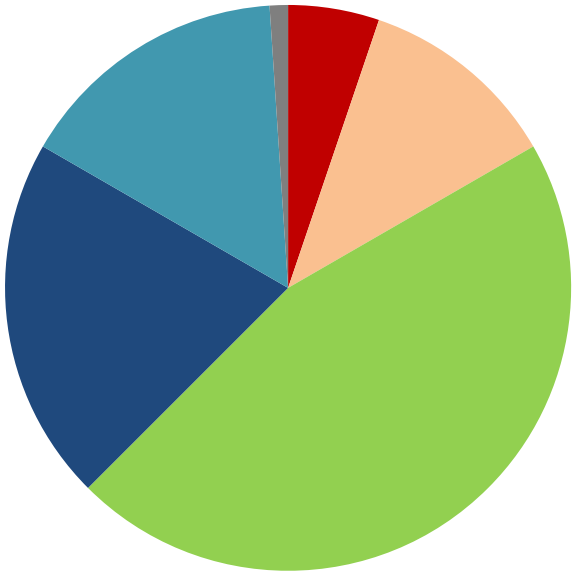
Chinese FeSi demand has three key end use sectors– steel, foundry, and magnesium

Rest of World FeSi consumption by end-use, 2011*



*total Rest of World consumption
3.4 million tonnes
(steel-related = 72%)

Chinese FeSi consumption by end-use, 2011**



**total Chinese consumption
4.8 million tonnes
(steel-related = 63%)

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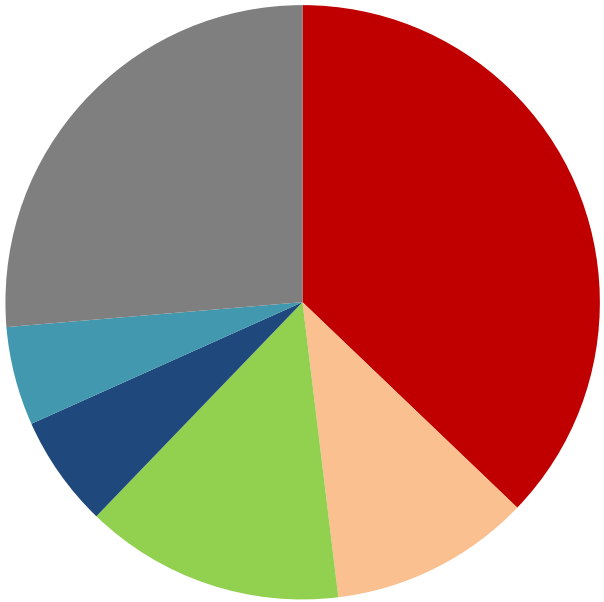
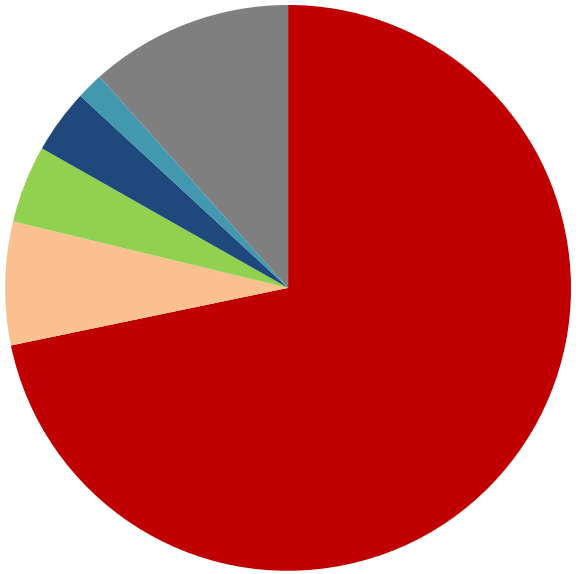
China's share of global FeSi output has risen from 37% in 2000 to 72% in 2011

Global FeSi production, 2000



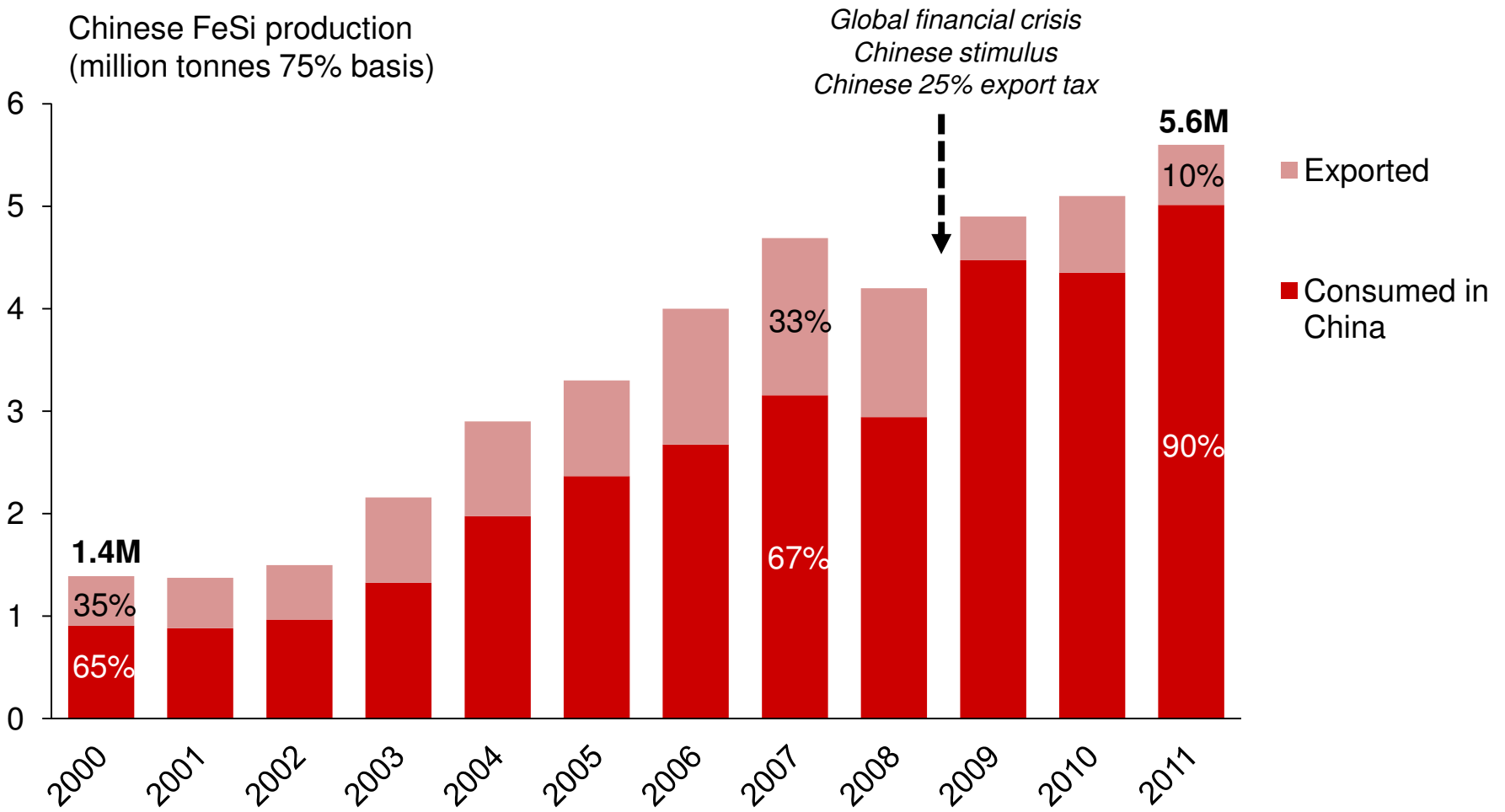
total
3.7 million tonnes

Global FeSi production, 2011



total
7.8 million tonnes

Chinese FeSi production has grown more slowly than consumption, leaving less available for export



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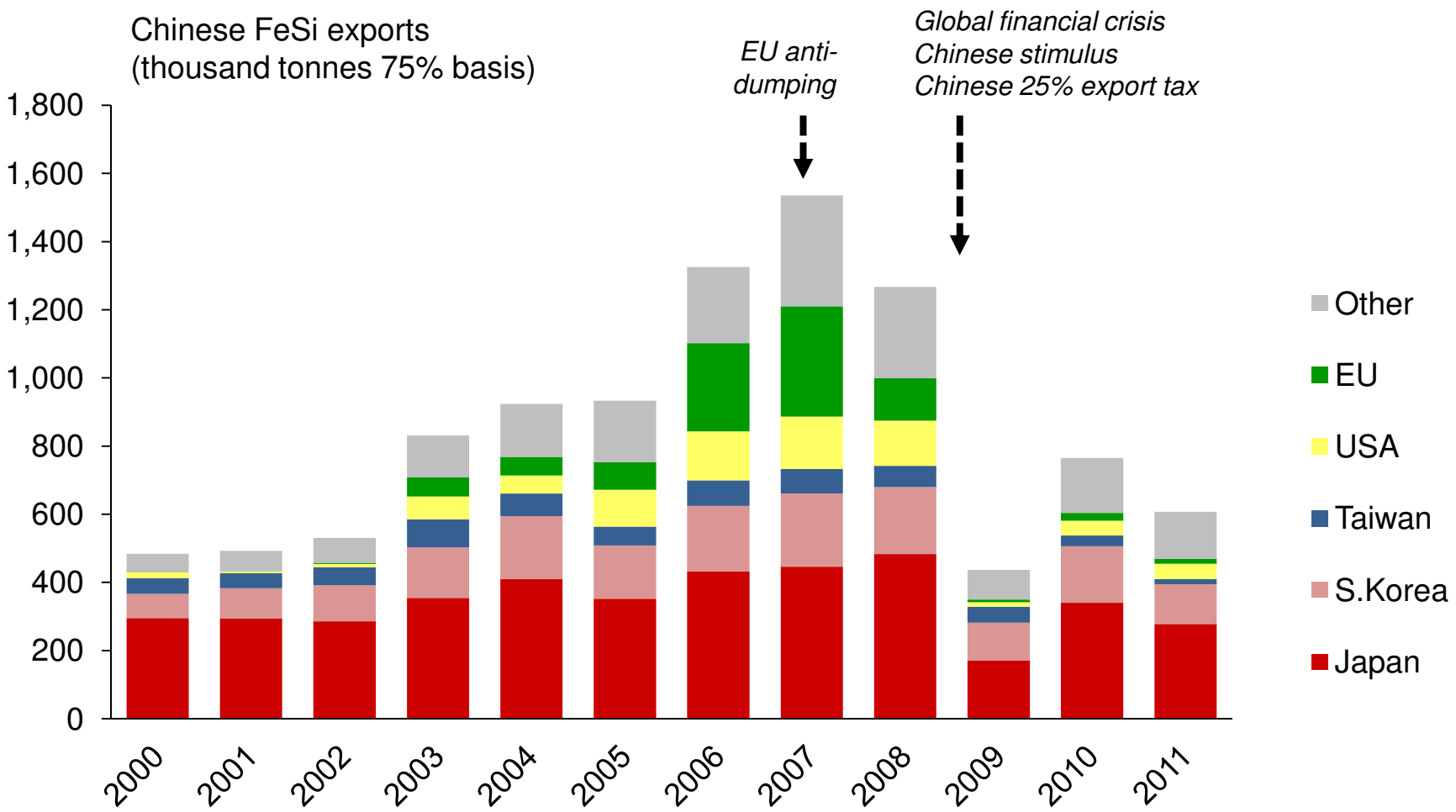
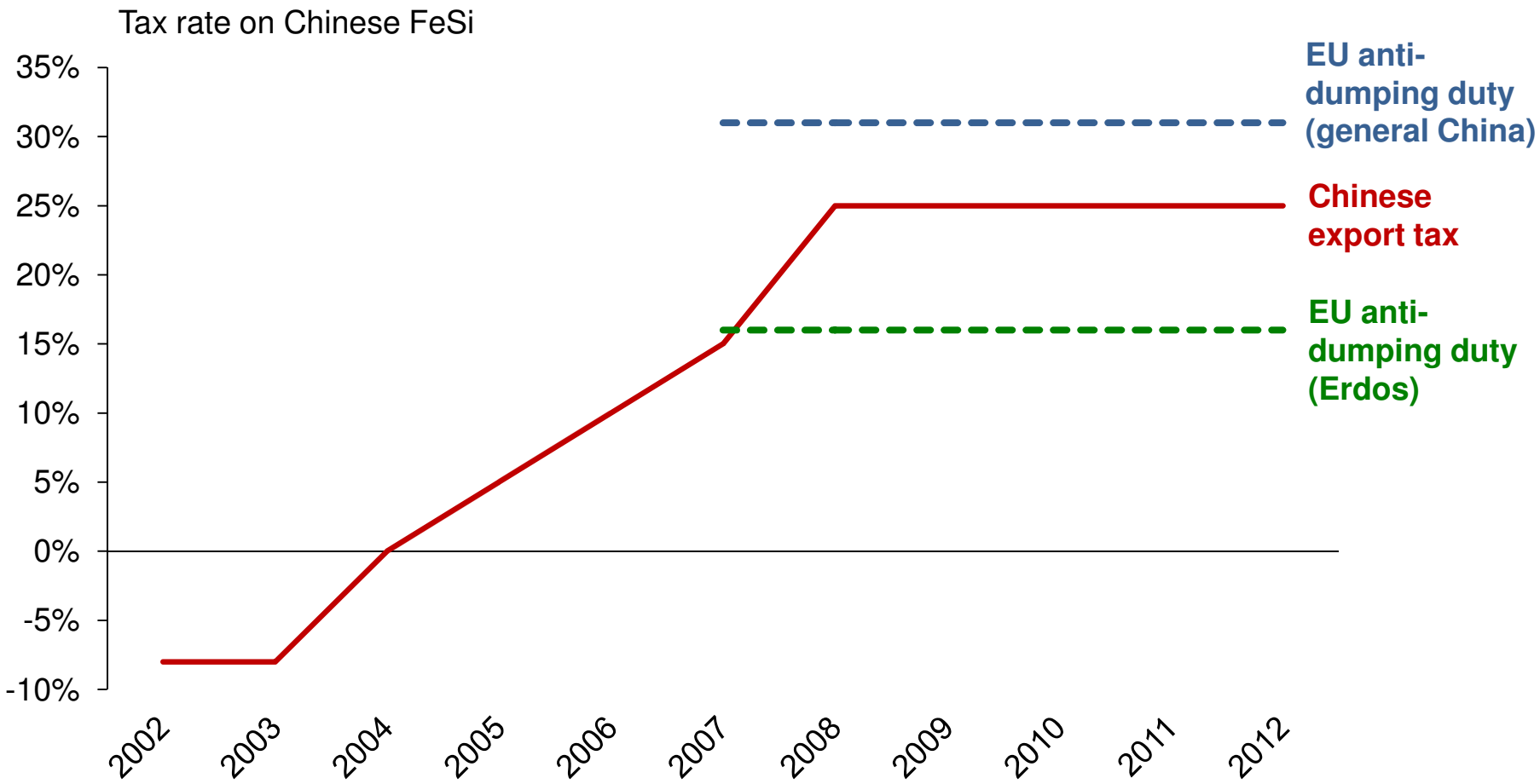
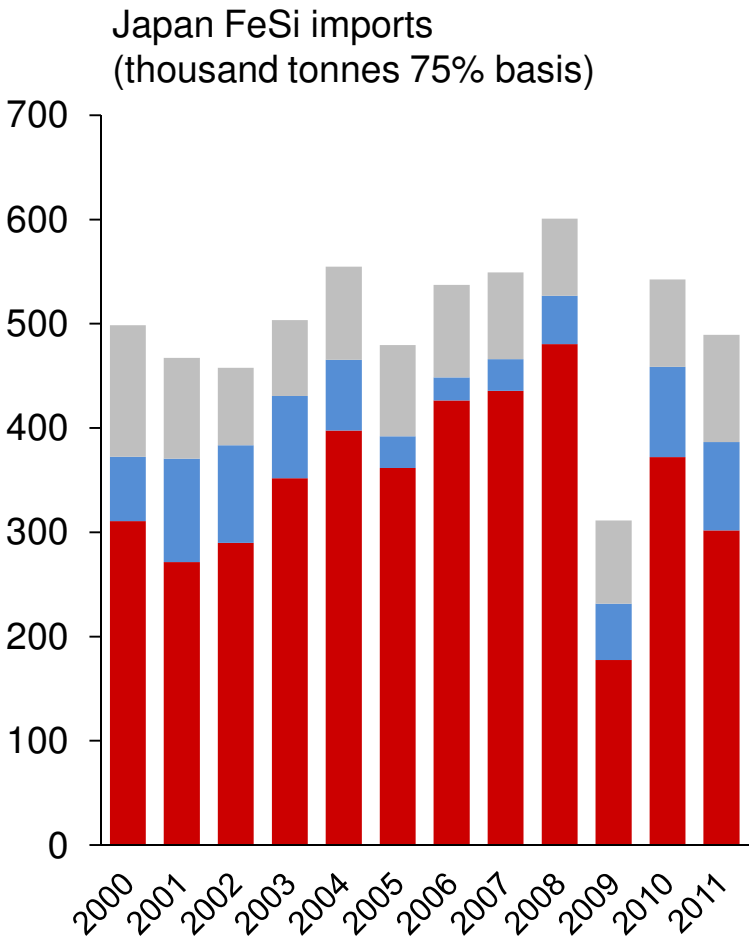
Chinese FeSi exports appear to have fallen to a permanently lower level since the end of 2008

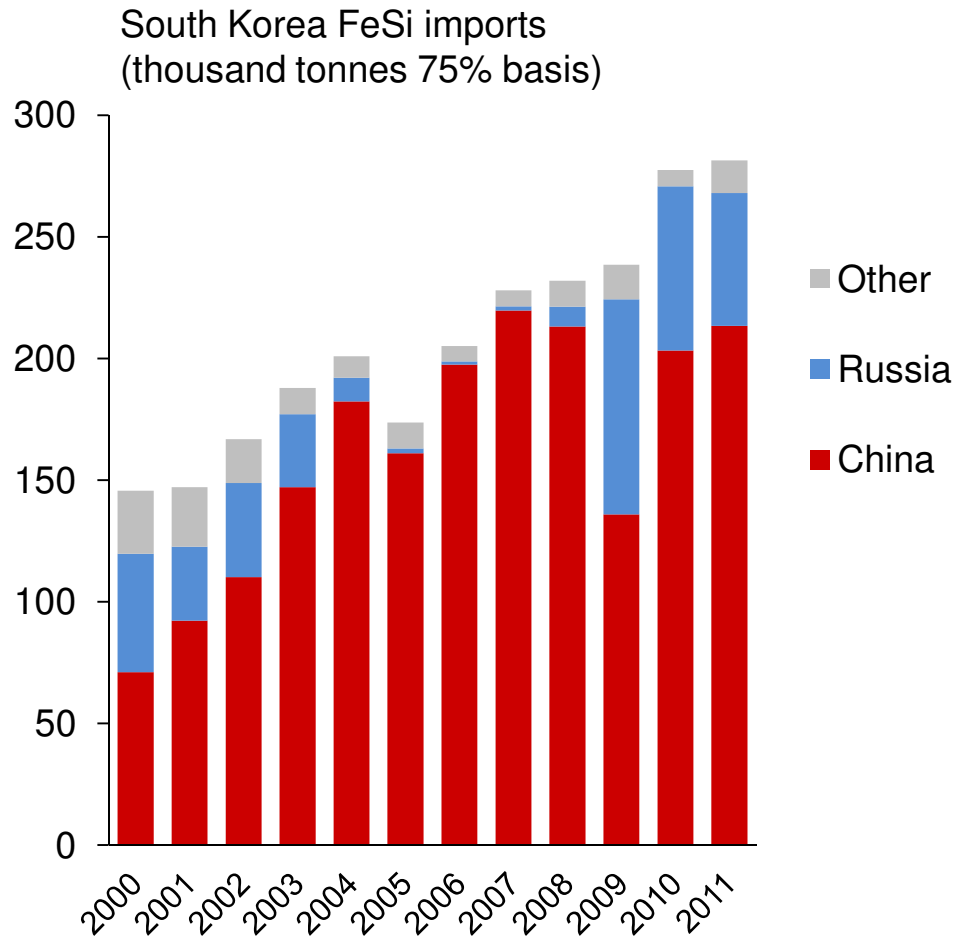


High taxation of Chinese exports since 2007-8 is a major cause of lower FeSi exports from China



In Japan, lower Chinese imports correspond to lower demand. In Korea, Russians have filled the gap





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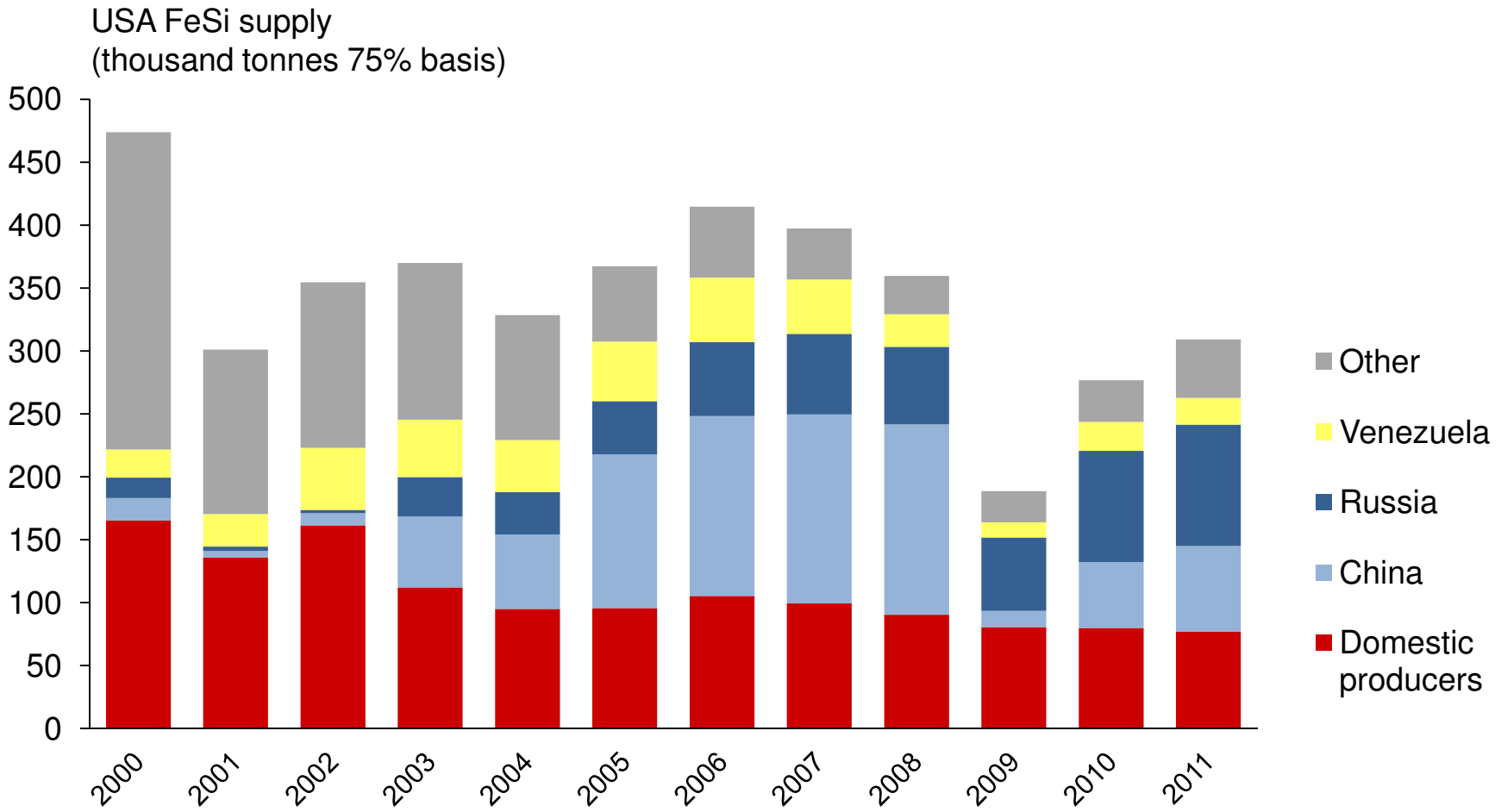
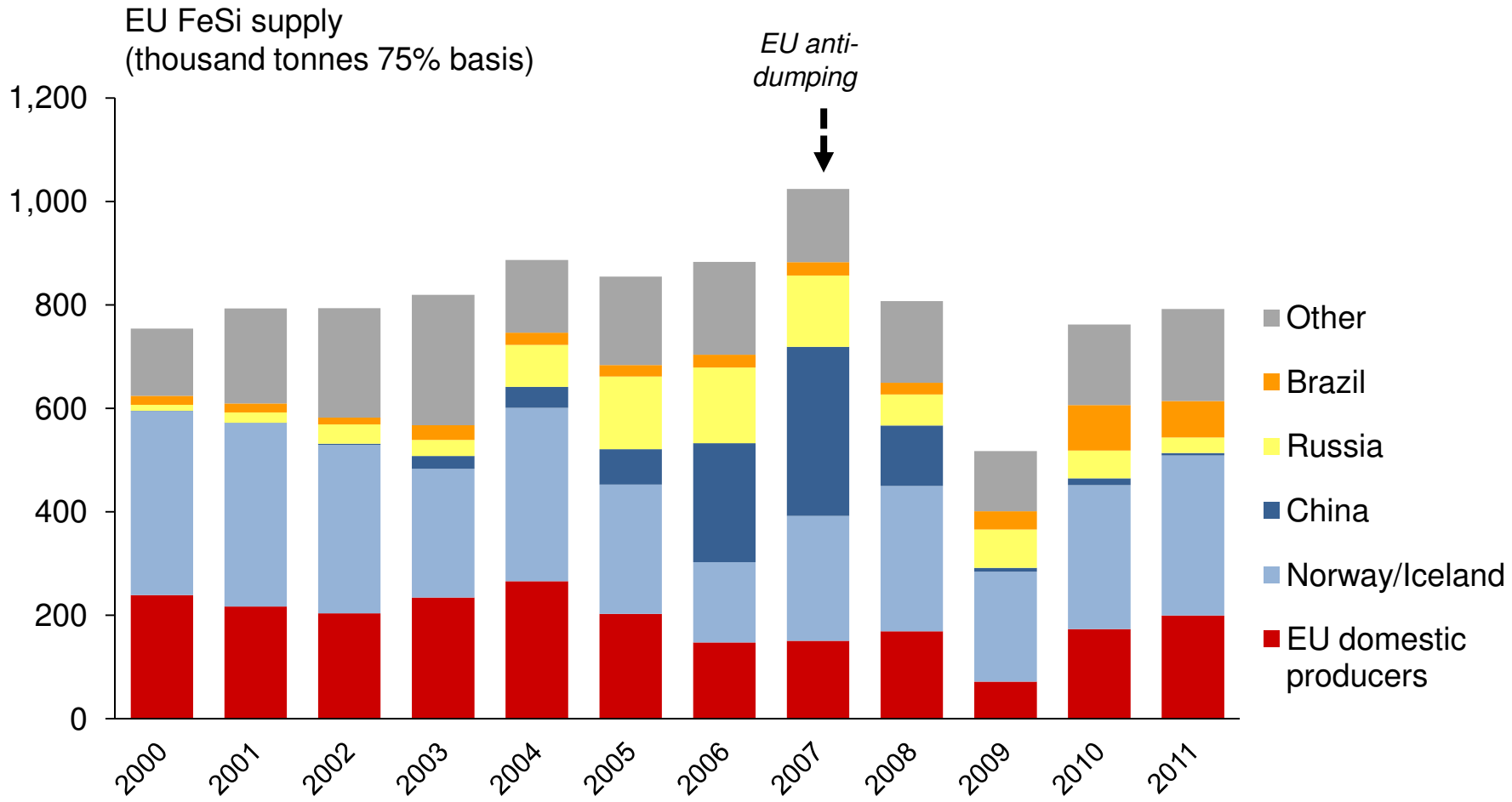
In the USA, lower Chinese imports have been offset by higher Russian imports and by lower demand



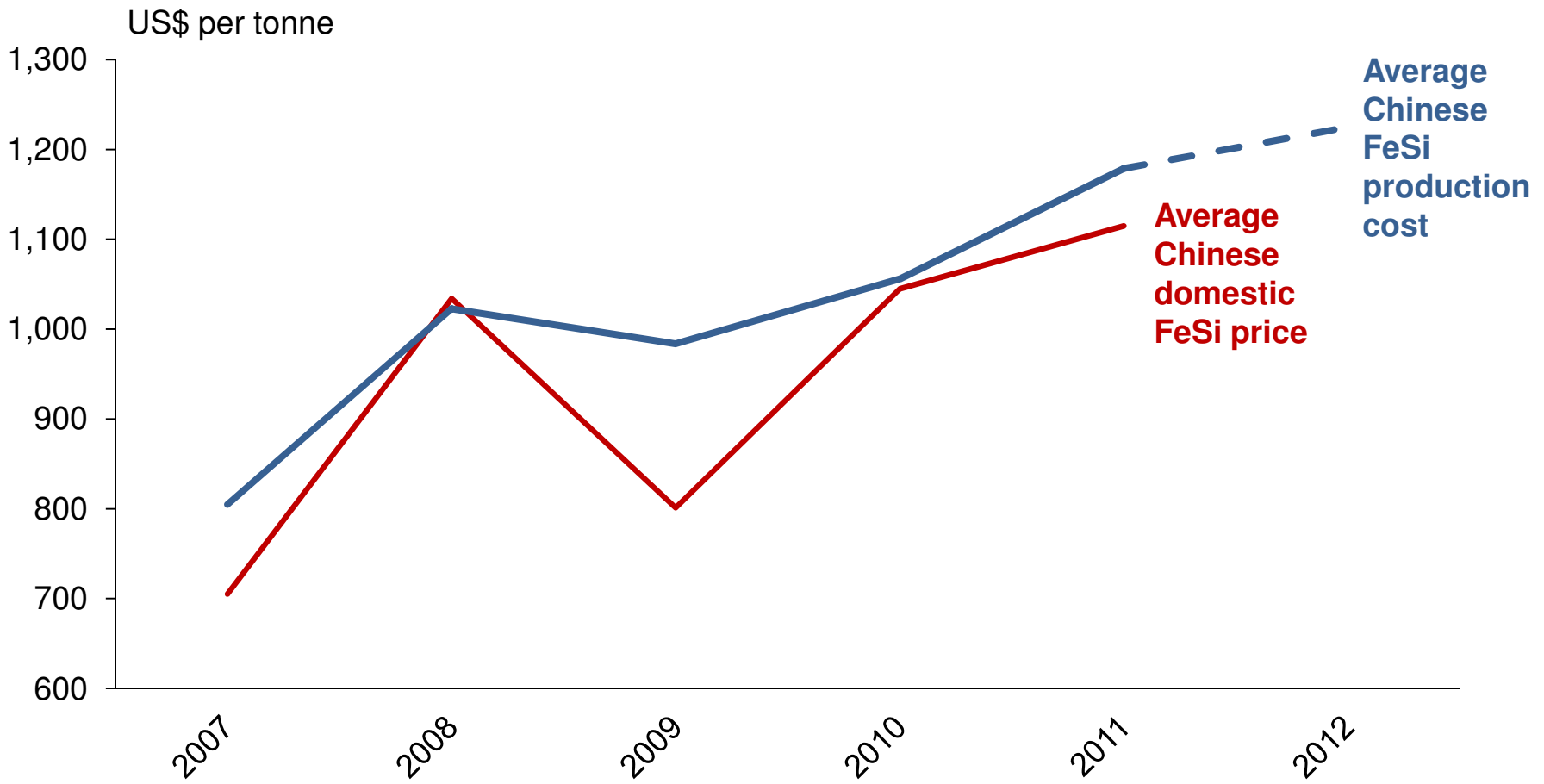
In Europe, Chinese market share has been re-taken by producers from Norway, Iceland and Brazil



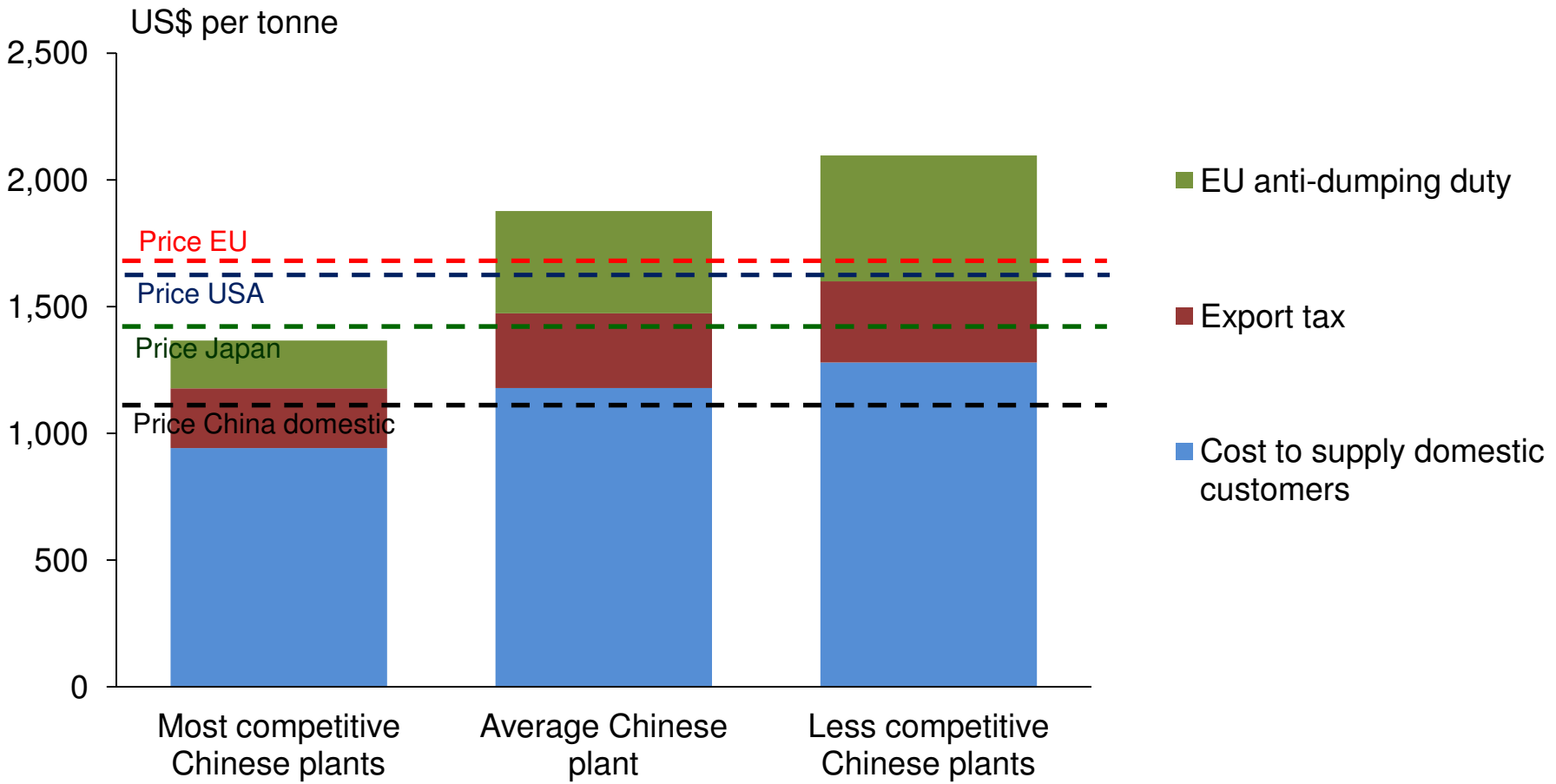
Other FeSi suppliers have taken market share from Chinese exports….expect this trend to continue

- Russian suppliers – have increased their share of Korean and US markets in particular
- Brazilian suppliers – increased supply to Europe 2009-2011, but now softening
- European suppliers – have taken much higher share of European market since 2008
- EU anti dumping duties up for review in 2013 – if revoked, Chinese might regain some share of EU market
- Loss of Chinese exports since 2008 partly offset by softer demand in some markets (Japan, Europe, USA). Recovery of demand in these markets will intensify the need to find alternative volumes of FeSi
- New FeSi suppliers likely to emerge in countries like Indonesia, Malaysia and in the Middle East

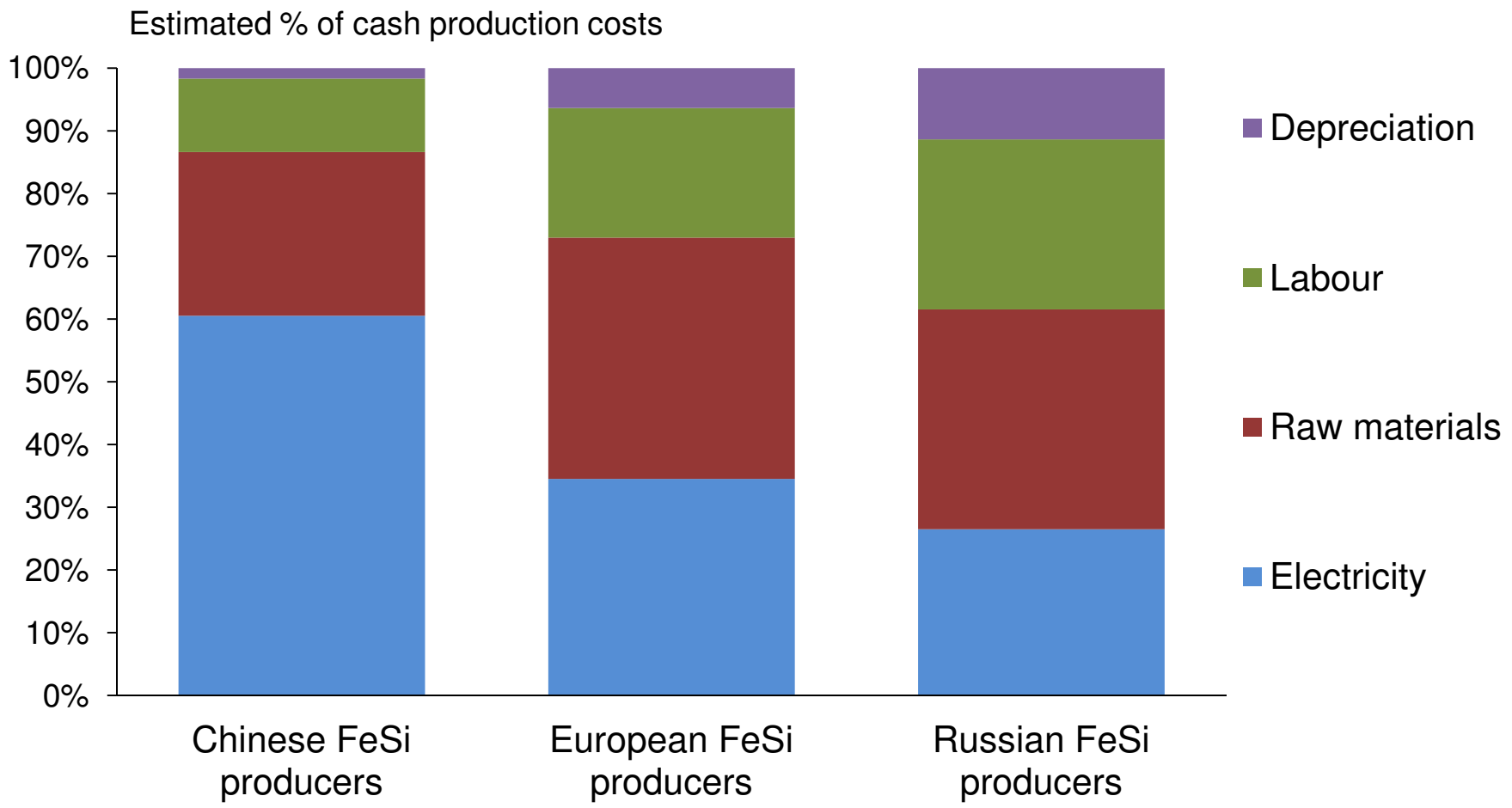
Profitability of Chinese FeSi production is poor… nevertheless, prices are cost-driven in the longer term



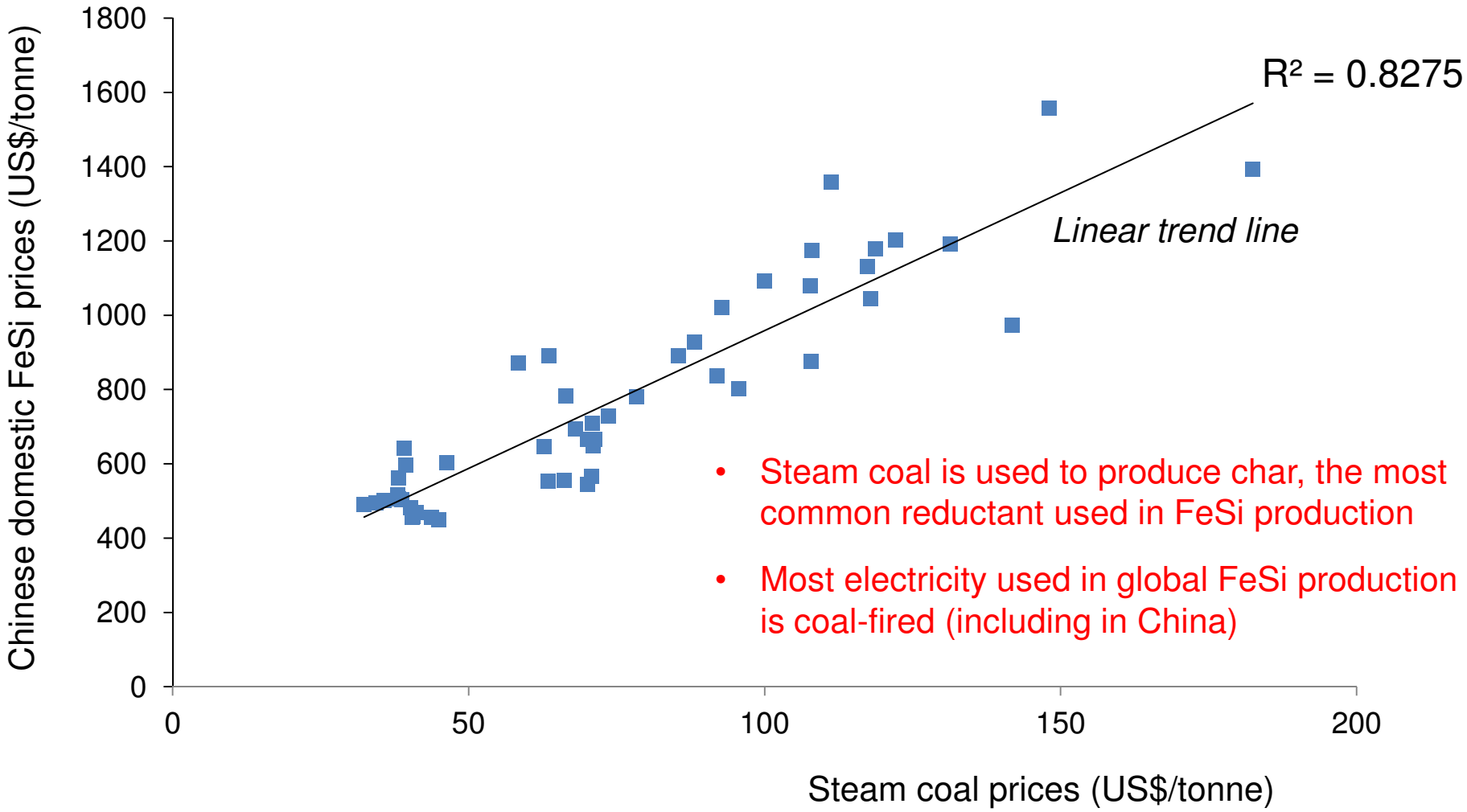
Sales to most export markets are also currently unprofitable for the average Chinese FeSi producer



The cost structure for Chinese FeSi producers is uniquely focused on electricity costs



Coal is the key cost driver for FeSi….with an 83% correlation between coal prices and FeSi prices



- Steam coal is used to produce char, the most common reductant used in FeSi production
- Most electricity used in global FeSi production is coal-fired (including in China)

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4 reasons to be

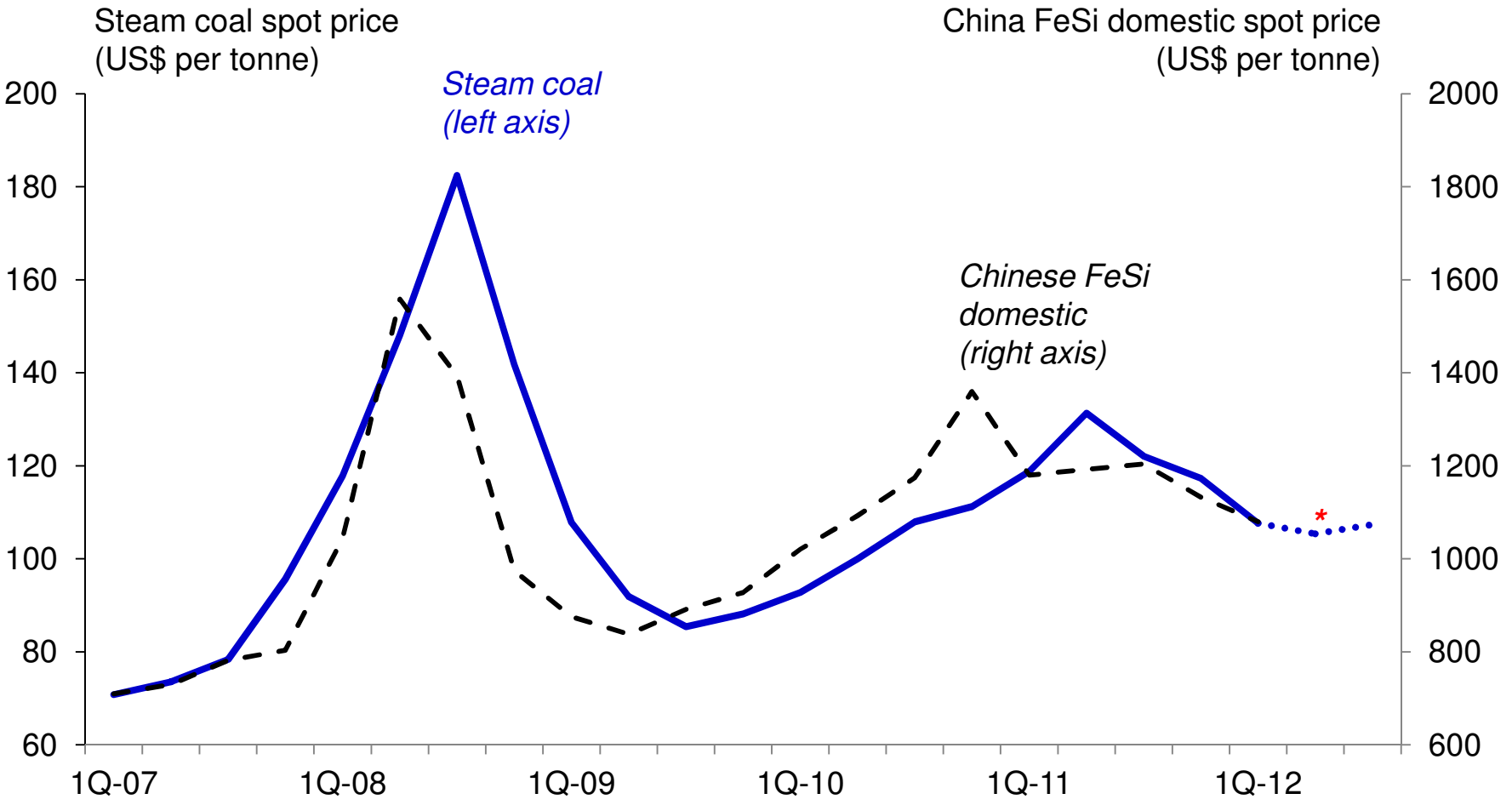
(cautiously)

optimistic about

FeSi prices

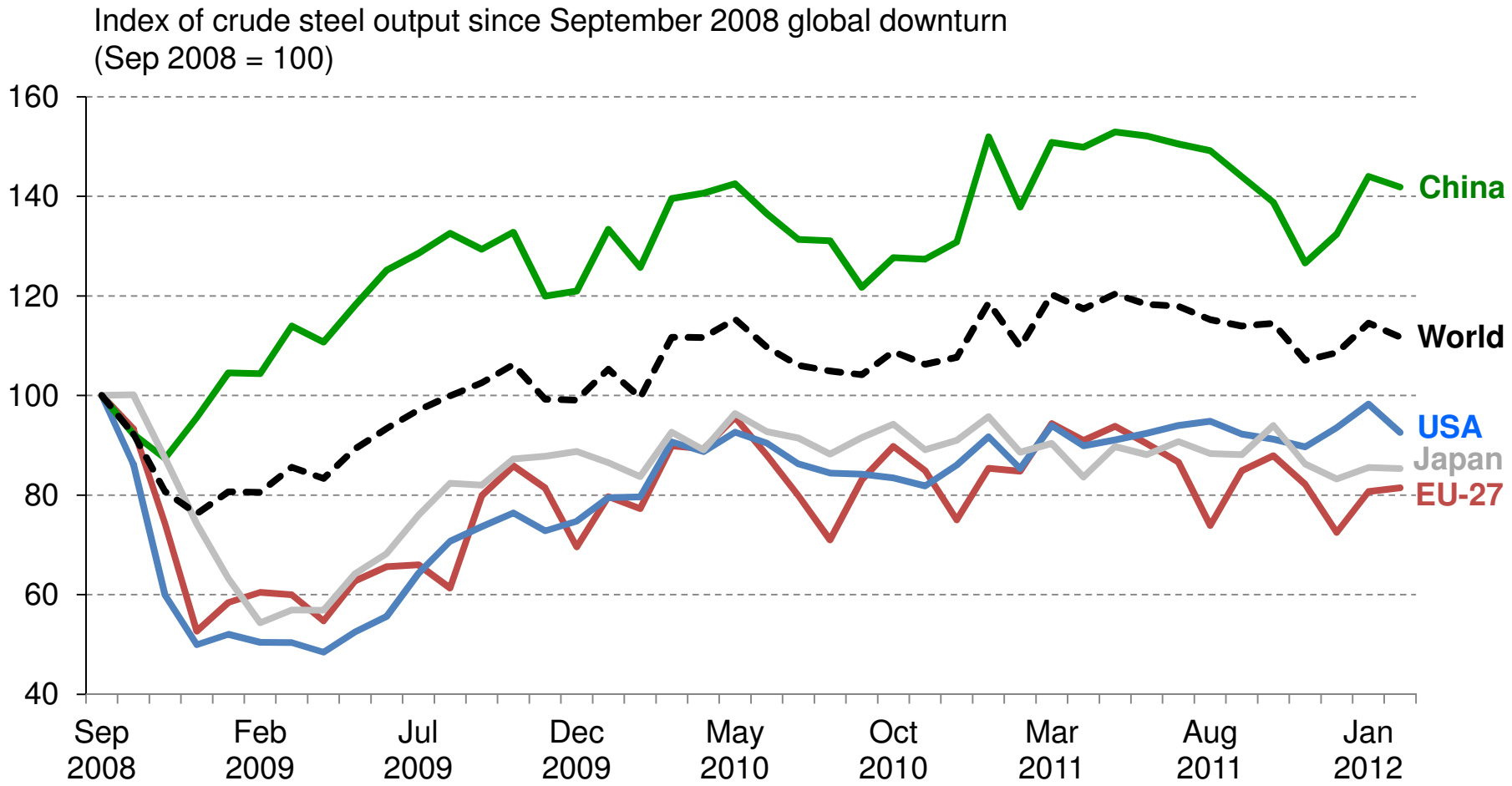
in the coming months…..

(1) Raw material prices appear to have bottomed out, with a recovery likely as 2012 progresses



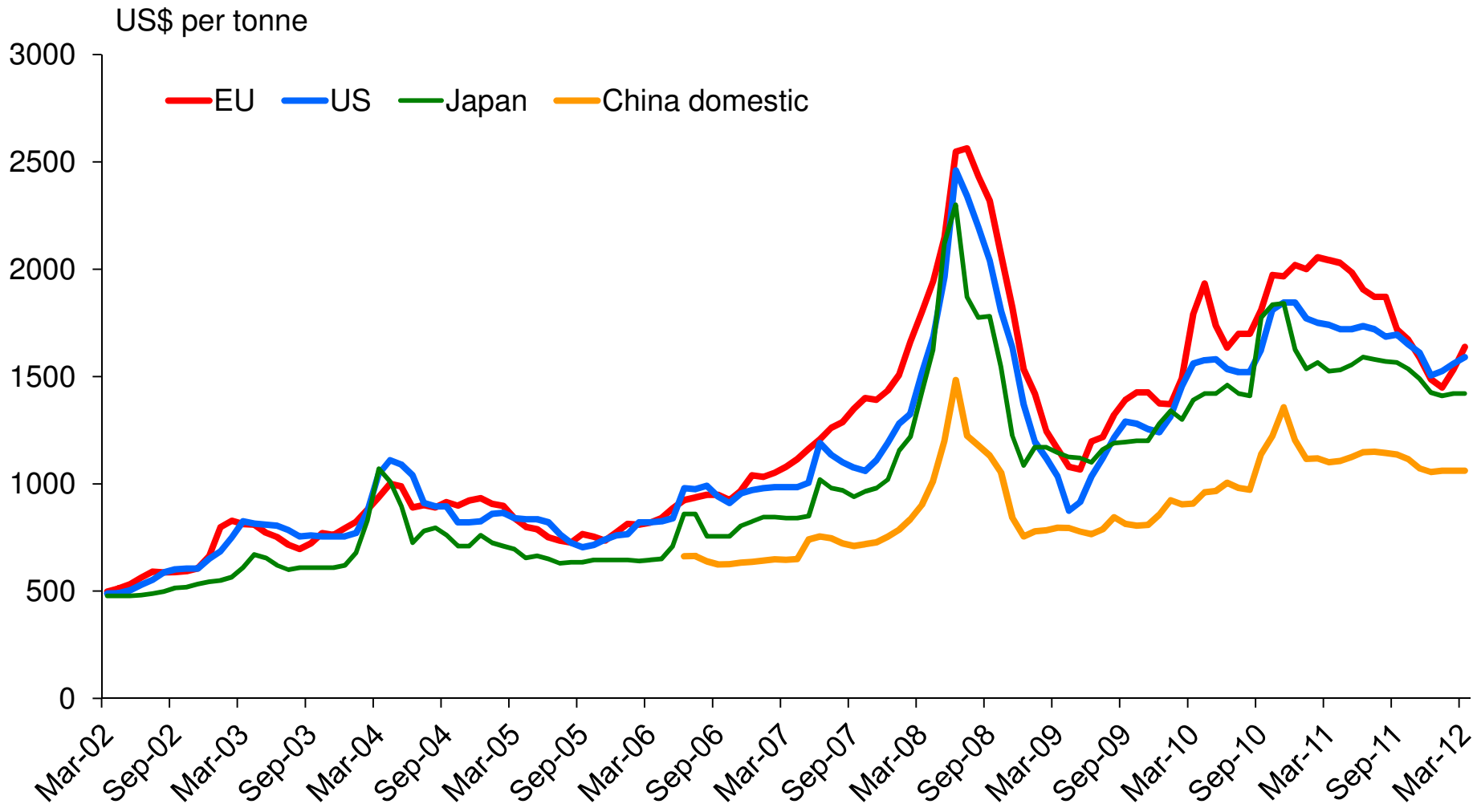
** Forecast based on steam coal futures prices, GlobalCoal.com, March 2012*

(2) In Q1-2012, crude steel output is on a recovering trend in both China and the developed world

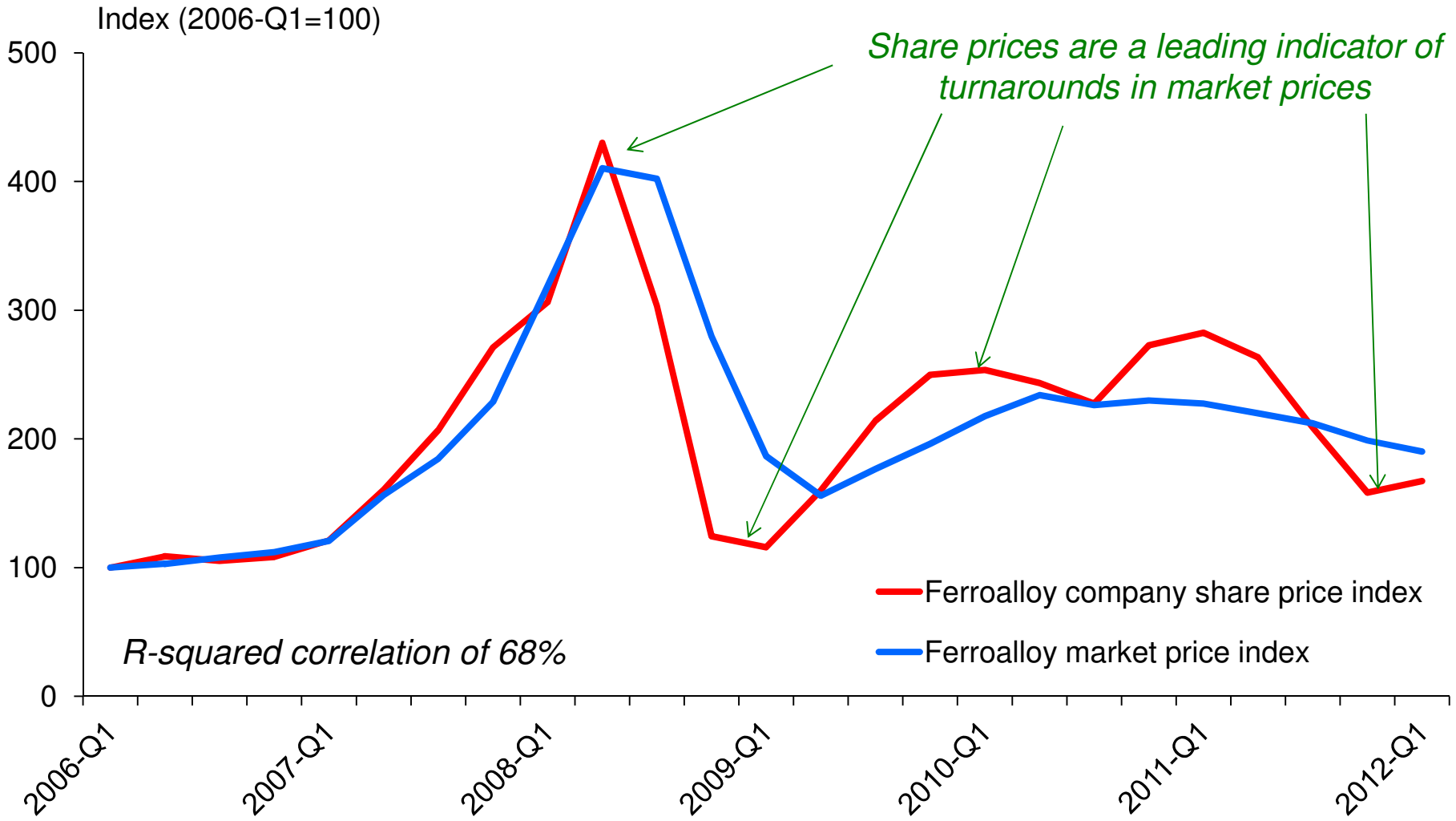


Source: worldsteel.org

(3) Cost pressures and improved demand have led prices to begin to recover in most markets



(4) Share prices for ferroalloy companies have begun to recover; a leading indicator for ferroalloy prices



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In conclusion…

- 75% of global FeSi consumption is now in Asia – 59% is in China
- China's percentage of global FeSi consumption will continue to increase
- China is focusing more FeSi production on domestic consumption, and exporting less
- Export taxation and anti-dumping duties reinforce this trend
- Other suppliers have taken market share previously dominated by Chinese exports – this trend can be expected to continue
- FeSi prices bottomed out early in Q1-2012 and have begun to recover
- Indicators for coming months are cautiously positive