



Presentation prepared for

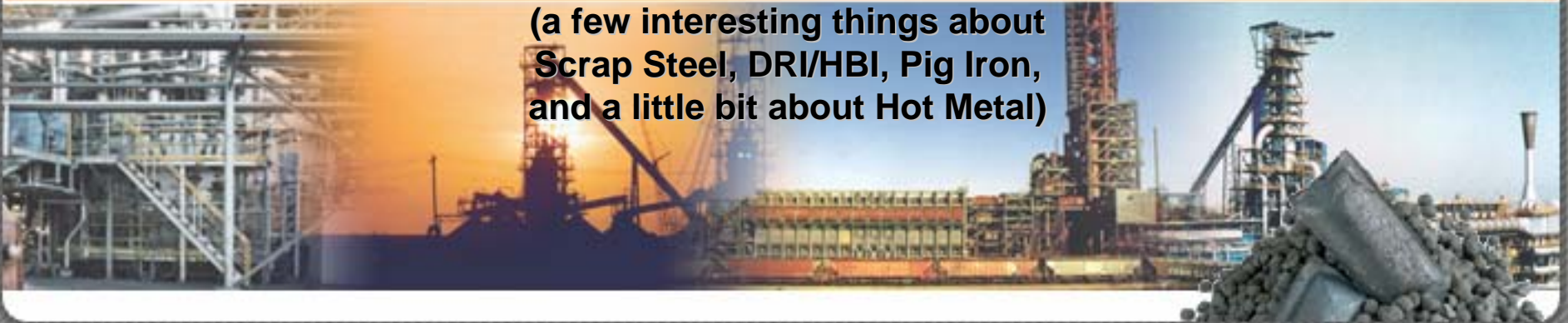
MetalExpert's

CIS RAW MATERIALS IN THE WORLD MARKETS

November 15-16, 2006 ~ Moscow

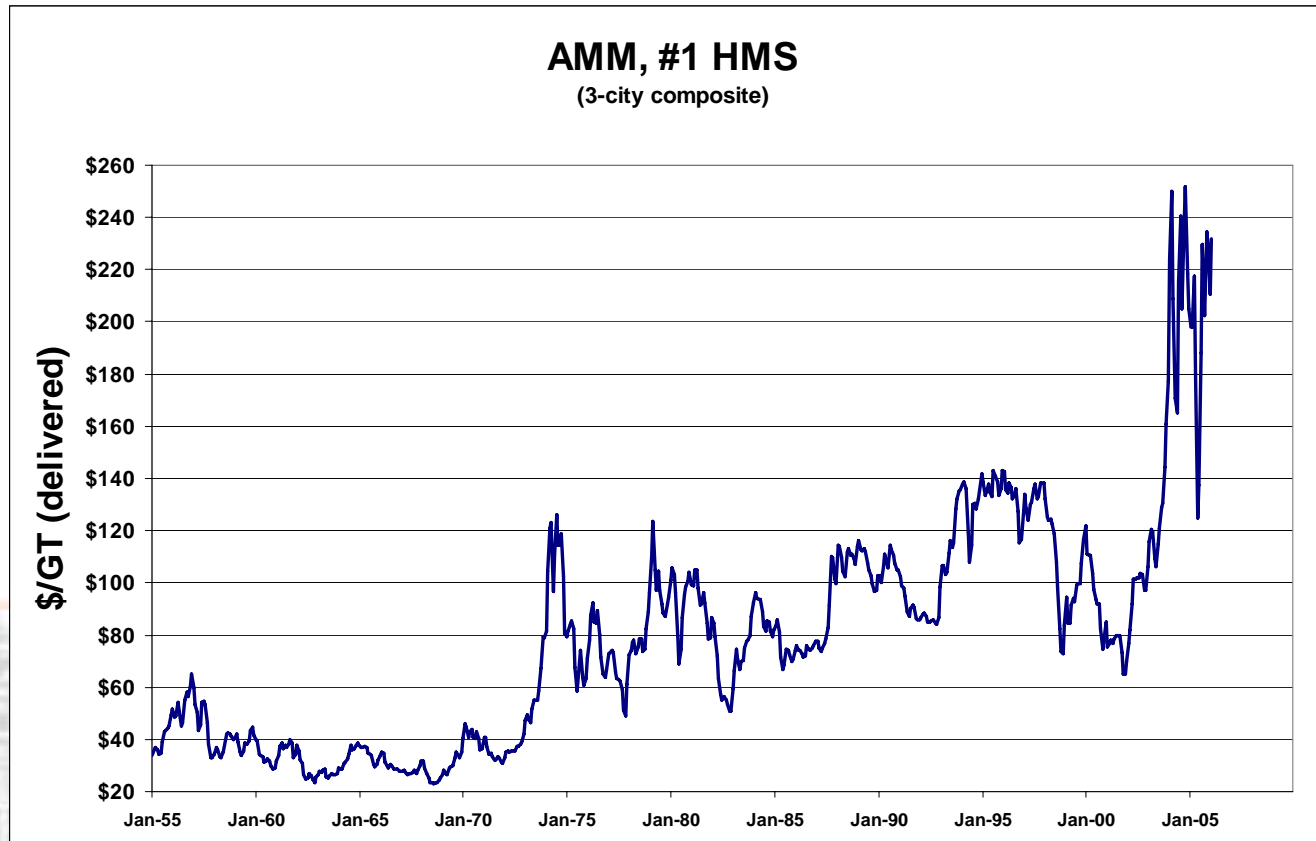
Global DRI/HBI Market: Long-term Outlook Prospects for CIS Producers

(a few interesting things about
Scrap Steel, DRI/HBI, Pig Iron,
and a little bit about Hot Metal)



2004 was, in fact, a watershed

the prices for scrap steels didn't just rise to new levels ...
they have stayed at those new levels



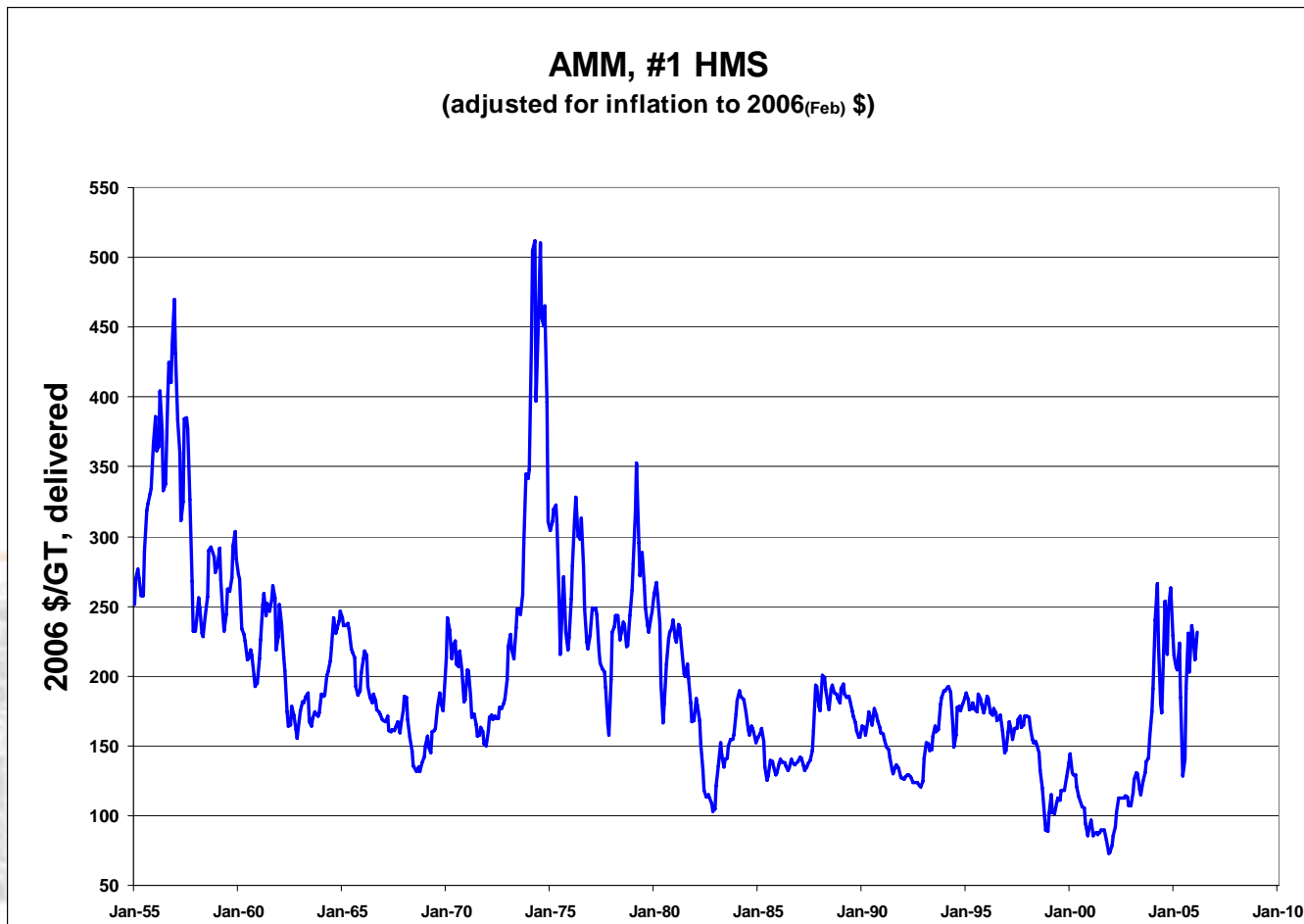
Structural change occurred, but not so drastically as this chart seems to show

**One must
account for
inflation**

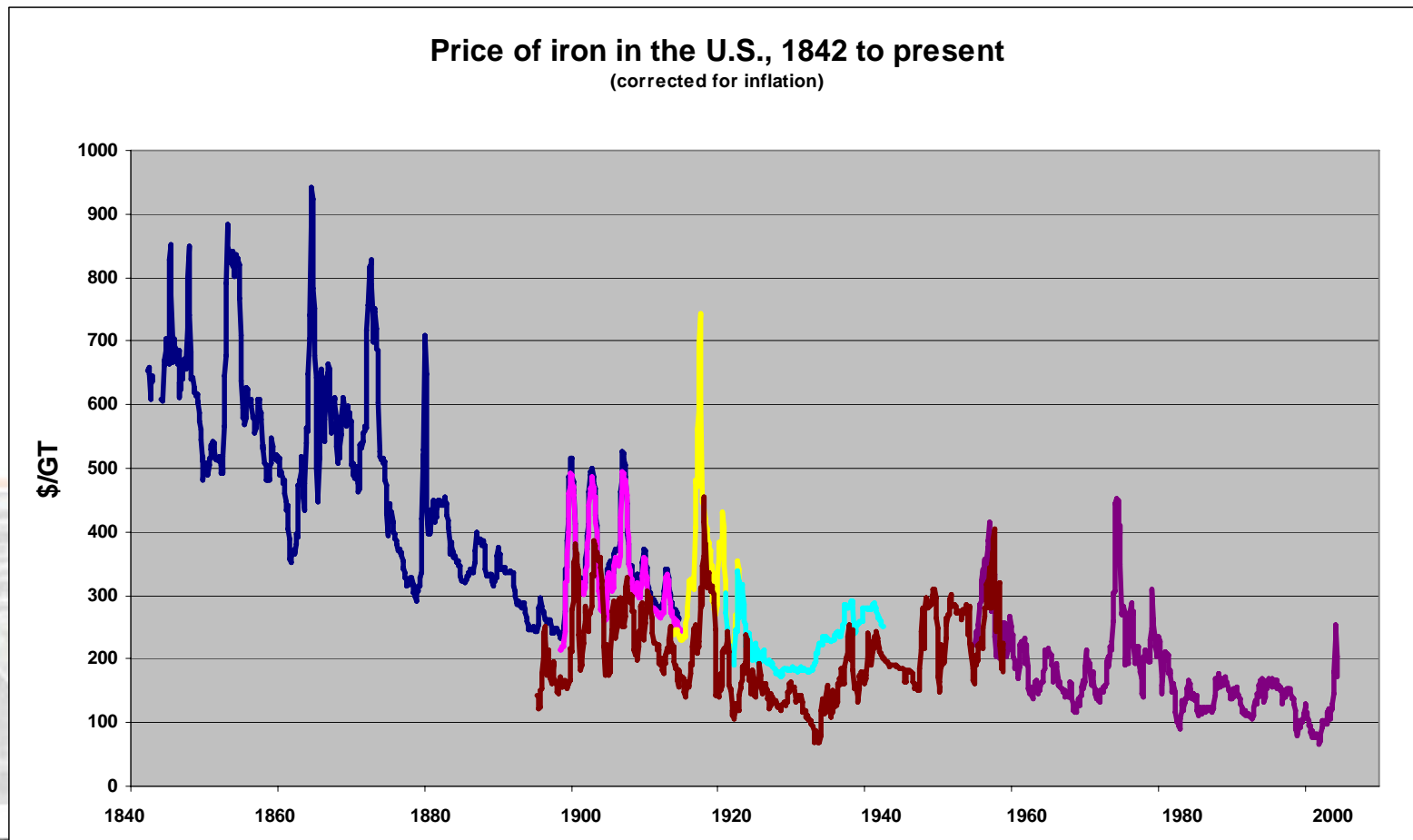


The price of scrap really has not increased so drastically. Over the past 50 years, inflation has driven down the value of the US \$ by more than 7-to-1.

Here is the same data graphed after adjustment for inflation.

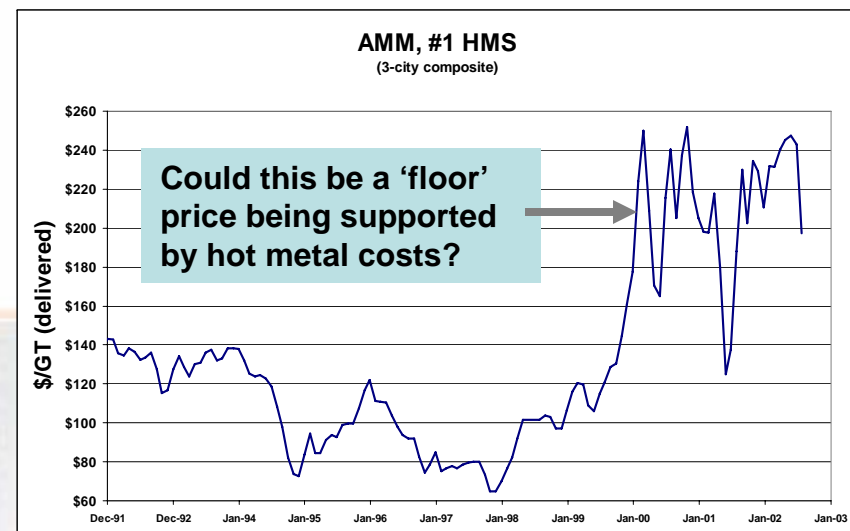


**Actually, we have recently emerged from the
LOWEST PRICES IN HISTORY
and from an exceedingly placid period of low prices.**



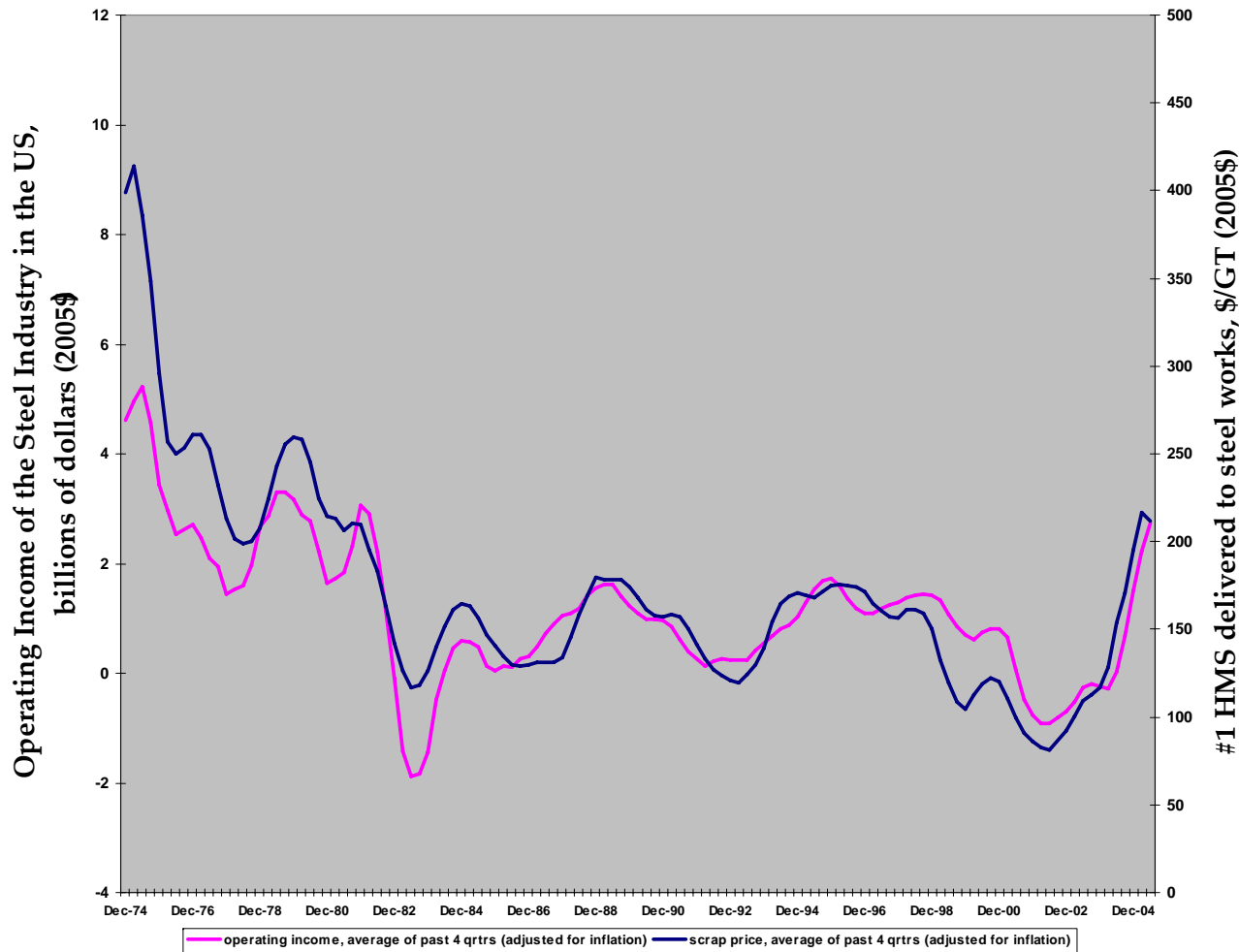
Opinion, scrap prices are now being supported at a 'floor' caused by the cost of producing hot metal

- It is difficult for scrap prices to remain far below the typical hot metal costs for any long period of time.
- Why? If they go too far below hot metal costs, integrated steelmakers begin buying larger quantities of scrap, thereby bringing the price back up.



Observation, steel companies make profits when scrap steel prices are high.

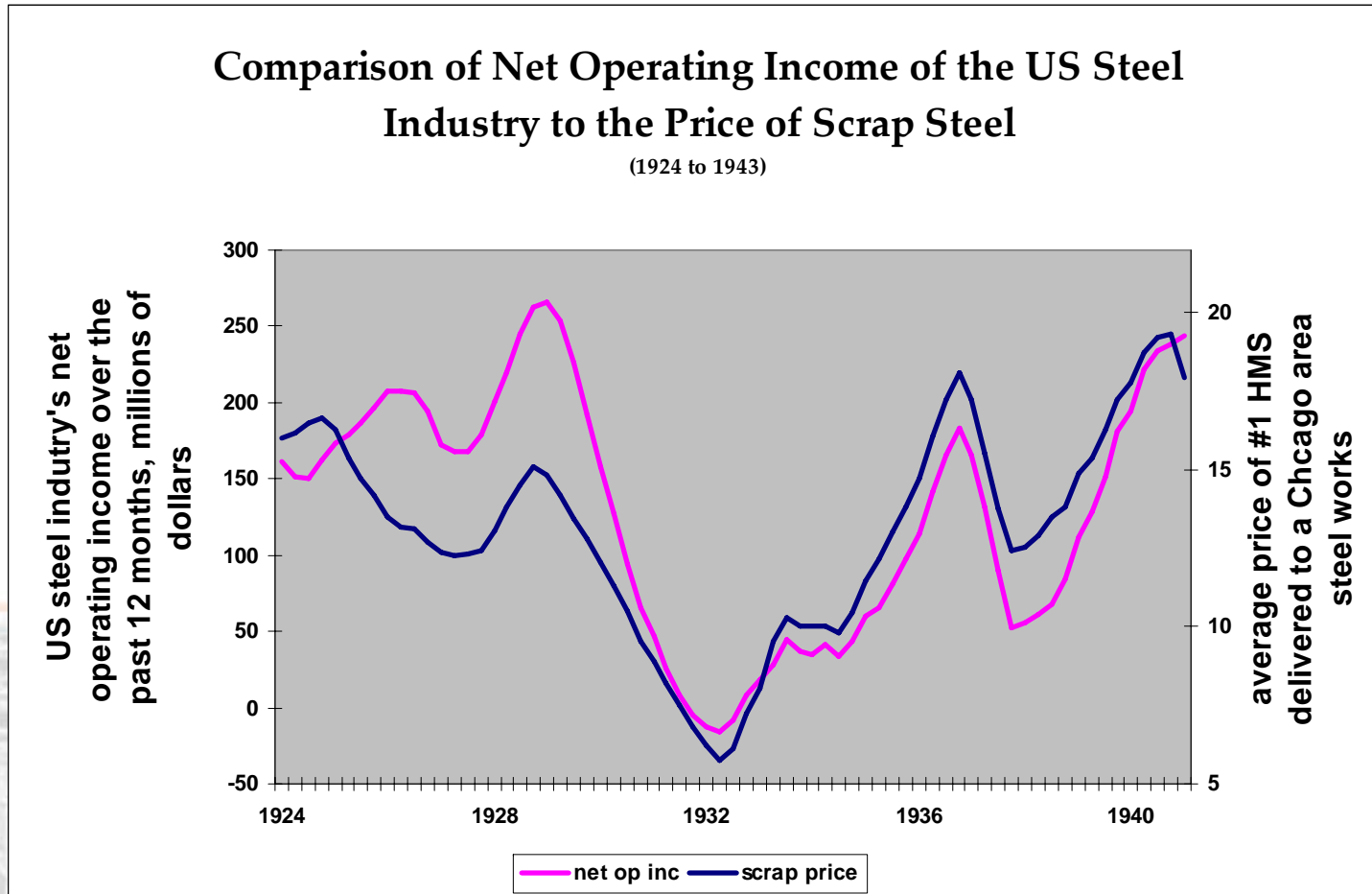
Operating Income of the Steel industry in the US vs Scrap Prices
(smoothed, average of prior four quarters)



This is not a new phenomenon.

Comparison of Net Operating Income of the US Steel Industry to the Price of Scrap Steel

(1924 to 1943)



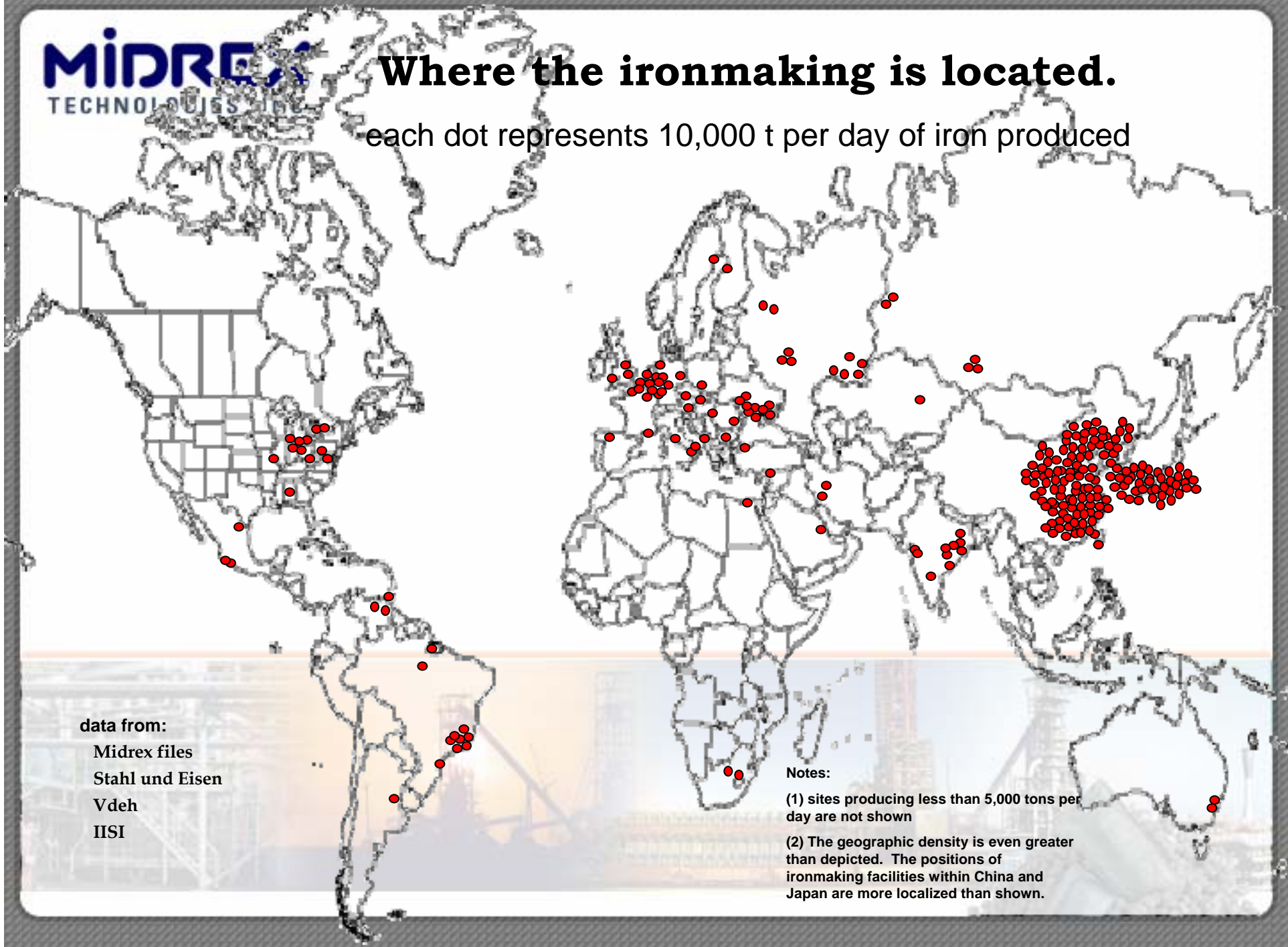
**Everyone knows that China
is the world's preeminent
producer of iron and steel.**

**East Asia currently produces
60% of total world hot metal.**



Where the ironmaking is located.

each dot represents 10,000 t per day of iron produced



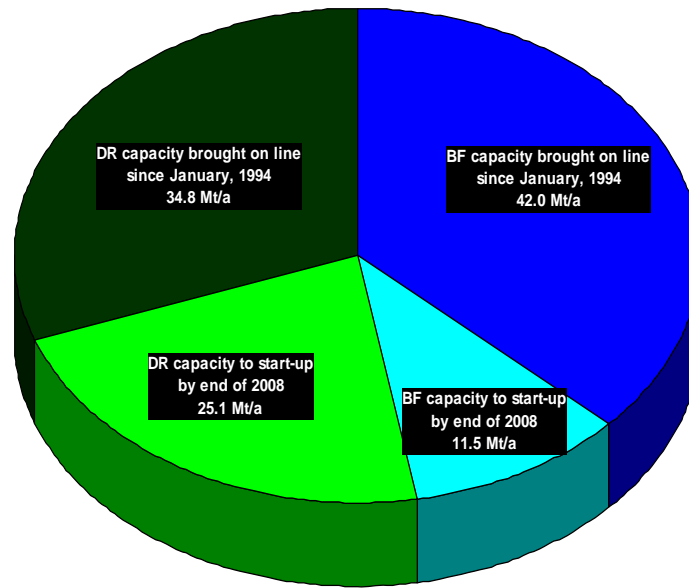
data from:
Midrex files
Stahl und Eisen
Vdeh
IISI

Notes:
(1) sites producing less than 5,000 tons per day are not shown
(2) The geographic density is even greater than depicted. The positions of ironmaking facilities within China and Japan are more localized than shown.

Nonetheless, it is still possible to make iron and steel outside of China. Over the 15 years, 1994-2008, inclusive, slightly more than 113 million tons per year of new ironmaking capacity have been, or will be, commissioned*, outside of China. More than half of those are direct reduction plants !!

**New Ironmaking Capacity Outside of China:
Direct Reduction Exceeds Blast Furnace**

(fifteen year period, 1994-2008, inclusive)
(total, blast furnace plus direct reduction, 113 million tons per annum of added capacity)





Over the next few years, new DR capacity will actually exceed new BF capacity, outside of China.

Midrex's announced projects:

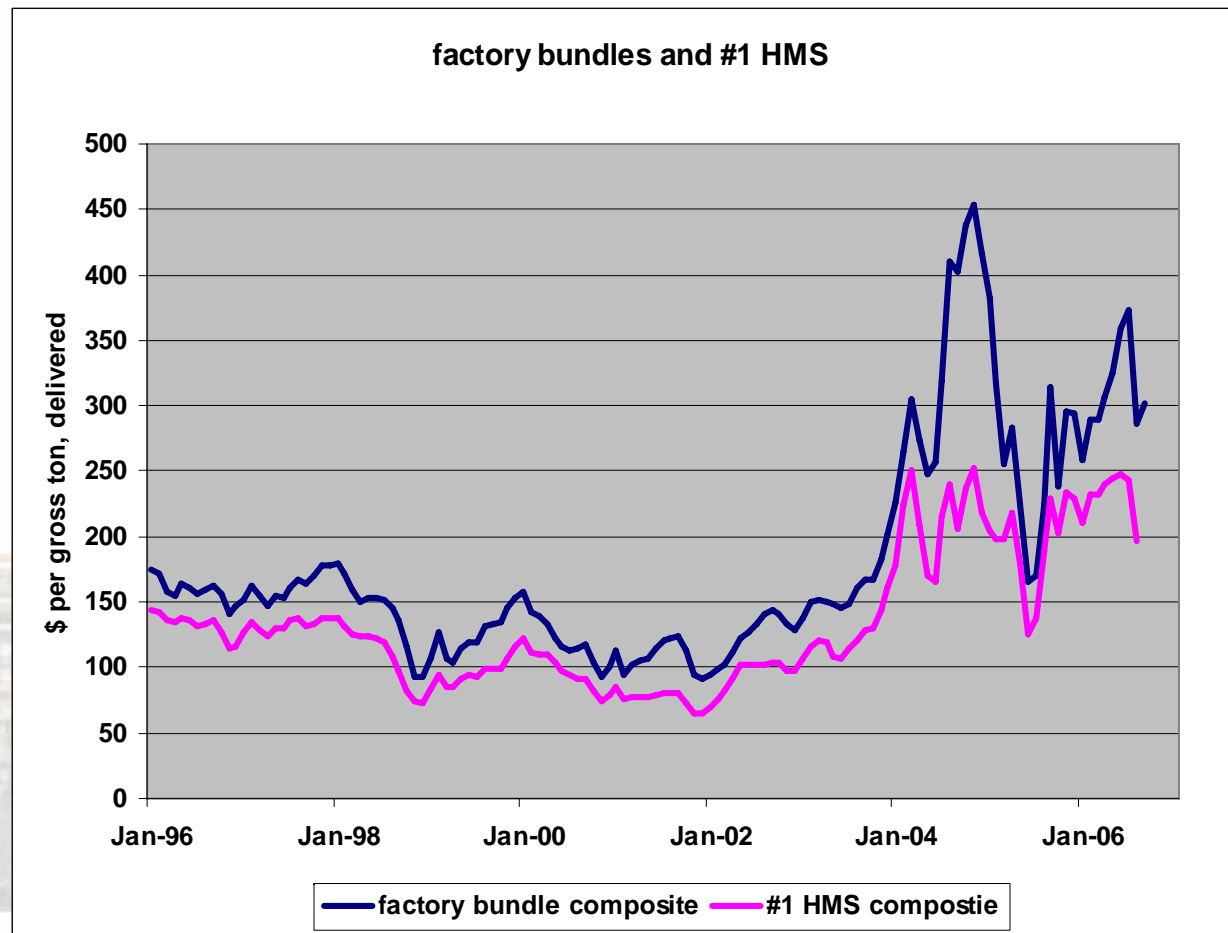
**Nu-Iron, Trinidad
Acindar expansion, Argentina
Qatar Steel, Qatar
Shadeed, Oman
Al-Tuwairqi, Saudi Arabia
Al-Tuwairqi, Pakistan**

**Lebedinsky GOK, Russia
Lion Group, Malaysia
Hadeed, Saudi Arabia
Mobarakeh VI, Iran
Essar V, India**

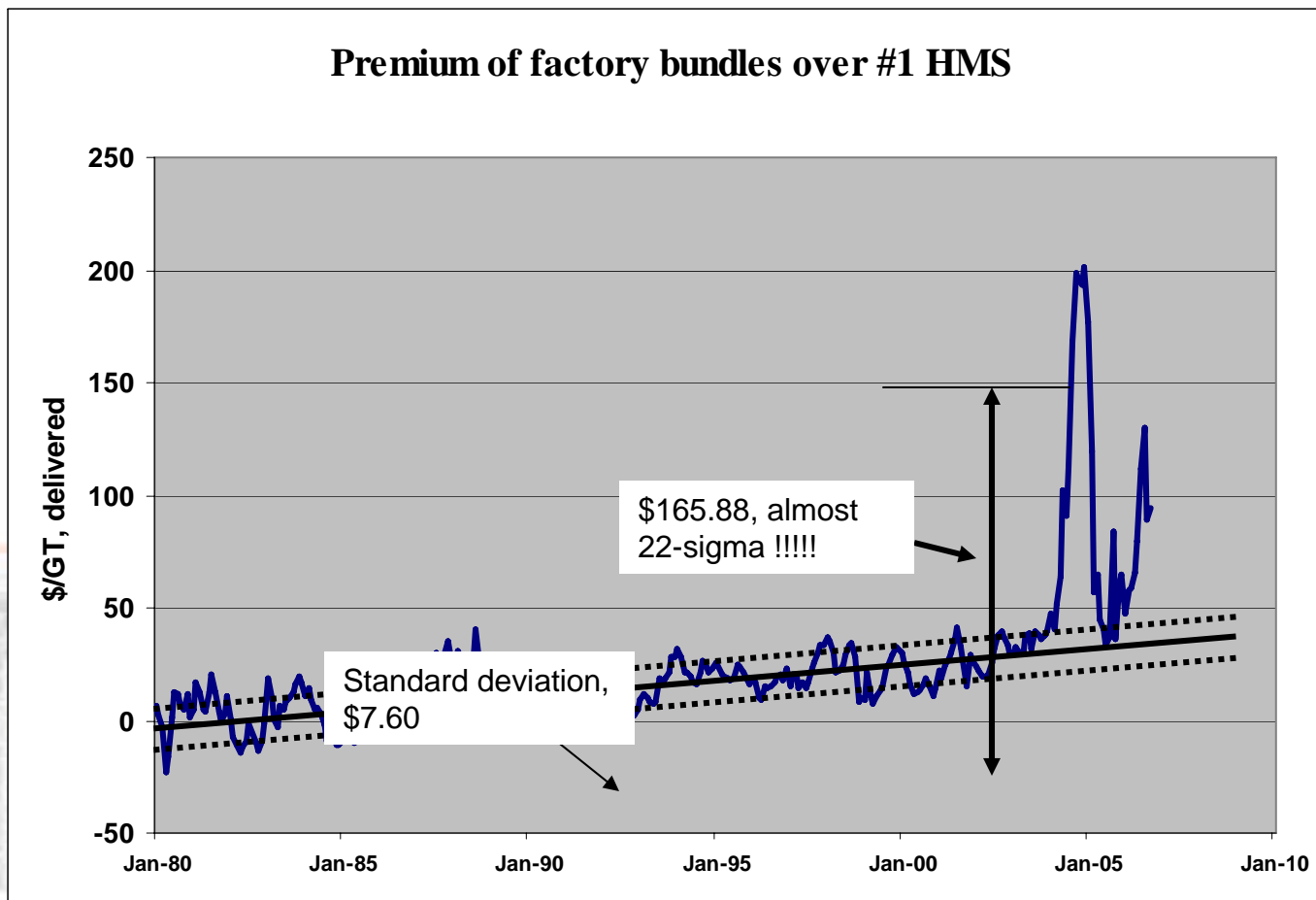
Total – almost 13 million tons per year of new capacity are to be brought on stream 2006-2008.

Plus, there are additional unannounced projects (letters of intent, pre-contract agreements, etc.) totaling over 3 million tons per year more new capacity, also expected to be brought on stream by the end of 2008.

What happened in the U.S. when scrap prices jumped upward so suddenly in late 2004?
Scrap steel prices leapt upward, but low residual scrap steel went through the sky.



The premium for the low residual grades rose to over 20-sigma relative to the previous trend



But, 20-sigma phenomenon do NOT occur

- That means the system changed.
- What changed?
- There was a shortage; a very, very small shortage.

And the buyers
panicked !!

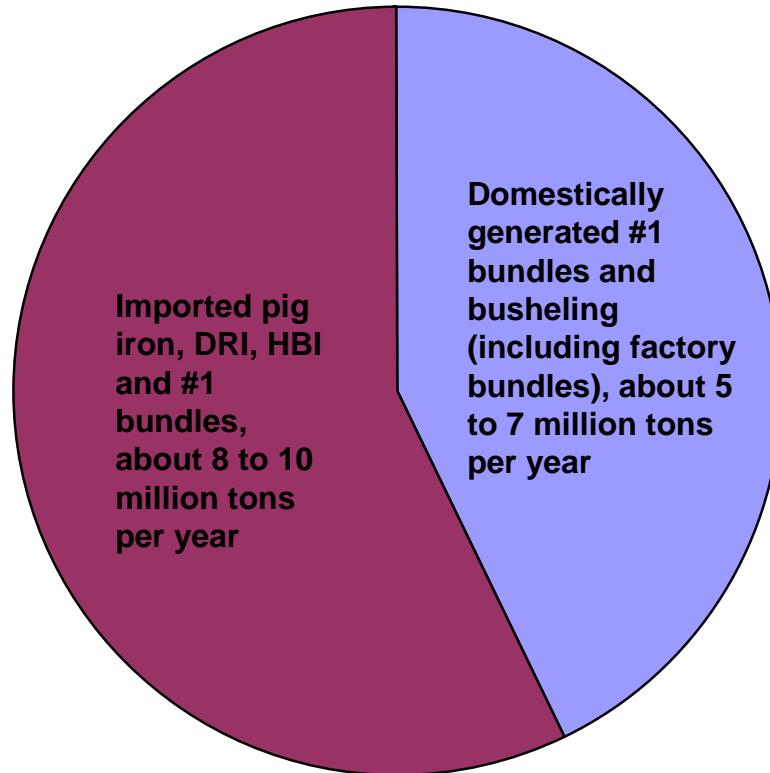


**And, what resulted was a price response to a
shortage situation**

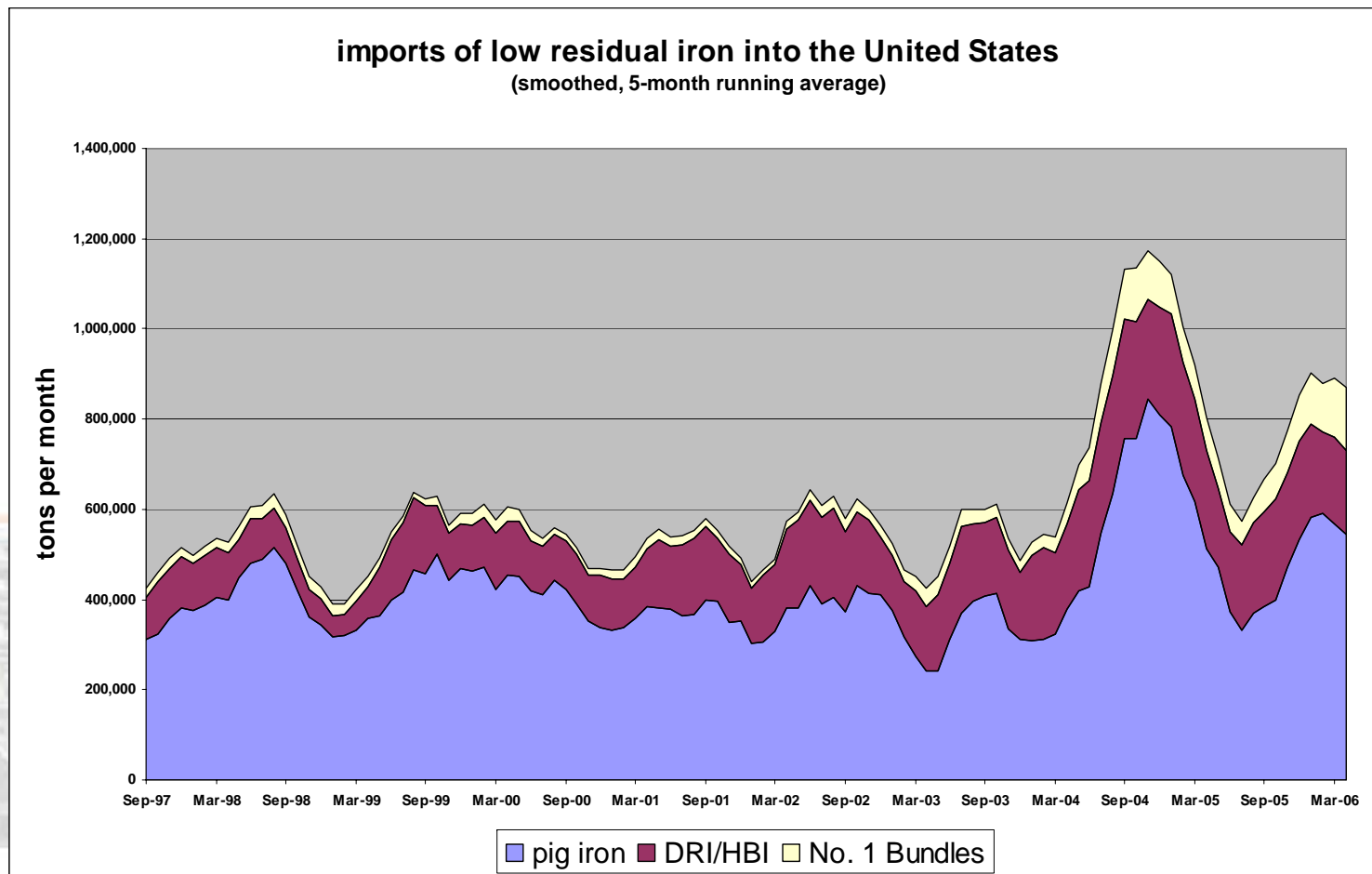


- Normally, when prices go up, consumers purchase less of the commodity. For instance, when oil prices elevated last fall, consumers began buying less petrol.
- But, if a staple, necessary commodity becomes short of supply, regardless of price, consumers buy. They buy extra, and they horde. As an example, let's imagine there is a shortage of food. And, food prices escalate to 5-times normal. Do you buy less food? No, you buy more, and you horde.
- Low residual iron is food to an EAF, thin slab steel works.

More than half of the United States' supply of low residual, cold charge is imported



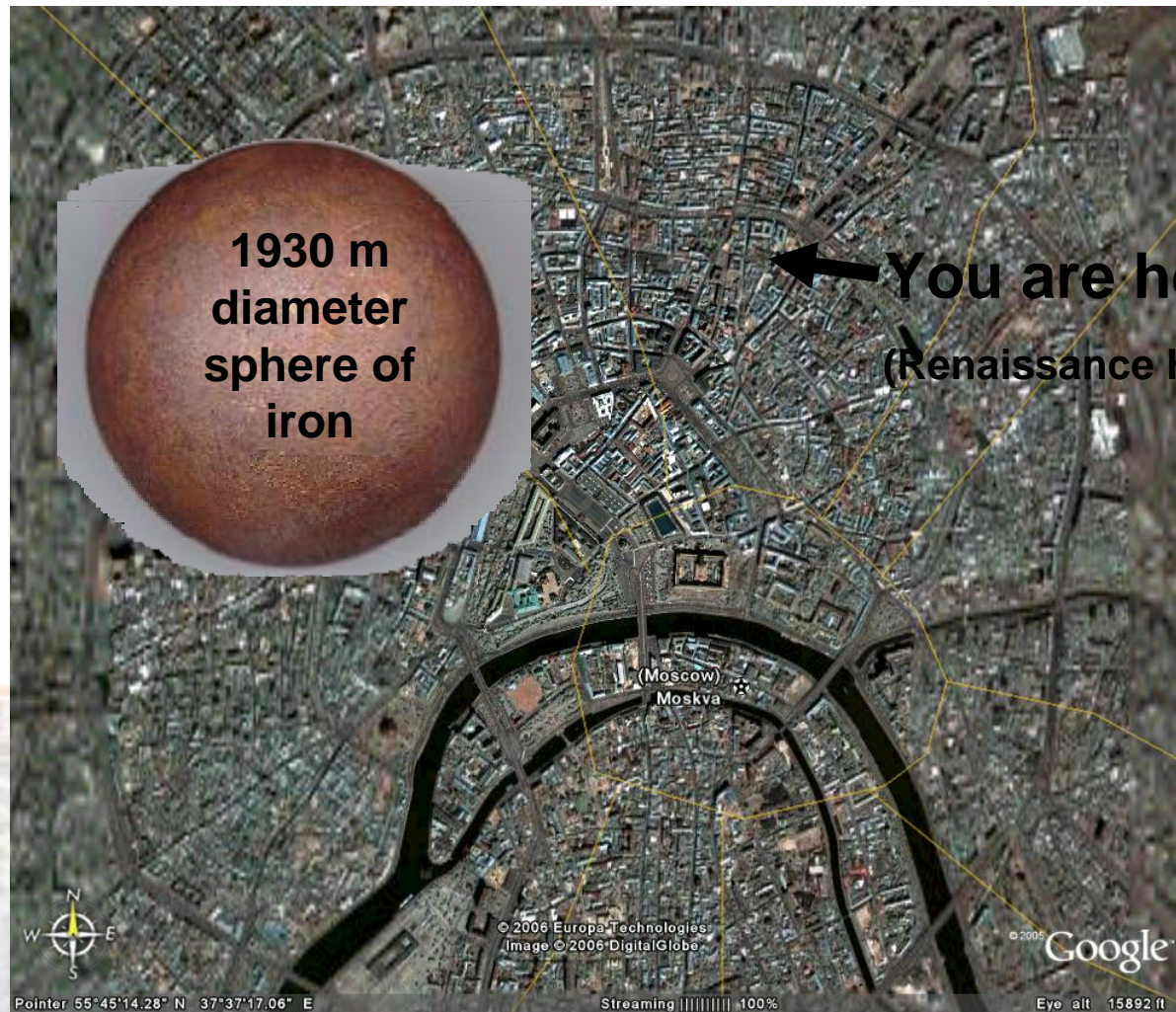
Imports of low residual iron (prime grades of scrap steel, pig iron and DRI/HBI)



How large is the 'pool' of available scrap steel?

Since mankind learned how to produce iron (approximately 1100 or 1200 BC) to date (afternoon, Thursday, November 16, 2006) about 26 billion (10^9) tons of iron have been reduced. More than half of this has been done in the past 24 years.

If all of the iron we've ever made were cast into a single sphere, it would be about 1930 m in diameter.



**1930 m
diameter
sphere of
iron**

**← You are here.
(Renaissance Hotel)**

Pointer 55°45'14.28" N 37°37'17.06" E

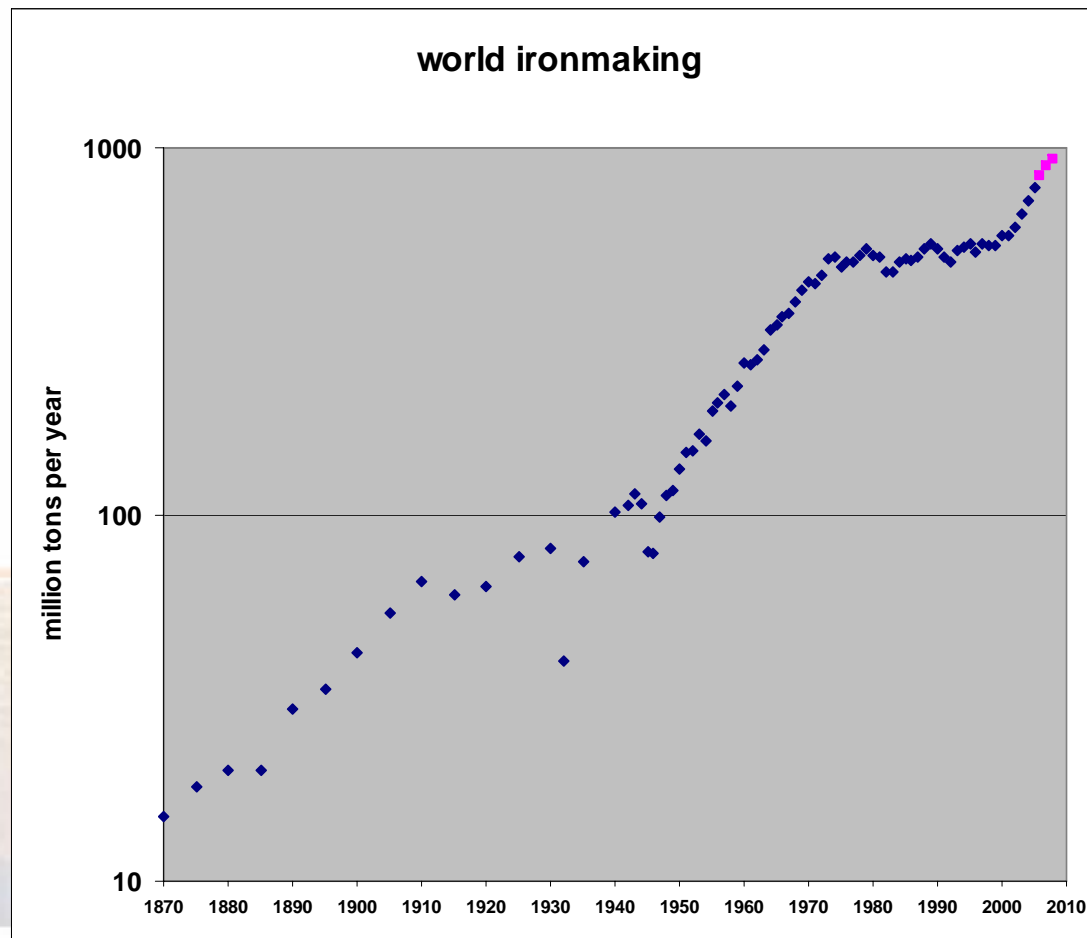
© 2006 Europa Technologies
Image © 2006 DigitalGlobe

Streaming ||||| 100%

© 2006 Google

Eye alt 15892 ft

The rate at which that 26 billion tons has been made
(note log scale)



Scrap steel tends to derive from steel that was made:

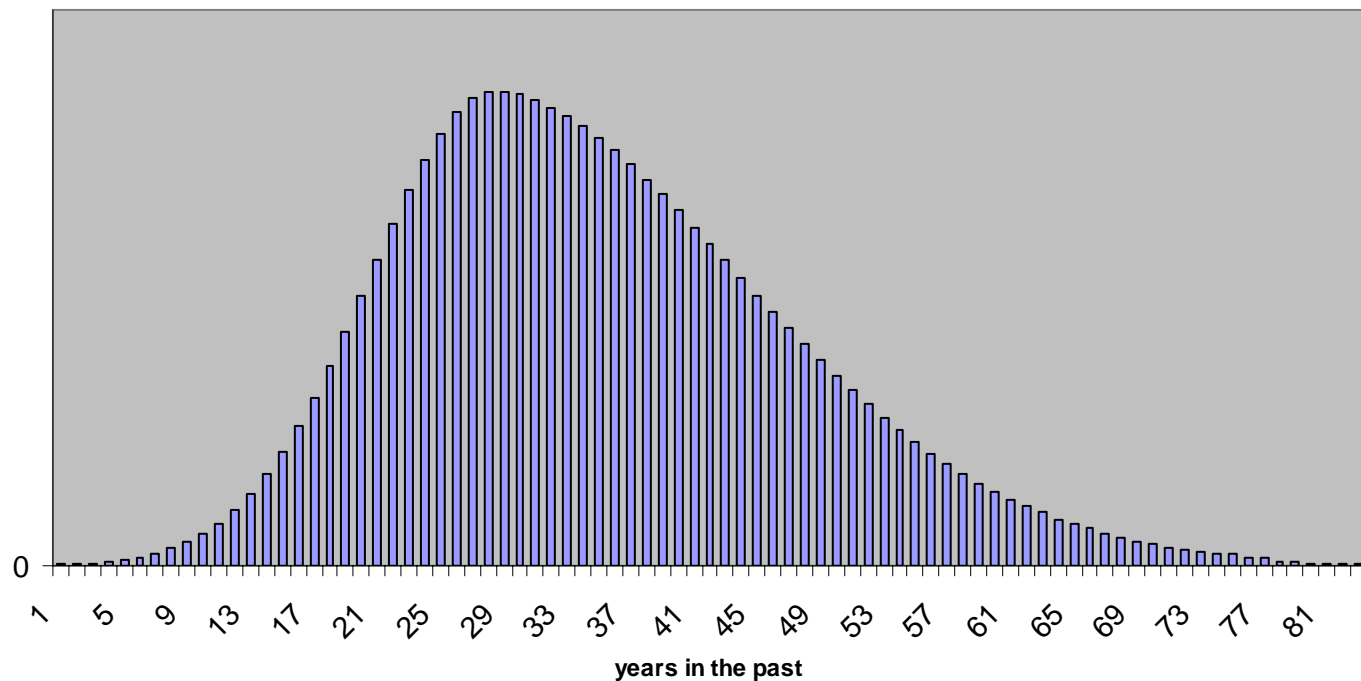
“28 years ago”

“30 years ago”

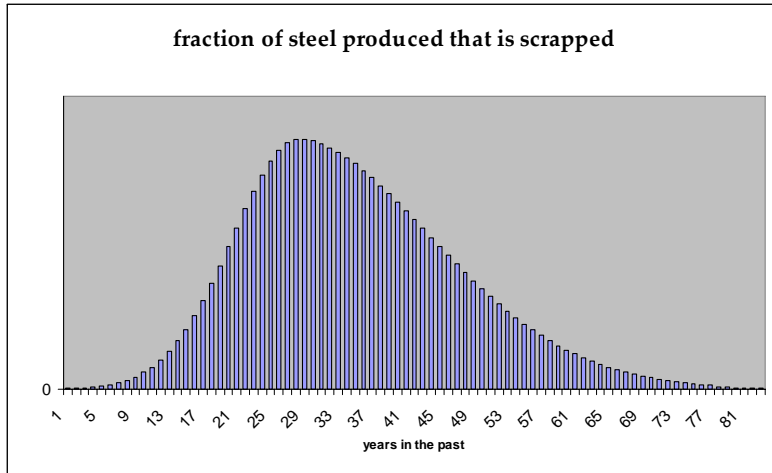
“8 to 30 years ago”

Well, frankly, I don't believe any of those. When I look at a pile of scrap steel it appears to be all ages; everything from yesterday to 100 years ago. Therefore, I suggest that the scrap is recovered via a curve somewhat like the following.

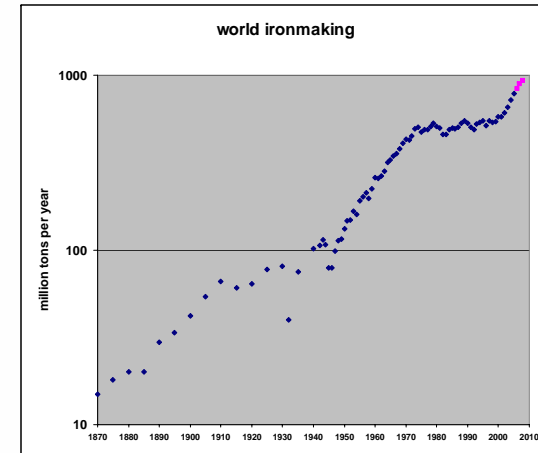
fraction of steel produced that is scrapped



using this curve

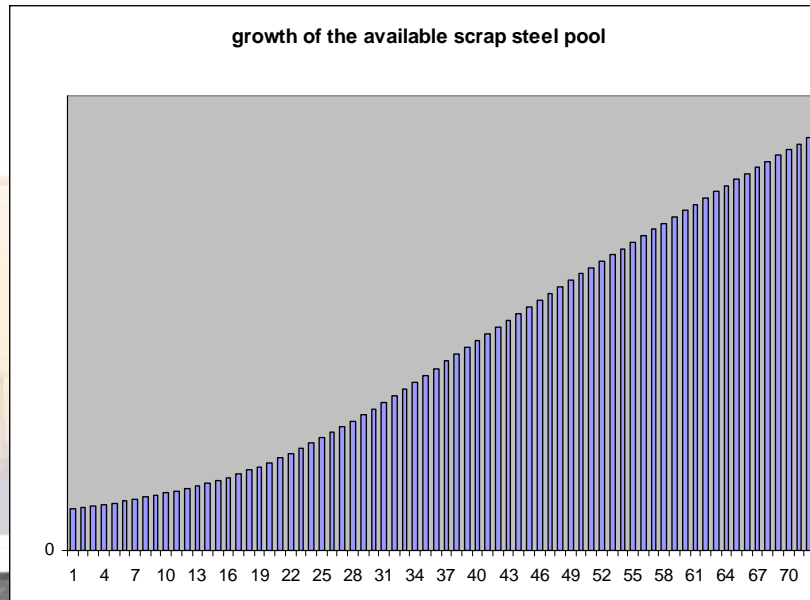


this curve



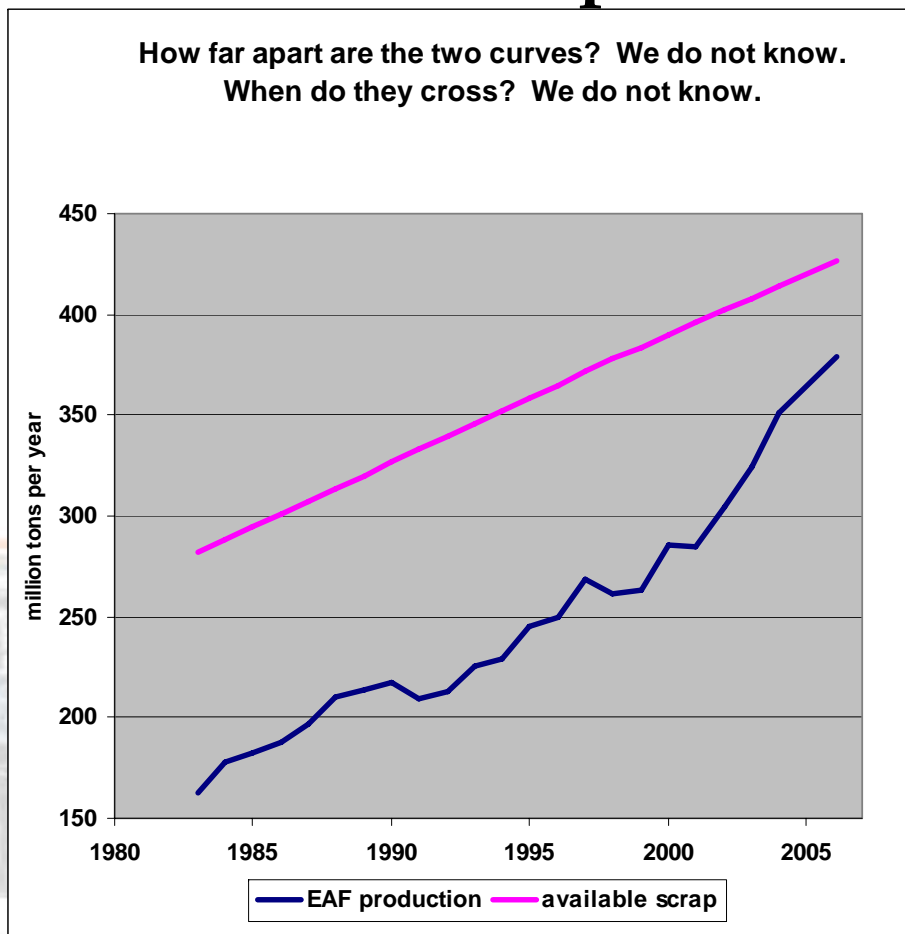
to
operate
on

yields a curve that looks like this



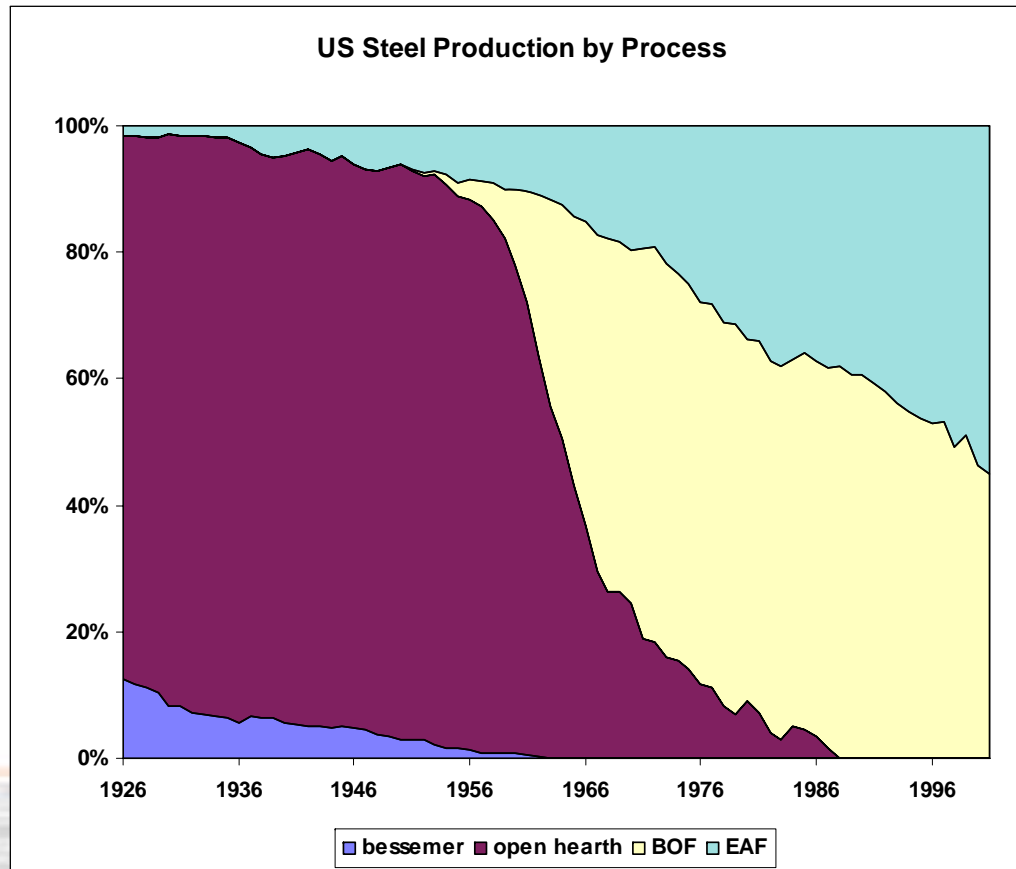
Now, let's take this curve, or at least its shape and compare it to scrap consumption.

The latest 23 years of the scrap pool curve compared to the last 23 years of the EAF production curve.



For the scrap pool curve, we really don't know its value; we only know its shape; that is, its slope. Nonetheless, it is clear that the scrap consumption curve is growing faster than it is. And so, we are approaching a 'pinch point'.

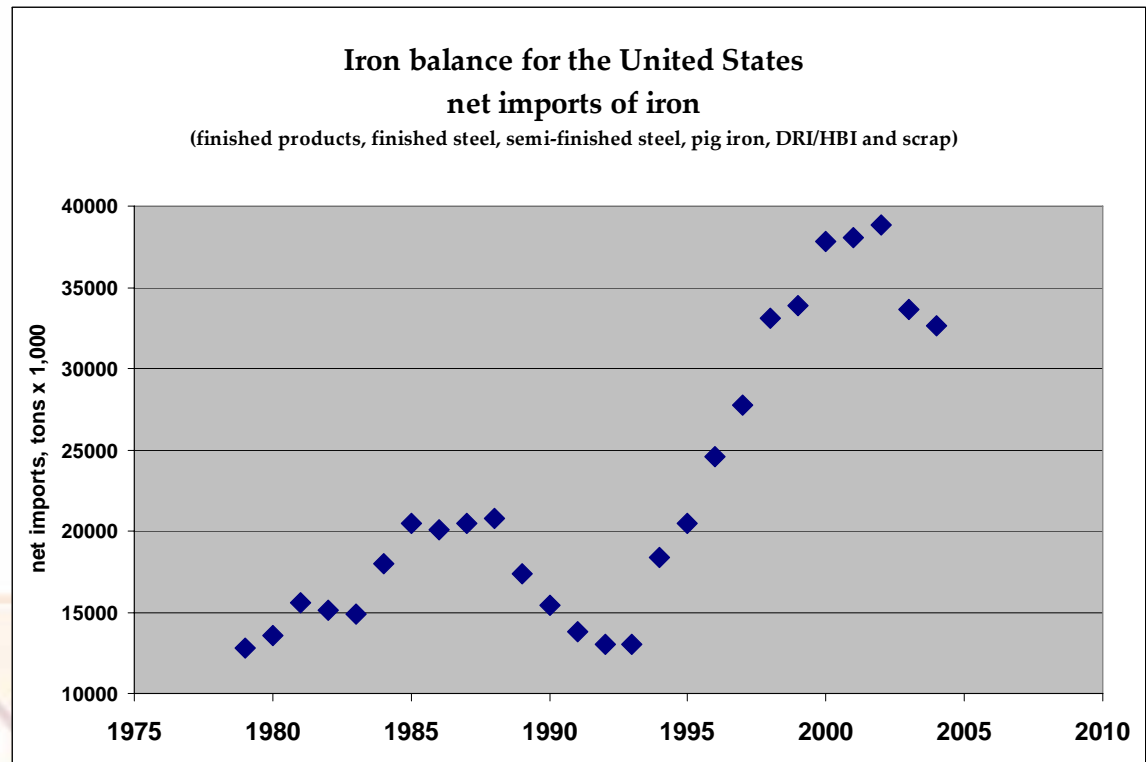
Could the recent sudden increase in scrap prices be a harbinger? Everyone attributed it to Chinese scrap importation, but Chinese importation of metallics do not fit the Far Eastern scrap prices well enough to justify this.



- The argument has been made that the United States has taken recycling of scrap steel to higher levels than the rest of the world. The US is making over 50% of its steel via EAF's. Why can't the rest of the world do this?

The U.S. is supplementing it's supply of metallic iron.

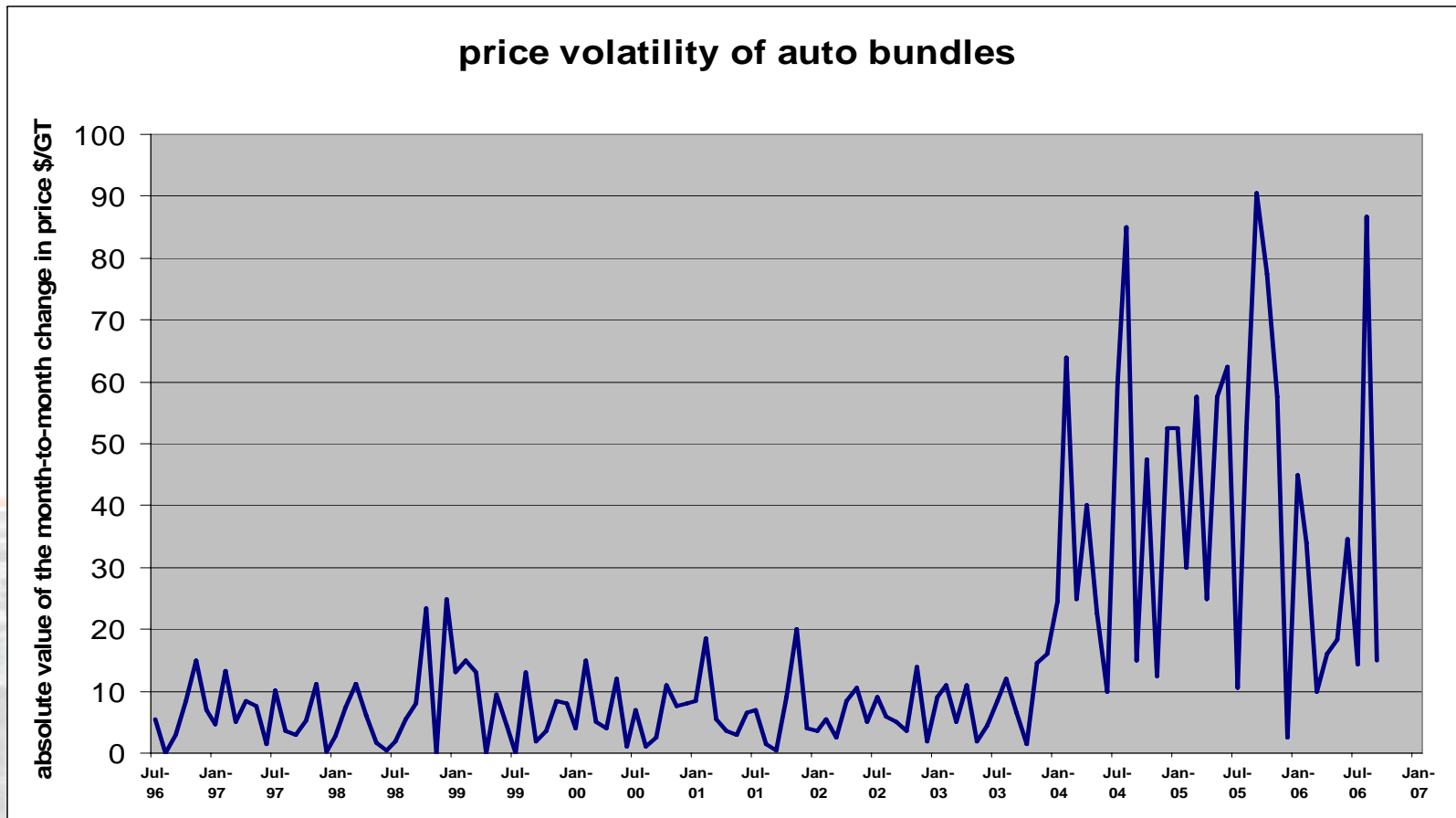
- The US doesn't really accomplish making 55% of its steel from domestic scrap. An iron balance for the US over the past three decades shows that the US has been a net importer of iron into the system since sometime prior to 1979. That is, the US really isn't being self sufficient in making 55% of its steel via EAF's.
- Therefore, it's doubtful that the world could be self sufficient if it tried to produce so much steel via the scrap-EAF route.
- The world, ex-China is already producing about 38-39% of its steel via the EAF route. The US passed through this level in the early-1990's.



Note: This balance does not include foundry products or iron ore.

volatility

- Since the sudden price increase for prime scraps in 2004, price volatility has been MUCH greater than it was before.



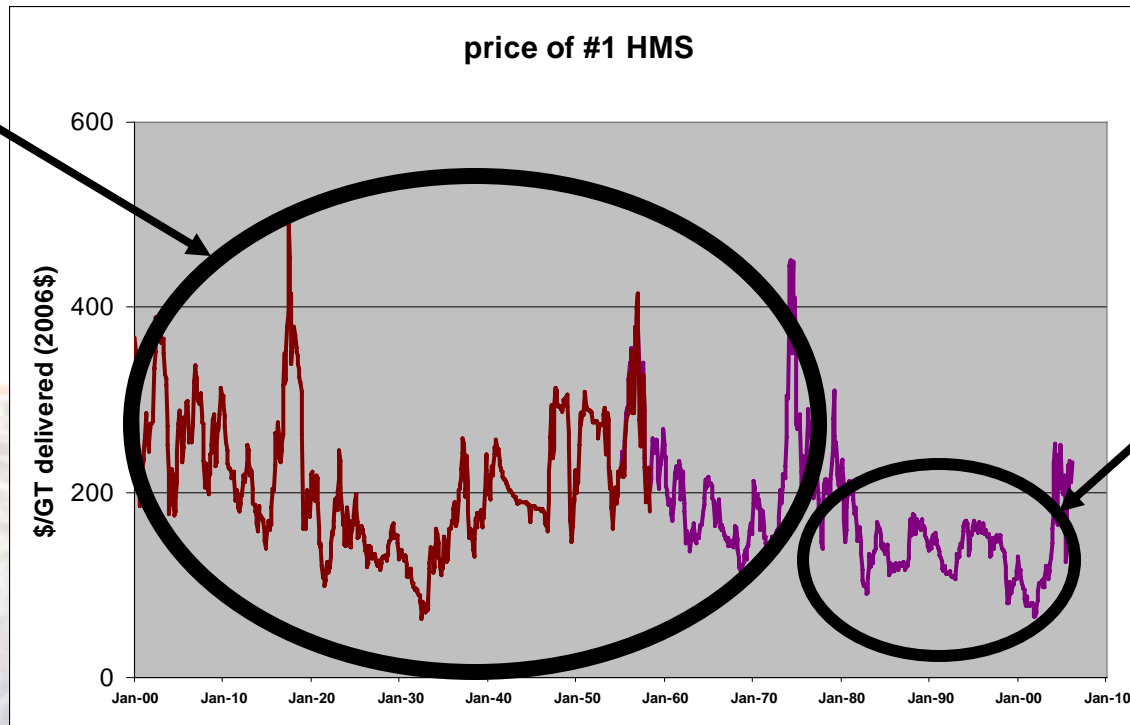
prediction



predictions

- We are in a period of growth for the steel industry, for the first time in many years. Expect the price of iron and scrap to resemble 1900-1974, not 1974-2000.

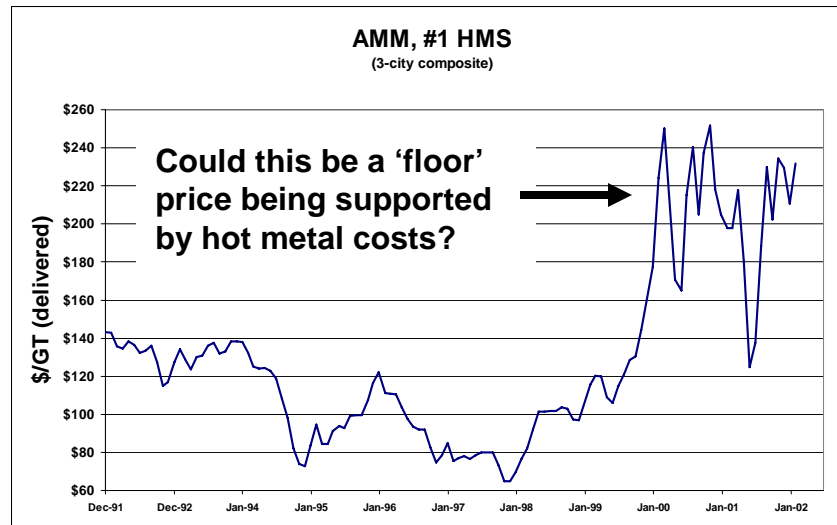
Like this



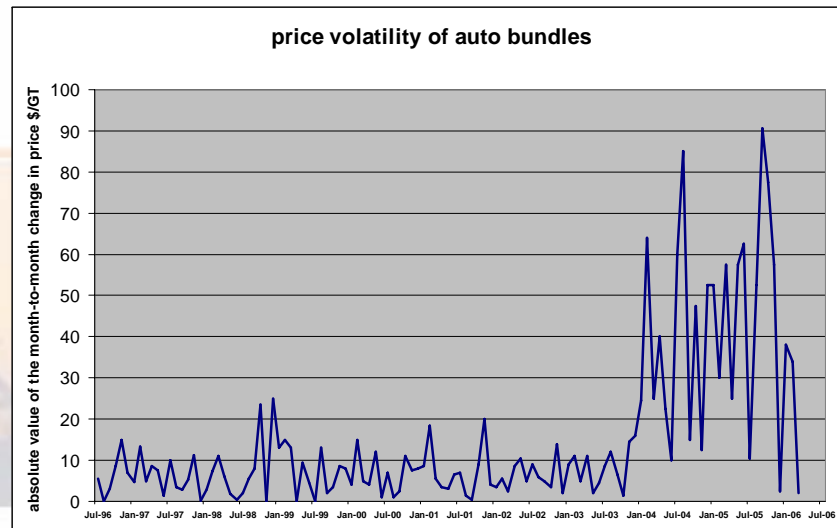
Not like this

That is

- Expect higher prices, supported at approximately the level of the cost of producing hot metal.



- Expect VOLATILITY.



- Thank you

