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ISRI
Voice of the Recycling Industry
Institute of Scrap Recycling Industries, Inc.

Recycling Markets Update: Metals

Metropolitan Washington Council of Governments Recycling Committee

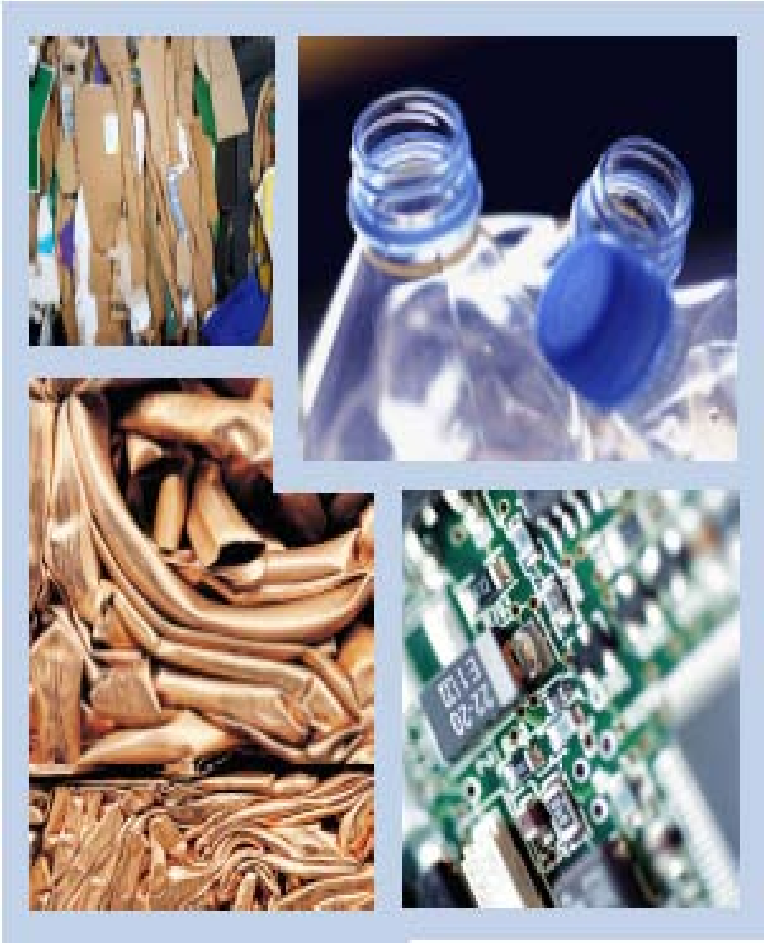
September 20, 2012

Scott Horne, Institute of Scrap Recycling Industries

About ISRI

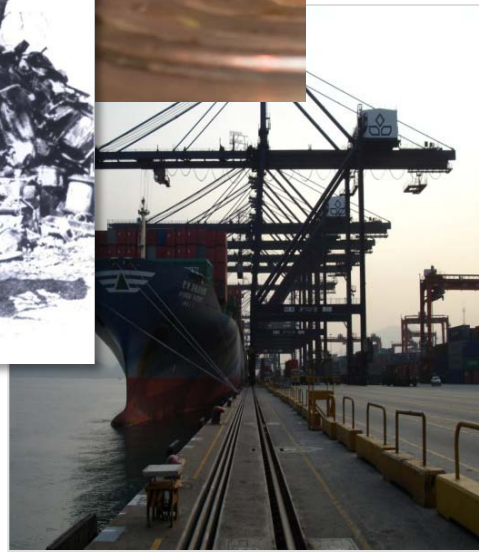
The Institute of Scrap Recycling Industries, Inc. (ISRI) represents more than 1,700 member companies that process, broker & industrially consume scrap metals, paper, plastics, glass, textiles, rubber, and electronics.

With headquarters in Washington, D.C., the Institute provides education, advocacy, and compliance training, and promotes public awareness of the vital role recycling plays in the U.S. economy, global trade, the environment and sustainable development. For more information about ISRI, please visit www.isri.org.



Over 100 Years of Recycling Experience

- Industry directly and indirectly employs more than 450,000 people in the United States and has been creating “green jobs” for decades.
- Processes over 130 million metric tons of material annually valued at $100 billion last year.
- Shipped over 50 million metric tons of commodity grade scrap to nearly 160 countries around the globe in 2011.
- Many ISRI members have been in business for three generations or more.



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Evolution of an Industry

Key Features in the Evolution of the Scrap Industry

- Increasingly Capital Intensive
- Industry Integration & Consolidation
- Expanding Range of Commercially Recyclable Commodities
- Competitiveness & Constant Need to Innovate
- Globalized Marketplace

Domestic and Global Metal Markets: Ferrous Scrap

- Industry Overview
- Market Drivers
- Supply and Demand
- Steel and Scrap Prices
- Relationship to Manufacturing
- Domestic and Overseas Demand
- Global Marketplace

About the U.S. Ferrous Scrap Recycling Industry

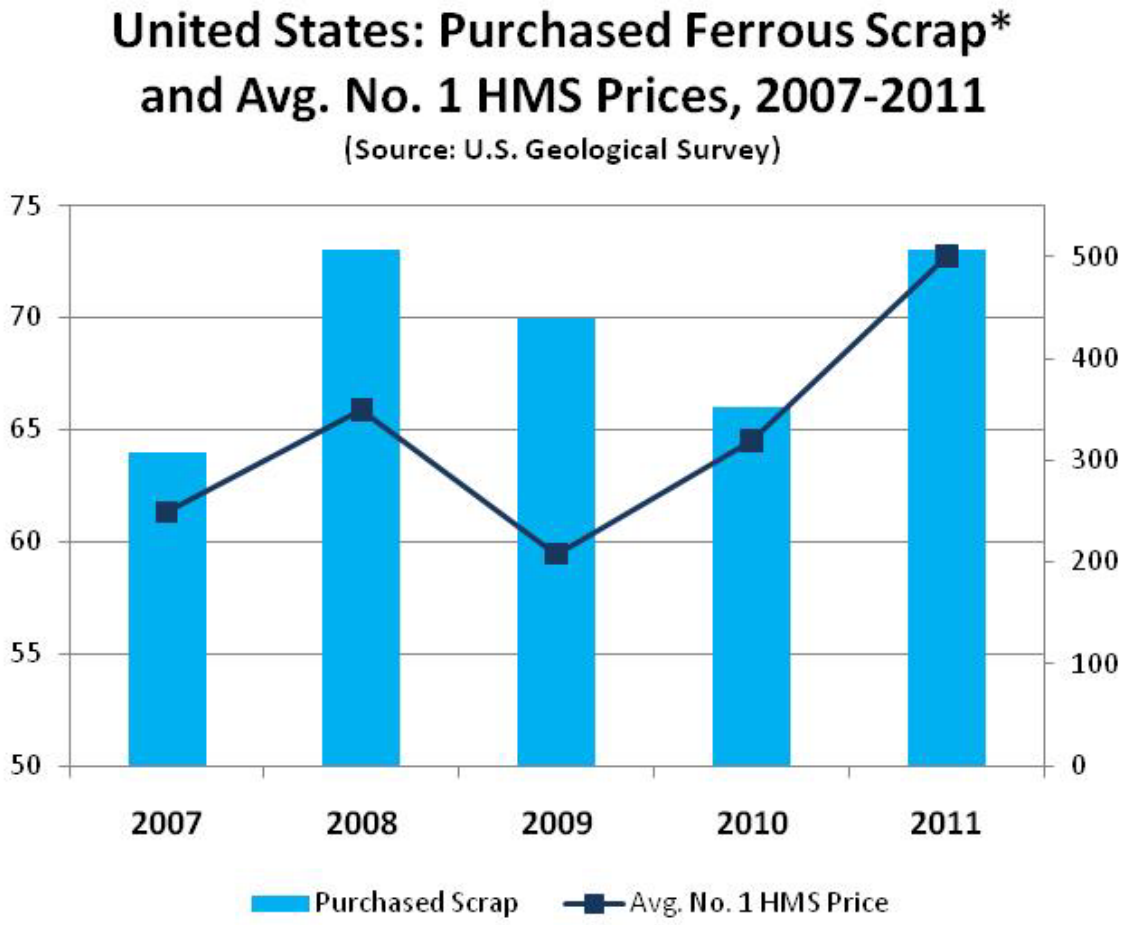
In the United States alone, **74 million metric tons** of ferrous scrap was processed by the scrap recycling industry last year. In 2011, the value of U.S. ferrous scrap purchases and exports was valued at **$35.2 billion**.

Obsolete ferrous scrap is recovered from automobiles, steel structures, household appliances, railroad tracks, ships, farm equipment and other sources. Prompt scrap is generated from industrial and manufacturing sources. The U.S. Geological Survey estimates that U.S. recycled scrap consisted of 58% obsolete, 20% prompt and 22% home scrap last year.

Both obsolete and prompt scrap are processed by the scrap recycling industry into commodity grade material that is used to produce more than 60% of total raw steel produced in the United States, predominantly at electric arc furnaces.

In addition, the United States exports ferrous scrap to approximately **90 countries worldwide**. According to UN data, the United States is the **largest exporter of ferrous scrap in the world**, accounting for over 20% of global ferrous scrap loadings in 2010.

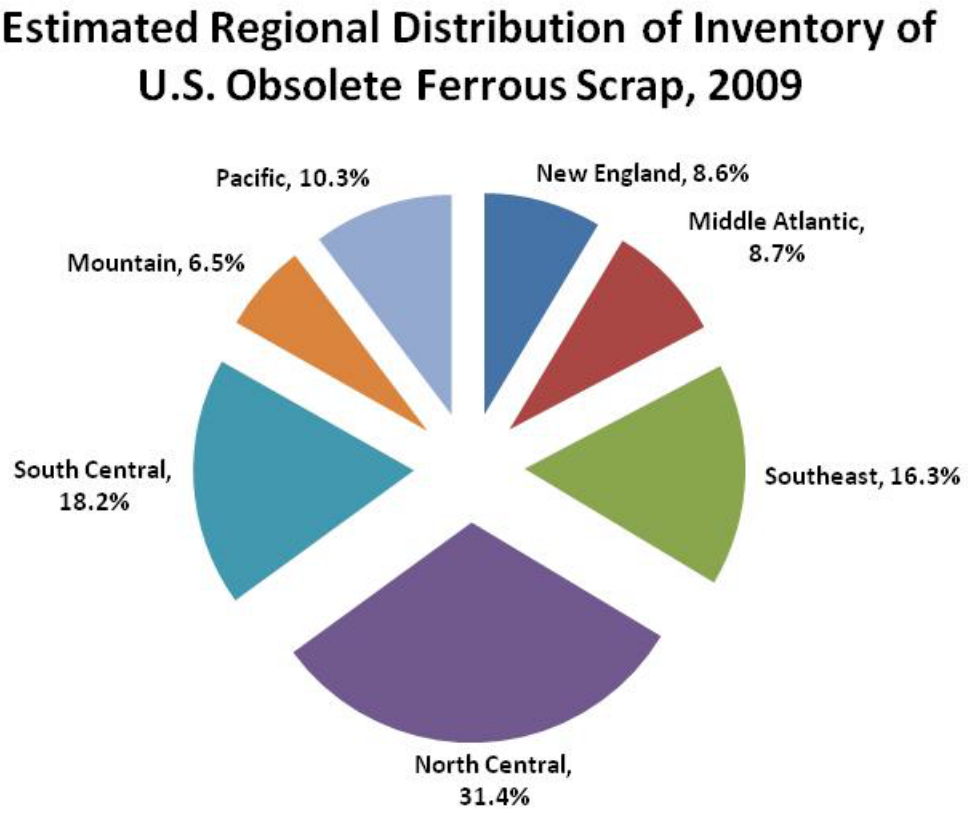
Scrap Market Drivers: Prices Provide the Incentive



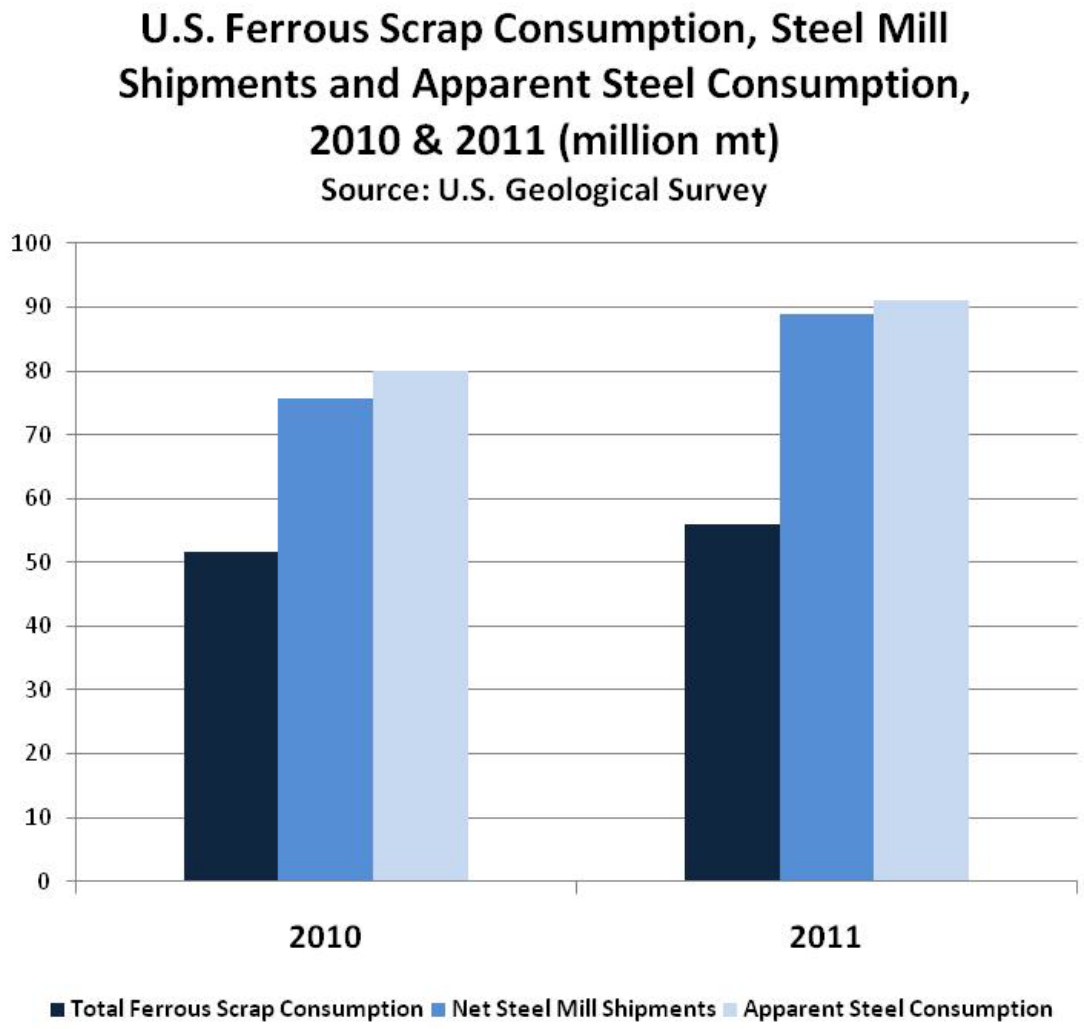
***Consumer shipments + exports - imports**

Obsolete Ferrous Scrap Supply

A recent study by commissioned by ISRI reports that the U.S. obsolete scrap inventory as of December 31, 2009 stood at 1.18 billion tons

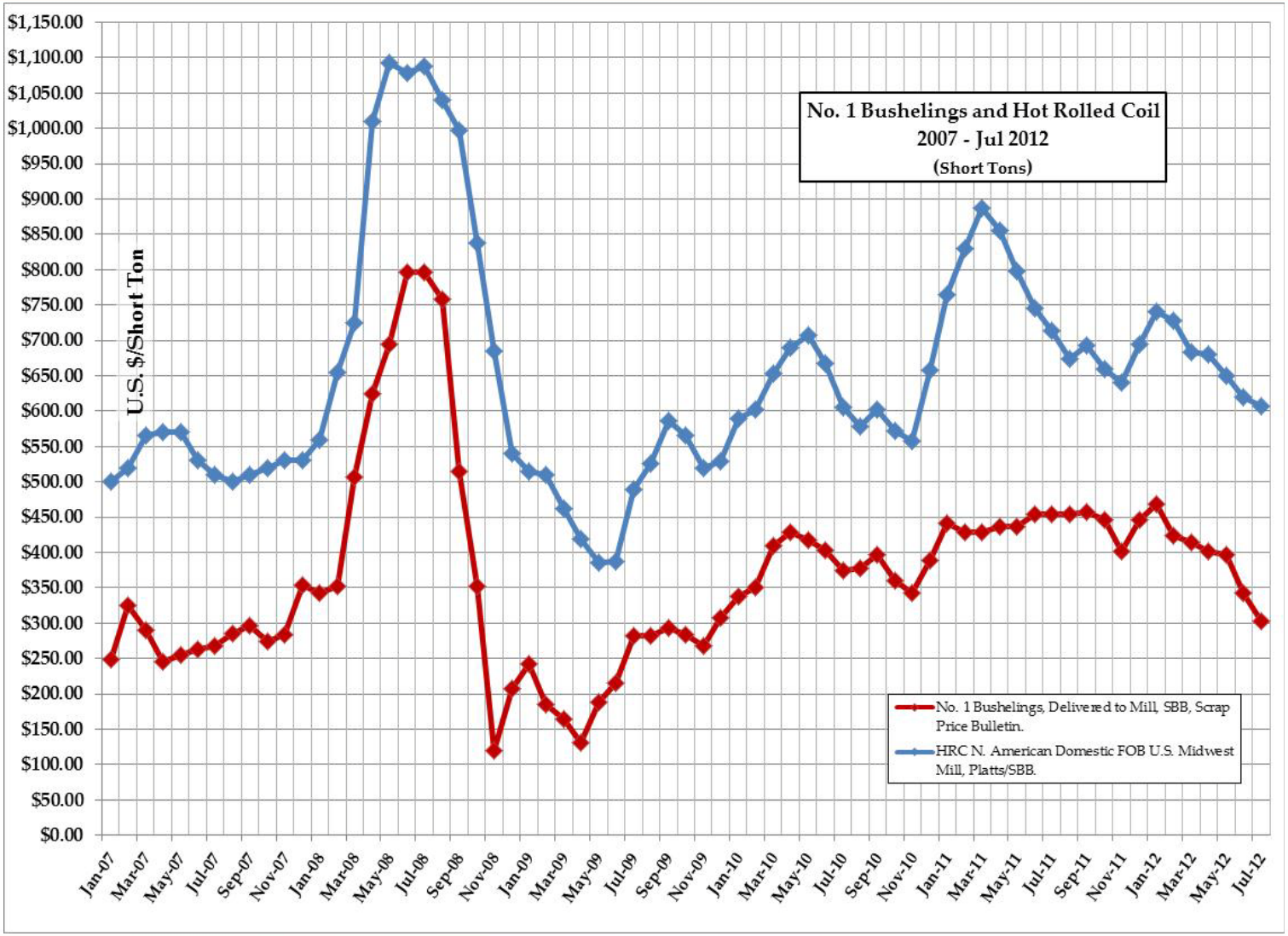


Domestic Demand and Production Have Been Rising

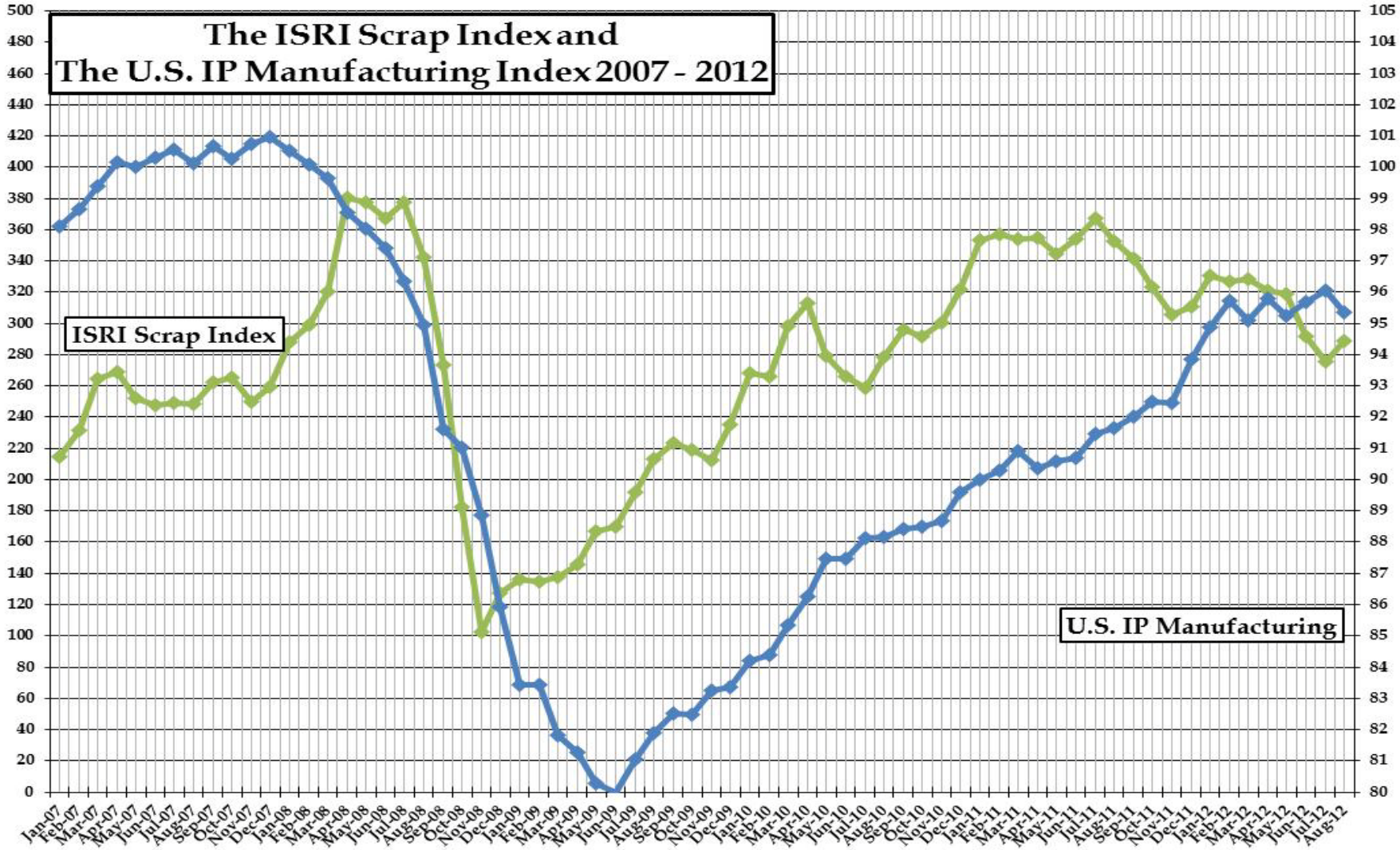


- U.S. Geological Survey data show that domestic ferrous scrap consumption increased to 56 million mt during Jan-Dec 2011 as apparent steel consumption rose to 91 million mt.
- Of the 56 million tons of domestically consumed ferrous scrap last year, USGS data show electric furnaces consumed 44.5 million tons, basic oxygen process steelworks accounted for 8.8 million tons, and blast furnaces consumed 2.3 million tons.
- Increasingly competitive market conditions.

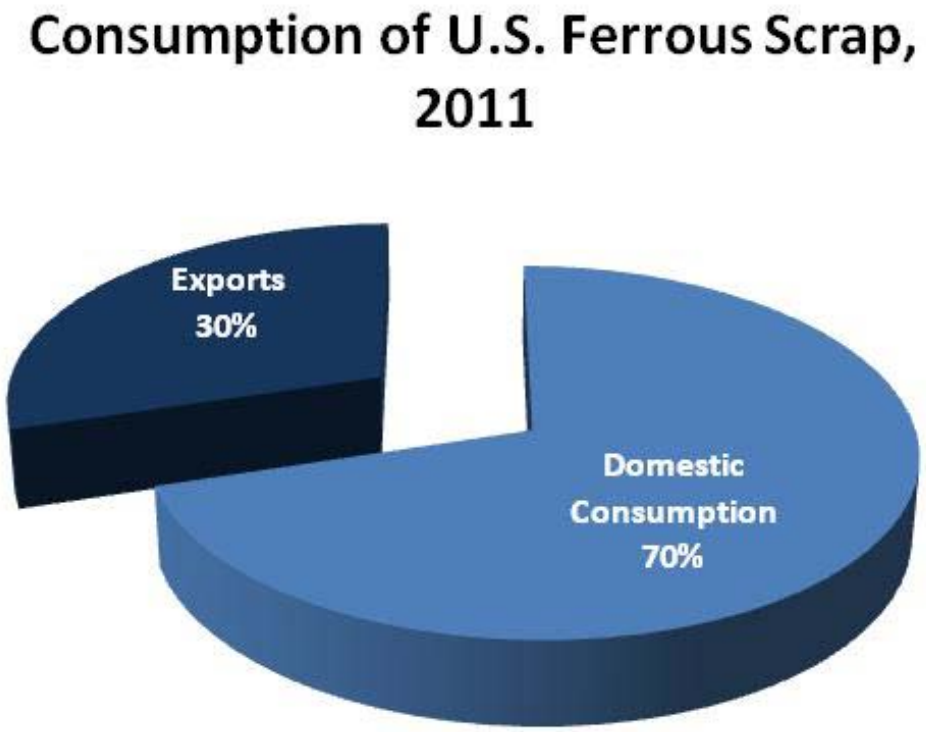
Recent Steel and Ferrous Scrap Pricing Trends



ISRI Index and U.S. Manufacturing



Most Important Scrap Market for the the U.S.: The U.S.



Overseas Demand is Becoming Increasingly Important

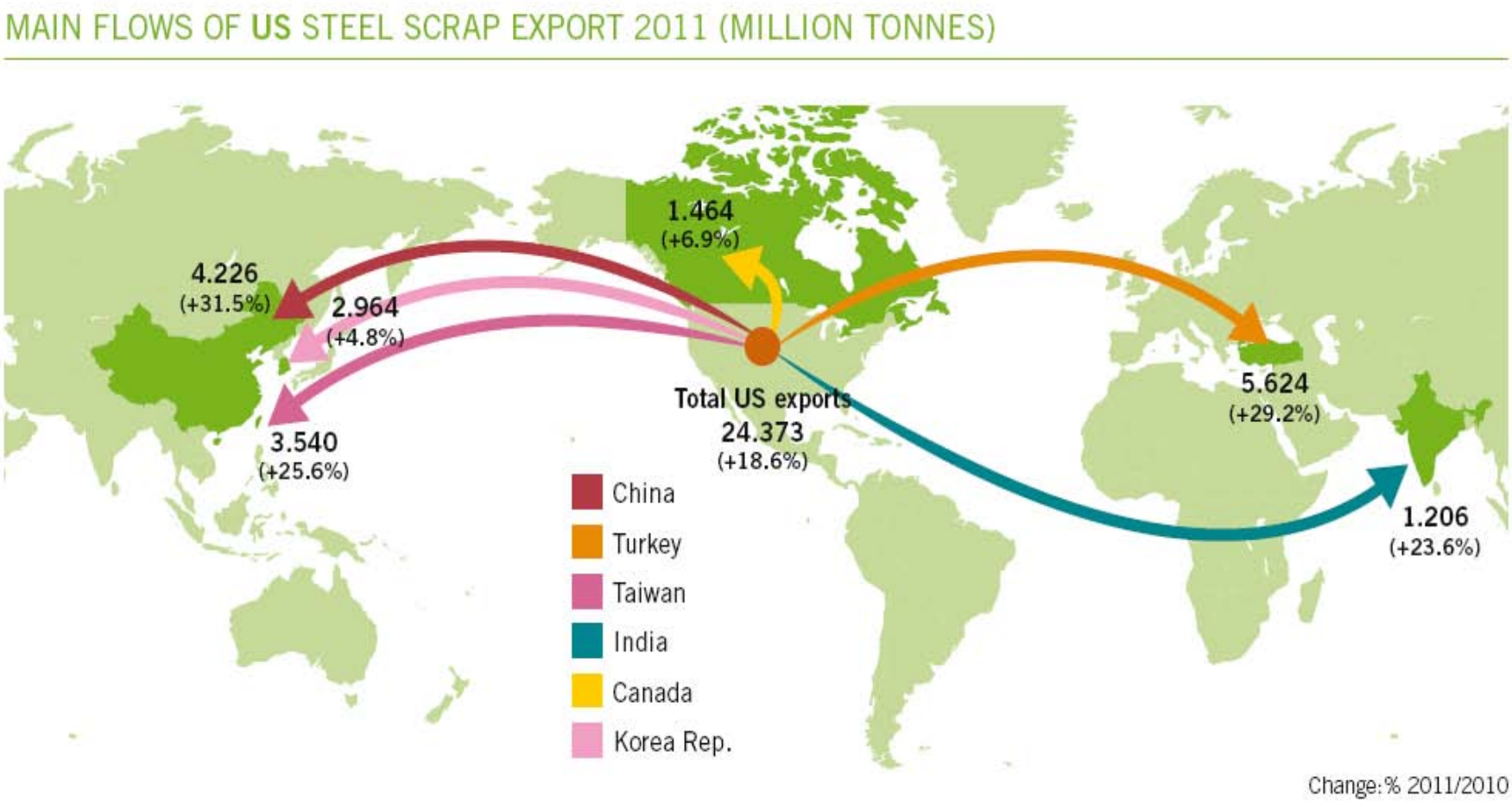
U.S. FERROUS SCRAP EXPORTS (METRIC TONS)	JAN-DEC '11	% CHG.
Cast Iron Scrap	514,595	0%
Tinned Iron	126,503	55%
No. 1 Bundles	524,582	61%
No. 2 Bundles	9,800	-82%
Borings, Shovelings, Turnings	105,965	72%
Shavings, Chips, etc.	231,290	-2%
No. 1 HMS	8,055,619	43%
No. 1 HMS	1,158,338	13%
Cut Plate and Structural	955,387	16%
Shredded Steel	8,391,166	13%
Other Ferrous Scrap	2,619,563	7%

In 2011, U.S. ferrous scrap exports jumped 21% higher by volume to nearly 22.7 million mt, while by value ferrous scrap shipments surged by 40% to $10.4 billion.

By grade, shredded shipments were up 13% by volume to nearly 8.4 million mt while loadings of No. 1 HMS advanced 43% to over 8 million mt.

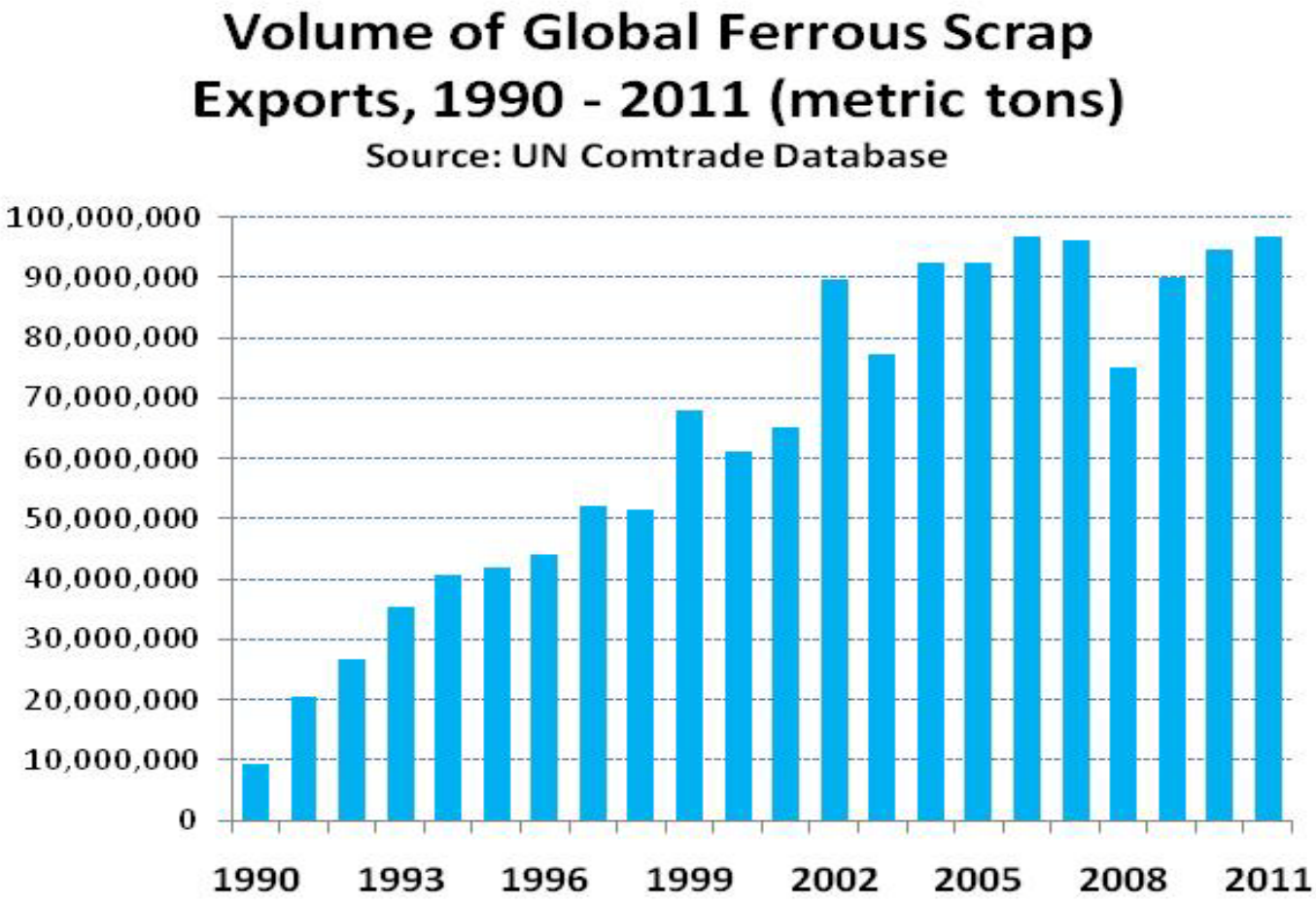
Turkey was again the largest overseas buyer of U.S. ferrous scrap in 2011 at $2.4 billion, followed by China $2.08 billion, Taiwan $1.4 billion, South Korea $1.3 billion and India $493 million.

Overseas Demand for Ferrous Scrap
(including Stainless Steel and Alloy Steel Scrap)



Source: Bureau of International Recycling

Global Ferrous Scrap Trade Trends

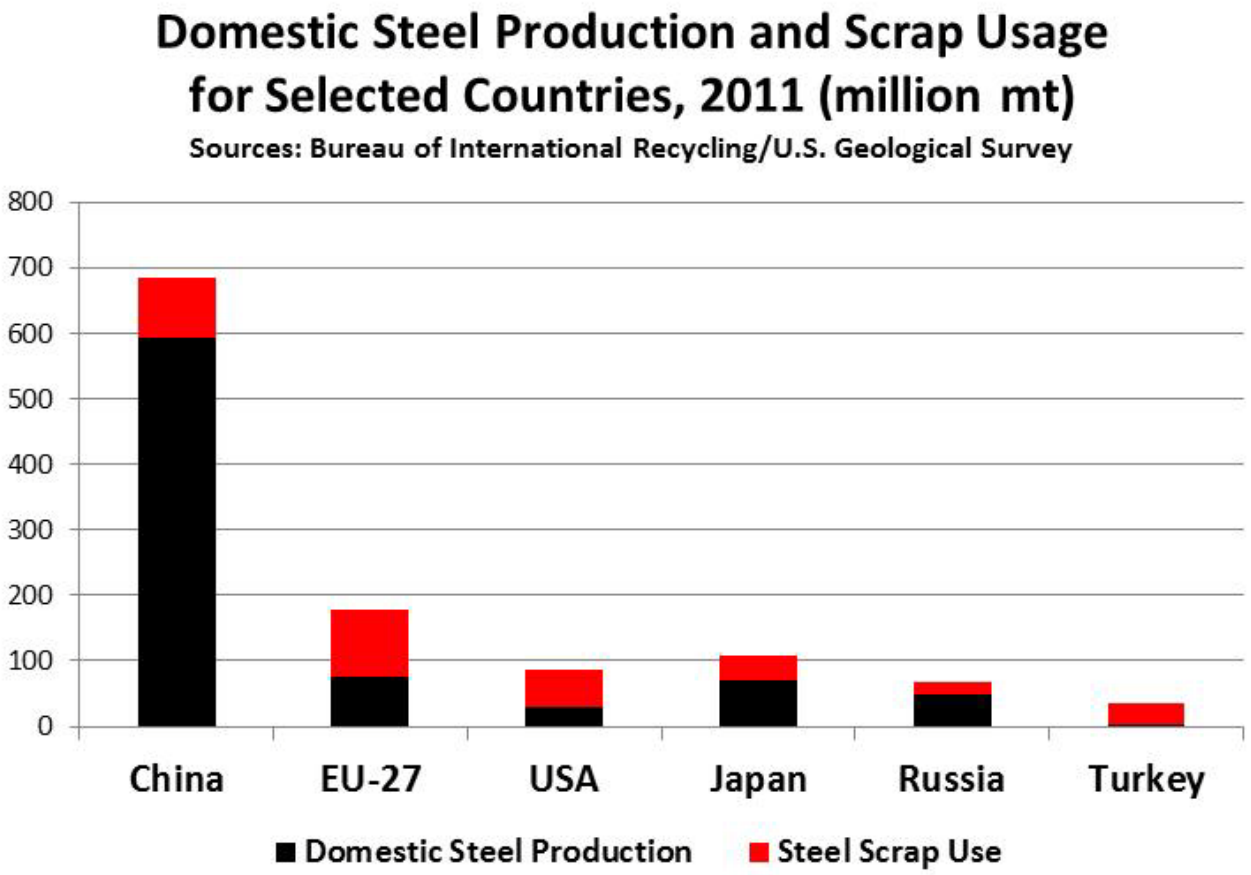


Global Ferrous Scrap Exports in 1990: 9.3 million mt

Global Ferrous Scrap Exports in 2011: Nearly 98 million mt

*Includes stainless and alloy scrap

Chinese Market: Steel Output and Scrap Demand



There still exists tremendous potential for expanded Chinese ferrous scrap consumption.

While domestic scrap generation already supplies the majority of ferrous scrap consumed in China, import demand is based not only on available supply, but also on pricing and regional trade.

The United States, which is by far the largest exporter of ferrous scrap in the world, imported over 3 million mt of ferrous scrap in 2011.

Domestic and Global Metal Markets: Nonferrous Scrap

About U.S. Nonferrous Scrap Markets

- Nonferrous metals, including aluminum, copper, lead, nickel, tin, zinc and others, are among the few materials that do not degrade or lose their chemical or physical properties in the recycling process. As a result, nonferrous metals have the capacity to be recycled an infinite number of times.
- While in terms of volume, nonferrous scrap makes up around one quarter of the total quantity of material recycled in the United States, by value nonferrous metal scrap — including precious metal scrap — accounted for nearly 70 percent of total U.S. scrap recycling industry earnings in 2011. More than **nine million metric tons** of nonferrous scrap was processed in the United States last year from a wide array of consumer, commercial and industrial sources: everything from copper and precious metal circuitry in electronic devices, to soft-drink containers, automobile batteries and radiators, aluminum siding, airplane parts and more.
- Nonferrous scrap is then consumed by secondary smelters, refiners, ingot makers, foundries and other industrial consumers in the U.S. and in **more than 100 countries worldwide**. These consumers rely on nonferrous scrap as a competitive, environmentally friendly and energy efficient input to make brand new products, continuing the nonferrous metals lifecycle.

Nonferrous Highlights

The U.S. Aluminum Market

	Domestic Scrap Consumption (mt)	Apparent Aluminum Consumption (mt)	Scrap Market Share	U.S. Scrap Exports (mt)
2007	3,750,000	7,484,000	50%	1,546,000
2008	3,320,000	6,408,000	52%	1,982,000
2009	3,000,000	5,697,000	53%	1,658,000
2010	2,700,000	5,053,000	53%	1,913,000
2011	3,020,000	5,520,000	54%	2,144,000

The U.S. Copper Market

	Old & New Scrap Combined (mt)	Total Apparent Consumption (mt)	Scrap Market Share	U.S. Scrap Exports (mt)
2007	907,000	3,022,000	30%	907,000
2008	883,000	2,730,000	32%	908,000
2009	810,000	2,238,000	36%	843,000
2010	830,000	2,403,000	35%	1,033,000
2011	780,000	2,400,000	33%	1,239,000

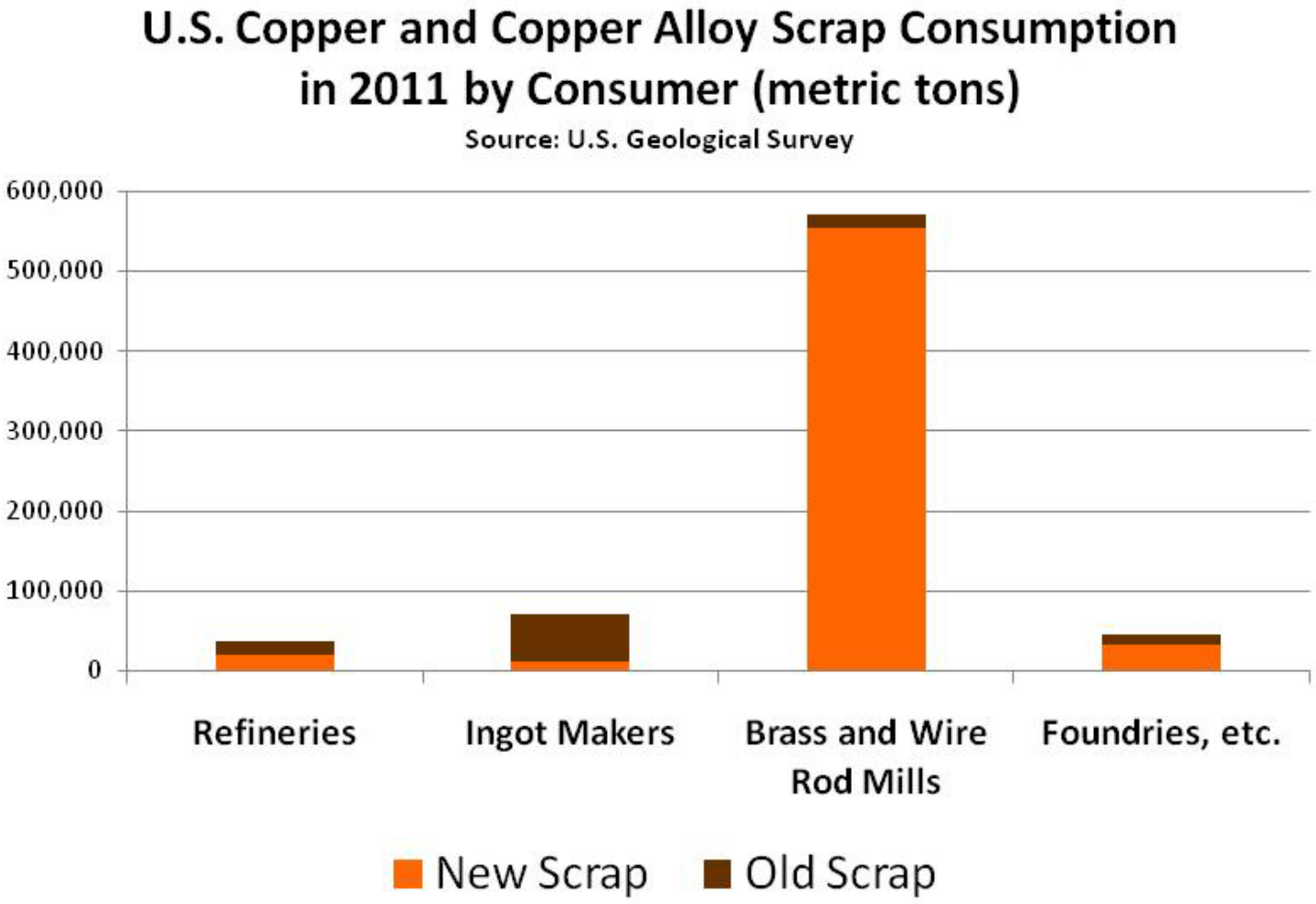
The U.S. Lead Industry

	Secondary Lead Production (mt)	Apparent Lead Consumption (mt)	Scrap Market Share	U.S. Scrap Exports (mt)
2007	1,180,000	1,540,000	77%	129,000
2008	1,150,000	1,500,000	77%	175,000
2009	1,120,000	1,410,000	79%	140,000
2010	1,150,000	1,500,000	77%	44,000
2011	1,200,000	1,500,000	80%	31,000

The U.S. Nickel Market

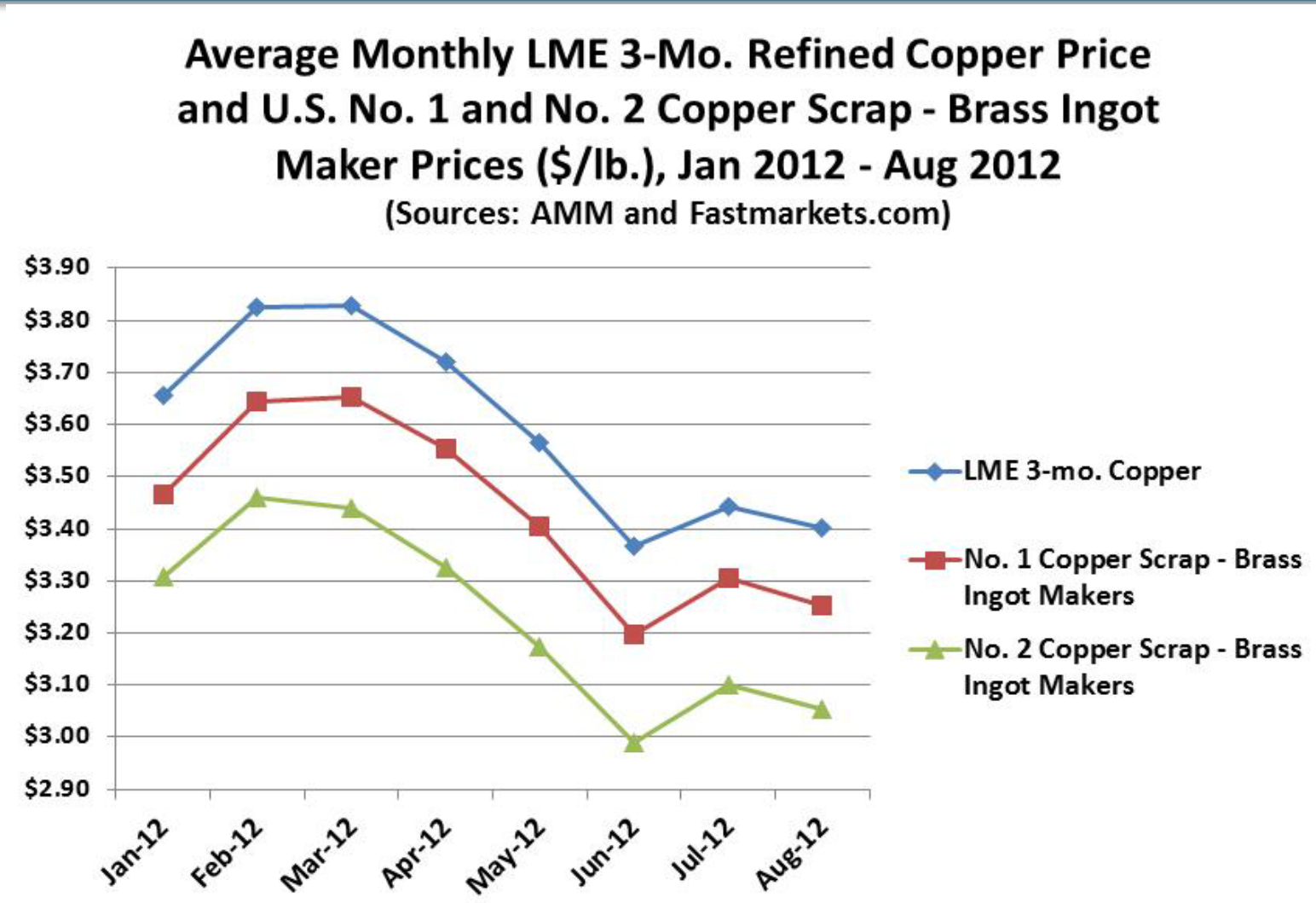
	Nickel Recovered from Scrap (mt)	Total U.S. Nickel Usage (mt)	Scrap Market Share (%)	Stainless Steel Scrap Exports
2007	98,600	212,000	47%	882,000
2008	84,500	201,000	42%	1,001,000
2009	63,500	173,000	37%	1,131,000
2010	100,000	217,000	46%	937,000
2011	99,000	228,000	43%	656,000

U.S. Copper Scrap Demand

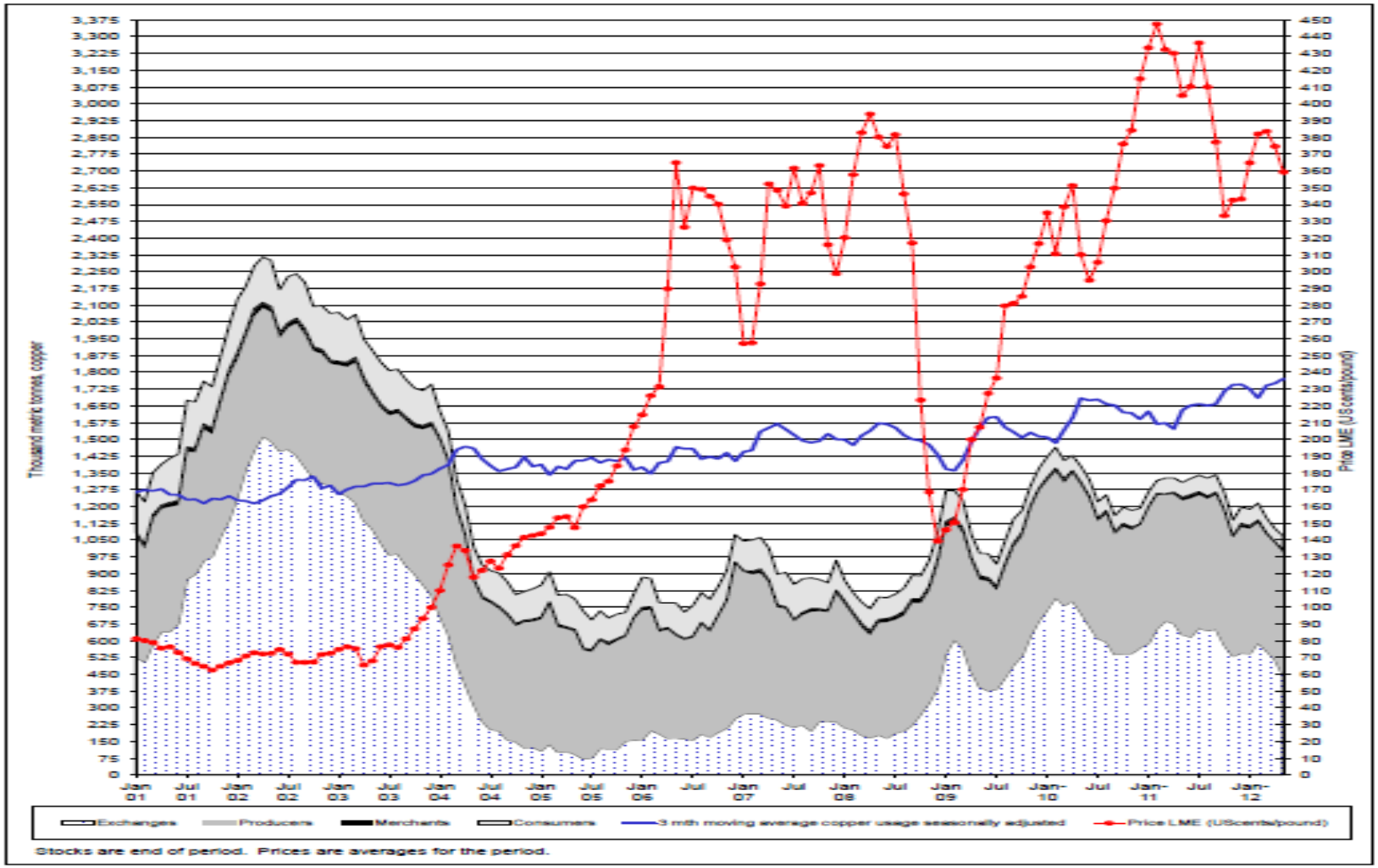


Figures from the U.S. Geological Survey show that domestic old (130,000 mt) and new (650,000 mt) copper scrap consumption reached 780,000 mt in 2011. In the mid-90's, annual U.S. copper scrap consumption averaged around 1.3 million mt.

Relationship Between Refined Copper and Copper Scrap Prices



Global Copper Market Fundamentals

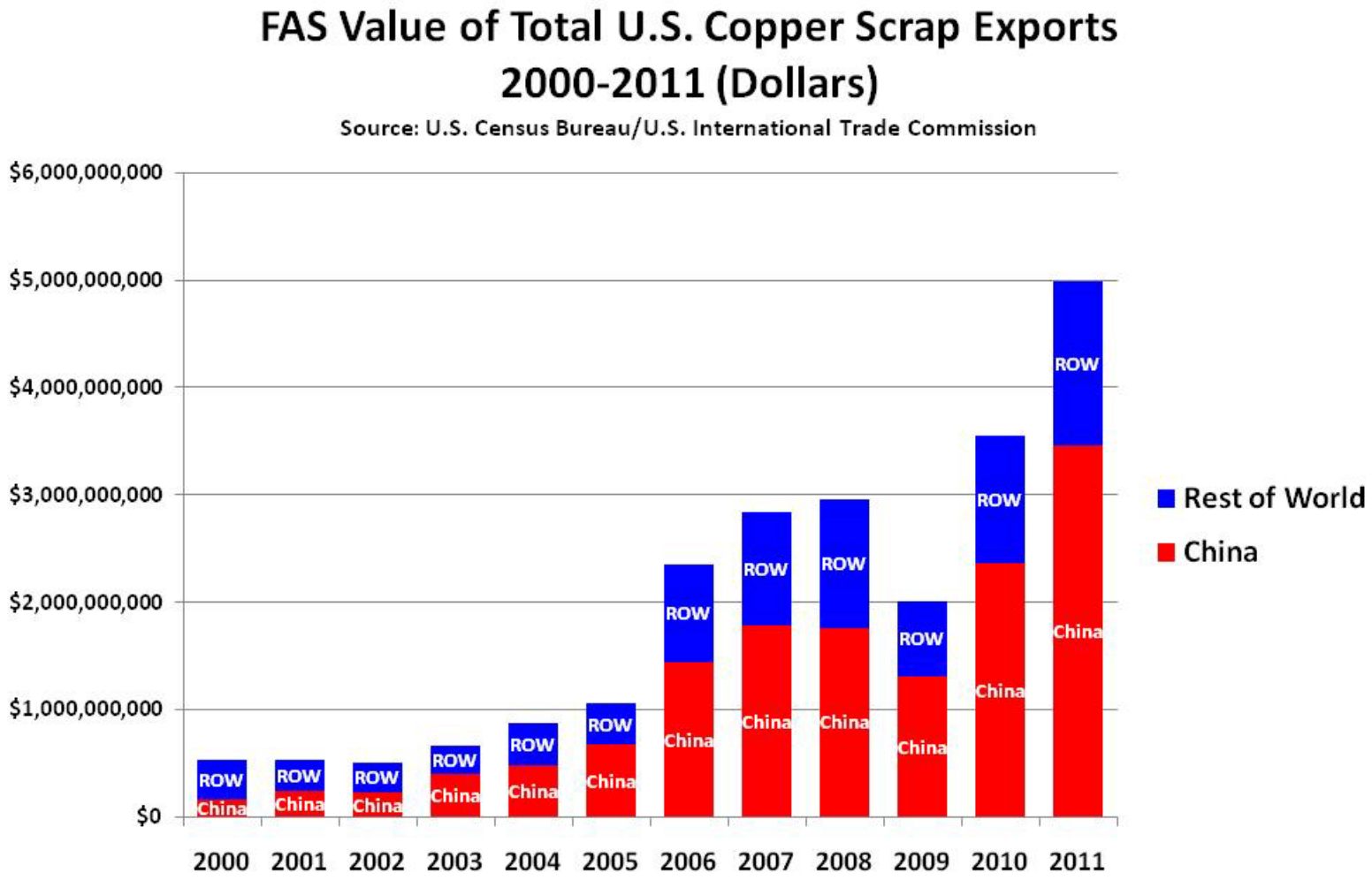


Source: International Copper Study Group.

Chinese and Rest of World Demand for U.S. Copper Scrap

From 2000 to 2011, the value of U.S. copper scrap exports surged from just over $500 million to nearly **$5 billion**.

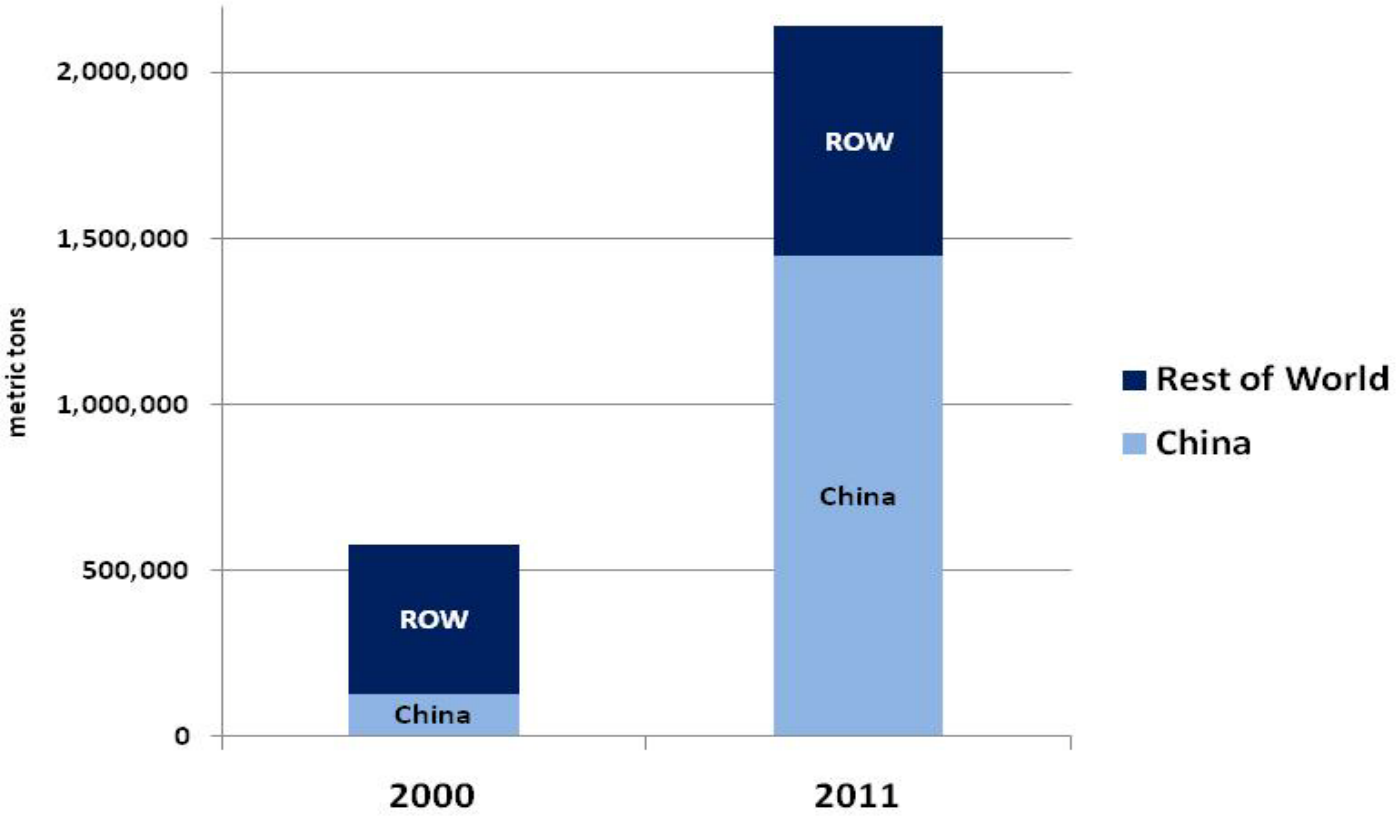
U.S. copper scrap exports to China jumped from approx. $165 million in 2000 to nearly **$3.5 billion** last year.



Similar Story for Aluminum Scrap Exports

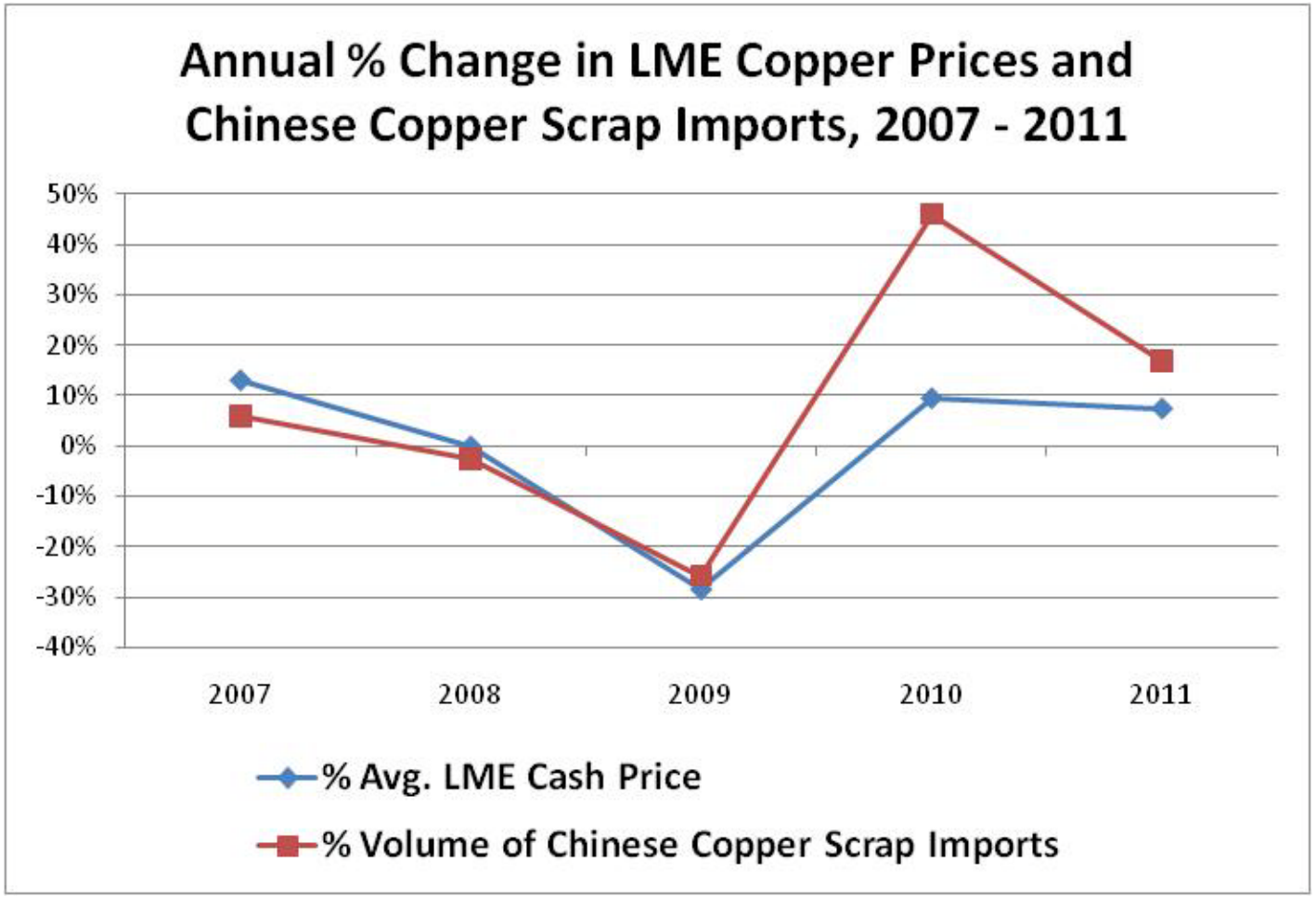
U.S. Aluminum Scrap* Exports by Volume, 2000 and 2011 (metric tons)

Source: U.S. Census Bureau/U.S. International Trade Commission



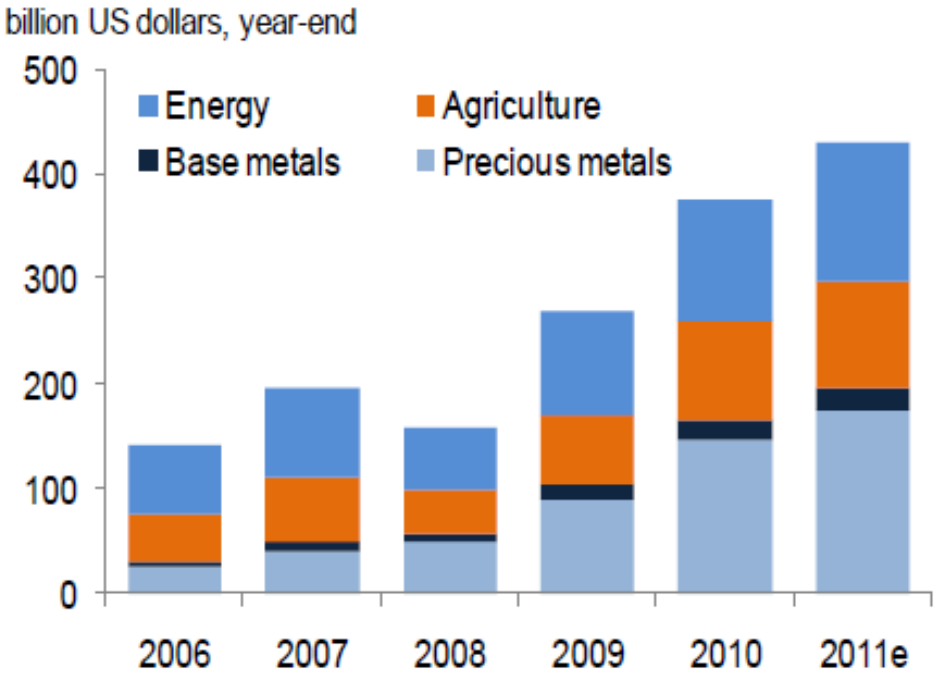
China and the Global Scrap Marketplace

Data from the International Copper Study Group show that global scrap exports increased from 3 million mt in 2002 to nearly 5.4 million mt in 2011, and China accounted for 62% of world copper scrap imports last year. But Chinese demand for overseas scrap is sensitive to refined copper price movements.



Investment Funds , Speculation and Nonferrous Prices

Funds Invested in Commodities



Sources: World Bank *Global Economic Perspectives 2012*, Bloomberg, Barclays Capital

Ask an Economist or Exchange Representative: No quantifiable relationship exists between speculative interest and higher commodity prices.

Ask a Consumer: Market fundamentals used to be the most important determinant of prices, today they are the least important.

Ask a Trader: The price is the price is the price.

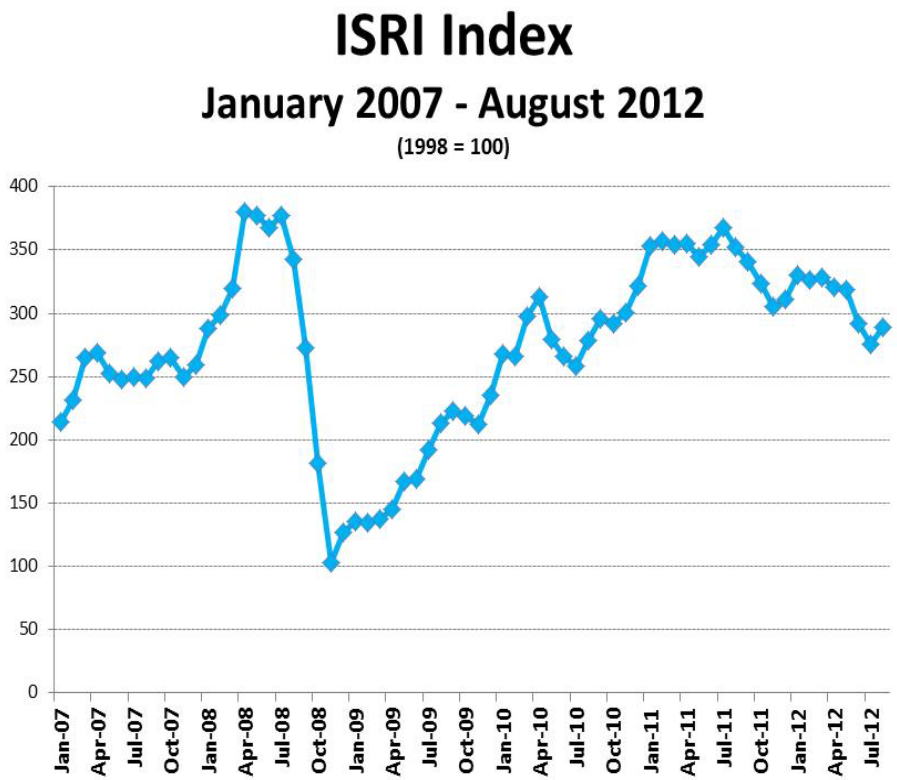
Macro Trends

- As virgin material prices increase in response to rising demand, scrap becomes an increasingly attractive source of supply.
- As societal concerns about sustainable supply become more pronounced, a greater emphasis is placed on the benefits of scrap recycling.
- As expanding developing economies and on-going urban migration prompts higher infrastructure investment, scrap becomes essential to meeting the growing global demand for raw materials.
- The market for scrap is increasingly global: scrap commodities are traded world-wide and become less dependent on local supplies and markets every day.

Challenges: Global Economic Risks

Expect Continued Market Volatility

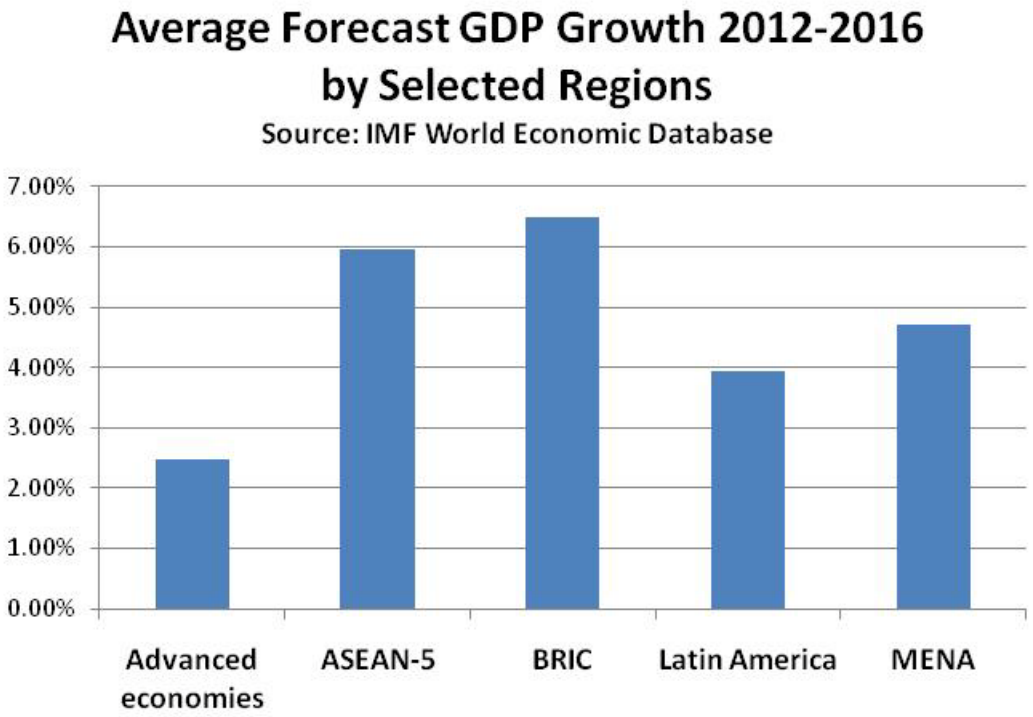
- Markets remain skittish due to the long list of global economic challenges
- Chief among them has been the sovereign debt crisis in Europe
- The potential slowdown in Chinese growth has also been weighing on markets
- While the U.S. economy continues to grow, recovery from the recession has been slower than expected due to the combined impacts of the pop in the housing bubble and financial market crisis



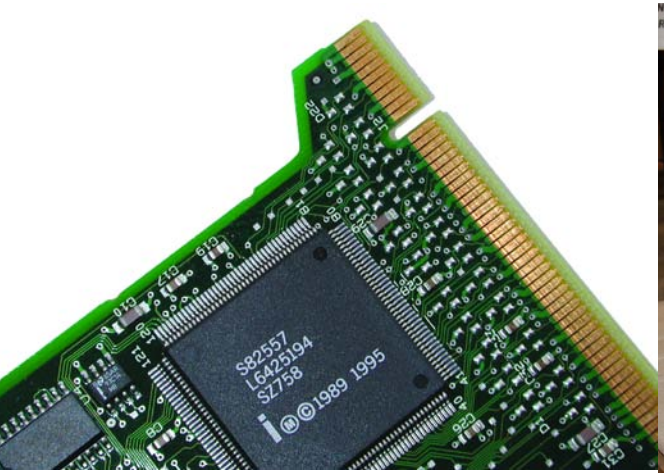
Key Drivers and Outlook: Grounds for Cautious Optimism

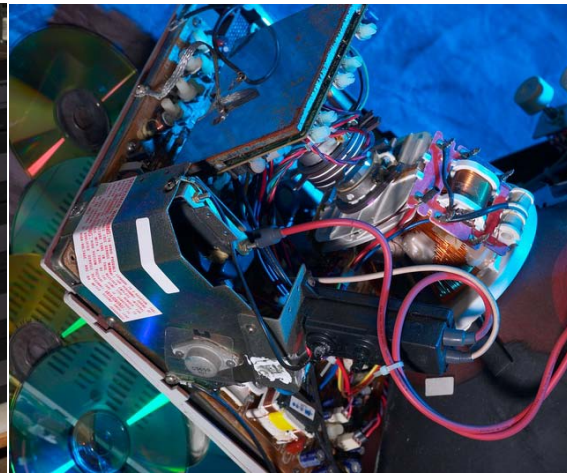
Key Trends/Drivers:

- Rapidly changing/increasingly global market
- Scrap becomes more attractive as primary prices increase
- Regional Economic and Manufacturing Growth
- Continued Low Interest Rates
- Energy and Transportation Costs
- Shifting Consumption Patterns
- U.S. presence and growth potential



Domestic and Global Markets: Electronics Scrap





Electronics Scrap (E-Scrap)

Markets vary based upon the following characteristics:

- Tested & Fully Functioning
- Repair & Refurbish
- Processed into Commodity Grade Materials
  - Ferrous Metals
  - Nonferrous Metals
  - Plastics

Thank You!

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