



Metals Outlook

Newsletter

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Publisher's Statement

“2015” is a comprehensive outlook at the metals and metalworking industry into the near future. Clearly, a recovery is underway and events may be happening sooner than originally predicted when this analysis was written in late 2010.

There have been several revisions of the U.S. GDP forecast by various sources including Bloomberg, JP Morgan, HIS Global Insight and the federal government from 2.7% to nearly 4%. The double-dip doppelganger has faded into the mist for the moment until events in the Middle East unfold and Japan's stability can be factored into the equation.

At the moment, the next five years indicate a bright outlook for manufacturing which has led every U.S. recovery since WWII. Most industries will remain lean into 2012, and metals and metalworking will be no exception. The current GDP is about the same as mid-2008 with 7 million fewer jobs. If anything drags on the GDP, it will be slow job growth.

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SEARCHING FOR THE “NEW NORMAL”

The devastating recession that began in late 2007 reportedly ended in the summer of 2009, according to the economists who reckon a gradual economic recovery will translate into slow revival for manufacturing—and metals consumption—in 2010-2015. Thus, it will be important for buying groups to determine how to coordinate future metals supply chain needs against the “new normal” levels of industrial production, metalworking activity, metals demand and supply trends. Users also will have to share the revised size and scope of manufacturing materials needs to their supply chain partners. And, since economists suggest the typical amount of metals used annually in North America before the recession may not return for years, there will be new levels of demand that will have to be addressed by suppliers.

In the near-term, the metals market is a mess. Steel production in the U.S dropped 41% and steel use collapsed 49% to 44 million net tons in 2009, the lowest tonnage in decades. Government investments in steel-intensive infrastructure and recovering consumption of consumer durables, supported by government stimulus and improving consumer and business sentiment, has prompted many steel producers to restart mills in 2010 that were idled in late 2008 and early 2009.

The 2008-2009 downturn was so deep and the recovery will be so timid, says analyst John Anton at IHS Global Insight, “that steel demand from most markets stays well below 2008 peaks until 2012 or later.” He explains that spending on consumer durables is the largest driver of demand for sheet, the biggest market segment as light vehicles and appliances are key users of sheet. “Consumers in the United States and many European countries saw their wealth decline as jobs were lost and house prices dropped,” Anton writes to clients. “In such a climate, it will be a long time before buying returns to old levels”—no matter how optimistic the steelmakers sound.

U.S. STEEL SUPPLY & CONSUMPTION

(annual, million net tons)

	Net Supply*	Net Consumption**
2004.....	132.8.....	95.1
2005.....	119.7.....	85.0
2006.....	135.5.....	98.4
2007.....	120.0.....	95.3
2008.....	109.8.....	85.9
2009.....	68.7.....	43.9

(*mill products shipments – exports + imports +/- service centers stock adjustments)

(** net supply x % of metalworking capacity utilization)

Source: Purchasing Magazine calculations

Stainless demand fell deeply during the recession, but production fell more. “Mills decided it was better to be safe than sorry,” says Anton. The fall in tonnage meant that inventory was pulled too low, though, so there has been some significant short-term production and restocking activity that will last through the winter of 2010--and then dissipate. Moderate growth in metalworking this year could boost supply of stainless steel by as much as 19% to 1.64 million net tons in the U.S., forecasts Charles Turack, vice president of sales and marketing for Outokumpu Stainless in New Castle, Ind. However, this compares with a 26% decline in 2009 to 1.37 million tons—and will keep purchasing well below the 2.27 million ton annual average in 2000-2008.

“Stainless steel sales are showing some improvement as funding for maintenance and repair projects in such key markets as chemicals and plastics processing are being released,” Turack tells a recent conference sponsored by the Fabricators & Manufacturers Association. “However, stainless steel buying by end users continues to be only for what’s needed to fabricate against the end-product order books.” Still, he admits he is somewhat more bullish than a recent Steel Market Research forecast of 10% growth in purchasing by stainless steel buyers in the U.S., Canada and Mexico who cut their invoices by 23% as a group in 2009.

U.S. Stainless Steel Use

(annual, net tons)

2000.....	2,608,940
2001.....	2,142,701
2002.....	2,148,086
2003.....	2,127,194
2004.....	2,459,355
2005.....	2,256,803
2006.....	2,591,577
2007.....	2,225,789
2008.....	1,841,966
2009.....	1,370,447

Source: Specialty Steel Industry of North America

Turack projects that sheet shipments will rise 20%, plate will increase 30% and bar, rod and wire products will rise 8% this year. “But, remember, these growth patterns will come off a historical low in 2009,” he says. Still, he believes there may be expanded purchasing in 2010 from green energy technologies, clean water and clear air projects and hybrid-powered motor vehicles. However, Turack admits that there’s still no sign yet of stainless steel inventory building among OEMs or service centers.

Looking ahead, analyst Anton suggests that OEM buyers in fundamental consuming sectors will take up the purchasing slack but not until the middle of 2011. Even the most optimistic analysts say the long-term recovery will be slower and weaker than the mill execs forecast. Anton sees “plenty of supply and only slight price inflation” in the months ahead.—and no significant turnaround in demand until 2012 or later. Most economists agree that fundamental demand in 2010 will remain at least 20% below the pre-recession 2000–2007 level, or around 1.4 million tons. Neil Buxton at GFMS Metals Consulting, for example, says “the stainless steel sector will not improve anytime soon.”

Since there are fewer regional steel, aluminum and copper producers than there were a decade ago, the supply of new North American metal may never reach the tonnages of 2000. Still, a return to robust global economic growth could put many commodities markets by mid-decade back on their footing of 2008, when they shot to records as analysts and producers expected consumption to outstrip production. The economic downturn temporarily put an end to those concerns by cutting demand and filling storage facilities with unwanted goods. Still, producers have come out of recession with fewer resources available to quickly ramp up output to meet any form of resurgent long-term growth. So, as the global economy recovers from the worst recession in 70 years, industrial metals are expected to stay on a recovery path this year, but even metal producers warn that the advance may be slow as demand remains shaky. In fact, demand from original equipment manufacturing (OEM) firms and construction companies is far from supportive of substantially stronger production levels. Reason: Surveys show time after time that buyers are reluctant to buy anything but what is needed for immediate consumption.

Eventually, steel use is expected to recover and then grow as OEM production of durable goods and nonresidential construction materials will accelerate as the decade plods along. The purchasing of nonferrous metals also is projected to expand as China, the biggest consumer, continues its double-digit economic growth and the U.S., the second-biggest consumer, awakens from its recessionary hibernation. That’s why regional demand for steel and other manufacturing and construction metals is expected to continue to grow over the next several years, increasing use of scrap, iron ore, metallurgical coal, natural gas and electricity.

However, global demand and supply developments will affect the future composition, size and shape of metals enterprises in the U.S. and Canada—ranging from production to processing to distribution. So, this will not be a typical metalworking recovery. The road ahead through 2015 will be bumpy, with setbacks and disappointments for suppliers and buyers alike. It will take some time for metalworking activity to expand beyond automotive assembly, for housing and non-residential construction to get back into a growth groove and for new-market development activities in renewable energy, green technology and recyclable consumer product programs to stabilize and expand.

So-called “clean transportation solutions” are affordable next-generation electric vehicles for personal, commercial, institutional and industrial markets. This will change the way metals are bought and used—especially new generations of lightweight steels for hoods and bumpers, hardened aluminum for internal parts, copper for wire harnesses and such “new metals” as lithium for batteries. In fact, automotive strategy consultation firm Roland Berger sees capacity to make lithium-ion batteries for hybrid and electric vehicles tripling to 2.6 million by 2015.

There also will be changes in the manufacture of traditional motor vehicles that will change what metals will be used and how they will be sourced. By 2014-2015, two thirds of General Motors and Ford Motor vehicles in North America will be built from global platforms; that means common underpinnings and parts as opposed to regional versions assembled in specific markets from many suppliers. Today, only 10% of GM and 6% of Ford vehicles are developed globally, according to the study by Grant Thornton. Toyota Motor and Honda Motor, with Ford and GM, will account for 68%-70% of total North American vehicle production by 2014-2015. North American production is forecast to be 15.3 million vehicles in five years. It was 8.6 million in 2009.

Meanwhile, a number of lightweight advanced high-strength steel and automotive-grade aluminum technologies will allow design engineers to create clean, unique designs that will result in new generations of motor vehicles that will be fuel efficient, longer-lasting and recyclable. The changes in engineering and assembly systems will impact procurement in coming years—and result in dramatic changes in the way the automakers and Tier I suppliers will source metals and metals parts.

DEMAND WILL IMPROVE BUT IT WON'T EXPLODE

The global metal industry is cyclical, highly competitive and historically has been characterized by overcapacity (excess of supply over demand). Overcapacity in the industry could increase the level of metal imports and squeeze metal prices. In the recent years, capacity growth in China has significantly exceeded the growth in Chinese market demand. A continuation of this unbalanced growth trend or a significant decrease in China's rate of economic expansion could result in China increasing metal exports in coming years. Key metal consuming industries such as auto, shipbuilding and construction have been experiencing weak demand in the last few quarters, forcing global metal producers to slacken production levels.

The latest Global Economic Prospects report from the International Monetary Fund (IMF) says “the acute phase of the financial crisis has past and a global economic recovery is underway. However, the recovery remains fragile (and) the pace of the recovery will be slow and subject to uncertainty.” Look at steel: Significant idling of steelmaking capacity caused by the global economic slowdown resulted in an 8% decline in global steel production to 1.22 billion metric tons in 2009 from 1.33 billion in 2008.

Over the past few months, some idled production capacity has been restarted and, in line with assumed improvements in world economic growth, global steel production is forecast by Sheffield, England-based analyst Peter Fish, who heads up MEPS International, to increase by 10% to 1.34 billion metric tons in 2010. Based on a 5% annual average growth rate over the next six years, 2015 production could be as high as 1.79 billion tons. Reflecting higher expected steel production, world trade in iron ore is forecast to increase by 8% to 987 million metric tons in 2010, compared with a rise of 2% in 2009. China has provided significant support for an otherwise weak iron ore market so the main contributors to increased import demand in 2010 are likely to be China, Japan and the European Union. However, with scrap cutting into iron ore markets, growth rates of ore import volumes to most countries, with the exception of China, are forecast to be closer to 5% than 10% over the next several years.

Before the recession, there was substantial industry optimism about metals demand through 2015. For example, ArcelorMittal, the world's largest steelmaker, forecast in 2006 that global steel consumption would explode from 1.03 billion metric tons in 2005 to 2.20 billion in 2015. Instead, revised forecasts from the World Steel Association (www.worldsteel.com) now suggest that 2015 steel use of 1.56 billion is more likely.

Economists agree that conditions gradually are falling into place for what they say could prove a pretty robust recovery in forward metals demand, but the timing of this rebound is still rather uncertain. The economists at the Organization of Economic Cooperation and Development (OECD) in Paris, for example, say that robust consumer and business sentiment and willingness by governments to rehabilitate and/or build new infrastructure will have to be in play to support strong 2010-2015 demand for steel and other production metals from firms in the consumer durables, housing and nonresidential construction markets.

World Steel Production & Consumption

(annual, billion metric tons)

	Production	Consumption
2004	1.069	0.968
2005	1.147	1.029
2006	1.251	1.121
2007	1.351	1.198
2008	1.329	1.207
2009	1.220	1.104

Source: World Steel Association

The market analysts at Barclays Capital suggest that 2010 aluminum demand probably won't rise as fast as production is being ramped up, so there is a growing danger that the market will move into surplus. As the years progress, though, annual demand expansion of an average 6% to 8% could occur—from a rebound in purchasing by the aerospace, car and truck market, appliances, office and commercial furniture and myriad consumer goods. And, since new capacity expansions are projected to be limited, there could be a supply shortage by mid-decade.

Primary Aluminum Production

(annual, billion metric tons)

	World	North America
2000	21,191,000	6,040,969
2001	20,551,000	5,219,742
2002	21,199,000	5,415,182
2003	21,935,000	5,496,411
2004	22,592,000	5,109,023
2005	23,463,000	5,374,691
2006	23,869,000	5,332,043
2007	24,812,000	5,642,270
2008	25,654,000	5,777,850
2009	23,399,000	4,757,491

Sources: International Aluminium Institute, Aluminum Association

Klaus Kleinfeld, CEO of aluminum giant Alcoa, is even more bullish, saying that total global aluminum consumption could rise 10% in 2010, a sharp reversal from the 6% world purchasing slide in 2009. He forecasts world use at 38.5 million metric tons, with 16.1 million metric tons in China, 6.6 million metric tons in Europe, 5.3 million metric tons in North America, 4.6 million metric tons in Asia outside China, 900,000 metric tons in Russia, 800,000 metric tons in Brazil and 4.2 million metric tons in “other” regions that include the Middle East, India, Latin America excluding Brazil, and the rest of the world.

Not so optimistic is Philip Martens, president of Novelis Inc. in Atlanta, the U.S.-based aluminum unit of India's Hindalco Industries Ltd., who forecasts global aluminum demand increasing by an annual average of 4% over the next five years or so. He sees the strongest growth, of an average 8% annually, coming from Asia, specifically China, followed by 7.5% increases in South America but only 2% annual expansion in North America and a gain of 1% or less in Europe. According to Martens, demand for the metal for beverage cans, food packaging, appliances, construction, transportation vehicles and consumer electronics “is on the verge of a new boom in emerging

markets.” Not so in the industrialized world, though, where demand growth may be stifled by consumer debt.

Investment bank UBS believes that copper has upward price potential in coming years on the back of supply constraints related to varying mining issues. Increased demand is also likely to spur gains, the Switzerland-based bank says in its latest Commodity Price

Review, as it forecast 12% consumption growth in the world ex-China in 2010 and the possibility of continued double-digit growth in 2011-2015. The International Copper Study Group says annual mine production capacity in the 2009-2013 period is expected to grow at an average annual rate of around 4.5% to reach 23.1 million metric tons in 2013, a 19% increase, or about 3.6 million metric tons, over 2009. The ICSG also believes total global copper production capacity at mines, smelters and refineries in the coming years should grow annually on a consistent basis so that at least a million new metric tons are available to world buyers by 2013.

A new OECD report cites conventional wisdom that China, already the world's second-largest economy and the largest metals-consuming nation, could well overtake the U.S. to become the leading producer of manufactured goods in the next five to seven years. A key reason is that manufacturing stimulus measures by the Chinese government “dwarfed those of other countries,” the OECD report says, and set the stage for continued double-digit economic expansion in coming years.

This doesn't mean that the U.S. will slip away quietly into the night, the OECD admits, noting that manufacturing activity in North America could rebound sharply in coming years—and generate a substantial increase in regional demand for carbon and stainless steels, aluminum, copper and the alloying metals. Metals demand locally tracks expansion of industrial production, which crashed by almost 10% in 2009 but is seen by the Blue Chip Forecast consensus growing by a robust 4.5% annual rate in 2010—and better than 4% annually through 2015.

“The U.S. is recovering with the help of government stimulus measures, a rebound in world trade underpinned by increasing demand from large emerging-market economies, stockbuilding by businesses and stabilization of the housing market,” says an OECD survey in early 2010. The OECD forecast puts U.S. gross domestic product (GDP) growing at least by 2.5% in 2010 and a further 2.8% in 2011. That fits with the outlook of private economists who also see 3%-plus GDP growth in 2011-2015. “I think we're in a secular bull market for commodities, which will be interrupted by speed bumps on occasion, which it's gone through in the last year and a half,” says analyst R. Wayne Atwell, Casimir Capital's research director in New York. “But I think you could have a strong market for metals for the next 10 years.”

METALS PRICES ARE, WILL REMAIN, ERRATIC

Commodity metals prices have increased significantly in recent years. This has boosted the economies of resource-rich nations but has added to the import bill in such consuming regions as North and South America, Europe, India and Asia. One of the most surprising aspects of commodities markets in the heart of the global recession was what analyst Gayle Berry at Barclays Capital calls “the remarkable strength of the recovery in metals prices.” In fact, from the end of 1999 to the end of 2009, there was remarkable volatility in prices of commodities. The price of gold advanced 278% while silver gained 208%. Copper, the benchmark base metal, rose 287%. Prices for a market basket of 14 steel products tracked by Purchasing magazine increased 79%—after spiking as high as 182% just before the recession hit. The fact that “commodity prices were surprisingly buoyant” means to the economists that metals prices will stay elevated in 2010-2015.

IMF economist Thomas Helbling explains that, until recently, metals prices tracked historical patterns—never increasing more than 75% during previous cyclical upturns—but the continued run-up in metals prices in 2008 made the cumulative price increase significantly larger than usual. The drivers of the unusually strong run-up in metals prices are well known. First, “the roaring Asian (especially Chinese) demand” that triggered the prospect of continued short-term supply shortages. There was low investment throughout the metals sector in the late 1990s and the early 2000s that followed a period of earlier price declines. Some analysts have suggested that the intensity of the price upswing in this recent cycle has been amplified by such new factors as the increasing weight of rapidly growing emerging markets (especially China and India) in the world economy and activity of financial investors (especially fund managers) in commodity markets.

ANNUAL METALS PRICE AVERAGES

		2007	2008	2009
Aluminum	\$/metric ton	2,638	2,573	1,665
Copper	\$/metric ton	7,118	6,956	5,150
Lead	¢/kilogram	258.0	209.1	171.9
Nickel	\$/metric ton	37,230	21,111	14,655
Tin	¢/kilogram	1,454	1,851	1,357
Zinc	¢/kilogram	324.2	187.5	165.5
Gold	\$/troy ounce	697	872	973
Silver	¢/troy ounce	1,341	1,500	1,469
Iron ore (Brazilian)	¢/dry metric ton unit	84.7	140.6	101.0
Steel hot-rolled coil sheet	\$/metric ton	550	883	683
Steel cold-rolled coil sheet	\$/metric ton	650	966	783
Steel rebar	\$/metric ton	522	760	486
Steel wire rod	\$/metric ton	533	1,010	970
Steel products index (Asia) 2000 = 100		182.0	289.3	227

Source: World Bank

“At the outset of 2009, sharp declines in prices seemed to foretell the usual misery for commodity markets during and after a global downturn,” notes the IMF report. “In the end, however, prices rebounded relatively soon and staged a strong rally that began in the late second quarter of 2009—despite generally high inventories and weakened demand.”

Berry agrees with this analysis, writing that metals markets typically are tightly linked to the global industrial production cycle as the main driver of demand. “So, at a time when global output dropped at the fastest rates seen in many decades, prices of industrial metals should have fallen, not risen, in 2009.” Her analysis and that of other economists suggest that metals prices were elevated during the 2008-2009 recession partially because of tight supply and partially because of investment activity by speculators and fund managers.

First, as metal prices approached or fell below marginal costs of production in 2008, producers of such key nonferrous metals as aluminum, lead, zinc and nickel began cutting production runs to save costs. Helbling at the IMF says “global production of a few key metals—such as aluminum, tin and zinc—declined by about or more than 10% (seasonally adjusted annual rate) during April 2008–February 2009, just when global industrial production was contracting.” Second, the

IMF economist says that besides the improvement in near-term global economic and financial prospects—which elicited strong price responses from the cyclically sensitive base metals—the price rebound also reflected speculative buying of commodity exchange futures and exchange-traded funds (ETFs) by investors switching away from dollar-denominated securities.

This year's metals price rally at the early stage of the recovery in global industrial production (and ahead of global economic growth) contrasts with past experiences. After previous global industrial downturns, prices typically continued to fall or rose at very modest rates, far below the increases recorded this year. The IMF's commodity price index, for example, rose by more than 40% in the eight months since global industrial production reached a trough in February 2009. In contrast, after earlier downturns, it rose by only 5% on average over the eight months after a trough. "However, commodity prices also fell faster and by larger magnitudes in the second half of 2008 than in previous recessions," says Helbling at the IMF.

Looking ahead through the middle of this decade, global metal prices could retreat from their current high levels as new mining and smelting output boosts supplies and metalworking companies adjust to the "new normal" of metals requirements. Still, the key word for industrial metals is erratic when buyers are mapping long-term acquisition plans and risk management programs. From aluminum to zinc, market economists say metal prices tend to respond sharply to relatively minor changes in demand and supply conditions. That's why they believe prices of industrial metal commodities will maintain their volatility in the 2009-2015 time frame as the markets slide in and out of supply tightness.

Interestingly, the IMF report says that "a long-term perspective highlights how prices are expected to remain high by historical standards." The effects of the two-year financial crisis have been to reduce prices somewhat below their 2008 peaks, but demand is expected to continue rising at a solid pace as industrialization continues in emerging and developing economies. "Accommodating this demand will eventually require further capacity expansion in many commodity sectors, with some need to tap higher-cost sources," says Helbling at the IMF.

In 2010, aluminum production is expected to exceed consumption for the fourth consecutive year and, hence, stocks are forecast to increase further to around 8 million metric tons (or about 12 weeks of consumption). Reflecting the continued increase in stocks and lower forecast import demand from China, the aluminum price in 2010 is forecast to average around \$1,950/metric ton—higher than 2009 but lower than 2007 and 2008. Looking ahead, light metal price forecasts range from an annual growth average of 5% to projections of 10%. Major risks to any aluminum forecast include the extent to which expectations about recovering demand from developed economies are met in 2010-2015 and the effect that large stockpiles, which are expected to continue to accumulate through 2012, have on future prices.

METALWORKING RECOVERY WON'T BE EVIDENT UNTIL LATER

The government's industrial production diffusion index has been improving since last July, reflecting stronger manufacture of fabricated metal products, machinery and electrical equipment, appliances, and cars, light trucks and transportation equipment other than airplanes. However, based on historic tendencies, it probably will be 2013 before the index returns to the halcyon days of late 2007 and early 2008—and only if manufacturing can recover from a smaller supply base and lost jobs and regain momentum. Federal Reserve Board economists are optimistic that 2010-2015 industrial production gains will be broad based, and particularly strong for consumer durables and materials. It is a good sign, they say, that monthly surveys of business conditions, sentiment, and capital spending plans all point to a moderate rise in business spending going forward.

Consumer spending will have to move ahead at “fairly respectable annual rates” of 2% to 4% to support overall economic growth, according to Brian Bethune, chief U.S. financial economist for IHS Global Insight in Lexington, Mass. Remember, consumer spending accounts for two-thirds of the U.S. economy. So, Bethune and other economists believe improved economic conditions will continue to boost spending on durable and nondurables alike in the 2010-2015 timeframe. Still, don't get super-excited: Consumer expenditures last grew at the high end of the range—actually by 3.4%—in 2005. Also, there might be several years of stubbornly high unemployment ahead. At this writing (in March 2010), there are 15 million employable people out of work so the nation's unemployment rate remains close to 10%. Some economists think employers will remain wary about hiring and skeptical of the speed of overall economy recovery for some months to come. “It is a wait-and-see attitude,” says Stuart Hoffman, chief economist at PNC Financial Services Group. The economy is growing, but too weakly to persuade employers to ramp up hiring. Most economists think unemployment will stay high into 2012. Complicating the jobs recovery will be remnants of the recession: high debt, a slow-recovering new-housing market, a tentative pickup in nonresidential construction and the inability or reluctance of people—and businesses—to borrow and spend.

Total U.S. construction spending contracted by 20% in 2009 and will fall another 6% to 10% in 2010, economists suggest, before starting to rebound slowly in 2011-2012. This isn't good news for suppliers of plate, structurals, rebar, copper products and other building materials. U.S. construction spending in January 2010 fell by \$5.5 billion to \$884 billion, the lowest level since June 2003, according to an analysis of new federal data by the Associated General Contractors of America. Declining investments in private-sector non-residential construction and public construction at all levels of government drove the decline. “What's clear from this data is that the downturn in nonresidential construction spending is far from over,” says the trade group's chief economist, Ken Simonson. “Federal funding for construction is one of the few crutches propping up a deeply wounded construction industry.”

Meanwhile, a leading indicator of U.S. residential construction spending shows that business conditions remain weak as the housing downturn lingers. The Home Design Survey Index of residential billings entered 2010 at 32, according to the American Institute of Architects. A score below 50 indicates a contraction in demand. A measure of inquiries for new projects was 45, meaning that “residential architects continue to report declining business conditions, indicating that the housing market is not yet entering a full recovery phase,” the AIA says. Atop that, in today’s uncertain economic environment, homeowners can’t be certain their homes will appreciate in value, which has made them more restrained in their spending on kitchens and bathrooms. So, instead of larger kitchens and more bathrooms that require copper plumbing and stainless steel products, homeowners are placing a priority on products and features that promote energy efficiency, says the AIA’s chief economist, Kermit Baker.

Fabricated metal production growth averaged 5% annual growth early in this decade but metalworking activity moved from down in 2007-2008 to total collapse in 2009. Now, in 2010, with improved orders for U.S.-made machinery, major appliances, motor vehicle, auto parts and capital goods equipment, metalworking activity for the end products and their components are bound to recover. Economists say that the turn in the inventory cycle that began at the start of the fourth quarter of 2009 will proceed rapidly—and should continue apace through mid-decade. In fact, bullish economists at Moody’s Economy.com and Global Insight.com suggest core orders for metalworked goods will track annualized increases of 20% in 2010-2011 as Corporate America loosens its grip on the purse strings. And, in 2012-2015, expect spending on metalworked goods to rise in the 10%-20% range if industrial production meets bullish expectations.

The years 2008 and 2009 proved more disastrous for sales of light-vehicles than had been expected. Even the “cash for clunkers” promotion was only marginally successful as consumers have continued to tread lightly when it comes to big-ticket acquisitions such as cars and light trucks. So, demand for light vehicles in the United States last year plummeted to levels not seen since 1962—falling from 16.5 million units in 2007 to 13.5 million in 2008 to 10.6 million in 2009. As the year closed, though, stabilizing used-car prices, lower interest rates and brightening economic data began to persuade more consumers to shell out dollars for a big-ticket item like a new car. A bullish forecast of 20% growth in deliveries to 12.7 million has come from Sean McAlinden, chief economist at the Ann Arbor, Michigan-based Center for Automotive Research. He believes the auto bazaar will be buoyed by pent-up demand and stronger credit markets—but his forecast admittedly is way more bullish than the consensus view. For example, economists at IHS Global Insights say better economic conditions in coming months will draw the consumer back into the automotive market place—but at a slow 5% average annual rate—so that sales won’t be flirting with 13 million units until 2013 or 2014.

Meanwhile, automaking capacity in North America shrank to 16.5 million units in 2009 from 17.3 million units in 2008--and will continue to decline to 14.9 million units by 2013. In this

environment, Ward's Automotive Group reports that North American automaking dropped to 8.75 million units in 2009, a 33% decline from 12.92 million in 2008. The most-bullish car and light truck production forecasts for 2010 suggest assembly rebounding by as much as 20% to 10.3 million units--but that's still well below the 15.4 million units assembled in 2007. Also, a key question still remains to be answered: Just how much steel, aluminum, copper wiring and other production materials will automotive need in 2010? Atop that, many auto parts companies are finding that managing the 2010-2013 upturn may be more difficult than weathering the 2008-2009 downturn. There is still too much capacity to meet the dramatically reduced demand for cars and trucks. And, with auto makers looking to ramp up production as the economy rebounds, many suppliers are finding it challenging to secure the necessary raw materials at reasonable prices, obtain the crucial credit and working capital required to restart production or find qualified workers willing to return to jobs they lost previously.

Another big metals-using segment is major appliances, which hasn't been very healthy. The decline in new housing starts and housing renovation projects reduced purchases of major appliances last year by 11%--or more than twice the drop that was forecast. Cooking, refrigeration, home laundry, dishwashing, heating and cooling, residential water heaters and commercial water heaters all declined in sales as consumers remained cautious about spending, especially on big-ticket items like major appliances. White goods manufacturing companies project a 5% to 9% pickup in 2010-2012 shipments, which will require some expanded production—and metals purchasing—over the next two-to-three years. Economists at Global Insight, however, don't see a big pickup in major appliance manufacturing until 2012-2014.

Pre-buying to beat new Environmental Protection Agency diesel engine regulations helped prop up medium and heavy truck production in the closing weeks of 2009, although mainly for just the heaviest trucks. It is not yet time for the truck builders or their suppliers to celebrate, however. Economists at Global Insight say that pre-buying distorts normal buying patterns, so to the extent that 2009 ended up on a much stronger note, 2010 has started on a lower note. At the end of the day, the peak-to-trough drop (641,879 units in 2006 to 217,713 units in 2009 in NAFTA class 4-8 production) is still expected to hit 66%. Truck production will gain ground during 2010, but will not really put the pedal to the metal until 2011-2014.

Motor carriers have experienced weak traffic and dismal earnings, which has kept sales of such new equipment as steel and aluminum truck trailers soft. Trailer shipments declined by 54% last year after sliding 31% in 2008. Trailer production will continue at current depressed levels before beginning a slow recovery as 2010 plods into 2011, says Eric Starks, president of consultant FTR Associates. "At the moment, transport demand is so weak that in fact the trucking industry as a whole actually does not need any new trailers at all," Starks said. Nevertheless, he predicts that the special needs of individual trucking firms would result in a continuation of the current low level of orders. A large over-supply of trailers will act as a continuing drag on new trailer demand,

according to Stark, which resulted in very weak 2009 production of just under 70,000 units for the industry as a whole. He forecasts that truck trailer assembly will improve only modestly to 89,000 units in 2010—and not get back to the 283,000 units made in 2006 until 2015.

Orders for machinery and equipment still are struggling. Corporate America is likely to keep a fairly tight hold on the purse strings until the economic recovery hits its stride. With a global economic recovery underway and a weak dollar, the prospects for U.S. exports of machinery and equipment have brightened, however, so production may improve. U.S. production of machinery and equipment slipped 6% in 2008 and dropped 22% in 2009; it will grow slightly in 2010 and finally turning the corner in 2011 or 2012. Analyst Ken Kremar of IHS Global Insights suggests that assembly of agricultural equipment and oil, gas and mining machinery will show some growth in 2010. But, production and shipments of these products—as well as lawn and garden equipment, industrial machinery, metalworking machinery, power equipment and material handling equipment —will be flat in 2010-2011 and won't increase briskly until 2012 or later.

PURCHASING IS CHANGING; IT'S GETTING LEANER

What was once a vision of leaner metalworking companies in North America producing finished products at fewer facilities made from commodities purchasing through borderless sourcing programs has become a reality—a changeover accelerated by the recession.. CEOs continue to work at increasing manufacturing efficiency by reducing production lines, outsourcing production of low value-added items and building production plants offshore to meet future marketplace needs. Over the next several years, metalworking companies in the automotive, industrial, aerospace, consumer goods, medical products and power generation businesses will undergo further consolidations. And that will have a dramatic impact on how metals are bought.

For purchasing organizations, what began three decades ago as just-in-time inventory management has been evolving into an amalgam of JIT inventory control and Lean waste-reduction programs with a smattering of Six Sigma total quality management. The mantra heard over and over is that effective supply chain management has to be “easier, faster and cheaper” in its implementation—yet resulting in the delivery of quality materials on the factory floor with few or no pit stops at the warehouse. The need to “lean down” inventories has manufacturing firms eliminating warehouse floor space packed with large quantities of raw materials and work-in-process stocks, says the principal at Lean management consulting firm R. Michael Donovan & Co. in Framingham, Mass. “Simply put,” Donovan says, “the old ways require too much working capital, and contribute to erratic and longer leadtimes for finished-product deliveries.” The goal, he says, is to link Lean operational improvements with best-in-class supply chain methods to deliver bottom line results for manufacturing firms.”

“There will be a lot more ‘leaning out’ of the whole supply chain transactional processes and systems--from purchasing to order tracking to parts delivery to materials management,” agrees John Bishop, vice president of strategic sourcing at Sikorsky Aircraft, the helicopter manufacturing company in Stratford, Conn. “That will allow expanded use of third-party supply management firms who will be responsible for materials and parts deliveries.” At the same time, there will be new supply-chain responsibilities and operations beyond companies switching from just buying and stocking parts and materials to coordinating plant-floor deliveries of preassembled modules. The logistics may be hard to implement at first but will be cost-effective over time, says Bishop. For example, he actually is coordinating the construction of manufacturing plants in India, Poland, Turkey and Japan that will make and ship next-generation helicopter components to Sikorsky production plants with no pre-assembly warehousing.

So, “there will be expanded development of factories without warehouses with materials, parts and components delivered just in time from suppliers or third-party logistics providers,” agrees Charlie Jacobs, director of continuous improvement at the APL Logistics supply chain management services firm in Phoenix. His firm already has implemented 202 Lean-related projects that have eliminated almost \$11.5 million in clients’ warehousing costs through training in waste-elimination, time-study analyses, cost-and-effect analyses, solution brainstorming and stock-reduction implementation programs. Jacobs says that the more factories without warehouses will put more pressure downstream on metals suppliers as well as delivery logistics providers. “Manufacturing firms will be working to get their plant-level capacity utilizations as close to 100% as possible with inventories as close to zero-percent as possible,” he says. And that will cause logistics providers to expand beyond freight forwarding and warehousing and distribution services to manufacturing support.

Buyer surveys show that 2009 was the “year of tight inventory, but suppliers who have been hoping buyers at original equipment manufacturers are planning to re-load storeroom shelves in 2010 are likely to be disappointed. As the North American economy exits the 2008-2009 recession, the “leaning” of the supply chain by manufacturing companies will be two-fold—the obvious de-emphasis on in-house warehousing of parts and materials and less apparent emphasis on electronic transactions with fewer suppliers. If anything, what is happening this year will only accelerate as the decade progresses. Since the overall goal of Lean is to reduce waste without interrupting supply, the system will bring new pressures to buyers, supply chain managers and logistics providers. Many purchasing and logistics managers and others involved in supply chain management suggest that manufacturing companies will continue internal programs to streamline purchasing operations by electronically connecting with real-time inventory information.

The goal will continue to be the elimination of in-house “just-in-case” stocks through better purchasing decisions and improved warehouse management. The best approach, they insist, is a

new perspective where all suppliers and internal customers are part of a single, even if complex, supply chain network that has to be synchronized to perform efficiently. “Ideally, suppliers would satisfy material needs in a very short cycle time,” says Lean management consultant Donovan. “If vendors can really perform by delivering what is needed when it’s needed, a lot of buffer inventory can be eliminated.”

In effect, he and other supply chain advisors and practitioners agree that the Lean principles already being used to minimize inventory and maximize service are the next generation of the just-in-time (JIT) leadtimes-tightening and inventory-lowering systems initiated three decades ago by Toyota and adapted by manufacturing companies worldwide. Buyers, consultants and software providers interviewed insist that JIT begat a set of ideas known as Lean (a management system labeled by consultant James P. Womack of Cambridge, Mass). And since they see Lean as the latest in the inventory-elimination continuum that began with JIT, they also see Lean Six Sigma as the next step in the elimination of waste in sourcing and managing production materials.

Mark Gavoor, managing partner at consulting company Cadent Resources Group in Lake Bluff, Ill., argues that there is very little difference between the basics of Lean and the Toyota Production System—since both have the manufacturing firm synchronize production plans with those of their suppliers, and reduce leadtimes to minimize inventory and maximize flexibility and responsiveness. JIT as a continuous improvement process was done with varying degrees of success, depending on the company and industry, Gavoor says, but laments that “there were many cases where the inventories were simply pushed back onto the books of suppliers under vendor-managed inventory programs.”

Hedging via futures remains exception, not rule

Earlier this year, Purchasing reported that Whirlpool Corp., the world’s largest appliance maker, has joined other large-tonnage users, such as General Motor Corp. and Ford Motor Co., in buying futures on commodity exchanges to hedge against volatility in prices. Like the company’s hedging of steel and nonferrous metals such as copper, zinc and aluminum, the exercise is handled not by procurement personnel but by the finance department’s risk management group. In a nutshell, the metals marketplace may look and act a lot differently by 2015. But, these large OEM firms remain the exception since the latest Purchasing survey of metals-buying groups finds a minority (31%) involved in steel, nonferrous or precious metals hedging.

Abrupt changes in prices tend to buffet metals-commodity buying with some regularity so purchasing and supply chain management personnel at end-use firms often are faced with price-risk volatility. However, the latest e-mail poll reinforces findings in previous polls as far back as 2005, which have shown that speculators, pension fund managers, producers, processors and traders are the most active users of futures to hedge metals traded on the New York and London commodity exchanges.

Hedging is a venerable mercantile strategy. The London Metal Exchange is the world's oldest non-ferrous metals market. Founded in 1877, the LME traces its origins back to 1571 and the opening of copper trading on the former Royal Exchange. Futures traded on the LME and CME Group's operations in Chicago since 1848 and New York since 1882 allow metals producers and buyers to hedge against volatility in prices. These days, the principal risk management instruments available to participants in the metals markets are the futures and options contracts listed on the LME, the New York Mercantile Exchange (Nymex) and its New York Commodity Exchange (Comex), plus such smaller exchanges in such locales as Shanghai, Singapore, Tokyo and Osaka.

Futures trading proponents say the use of a single price benchmark with multiple delivery options offers the futures buyers the best flexibility in managing price risk by either buying and selling the warrants or accepting delivery of physical metals from regional warehouses. This has worked well in hedging gold, silver, platinum group metals, copper, aluminum, lead, zinc, nickel, tin and uranium—with cobalt and molybdenum just added. Steel trading has been a bit of a bust, however.

With many steel producers still opposed to hedging of their products on commodity exchanges, most of this production metal still is sold directly to customers by the mills or through such middlemen as metal service centers. The Nymex steel futures program still is seeking its footing with some producers and buyers unhappy with the price-setting mechanisms in place. Also, the LME this spring is merging its existing Mediterranean and Far East steel billet contracts into a single global contract. However, buyers aren't convinced that trading futures is a viable purchasing option.

Speculators do like hedging, especially when there is an apparent disconnect from supply/demand fundamentals, writes analyst Scott Wright at financial-services company Zeal LLC. "Investment demand will continue to rise as more and more folks hedge their exposure to fading currencies," he says. "This will be done not only physically, but via exchange-traded funds," the ETF investment vehicles that are spreading across the precious and nonferrous metals complexes.