October 5, 2010

Commodities

Metals Watch

Structural drivers beginning to give way to cyclical drivers

We still favor copper and believe that shortages will lead to price spikes in 2011; we are raising our price forecasts and introducing a new copper long position in the Dec-11 contract

Cyclical volatility will drive prices as macro concerns subside

In our view, the key to understanding seemingly conflicting developments between base metals price movements and fundamentals is acknowledging the distinction between structural volatility and cyclical volatility. We define structural volatility as the uncertainty around rising trend demand growth and the cost of new production capacity required to meet that demand, which anchors a long-dated "fair price" based on marginal costs. We view cyclical volatility as the uncertainty in near-term balances and availability of inventory, creating a discount to structural prices when material is readily available and a premium when supplies are tight. We believe that much of the price action across base metals over the past two years has been driven by structural volatility, but that subsiding financial and macro uncertainty has pushed cyclical drivers back into focus.

Extreme tightness ahead for copper; nickel eases

Given the rising cyclical focus, we have reassessed our demand and supply outlook, and in particular have re-examined demand-side drivers across metals. We expect periods of extreme tightness in the copper market in 2011, with the rest of the complex remaining in surplus, though periods of deficit in zinc may also occur. Accordingly, we believe that copper will remain the metal most leveraged to cyclical volatility, with prices potentially spiking substantially above our estimated long-dated anchor price for the metal. We believe nickel will come off a period of high cyclical leverage and move back into surplus, suggesting downside price risk. We have updated our price forecasts to reflect these views.

Taking profit on copper but establishing a new long in the metal

We are taking a $1,558/mt profit on our long Dec-10 copper trade, but recommend opening a long copper position in the Dec-11 contract. We would also view high OTM call options as a potential alternative given the relatively inexpensive volatility that we expect to move higher.

Joshua Crumb
+44(20)7774-2535 joshua.crumb@gs.com
Goldman Sachs International

Allison Nathan
(212) 357-7504 allison.nathan@gs.com
Goldman Sachs & Co.

Tiger Chen
+852-2978-0106 tiger.chen@gs.com
Goldman Sachs (Asia) L.L.C.

Jeffrey Currie
+44(20)7774-6112 jeffrey.currie@gs.com
Goldman Sachs International

Hedging and trading recommendations

Base Metals

Hedging recommendations

Consumers: Although prices have broken out to the upside of recent ranges, we believe that price risk for copper in particular remains substantially skewed to the upside. Supply-demand deficits look set to grow on emerging market demand strength and improving demand from developed economies, which we expect to significantly outpace supply growth, drawing down inventories and creating market shortages. We don't believe that the market is fully pricing these shortages and the potential for demand rationing that lies ahead in 2011 and therefore believe that long-dated protection remains prudent in copper and zinc, which we see as the more supply-constrained metals over the medium term.

Producers: Given the risk of unexpected financial/macro deterioration, recent price strength and exceptionally low volatility, we believe that the current environment provides a compelling opportunity for producer hedging via put structures. We also believe 2011 and 2012 hedging looks particularly attractive for nickel producers, as projected supply surpluses across nickel products will pressure nickel prices to the lower end of recent ranges, in our view.

Trading recommendations

Close Long Copper December 2010 (current value at $8,066/mt; first suggested at $6,508/mt; $1,558/mt gain).]

Given its recent strong performance and proximity to expiration, we are closing this trade. However, we maintain a constructive view of copper fundamentals and price upside.

Open Long Copper December 2011 (current value at $8,024/mt).

Given our view of nearly 40% upside potential in year-end 2011 copper prices relative to the current forward curve, we recommend opening a long copper position in the December 2011 contract. We would also view high OTM call options as a potential alternative given the relatively inexpensive volatility that we expect to move higher.

Current trading recommendations

Current trades	First recommended	Initial value	Current Value	Current profit/(loss)[1]
Open: Long Copper Buy December 2011 Copper	October 4, 2010 - *Metals Watch*	$8,024/mt		
Close: Long Copper Buy December 2010 Copper	May 18, 2010 - *Metals*	$6,508/mt	$8,066/mt	**$1,558/mt**
Long Platinum Buy January 2011 NYMEX Platinum	July 15, 2009 - *Commodity Watch* Rolled on September 16, 2010 from a Buy October 2010 NYMEX Platinum for a $437.0/toz gain	$1,611.1/toz	$1,682.1/toz	**$508.0/toz**
Long WTI Buy December 2010 NYMEX WTI	February 5, 2010 - *Commodity Watch*	$77.75/bbl	$82.50/bbl	**$4.75/bbl**

[1]As of close on October 4, 2010. Inclusive of all previous rolling profits/losses.

Source: Goldman Sachs Global ECS Research.

Price actions, volatilities and forecasts

	Prices and monthly changes[1]			Volatilities (%) and monthly changes[2]				Historical Prices						Price Forecasts[3]		
	units	04 Oct	Change	Implied[2]	Change	Realized[2]	Change	2Q 09	3Q 09	4Q 09	1Q 10	2Q 10	3Q 10	3m	6m	12m
Energy																
WTI Crude Oil	$/bbl	81.47	↑ 6.87	32.0	-1.11	23.3	-4.2	59.79	68.24	76.13	78.88	78.05	76.19	**92.00**	**91.00**	**101.00**
Brent Crude Oil	$/bbl	83.28	↑ 6.61	31.7	-1.01	16.0	-11.2	59.90	68.87	75.54	77.37	79.41	76.65	**90.50**	**89.50**	**99.50**
RBOB Gasoline	$/gal	2.09	↑ 0.17	34.2	-1.00	19.9	-7.2	1.71	1.86	1.94	2.11	2.17	2.01	**2.27**	**2.22**	**2.60**
USGC Heating Oil	$/gal	2.24	↑ 0.23	31.4	-1.36	20.4	-5.9	1.51	1.73	1.94	2.01	2.07	2.00	**2.44**	**2.46**	**2.60**
NYMEX Nat. Gas	$/mmBtu	3.73	↓ -0.21	41.1	-2.78	39.2	1.6	3.81	3.44	4.93	4.99	4.35	4.28	**4.75**	**5.00**	**5.25**
UK NBP Nat. Gas	p/th	46.38	↑ 3.15	47.5	-5.14	28.1	-29.3	27.57	23.48	31.83	33.35	37.48	42.41	**36.20**	**34.20**	**35.10**
Industrial Metals[4]																
LME Aluminum	$/mt	2363	↑ 216	28.6	-1.04	20.5	-0.7	1530	1836	2037	2199	2122	2084	**2125**	**2200**	**2200**
LME Copper	$/mt	8064	↑ 418	32.3	-1.85	15.4	-6.4	4708	5856	6677	7274	7042	7189	**8500**	**8800**	**11000**
LME Nickel	$/mt	24140	↑ 2540	41.1	-0.62	22.0	-8.8	13147	17576	17593	20163	22431	21036	**20000**	**19500**	**19500**
LME Zinc	$/mt	2230	↑ 79	39.1	-1.77	25.3	-7.5	1509	1780	2241	2307	2052	2020	**2200**	**2400**	**3000**
Precious Metals																
London Gold	$/troy oz	1317	↑ 66	18.3	0.07	9.5	2.0	923	962	1099	1110	1197	1218	**1260**	**1300**	**1365**
London Silver	$/troy oz	22.0	↑ 2.4	30.7	1.98	18.3	-6.9	13.8	14.7	17.6	16.9	18.3	18.7	**21.0**	**21.7**	**22.8**
Agriculture																
CBOT Wheat	cent/bu	647	↓ -61	36.4	-2.01	38.0	-19.2	564	485	522	496	467	646	**650**	**650**	**650**
CBOT Soybean	cent/bu	1054	↑ 24	24.1	0.73	26.8	10.0	1128	1049	1002	955	957	1025	**975**	**950**	**950**
CBOT Corn	cent/bu	472	↑ 22	33.9	-1.64	39.2	12.7	406	327	386	370	355	410	**465**	**515**	**500**
NYBOT Cotton	cent/lb	98	↑ 7	n/a	n/a	32.4	19.4	54	60	71	76	81	85	**90**	**90**	**75**
NYBOT Coffee	cent/lb	173	↓ -13	n/a	n/a	34.7	-6.6	124	125	139	134	140	173	**180**	**140**	**140**
NYBOT Cocoa	$/mt	2736	↑ 9	n/a	n/a	26.0	4.8	2499	2867	3259	3070	2987	2871	**2700**	**2400**	**2400**
NYBOT Sugar	cent/lb	23.0	↑ 2.4	36.1	0.70	51.5	12.4	14.7	20.6	23.6	24.4	15.5	19.4	**20.0**	**16.0**	**16.0**
CME Live Cattle	cent/lb	95.1	↓ -3.4	n/a	n/a	13.9	3.0	83.0	85.4	83.6	90.5	93.7	94.8	**105.0**	**105.0**	**105.0**
CME Lean Hog	cent/lb	75.7	↓ -1.5	n/a	n/a	21.6	-20.5	63.2	53.7	57.8	69.7	81.9	79.8	**78.0**	**80.0**	**85.0**

[1] Monthly change is difference of close on last business day and close a month ago.
[2] Monthly volatility change is difference of average volatility over the past month and that of the prior month (3-mo ATM implied volatility, 1-mo realized volatility).
[3] Price forecasts refer to prompt contract price forecasts in 3-, 6-, and 12-months time.
[4] Based on LME three month prices.

Source: Goldman Sachs Global ECS Research.

Executive Summary

We have reassessed our demand and supply outlook over the next five quarters, and in particular have extensively re-examined demand-side drivers across the metals. This review suggests periods of extreme tightness in the copper market in 2011, with the rest of the complex remaining in surplus, though periods of deficit in zinc may also occur as the market moves closer to an annual balance. Accordingly, we believe that copper will remain the metal most leveraged to cyclical volatility, with prices potentially spiking substantially above our estimated long-dated anchor price for the metal. We believe nickel will come off a period of high cyclical leverage and move back into surplus, suggesting downside price risk. We have updated our price forecasts to reflect these views.

Copper

Even relatively conservative demand forecasts suggest that the global copper market will sustain deficits large enough to mostly deplete exchange inventories over the next five quarters, leading to periods of extreme volatility and price spikes, in our view. Despite this exceptionally high leverage to cyclical volatility and a growing consensus in this view, we believe that still-cautious positioning by both commercial and investor participants driven by macro concerns have the potential to exacerbate upside price volatility. As a result, we are raising our 3, 6 and 12-month copper forecasts to $8,500/mt, $8,800/mt, and $11,000/mt respectively, and introduce a full-year 2011 average price forecast of $9,300/mt. We also emphasize that $11,000/mt may not be the peak, as previous spikes in base metals saw quarterly peaks in excess of 100% to their long-dated price, driven by extreme volatility and a scramble for material. This suggests copper prices could climb in excess of $13,500 based on historical context. The combination of rising global trend growth driven by EM urbanization and a challenging medium-term supply growth outlook also suggests structural support for long-dated prices. Given these constructive views, we are taking profit on our long Dec-10 position, but recommending establishing a new long position in the Dec-11 contract. We believe that consumers should be actively pursuing upside protection and producers should be patient in their hedging programs, but buying puts to take advantage of inexpensive volatility in protecting against downside risks to our constructive view, most likely due to unexpected deterioration in the financial markets and broader macro environment.

Zinc

We expect zinc to remain in a near-term surplus driven by short-term supply growth, but expect a moderately tighter outlook on reduced growth in concentrate and scrap availability, leaving the market more balanced in the year ahead, and possibly swinging to times of deficit over the course of 2011. This tighter outlook leads us to raise our 3, 6 and 12-month zinc forecasts to $2,200/mt, $2,400/mt, and $3,000/mt, respectively, and introduce a 2011 average price forecast of $2,575/mt. Over the longer term, we maintain that substantial mine investments will be required to keep up with demand. As a result, we believe that long-dated prices will need to move higher and that near-to-medium term price action will likely be driven by structural volatility potentially owing to rising costs, currency appreciation in the marginal producer – China – and/or shifting market views on trend demand growth. Given these views, we recommend that consumers take advantage of price dips to lock in long-dated hedges, and producers should be cognizant of zinc's high leverage to macro volatility and engage in shorted-dated programs to protect against downside risk should current surpluses fail to diminish, mostly likely owing to unexpected deterioration in the financial markets and the broader macro environment.

Nickel

Although nickel fundamentals will likely remain tight through the end of 2010, we expect returning Vale Inco supply, new project commissioning and ramp up, and slowing consumption growth into 2011 will push the market into a sizable surplus in 2011. Accordingly, we believe that prices will become less leveraged to cyclical volatility and that price risk is skewed to the downside. As a result, we are reducing our 3, 6 and 12-mo forecasts to $20,000/mt, $19,500/mt, and $19,500/mt, respectively, and introducing a 2011 average price forecast of $19,550/mt. Despite our broadly negative outlook for 2011, the need for new projects over a longer 5-10 year horizon suggests long-dated prices should remain anchored in the $19,000/mt to $22,000/mt range, leaving the market vulnerable to structural volatility as its leverage to cyclical volatility declines. Given these views, we believe that consumers should be patient in establishing hedges, although should consider layering in some upside protection given the possibility that supply growth disappoints on technical difficulties as has been the case for key projects in recent years. We believe that current price levels provide a compelling opportunity for producer hedging.

Aluminum

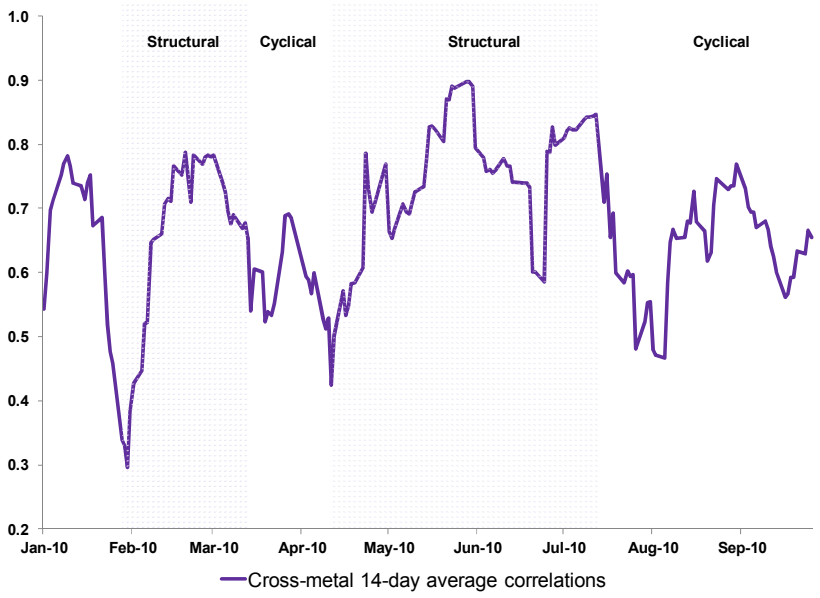
We continue to expect high aluminum stocks and excess capacity for the foreseeable future, with some of the confusion and dislocation that led to tight spot markets thus far in 2010 dissipating with more supply and better matched demand in 2011. Ultimately, much of this new supply should prudently be hedged out, bringing new supply to the forward curve and capping further upside from current price levels. Accordingly, we believe that prices will become less leveraged to cyclical volatility and that price risk is skewed to the downside. We've slightly adjusted our 3, 6 and 12-mo forecasts of $2,125/mt, $2,200/mt, and $2,200/mt, respectively, and introduce a 2011 average price forecast of $2,175/mt. While copper and aluminum prices have remained well correlated for much of 2010, likely due to dominant macro sentiment swings and structural volatility driving prices, we believe that there is little chance future curve support for aluminum will keep pace with the cyclical upside we see in copper. Therefore, we believe that high correlation between copper and aluminum will break down, and see this breakdown as an indicator of strong cyclical momentum in the global economy and China in particular.

Structural drivers beginning to give way to cyclical drivers

Over the past two years, the metals markets have seen rising prices with rising inventory, falling prices with falling inventory, cross metal correlation regardless of surplus and deficit, and physical tightness in the presence of all-time-high absolute exchange inventory in some metals. In our view, the key to understanding these seemingly conflicting developments is understanding the distinction between structural volatility and cyclical volatility. Specifically, we define structural volatility as the uncertainty around rising trend demand growth and the amount and cost of new production capacity required to meet that trend demand, which anchors a long-dated "fair price" for each metal based on long-term marginal costs. We view cyclical volatility as the uncertainty in the near-term supply and demand balance and availability of inventory, creating a discount to structural prices when material is readily available and a premium when supplies are tight.

We believe much of the price action across metals over the past two years has been driven by structural volatility, reflecting the market's struggle with anchoring a fair price in the presence of financial market risks and as China and other emerging market growth economies firmly take over leadership not only in first use manufacturing demand, but also in global economic growth and end use metals consumption growth as well. To complicate matters further, the higher trend growth rate from China has shifted up global trend demand as China grows off of an already significant base, and therefore creates potentially large supply gaps when projecting Chinese growth rates forward. A continuation of that growth would suggest needing to add as much mine capacity in the next 5 years as has been added in the previous 15 years, and much of the past 5 years has already seen sharply higher prices but disappointing supply growth. We believe it is this structural uncertainty that has driven periods of high cross-metals correlation regardless of differing near-term cyclical balances and inventory, as all metals face similar pressures in rising costs and a daunting investment cycle ahead (see Exhibit 1).

Exhibit 1: Diminishing financial and macro uncertainty has begun to push cyclical drivers back into focus
14-day average cross-metal correlations



Source: LME, Goldman Sachs Global ECS Research.

However, while structural volatility will likely continue to play a role in price movements, diminishing financial and macro uncertainty, as reflected in a rebound in prices toward structural support ranges in recent months, has begun to push cyclical drivers back into focus, as evidenced by generally lower cross-metal correlations over the past quarter. And we believe that cyclical fundamentals will increasingly drive relative price movements around these levels. As a result, we have reassessed our demand and supply outlook over the next five quarters, and in particular have extensively re-examined demand-side drivers across the metals. Although our demand views are largely shaped by Goldman Sachs' economists views of below-consensus growth in the US and advanced economies overall but above consensus global growth driven by the BRICs and other emerging markets, we find substantial differentiation in the key drivers of metals demand among the major consuming countries (see "Demand" sections in the metals-specific discussion below).

This review suggests extreme tightness in the copper market in 2011, with the rest of the complex remaining in surplus. These revised fundamental expectations have led us to change price expectations across the complex, summarized in Exhibit 2. Specifically, the exceptional tightness that we expect in copper suggests that the metal will remain the most leveraged to cyclical volatility, leading us to raise our 12-month copper price forecast to $11,000/mt from $8050/mt and introduce an average 2011 copper price forecast of $9,300/mt. It is important to emphasize that driving these higher forecasts are expectations that the cyclical tightness will generate a substantial premium in near-dated copper prices to our estimated long-dated anchor price for the metal, and that this premium could move substantially higher than our forecasts suggest on sticky demand or market positioning (see Exhibit 3). Given this view, we are taking profit on our Long Dec-10 copper trade recommendation, but suggest opening a long position in the Dec-11 copper contract.

Exhibit 2: Goldman Sachs Commodities base metals price forecasts

	Unit	Goldman Sachs Forecast						Avg 2010	Avg 2011	Market forward curve[1]		
		3m		6m		12m				3m	6m	12m
		New	*Old*	New	*Old*	New	*Old*					
Copper	$/mt	8,500	*7,900*	8,800	*7,975*	11,000	*8,050*	7,475	9,300	8,067	8,060	8,012
Aluminum	**$/mt**	**2,125**	***2,150***	**2,200**	***2,180***	**2,200**	***2,210***	**2,125**	**2,175**	**2,369**	**2,386**	**2,429**
Nickel	$/mt	20,000	*22,000*	19,500	*21,000*	19,500	*20,000*	21,475	19,550	24,153	24,100	23,714
Zinc	**$/mt**	**2,200**	***2,100***	**2,400**	***2,165***	**3,000**	***2,225***	**2,150**	**2,575**	**2,234**	**2,256**	**2,280**

[1]As of market close on October 4, 2010.

Source: Goldman Sachs Global ECS Research.

Exhibit 3: GS metals views and fundamental sensitivities

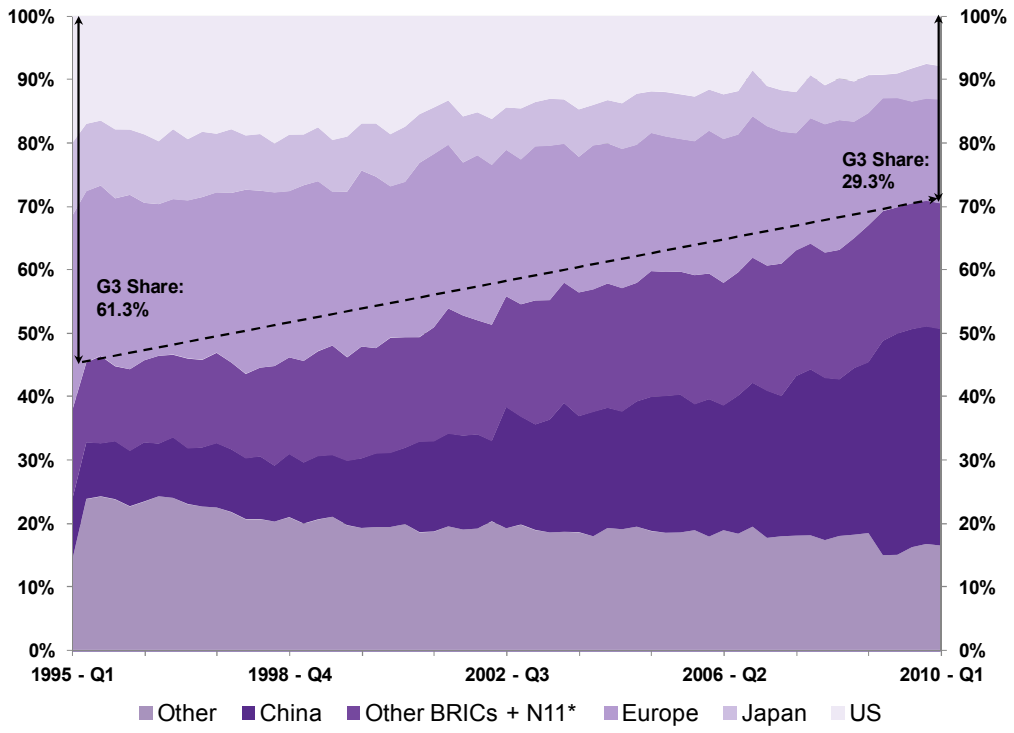
		Copper	Zinc	Nickel	Aluminum
2011 Projected Balance (Kmt)		-695	13	97	1294
Demand Sensitivity (Kmt)					
G3	1% Δ[1]	62	38	6	124
Europe	1% Δ	36	24	3	60
China	1% Δ	85	59	6	180
USA	1% Δ	16	8	1	44
ROW	1% Δ	51	31	1	112
Supply Sensitivity		+175/-300	+250/-300	+60/-80	+300/-500
5-year Anchor Price ($/mt)		6,700	2,400	20,000	2,300
2011 Cyclical Price Range ($/mt)		**7,000 - 13,500**	**2,100 - 3,100**	**19,500 -21,000**	**1,900 - 2,350**

[1] 1% change in 2011 demand.

Source: Goldman Sachs Global ECS Research.

Strengthening this constructive copper view is the generally still-cautious outlook held by many commercial and investor market participants. Many developed-market metal consuming industries have remained exceptionally hand-to-mouth in raw material purchasing due to the lack of clarity in end-use demand, tight credit conditions, and tight manufacturing margins from regional excess capacities. This conservative term-purchasing pattern has generally led to cautious near-term outlooks on the part of producers, particularly with "high" metals exchange inventories looming. And investors have followed suit, generally remaining reluctant to establish long positions despite mounting evidence of a sustained and likely growing deficit in the copper market. We also believe that the market does not fully appreciate just how far the G3 economies have fallen as a share of global demand (see Exhibit 4). Accordingly, in our view, G3 financial conditions matter far more to the global market than G3 industrial strength. This prevailing psychology suggests the potential for extreme upside price action as copper balances continue to tighten and inventories continue to decline in 2011, potentially forcing consumers to scramble for physical supply that producers are not fully equipped to provide and investors to rush to capture remaining upside.

Exhibit 4: G3 economies' share of global copper demand has fallen substantially
Percent



Source: CRU, Goldman Sachs Global ECS Research.

For nickel, the metal with the strongest cyclical leverage through 2010, we believe the current price already reflects the tight market heading into 4Q2010 that we had expected, but that cyclical leverage will diminish as 2011 progresses and the market moves into a supply surplus of 97Kmt. However, in the near term we believe that nickel provides a useful leading indicator for the 4Q2010 cyclical outlook, and see building LME inventories other than full plate cathodes as being a sign of market weakness, something we do not expect in our base case. Zinc and aluminum should also see lower cyclical leverage based on surpluses and high inventory. However, we continue to believe that besides copper, zinc possesses the most structural leverage given a tight medium-term outlook largely driven

by expected mine retirements and few large scale projects that could be developed in the current price environment. We remain neutral medium term for aluminum and nickel, seeing some cost and currency support ahead, but little chance for sustained deficits and sharply higher prices barring unforeseen events.

The largest downside risk to our current forecasts is the potential for deterioration in the financial and/or economic environment. However, we believe that the market is still overly focused on the risk of deterioration in the developed market economies, which is far less relevant than even five years ago given the low base and rapidly falling global share of metal demand. We again reemphasize that the larger risk is that deteriorating financial conditions in the developed markets spread to emerging market growth economies. Given the projected shortages in copper, we view copper as being most leveraged to near-term slowing below our expectations and view zinc as particularly vulnerable to tail risks and structural volatility, although all metals are likely to fall from current levels should this risk come to fruition as structural prices move lower.

Copper: Shortages and price spikes ahead

Even relatively conservative demand forecasts suggest that the global copper market will sustain deficits large enough to mostly deplete exchange inventories over the next five quarters, leading to periods of extreme volatility and price spikes, in our view. Despite this exceptionally high leverage to cyclical volatility and a growing consensus in this view, we believe that still-cautious positioning by both commercial and investor participants driven by macro concerns have the potential to exacerbate upside price volatility. As a result, we are raising our 3, 6 and 12-month copper forecasts to $8,500/mt, $8,800/mt, and $11,000/mt respectively, and introduce a full-year 2011 average price forecast of $9,300/mt. We also emphasize that $11,000/mt may not be the peak, as previous spikes in base metals saw quarterly peaks in excess of 100% to their long-dated price, driven by extreme volatility and a scramble for material. This suggests copper prices could climb in excess of $13,500 based on historical context. The combination of rising global trend growth driven by EM urbanization and a challenging medium-term supply growth outlook also suggests structural support for long-dated prices. Given these constructive views, we are taking profit on our long Dec-10 position, but recommending establishing a new long position in the Dec-11 contract. We believe that consumers should be actively pursuing upside protection and producers should be patient in their hedging programs, but buying puts to take advantage of inexpensive volatility in protecting against downside risks to our constructive view, most likely due to unexpected deterioration in the financial markets and broader macro environment.

Copper remains the metal most leveraged to cyclical volatility, in our view, given the combination of lower exchange inventories that continued to draw even through the seasonally-weak 3Q2010, robust demand largely driven by EM urbanization, and a constrained supply outlook with mine utilization effectively running at 100% and the pipeline of new supply particularly thin relative to expected demand needs. Although exchange inventories remain well-above the critically-low levels that persisted for much of the late 2000s prior to the Global Financial Crisis (GFC), we expect the above drivers will be sufficient to deplete these inventories over the course of 2011, forcing the market back into a period of demand rationing characterized by extreme levels of backwardation. Further, this backwardation will likely come on top of well-supported long-dated prices given the

overwhelming need for investment in new mine capacity to meet rising global trend demand fueled by the emerging economies.

Despite a growing consensus in this tight fundamental outlook - with any doubts typically pointed at unknowns in global or Chinese economic growth itself rather than any specific supply or demand driver in the copper market - one of the few surprises since May has been the cautious relative positioning in copper as the market remains focused on broad macro concerns rather than clearly identifiable upside risks in the quarters ahead. While we believe that copper has recovered price levels sufficient to build balance sheets and resume the daunting investment cycle ahead, we don't believe the market is positioned for expected sustained shortages and demand rationing ahead, reinforcing our constructive price view.

Demand: Even conservative estimates leave the market short

We have conducted extensive analysis on the key drivers of demand from the major copper consuming countries. As expected, copper demand has broadly been tied most closely to emerging market construction and infrastructure investment and global industrial production, with some variation of key drivers by country (see Exhibit 5). As discussed in detail below, we have used these historical relationships to reassess our view on demand over the next five quarters and on net are expecting global copper demand growth of 6.8% yoy in 2010 and 6.1% yoy in 2011. It is important to emphasize that these demand estimates are, if anything, conservative, in our view. China is clearly the major growth driver, but while Goldman Sachs maintains above-consensus forecasts for Chinese GDP growth, we are forecasting below the 10-year CAGR for copper consumption growth, primarily due to waning stimulus and consumption trend-reversion as much of the non-construction demand slows from levels pulled forward from stimulus. Further, we are embedding nearly flat demand growth from the US, Japan and South Korea, leaving overall world ex-China demand still well below pre-recession levels. Thus, while macro deterioration presents downside risk to this demand outlook, we believe that risks to our demand forecasts are skewed to the upside.

Exhibit 5: Copper demand has broadly been tied most closely to emerging market construction and infrastructure investment and global industrial production, with some variation of key drivers by country
Copper demand drivers and respective R^2

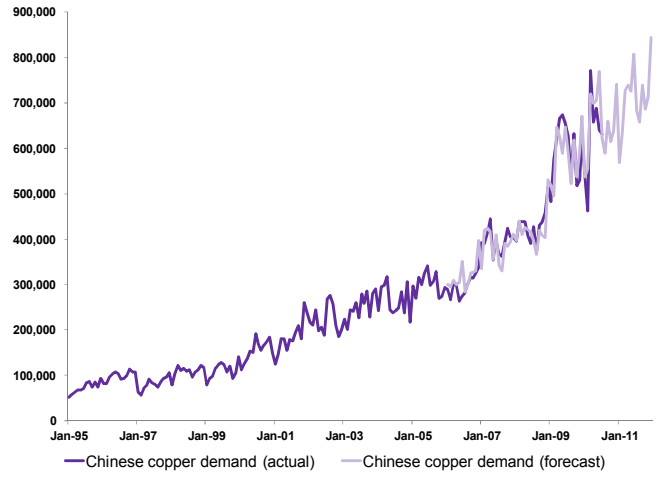
	China	US	Europe	Japan
Key Indicators	Gearing production	Electric equipment & appliance production	Electrical equipment production	Fabricated metal production
	Mom change in RRR	Housing starts	Residential building permits	Motor vehicle production
	Air conditioner production	Imports of industrial supplies & materials	Exports of manufactured products	Building construction start
	Metals to semis ratio		Transportation IP	Manufacturing machinery order (1m lag)
	FAI		Euro	Mom % change in fabricated metals inventory
	Auto production			
R-squared	**0.92**	**0.83**	**0.88**	**0.75**

Source: Goldman Sachs Global ECS Research.

China: Demand growth expected to slow but remain healthy

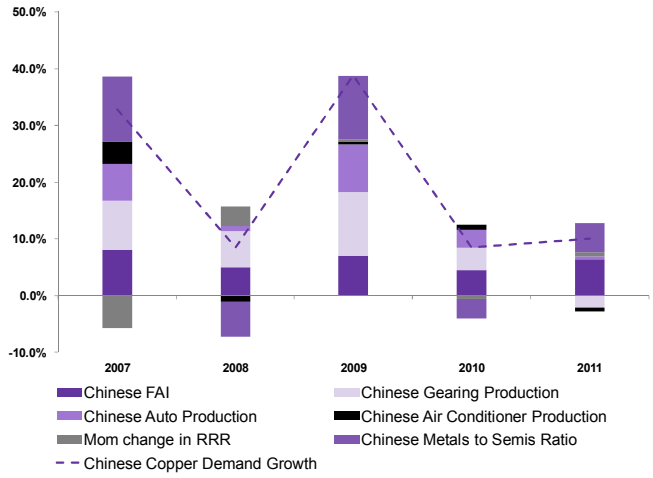
Our analysis identifies five key drivers of Chinese copper demand: Fixed Asset Investment (FAI)(reflective of infrastructure investment), auto and gearing production and air conditioner production (reflective of IP in sectors boosted by stimulus programs), the Reserve Requirement Ratio (RRR) (reflective of broad financial conditions), the ratio of refined metal supply to semis production (reflective of inventory cycles) and the ratio of refined to scrap metals prices (reflective of the substitution between refined and scrap metal). These combined indicators explain much of the historical volatility in demand (see Exhibit 6). In particular, supportive stimulus programs and substantial restocking largely motivated by higher availability in the wake of the global financial crisis drove much of the demand growth in 2009, while financial conditions clearly shifted from a drag on growth in 2007 to a boost in 2008 (see Exhibit 7).

Exhibit 6: Actual vs. GS predicted Chinese copper demand
Mt



Source: World Bureau of Metal Statistics (WBMS), Goldman Sachs Global ECS Research estimates.

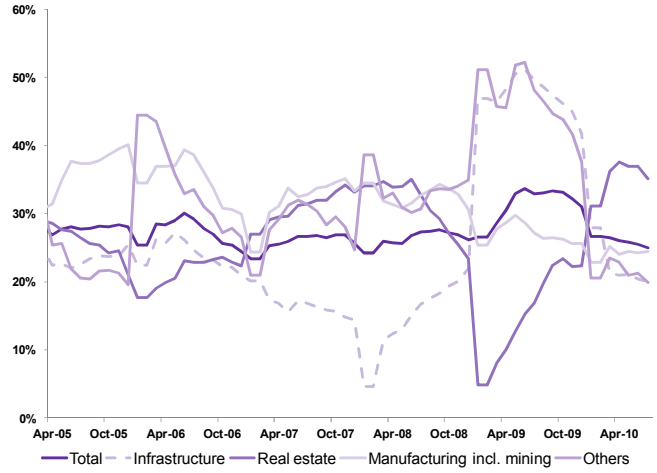
Exhibit 7: FAI will remain a key driver of still high single-digit copper demand growth for China through 2011
Percentage contribution to Chinese copper demand growth



Source: WBMS, Goldman Sachs Global ECS Research estimates.

Going forward, we believe that the combination of waning stimulus programs, payback as these programs have pulled forward demand, and a slightly higher availability of scrap will slow Chinese refined copper demand growth, as has already been generally the case thus far in 2010. We nonetheless maintain that FAI will remain a key driver of high single-digit growth through 2011 as China continues to expand its mega-cities and attract more freed labor from the rural areas resulting from improvements in agricultural productivity. Further, our China strategy team expects renewed infrastructure investments will likely be a key component of the shift in government policies from a tightening to a loosening stance anticipated in coming months as the country still has infrastructure needs and can afford to fund the projects, particularly as weaker global demand has kept commodity availability in check (see Exhibit 8; for more details please see *China Portfolio Strategy: Policy mix drives focused returns*, September 17, 2010). Incipient evidence of this shift has been acceleration of the pace in the National Development and Reform Commission's (NDRC) approval for new projects in recent months (see Exhibit 9).

Exhibit 8: Infrastructure investments will likely be a key component of an expected shift in Chinese government policies from a tightening to a loosening stance
Yoy growth in FAI by sector in percent



Source: National Bureau of Statistics (NBS).

Exhibit 9: Incipient evidence of increased infrastructure spend has been acceleration of the pace in the NDRC's approval for new projects
Number of new project approvals

Category	May-10	Jun-10	Jul-10	Aug-10	Total
Agriculture	1	1			2
Coal and Chemical		1	3		4
Transport	3	12	11	1	27
Health	8	9	5	3	25
Education	1	1	2		4
TV and Media		1	31		32
Electricity, gas and water production and supply	5	8	30	1	44
Environment	42	61	43		146
Others	6	1	1	1	9
Foreign	11	2	5		18
Total	**77**	**97**	**131**	**6**	**311**
Region	**May-10**	**Jun-10**	**Jul-10**	**Aug-10**	**Total**
East	17	18	53	2	90
West	32	43	42	2	119
Northeast	4	18	13		35
Central	11	15	17	2	45
National	2	1	1		4
Foreign	11	2	5		18
Total	**77**	**97**	**131**	**6**	**311**

Source: National Development and Reform Committee (NDRC), Goldman Sachs Global ECS Research.

Developed markets: Demand outlook remains lackluster

As expected, our analysis confirms that key drivers of developed market copper demand include construction, industrial production in copper-intensive industries such as wire and electrical equipment, and trade in industrial supplies and materials that reflects the extent of displacement of developed market production of metals-intensive semi-fabricated and finished goods by emerging market production. Thus, the deterioration in developed market residential and commercial construction over the last several years followed by the sharp downturn in industrial production during the GFC led to exceptionally weak developed market copper demand.

In 2010, we have generally observed a rebound in demand from the exceptionally depressed levels of 2009, largely driven by restocking in metals-intensive sectors as well as fiscal stimulus programs that have brought forward consumption. Europe and Japan were the largest beneficiaries of these drivers with Europe also supported by a more resilient construction sector and Japan in particular boosted by strong export demand for fabricated goods and machinery especially from China and the broader Asian region. On net, we expect 2010 year-over-year growth for the US, Europe and Japan, of 3.9%, 11.9% and 19.8%, respectively, which still leaves demand well below pre-recession levels.

Going forward, with restocking largely behind us, fiscal stimulus generally waning or even shifting into tightening as will likely be the case in the US, and little life broadly anticipated for the construction sector, we continue to expect positive, but lackluster developed market demand growth in copper. We nonetheless expect Europe to outperform growth in the other key developed market consumers driven by above-consensus economic growth forecasts, a moderately stronger outlook for construction, and a robust outlook for high-end manufacturing exports to China and other EM growth economies. On net, we expect 2011 year-over-year demand growth for the US, Europe and Japan, of 1.8%, 8.2% and 1.3% respectively.

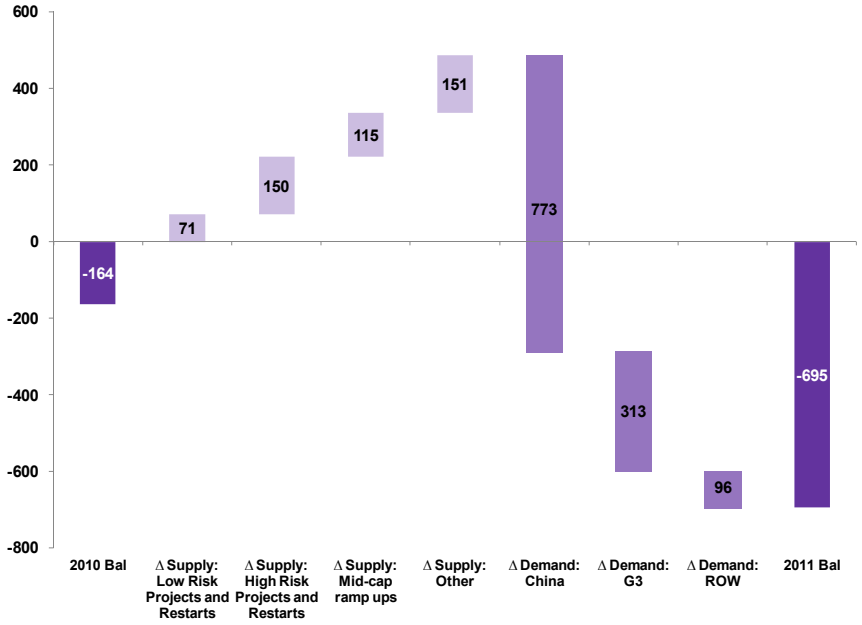
Supply: Growing, but not enough

We expect global supply growth of 651 Kmt, or 3.4% yoy, for 2011 after 813 Kmt in 2010 or 4.4% yoy, with roughly half of net increases coming from the majors and mid-cap producers in our equity coverage universe, and with a high level of confidence in growth from these projects and restarts. Codelco and Freeport McMoRan, the world's largest and second largest producers, respectively, are both forecast to grow modestly, with both having numerous incremental projects and expansions to offset year-over-year declines at large mines such as Grasberg, Chuquicamata and Codelco Norte division. Outside of our coverage universe, we believe that there is some downside risk to our forecasts, with roughly a third of net growth coming from Cananea, a third coming from mid-cap producer ramp ups that have thus far underperformed projections on difficult technology and/or operating environments, and a quarter coming from small- and medium-sized mines in an increasingly troubling environment in the DRC (see Exhibit 10). On balance, we are comfortable with this level of supply increase; while we are possibly conservative on the ramp-ups of a few projects with capable operators and proven technology, we are not factoring in excessive disruptions and declining grades that will likely come from higher and more volatile upward price spikes.

Other supply considerations that pose risk to our forecasts are potential increased supply of scrap and off-exchange inventory. Although we believe that a slight scrap reprieve might come from new primary scrap generation in Europe, we don't see much potential for primary increases out of Japan or the US or for additional secondary scrap to surface post the large scrappage programs brought about by 2010 fiscal stimulus. Our channel checks and regression analysis also lead us to believe there is little excess in off-exchange inventory left in the system, as DM producers and consumers have been running excessively tight working capital levels if anything, and Chinese restocking post the GFC has largely been worked off as evidenced by high semi production to refined ratios, accelerating declines in SHFE stock levels, and generally low year-over-year Chinese imports despite much higher industrial output levels.

In our view, the Chinese SRB holds the only significant non-exchange stockpile, likely holding upwards of 250-300 kmt, and would prudently sell or lend metal into the environment we are forecasting. While we believe this material is enough to keep deficits from running in excess of 5% of the market in any given quarter, and therefore highly useful in keeping a lid on price spikes over the next few quarters, we don't believe it is enough to fill the gap from sustained deficits through 2011, and should be exhausted by 4Q2011.

Exhibit 10: 2011 copper global supply-demand change summary
Kmt



Source: Brook Hunt, CRU, WBMS, Goldman Sachs Global ECS Research.

Putting it all together: Shortages and price spikes ahead

Given the above demand and supply expectations, we believe that the global copper market will enter sustained deficits where exchange inventory, the seller of last resort, will not be enough to maintain balance in the market. We estimate that the market has likely been in a deficit of about 100 kmt through the first three quarters of 2010, and project another 62 kmt deficit in the fourth quarter and sustained throughout 2011. On net, we expect the cumulative deficit over the next five quarters to be about 757 kmt against current exchange inventory of 546 kmt (see Exhibit 11).

Exhibit 11: Goldman Sachs copper balance table

		GS Forecasts							GS Forecasts			GS Forecasts	
(Kmt)	**2010Q1**	**2010Q2**	**2010Q3**	**2010Q4**	**2011Q1**	**2011Q2**	**2011Q3**	**2011Q4**	**2009**	**2010**	**2011**	**10 yoy%**	**11 yoy%**
World Consumption													
USA	370	405	396	365	388	402	394	380	1,479	1,536	1,564	3.9%	1.8%
European Union	772	859	792	869	910	910	830	914	2,943	3,293	3,564	11.9%	8.2%
Japan	244	269	268	267	262	271	266	263	875	1,048	1,062	19.8%	1.3%
Total G3	**1,386**	**1,534**	**1,456**	**1,501**	**1,560**	**1,583**	**1,490**	**1,557**	**5,297**	**5,877**	**6,190**	**11.0%**	**5.3%**
China	1,773	2,117	1,869	1,992	1,929	2,273	2,079	2,244	7,144	7,752	8,525	8.5%	10.0%
South Korea	191	221	233	212	217	242	221	222	936	858	903	-8.4%	5.3%
Rest of the World	1,207	1,245	1,287	1,266	1,207	1,245	1,313	1,291	4,871	5,005	5,056	2.8%	1.0%
Non G-3	**3,171**	**3,584**	**3,390**	**3,470**	**3,353**	**3,760**	**3,613**	**3,758**	**12,951**	**13,614**	**14,484**	**5.1%**	**6.4%**
World Consumption	**4,557**	**5,117**	**4,846**	**4,971**	**4,913**	**5,343**	**5,103**	**5,314**	**18,248**	**19,491**	**20,674**	**6.8%**	**6.1%**
World Production	**4,671**	**4,977**	**4,771**	**4,909**	**4,808**	**5,049**	**5,018**	**5,104**	**18,515**	**19,328**	**19,979**	**4.4%**	**3.4%**
Balance	**114**	**-140**	**-75**	**-62**	**-105**	**-294**	**-85**	**-210**	**267**	**-164**	**-695**		
Price ($/mt)	**7,274**	**7,050**	**7,275**	**8,300**	**8,600**	**8,800**	**8,875**	**11,000**	**5,199**	**7,475**	**9,300**		

Source: CRU, WBMS, Goldman Sachs Global ECS Research.

However, while we feel confident that the balance of risk lie squarely on the side of greater deficits, our forecasting approach is to model potential demand growth against incremental supply, and - given the level and availability of inventory - assess when cyclical tightness may drive up price and ration demand, even before inventory is depleted. Therefore, we are less confident in the overall balance projection, but very confident in the upside risk in the price. Specifically, we believe that annualized deficits at certain points in 2011 will lead to sharply higher prices and volatility in 2Q2011 and 4Q2011 in particular. In addition, we generally believe that still-cautious positioning from both corporates who have been hesitant to plan based on expected macro improvement given the poor experience of recent years, and investors still largely focused on financial and economic tail risk, suggest the market has yet to price the likely shortages ahead and may end up scrambling as tightening fundamentals and ever-lower inventory levels become increasingly apparent.

Although it is nearly impossible to forecast the extreme highs in a volatile and backwardated environment, we believe that the price will likely sustain a 35-65% premium to fair value to balance the market and remove potential demand not able to compete for limited supply. We have updated our forecast through 2011 to reflect this environment and expect average 2011 prices of $9,300/mt.

Given these views, we are taking $1,558/mt profit on our long Dec-10 trade first recommended on May 18, 2010, but are recommending establishing a new long position in the Dec-2011 contract. We would also view high OTM call options as a potential alternative given the relatively inexpensive volatility that we expect to move higher. From a hedging perspective, we believe that consumers should be actively pursuing upside protection and producers should be patient in their hedging programs, but buying puts to take advantage of inexpensive volatility in protecting against downside risks to our constructive view, most likely due to unexpected deterioration in the financial markets and broader macro environment.

Looking further out, we see some chance for reprieve in fundamentals and prices in early 2012, particularly as the last wave of expansions and new projects stalled out from the GFC ramp up. However, we believe that prices will remain firmly anchored around $7,000/mt over the medium term, as we believe a range of $6,500/mt to $7,500/mt is needed to pace supply against rising trend demand potential. Over the next 18-24 months the mining industry will need to commence detailed engineering and long-lead time ordering for over 5 mmt of additional capacity needed by YE 2015, or roughly equivalent to the incremental capacity added over the past 10 years; 10 years that had a larger initial pipeline and more brownfield and expandable capacity in off-site infrastructure as well.

Zinc: Small surpluses in the near term, deficits over the medium term

We expect zinc to remain in a near-term surplus driven by short-term supply growth, but expect a moderately tighter outlook on reduced growth in concentrate and scrap availability, leaving the market more balanced in the year ahead, and possibly swinging to times of deficit over the course of 2011. This tighter outlook leads us to raise our 3, 6 and 12-month zinc forecasts to $2,200/mt, $2,400/mt, and $3,000/mt, respectively, and introduce a 2011 average price forecast of $2,575/mt. Over the longer term, we maintain that substantial mine investments will be required to keep up with demand. As a result, we believe that long-dated prices will need to move higher and that near-to-medium term price action will likely be driven by structural volatility

potentially owing to rising costs, currency appreciation in the marginal producer – China – and/or shifting market views on trend demand growth. Given these views, we recommend that consumers take advantage of price dips to lock in long-dated hedges, and producers should be cognizant of zinc's high leverage to macro volatility and engage in shorted-dated programs to protect against downside risk should current surpluses fail to diminish, mostly likely owing to unexpected deterioration in the financial markets and the broader macro environment.

Zinc stands out as the metal that's had one of the weakest cyclical performances year to date, but perhaps as strong an upside as copper on a five-year horizon. . While zinc and copper share leverage to the EM urbanization story, unlike copper, zinc continues to battle near-term supply surpluses from low barriers to entry in small mines coupled with high output from some of the largest known geologic concentrations of zinc, namely Red Dog, Century, and Angouran. Thus, we continue to see lower leverage to the cyclical outlook relative to copper and generally expect rangebound prices over the next few quarters, but expect prices to move higher by the end of 2011 as periods of deficit occur and the market starts pricing in the shortages expected beyond 2011.

Over the medium term, however, we do not believe that the known geologic setting exists for this supply dynamic to continue, at least not in the politically stable jurisdictions where large infrastructure investments are needed to open up the known large deposits. This is particularly the case as Century retires in 2014, removing half a million tonnes of mine supply from the market. The significant requirements for mine investment ahead, exacerbated by growing trend demand from EM urbanization, suggest that long-dated prices will need to move higher to carry temporary surpluses in inventory and incentivize large scale zinc investments. Accordingly, zinc is highly leveraged to structural drivers, in our view, and we see structural volatility dominating zinc price action until fundamentals tighten over the next several years.

Demand: Slowing but still robust

Our comprehensive demand analysis of the major zinc consuming countries confirms that zinc demand has been closely tied to emerging market infrastructure investment, the global auto sector and production of fabricated metals products and coated and galvanized sheets, all of which leverage the metal's strong durability and anti-corrosive properties (see Exhibit 12). As discussed in detail below, we have used these historical relationships to reassess our view on demand over the next five quarters and on net are expecting global zinc demand growth of 11.7% yoy in 2010 and 6.1% yoy in 2011. The stronger growth in 2010 primarily reflects the large base effects from exceptionally depressed demand levels in the developed economies last year during and in the aftermath of the GFC. However, growth was also boosted by fiscal stimulus programs that encouraged infrastructure spend and auto production in particular. Our models suggest that the winding down, if not reversal, of this stimulus in 2011 will slow global zinc demand growth in 2011, but to a still robust pace relative to history.

Exhibit 12: Zinc demand has been closely tied to emerging market infrastructure investment, the global auto sector and production of fabricated metals products and coated and galvanized sheets
Zinc demand drivers and respective R^2

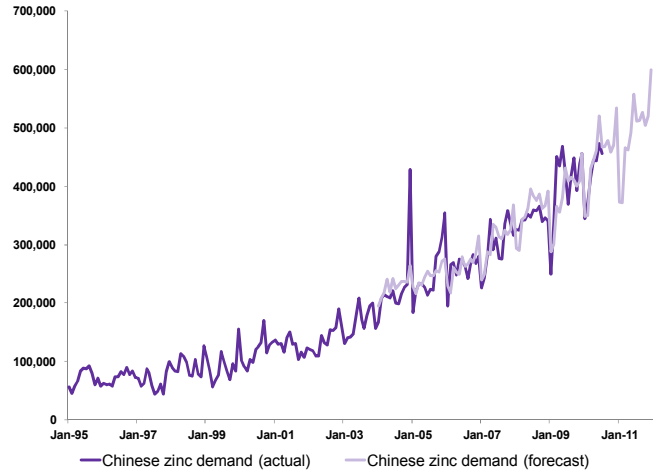
	China	US	Europe	Japan
Key Indicators	FAI	Motor vehicle parts production	Motor vehicle production	Building construction start (6m lag)
	Coated & galvanized sheet production	Fabricated metals products production	Imports of manufactured products	Steel production
	Scrap to refined ratio	US 10 year yields	US 10 year yields	3-month TIBOR
		Imports of industrial supply & materials	Euro	Mom % change in fabricated metals inventory (5m lag)
		3-month zinc price		Mom % change in steel inventory (2m lag)
R-squared	**0.78**	**0.91**	**0.91**	**0.80**

Source: Goldman Sachs Global ECS Research.

China: FAI will likely support demand growth

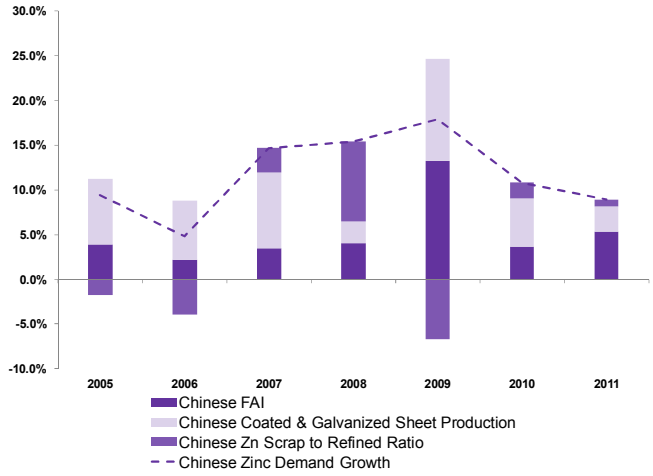
Chinese zinc demand has largely been driven by infrastructure spending and demand for high-quality construction materials. Specifically, the indicators that have proven most predictive in our models are: FAI (reflective of infrastructure investment), coated and galvanized sheet production (reflective of the special usage of zinc as a protective coating to building materials), and the zinc scrap-to -refined price ratio (reflective of substitution effects), which combined have explained much of the volatility in Chinese zinc demand (see Exhibit 13). In 2009 in particular, FAI and coated and galvanized sheet production benefited substantially from stimulus-led expansion in China's infrastructure and a sharp rise in auto sales as well extensive expansion in the Chinese property sector, which drove a significant jump in zinc demand despite considerable refined to scrap substitution during the year due to relatively cheap scrap prices (see Exhibit 14).

Exhibit 13: Actual vs. predicted Chinese zinc demand
Mt



Source: WBMS, Goldman Sachs Global ECS Research estimates.

Exhibit 14: We anticipate a further modest slowing in zinc demand largely on waning fiscal stimulus, but still expect FAI and coated and galvanized sheet production to support relatively strong zinc demand growth
Percentage contribution to Chinese zinc demand growth



Source: WBMS, Goldman Sachs Global ECS Research estimates.

In 2010, zinc demand growth has slowed moderately from 2009's very strong pace, driven by a slowdown in FAI and relatively depressed galvanized sheet prices, which prompted some domestic producers to cut back production or pull forward maintenance. Going forward, we anticipate a further modest slowing in zinc demand largely on waning fiscal stimulus, but still expect FAI and coated and galvanized sheet production to support relatively strong zinc demand growth of 8.8% for 2011. In particular, while Goldman Sachs strategists expect infrastructure spending to benefit from government loosening policies in coming months, we also anticipate ongoing robust demand for coated and galvanized sheet from the construction sector as China continues to pursue its urbanization process and, more importantly, rehabilitation of old and shanty buildings with higher-quality building materials such as galvanized sheet.

Developed markets: Demand growth expected to stagnate in 2011

As expected, our analysis confirms that key drivers of developed market zinc demand are similar to those in the emerging markets, including production of fabricated metals goods, motor vehicle parts and construction starts and steel production to name a few, again, all of which leverage zinc's unique protecting properties. We also find that trade in industrial supplies and materials is also significant, likely reflecting the extent of displacement of developed market production of metals-intensive semi-fabricated and finished goods by emerging market production, as we also find with copper. Thus, the sharp downturn in industrial production during the GFC led to exceptionally weak developed market zinc demand.

Similar to copper, in 2010 we have generally observed a rebound in demand from the exceptionally depressed levels of 2009, largely driven by restocking in metals-intensive sectors as well as fiscal stimulus programs that have brought forward consumption. Japan and South Korea have led the growth supported by both fiscal stimulus programs in Japan in particular as well as strong export demand for fabricated goods especially from China and the broader Asian region. On net, we expect 2010 year-over-year growth for the US,

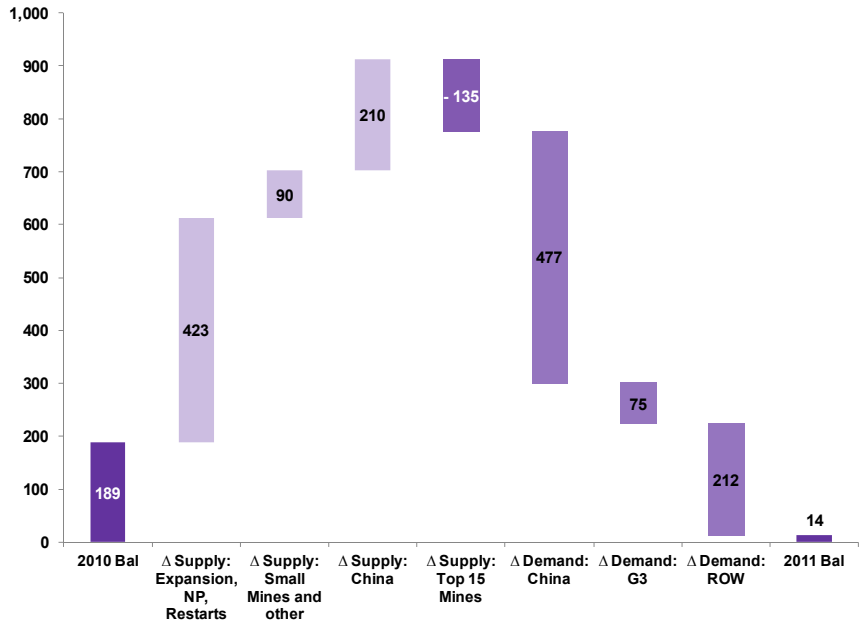
Europe and Japan, of 8.5%, 16.4% and 18.4% respectively, which generally leave demand well below pre-recession levels.

Going forward, we believe the winding down or outright reversal of fiscal stimulus and still generally poor outlook for construction in the US and Japan in particular suggests relatively flat demand growth for zinc from most of the developed economies. On net, we expect 2011 year-over-year growth for the US, Europe and Japan, of -1.0%, 3.2% and 1.4%, respectively.

Supply: Growth expectations declining but still high in 2011

We expect global supply growth of around 590kt, or 4.6% yoy, in 2011 predominately from the ramp up of new projects such as the Penasquito gold mine, as well as restarts and ramp up of numerous projects delayed during the GFC (see Exhibit 15). We forecast 423kt of incremental capacity from new projects, an additional 210kt of Chinese zinc mine growth, and 90kt from other small and mid-sized mines globally. While there are no major zinc mine closures planned in 2011, partially offsetting the growth is the potential combined loss of 135 kmt from the world's top 15 mines, mostly from changing Antamina mining sequence, but also possibly from Red Dog losses in the ramp up of the Aqqaluk deposit, and rapidly aging production at Brunswick. Further out, mine retirements will play a larger role. In addition, we believe that most of the remaining advanced stage pipeline projects will be behind us by 2012, reinforcing a tighter medium-to-longer term supply outlook, as demand growth is already outpacing supply growth, even with GFC shelved projects and low mine retirements.

Exhibit 15: 2011 Zinc global supply-demand change summary
Kmt



Source: Brook Hunt, CRU, WBMS, Goldman Sachs Global ECS Research estimates.

Putting it all together: Small surpluses in the near term, deficits over the medium term

On net, we believe that the zinc market was likely in a 169 kmt surplus in the first half of 2010, though in slight deficit through 3Q2010 owing to Chinese mine closures on poor economics, and we expect a 70 kmt surplus in 4Q2010 as new projects and expansions continue to ramp up and Chinese smelters increase utilization on new concentrate supply (Exhibit 16). We believe that this surplus will temporarily build through 1Q2011, but then see a chance for inventory draws through the middle part of the year before ending the year in balance largely owing to a moderately tighter supply outlook in reassessing the current project pipeline.

Exhibit 16: Goldman Sachs zinc balance table

	GS Forecasts								GS Forecasts			GS Forecasts	
(Kmt)	2010Q1	2010Q2	2010Q3	2010Q4	2011Q1	2011Q2	2011Q3	2011Q4	2009	2010	2011	10 yoy%	11 yoy%
World Consumption													
USA	248	192	193	198	195	205	213	210	766	831	823	8.5%	-1.0%
European Union	545	647	570	596	587	630	582	634	2,027	2,358	2,434	16.4%	3.2%
Japan	125	127	128	132	126	128	132	134	433	513	520	18.4%	1.4%
Total G3	**918**	**967**	**891**	**926**	**908**	**964**	**927**	**978**	**3,226**	**3,702**	**3,777**	**14.8%**	**2.0%**
China	1,132	1,412	1,413	1,463	1,211	1,511	1,550	1,625	4,888	5,420	5,897	10.9%	8.8%
South Korea	149	73	136	141	124	133	134	145	392	499	537	27.3%	7.7%
Rest of the World	774	634	809	702	789	674	866	763	2,719	2,919	3,092	7.3%	5.9%
Non G-3	**2,055**	**2,119**	**2,358**	**2,306**	**2,124**	**2,319**	**2,550**	**2,533**	**7,999**	**8,837**	**9,526**	**10.5%**	**7.8%**
World Consumption	**2,973**	**3,086**	**3,249**	**3,232**	**3,031**	**3,282**	**3,477**	**3,511**	**11,225**	**12,539**	**13,303**	**11.7%**	**6.1%**
World Production	**3,068**	**3,159**	**3,199**	**3,302**	**3,172**	**3,270**	**3,358**	**3,517**	**11,472**	**12,728**	**13,316**	**10.9%**	**4.6%**
Balance	**95**	**74**	**-50**	**70**	**141**	**-13**	**-120**	**5**	**247**	**189**	**13**		
Price ($/mt)	**2,307**	**2,050**	**2,050**	**2,150**	**2,250**	**2,400**	**2,525**	**3,075**	**1,689**	**2,150**	**2,575**		

Source: CRU, WBMS, Goldman Sachs Global ECS Research.

These expectations suggest cyclical volatility will likely remain low over the next few quarters and prices will maintain a range of 2100 to 2400 through the first half of 2011, moving up by 2011 year end to close around 3100 – higher than we had previously expected given the modestly tighter supply outlook. Accordingly, we are introducing a 2011 average price forecast of $2,575/mt. Looking further out, we believe that a tightening balance in 2012 will likely substantially dent global stockpiles, generating cyclical price appreciation.

However, even prior to this cyclical tightening, we believe that structural support will help anchor prices between $2100/mt and $2500/mt, representing the price needed to build 3-4 mmt of new capacity over the next five years, or more than the capacity added over the previous ten years, which we estimate will be required to meet trend demand growth. While zinc deposits are not rare, and hence the traditional low barriers to entry, and the ability for small Chinese mines to drive down returns in the industry with competitive cost structures that don't price in environmental externalities, we believe that the sheer scale of the new requirements will require much higher long-dated prices. Simply put, less than $2100/mt does not sustain the industry, let alone build new mines. Accordingly, we believe that structural price volatility will likely dominate zinc price action in the near-to-medium term.

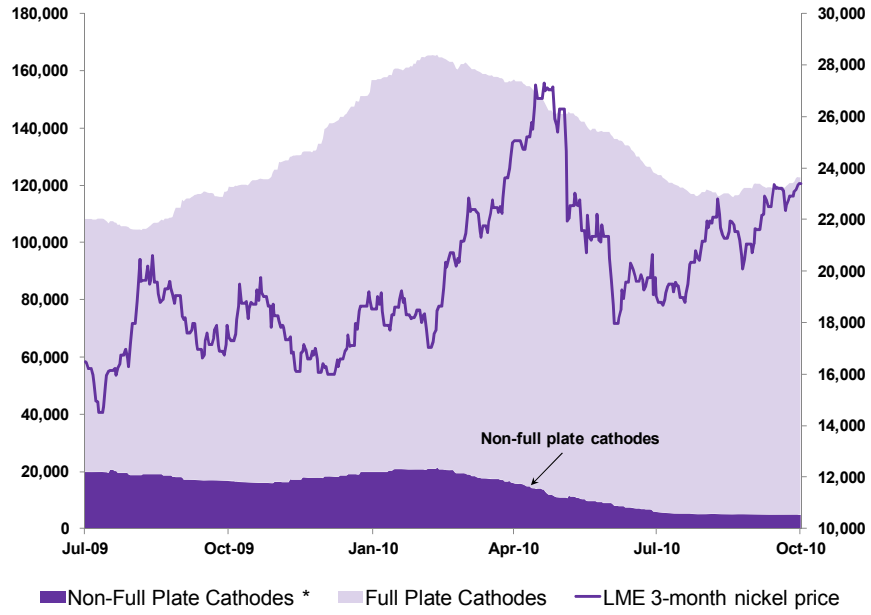
Given these views, we recommend that consumers with zinc exposure take advantage of any price dips to lock in long-dated hedges and that producers engage in shorted-dated programs to protect against downside risk should current surpluses fail to diminish, mostly likely owing to unexpected deterioration in the financial markets and broader macro environment.

Nickel: Downside risks ahead

Although nickel fundamentals will likely remain tight through the end of 2010, we expect returning Vale Inco supply, new project commissioning and ramp up, and slowing consumption growth into 2011 will push the market into a sizable surplus in 2011. Accordingly, we believe that prices will become less leveraged to cyclical volatility and that price risk is skewed to the downside. As a result, we are reducing our 3, 6 and 12-mo forecasts to $20,000/mt, $19,500/mt, and $19,500/mt, respectively, and introducing a 2011 average price forecast of $19,550/mt. Despite our broadly negative outlook for 2011, the need for new projects over a longer 5-10 year horizon suggests long-dated prices should remain anchored in the $19,000/mt to $22,000/mt range, leaving the market vulnerable to structural volatility as its leverage to cyclical volatility declines. Given these views, we believe that consumers should be patient in establishing hedges, although should consider layering in some upside protection given the possibility that supply growth disappoints on technical difficulties as has been the case for key projects in recent years. We believe that current price levels provide a compelling opportunity for producer hedging.

After spending most of 2010 as the top performing base metal in our coverage, we expect softer quarters ahead for nickel on returning Vale-Inco supply, new project commissioning and ramp up, and a slowing consumption growth rate into 2011 owing to a weak developed market construction outlook, targeted government policies to slow China's crude steel production and waning fiscal stimulus that had lent support to nickel-intensive sectors such as home appliances. Although we were positive in our price outlook before and after the late July rally, despite very soft 3Q2010 stainless production, we reiterate that it was a temporary tightness that drove our view, particularly in specialty refined products, and we believe that prices will fall off into 1Q2011 as this tightness diminishes. In particular, we believe that the return of long-disrupted supply from Vale-Inco's Sudbury operations following the resolution of a year-long strike in recent months will help relieve this tightness (see Exhibit 17). Accordingly, we believe that the high cyclical volatility that has driven nickel prices for much of this year will wane into 2011.

Exhibit 17: Tightness in the specialty non-full plate cathodes market has been driving prices up
LME exchange inventory in Mt, left axis; LME 3-month nickel price in $/mt, right axis



* Non-full plate cathodes include cut cathodes, pellets, and briquettes

Source: LME, Goldman Sachs Global ECS Research.

However, we maintain that despite the expected growing nickel surplus over the next year, substantial mine investment will be required to meet global trend demand growth over a longer horizon, which will underpin long-dated prices around current ranges. As a result, we believe that as leverage to cyclical volatility diminishes, structural volatility will become the key driver of nickel price action.

Demand: Looking weak into 2011

Our demand analysis of the major nickel consuming countries confirms that nickel consumption is closely tied to emerging market infrastructure investment, home appliance production, steel production, and construction (see Exhibit 18). As discussed in detail below, we have used these historical relationships to reassess our view on demand over the next five quarters and on net are expecting global nickel demand growth of 6.1% yoy in 2010 and 5.0% yoy in 2011. Similar to the other metals, the relatively strong anticipated growth for 2010 mainly reflects sizeable base effects from last year's depressed levels in the developed markets while the situation was largely the reverse in China with exceptionally strong growth in 2009 aided by supportive government policies and restocking coming off sharply in 2010. In 2011, our models suggest lackluster global demand growth generally owing to a weak developed market construction outlook, targeted government policies to slow China's crude steel production and waning fiscal stimulus that had lent support to nickel-intensive sectors such as home appliances. China's demand growth is nevertheless expected to outperform that of other key consuming economies.

Exhibit 18: Nickel consumption is closely tied to emerging market infrastructure investment, home appliance production ,steel production, and construction
Nickel demand drivers and respective R^2

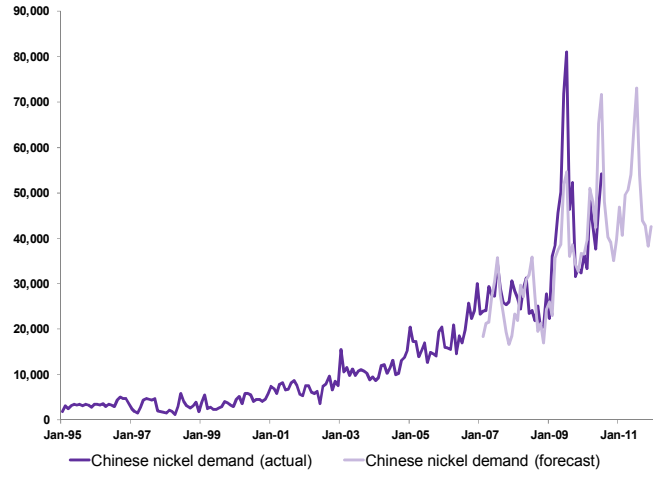
	China	US	Europe	Japan
Key Indicators	Refrigerator production	Housing starts	Transportation IP	Steel production
	FAI (1m lag)	Machinery production	Residential Building Permits	Mom % change in fabricated metals inventory
	Crude stainless steel production (1m lag)	US 10 year yields	Imports of machinery and transportation equipments	
	Floor space under construction (5m lag)	Imports of industrial supply & materials	Nickel 3-27 month timespread	
	Mom % change of steel product inventory	Exports of industrial supply & materials	3-month Nickel price	
		Value of inventory - Non-ferrous		
R-squared	**0.65**	**0.81**	**0.88**	**0.52**

Source: Global Sachs Global ECS Research.

China: Demand growth regaining more positive territory in 2011

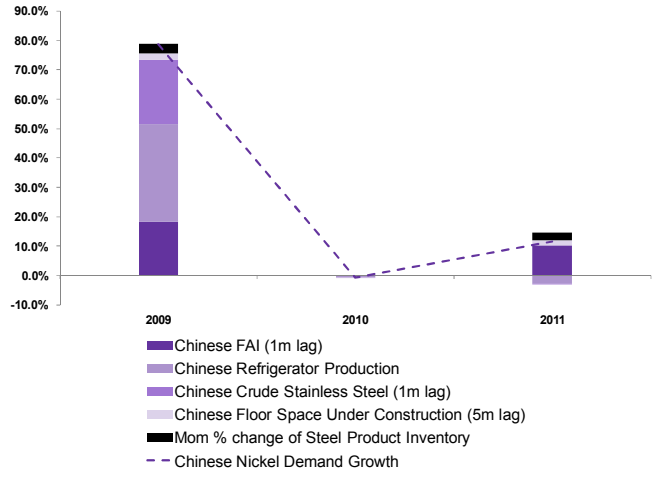
Chinese nickel demand is closely tied to infrastructure investment, home appliance production, crude stainless steel production and construction. Specifically, the indicators that have proven most predictive in our models include: FAI (reflective of infrastructure investment), refrigerator production (reflective of exposure to consumers), Chinese crude stainless steel production (reflective of the key usage of nickel as a partner with steel to improve the durability, strength, and resistance to corrosion of the end product), Chinese floor space under construction (reflective of construction demand from the property sector), and steel product inventory (reflective of inventory cycle in end-use sectors). Despite nickel's long consumer chain, these variables combined have captured past variations in Chinese nickel demand relatively well (see Exhibit 19).

Exhibit 19: Actual vs. predicted Chinese nickel demand
Mt



Source: WBMS, Goldman Sachs Global ECS Research estimates.

Exhibit 20: For 2011, we expect a moderate improvement in consumption growth despite some payback from the winding down of stimulus programs
Percentage contribution to Chinese nickel demand



Source: WBMS, Goldman Sachs Global ECS Research estimates.

Specifically, Chinese nickel demand surged in 2009 driven in large part by a sharp rise in domestic home appliance sales owing to the introduction of home appliance subsidy and scrappage programs (with Chinese refrigerators being a representative of the big-ticket items included in the program) (see Exhibits 20 and 21). Further, better-than-expected macro indicators and a bullish 2H2009 outlook boosted by the government's fiscal stimulus package prompted steel mills to rapidly ramp up production early in the year (with some reaching a all-time high utilization of 90%) to meet higher end-use and restocking demand, also captured by our model. Substantial expansion in China's infrastructure and property sector also underpinned by government stimulus contributed to strong nickel demand growth.

Exhibit 21: Summary of the Chinese home appliance stimulus program

	Release Date	Subsidized products	Applicable regions	Subsidy amount	Effective period
Home appliances to the countryside	12/25/2007	Color TV, Refrigerator, Cell phone of which: Color TV < Rmb 1,500 / unit Refrigerator < Rmb 2,000 / unit Cell phone < Rmb 1,000 / unit	Shandong, Henan, Sichuan	13% of sales price	Dec 1, 2007 - May 31, 2008
	5/26/2008	*[Same as above]*	Shandong, Henan, Sichuan, and Qingdao City	*[Same as above]*	*[Extended]* Jun 1, 2008 - Dec 31, 2008
	10/16/2008	Color TV, Refrigerator, Cell phone, Washing machines of which: Color TV < Rmb 2,000 / unit Refrigerator < Rmb 2,500 / unit Cell phone < Rmb 1,000 / unit Washing machine < Rmb 2,000 / unit	Inner Mongolia, Liaoning, Dalian, Heilongjiang, Anhui, Shandong, Qingdao, Henan, Hubei, Hunan, Guangxi, Chongqin, Sichuan, Shanxi	*[Same as above]*	Shandong (incl Qingdao), Henan, Sichuan: extended to Nov 31, 2011 Others: Dec 1, 2008 - Nov 31, 2012
	12/10/2008	*[Same as above]*	*[Expanded]* Jilin, Xinjiang, Gansu, Qinghai, Ningxia, Tibet, Beijing, Tianjin, Hebei, Shanxi, Shanghai, Jiangsu, Zhejiang, Ningbo, Fujian, xiamen, Hainan, Jiangxi, Guangdong, Shenzhen, Yunan, Guizhou	*[Same as above]*	Feb 1, 2009 - Jan 1, 2013
	3/5/2009	*[Expanded]* Color TV, Refrigerator, Cell phone, Washing machines, Motorcycle, Computer, Water heater, Air conditioner, Microwave, Electromagnetic oven of which: Color TV < Rmb 3,500 / unit Refrigerator < Rmb 2,500 / unit Cellphone < Rmb 1,000 / unit Washing machine < Rmb 2,000 / unit Air conditioner (wall-mounted) < Rmb 2,500 / unit Air conditioner (console) < Rmb 4,000 / unit Water heater (storage type) < Rmb 1,500 / unit Water heater (Gas-fired) < Rmb 2,500 / unit Water heater (solar) < Rmb 4,000 / unit Computer < Rmb 3,500 / unit Microwave < Rmb 1,000 / unit Electromagnetic oven < Rmb 600 / unit	*[Same as above]*	*[Same as above]*	
	3/30/2010	*[Expanded]* Allowed each province to add one more discretionary item to the list above	*[Same as above]*	*[Same as above]*	
Home appliances scrappage program	7/6/2009	TV: Rmb 400 / unit (upside limit) Refrigerator: Rmb 300 / unit (upside limit) Washing machine: Rmb 250 / unit (upside limit) Computer: Rmb 400 / unit (upside limit)	Beijing, Tianjin, Shanghai, Jiangsu, Zhejiang, Shandong, Guangdong, Fujian, Changsha	For consumers: 10% of sales price but with limits For transportation & disposition companies: certain tranportation & disposition subsidies	Jun 1, 2009 - May 31, 2010
	6/3/2010	TV, Refrigerator, Washing machine, Air conditiioner, Computer	[Expanded] to include: Hebei, Shanxi, Liaoning, Dalian, Jilin, Helongjiang, Anhui, Fujian, Xiamen, Jiangxi, Henan, Hubei, Hunan, Chongqin, Sichuan, Guizhou, Shanxi, Gansu, Qinhai [Preparation Mode] Inner mongolia, Guangxi, Hainan, Yunnan, Tibet, Ningxia, Xinjiang	*[Same as above]*	Jun 1, 2010 - Dec 31, 2011

Source: Goldman Sachs Global ECS Research.

However, entering 2010, demand growth lost momentum across the board. The counter-cyclical monetary tightening, stricter credit control over banks' balance sheets, and uncertainties in the external environment have generally slowed overall activity growth in the country, particularly during the middle of the year. Waning government stimulus and tightening measures targeting the property sector have also kept demand growth

contributions from FAI and floor space construction muted. Further, deteriorating margins in steel mills from rising cost inflation and large fluctuations in product prices during 1H2010, combined with targeted energy-related production constraints on the steel sector, have prompted many mills to reduce production or completely shut down operations, halting growth from stainless applications.

However, for 2011, we expect a moderate improvement in consumption growth to 11.8% despite some payback from the winding down of stimulus programs, as an anticipated loosening in government policy is expected to boost the demand contribution from FAI and the construction sector is also expected to lend some support. Although the government has implemented a series of tightening measures targeted at the property sector, these measures have focused on curbing price appreciation and speculation while encouraging developers to push quality housing projects onto the market. At the same time, a substantial focus remains on ensuring social housing projects deliveries. As a result, we believe that the property-related policies on net will support rather than dent metals demand. We also expect 2011 nickel demand growth to further benefit from an improving steel inventory cycle with declining product inventories on the back of limited supply growth to drive restocking needs.

Developed market demand: Turning negative in 2011

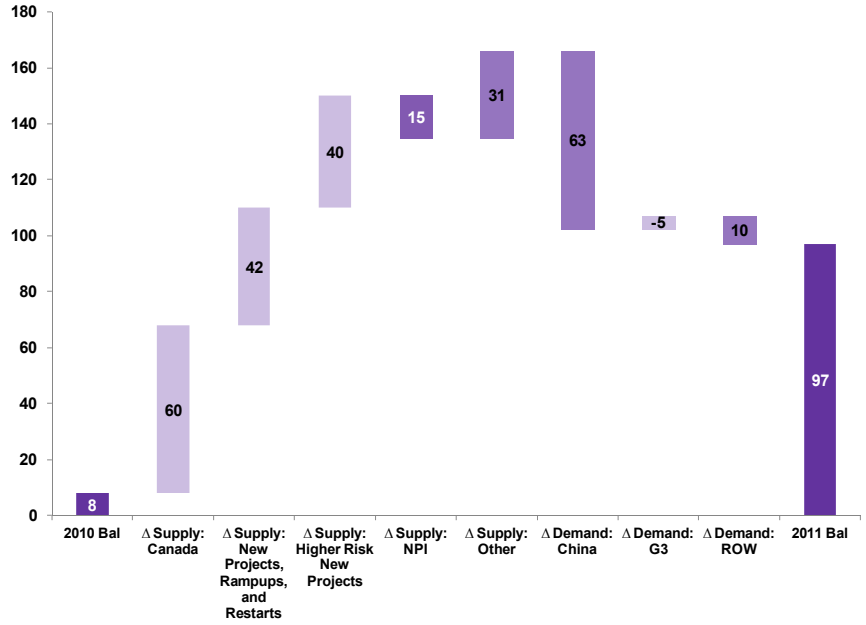
Although the most predictive indicators for developed market nickel demand varied substantially by country, our analysis generally confirmed that demand was most closely tied to the home appliance sector, steel production, construction and the transport sector. We also find that trade in industrial supplies and materials is also significant, likely reflecting the extent of displacement of developed market production of metals-intensive semi-fabricated and finished goods by emerging market production, similar to the other metals. Accordingly, again similar to the rest of the base complex, developed market nickel demand generally weakened substantially in 2009 owing to the sharp deterioration in industrial sectors and construction, which had already been in decline prior to the GFC.

In 2010, we are predicting a strong 15.5% rebound in developed market demand for nickel relative to the depressed demand levels in 2009. However, our models suggest that a weak outlook for construction, particularly in the US and Japan, and waning stimulus programs for consumer goods will considerably slow demand growth in 2011, particularly as much of the steel restocking that boosted demand this year is largely behind us. In fact, we are expecting moderately negative demand growth for both the US and Japan of -4.5% and -4.3% respectively, with Europe expected to rise only 2.5%.

Supply: Rebound expected on less disruption and more capacity

We expect nickel supply to grow by a record 158 kmt in 2011, 11.3% yoy, including 60 kmt of additional material out of Canada, which may prove to be a conservative restart ramp up estimate out of Vale Inco, 82 kmt from new projects and ramp ups, 15 kmt less in NPI output given the oversupplied market, and 31 kmt additional output from other net operations. Of the 82 kmt in new projects and ramp ups, roughly half is projected to come from projects the market is still skeptical can deliver, including 20 kmt from Goro, and new tonnage from Ravensthorp and Ambatovy (Exhibit 22). We take a relatively neutral view on these projects given our projected surplus in 2011, but have also taken a fairly conservative approach to projecting new-start performance of the more traditional technology.

Exhibit 22: 2011 nickel global supply-demand change summary
Kmt



Source: Brook Hunt, CRU, WBMS, Goldman Sachs Global ECS Research.

Putting it all together: Downside risks ahead

On net, we believe that the market will end 2010 with an annual surplus of 8 kmt, and together with our forecasted 69 kmt (5.0%) growth in consumption for 2011, will not be nearly enough to absorb a significant 158 kmt increase in additional supply (Exhibit 23). While we don't believe the quarterly surpluses will be extremely large until 4Q2011, we believe that a gradual return of premium refined products from Vale Inco will significantly alleviate specific tightness in the market, allowing exchange stocks to build and pressuring premiums and time spreads as early as late December 2010 or 1Q2011.

Exhibit 23: Goldman Sachs nickel balance table

	GS Forecasts								GS Forecasts			GS Forecasts	
(Kmt)	**2010Q1**	**2010Q2**	**2010Q3**	**2010Q4**	**2011Q1**	**2011Q2**	**2011Q3**	**2011Q4**	**2009**	**2010**	**2011**	**10 yoy%**	**11 yoy%**
World Consumption													
USA	32	28	28	27	25	29	29	27	105	115	110	9.9%	-4.5%
European Union	82	93	71	83	82	93	74	89	288	330	338	14.5%	2.5%
Japan	45	47	45	42	42	44	43	42	148	179	171	21.2%	-4.3%
Total G3	**159**	**168**	**145**	**151**	**149**	**165**	**147**	**158**	**540**	**624**	**619**	**15.5%**	**-0.7%**
China	117	146	130	144	144	162	171	123	541	537	600	-0.9%	11.8%
South Korea	21	26	22	21	24	24	24	23	93	90	95	-3.4%	5.3%
Rest of the World	30	41	22	41	32	42	26	39	130	134	139	2.9%	3.8%
Non G-3	**168**	**212**	**175**	**206**	**200**	**228**	**220**	**186**	**765**	**760**	**834**	**-0.6%**	**9.6%**
World Consumption	**327**	**380**	**320**	**357**	**349**	**393**	**367**	**344**	**1,305**	**1,385**	**1,453**	**6.1%**	**5.0%**
World Production	**335**	**348**	**345**	**364**	**370**	**402**	**377**	**401**	**1,327**	**1,393**	**1,551**	**5.0%**	**11.3%**
Balance	**9**	**-32**	**25**	**7**	**22**	**9**	**10**	**57**	**22**	**8**	**97**		
Price ($/mt)	**20,163**	**22,425**	**21,275**	**22,000**	**19,675**	**19,500**	**19,500**	**19,500**	**14,781**	**21,475**	**19,550**		

Source: CRU, WBMS, Goldman Sachs Global ECS Research estimates.

Looking further out, the ability of the large new laterite projects to deliver next year will be very important to the medium-term outlook. Although we can afford to be wrong in our optimism for (slow) success next year given the more important Canadian supplies for the cyclical outlook, the market could quickly move back to deficit beyond 2011 if multiple new projects follow the initial bumpy path of Ravensthorp. Furthermore, even with full success in hydrometallurgical nickel laterite production, the market will still need to bring on new projects on a 5 to 10-year horizon. Therefore we maintain that long-dated nickel price support should hold over the medium term in the range of $19,000/mt - $22,000/mt, roughly the price needed to grow future laterite projects, and specifically new investments the Chinese NPI sector will likely make as the sector evolves into higher quality, but higher capex and more traditional ferronickel production.

Aluminum: Spot market dislocations to recede, along with prices

We continue to expect high aluminum stocks and excess capacity for the foreseeable future, with some of the confusion and dislocation that led to tight spot markets thus far in 2010 dissipating with more supply and better matched demand in 2011. Ultimately, much of this new supply should prudently be hedged out, bringing new supply to the forward curve and capping further upside from current price levels. Accordingly, we believe that prices will become less leveraged to cyclical volatility and that price risk is skewed to the downside. We've slightly adjusted our 3, 6 and 12-mo forecasts to $2,125/mt, $2,200/mt, and $2,200/mt, respectively, and introduce a 2011 average price forecast of $2,175/mt. While copper and aluminum prices have remained well correlated for much of 2010, likely due to dominant macro sentiment swings and structural volatility driving prices, we believe that there is little chance future curve support for aluminum will keep pace with the cyclical upside we see in copper. Therefore, we believe that high correlation between copper and aluminum will break down, and see this breakdown as an indicator of strong cyclical momentum in the global economy and China in particular.

Aluminum continues to surprise to the upside with a confounding dynamic playing out in prices and fundamentals. While there is no question the market has ample capacity and abundant on and off exchange stocks, tight regional balances and spot material shortages have given aluminum the appearance of a tight cyclical market for much of the year. We believe there are two reasons for this dislocation, the bid for future material that is driving financing and storage deals, and the mismatch in producer and consumer outlook, both putting excess pressure on spot markets and creating tightness in the availability of material. The generally poor visibility on end demand, combined with regional overcapacities and tight credit in manufacturing sectors has led to under-booking of term off-take material, and the strong restocking cycle and continued manufacturing growth has led to higher activity in spot markets. However, this spot material has been increasingly unavailable at low premiums in many regions due to the strong demand for storage deals, as the oversupplied market has created substantial contangos that continue to make such deals attractive.

These factors combined have led to tight markets and high delivery premiums for much of 2010. However, as we look forward into 2011, on balance we believe markets will be better matched, and new producer supply and hedging will meet forward curve demand, capping prices and ultimately driving them lower. We ultimately question why consumers and investors are willing to pay $2,400/mt-$2,500/mt for 2012 material, as we believe the marginal cost of production in both the short and medium term is below this level. The main argument for higher future prices is based on rising production costs and higher

energy costs, particularly in China. While we generally agree with the view on rising average costs for many Chinese and non-Chinese producers alike, our baseline view is that these producers do not set the marginal cost when new lower cost projects continue to permanently displace high cost production. However, the key uncertainty around marginal cost is whether or not lower cost projects can outpace demand growth, and if so, how much high-cost production will be subsidized and produced regardless of economics. Currently we see no reason to believe new low-cost capacity will be limited, and therefore view prices as over bid and the future curve holding little value above $2,300/mt.

Demand: Slowing on waning stimulus

Aluminum is utilized across many industries that leverage its lightness, pliability and strong resistance to rust. Our demand analysis of the major aluminum consuming countries confirms that aluminum is most closely tied to the auto, packaging, home appliance and construction sectors (see Exhibit 24). As discussed in detail below, we have used these historical relationships to reassess our view on demand over the next five quarters and on net are expecting global aluminum demand growth of 16.3% yoy in 2010 and 5.0% yoy in 2011. The strong demand growth for this year has been largely driven by a substantial rebound in aluminum-intensive industries following the sharp contraction in 2009, boosted by auto and home appliance stimulus programs in key consuming countries as well as substantial restocking of aluminum-intensive goods early in the year. In 2011, our models suggest slowing but still positive growth driven primarily by the winding down or reversal of supportive fiscal stimulus in both developed and developing consumers.

Exhibit 24: Aluminum consumption is closely correlated to auto production, home appliance manufacturing, construction, and packaging sectors
Aluminum demand drivers and respective R^2

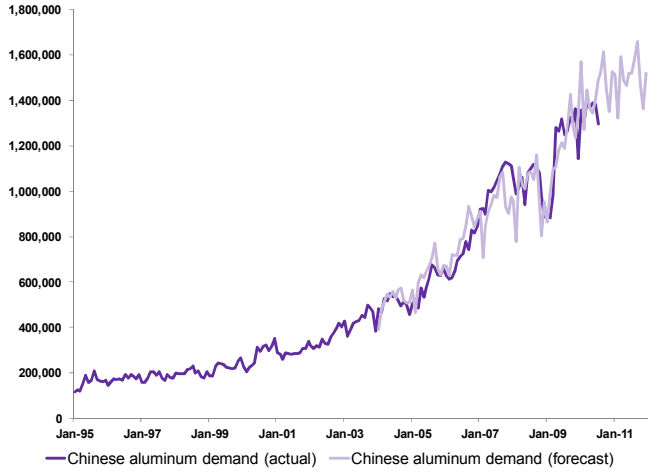
	China	US	Europe	Japan
Key Indicators	Auto production	Motor vehicle parts production	Residential Building Permits	Building construction start
	Refined to scrap price differential	Machinery production	IP ex Construction	Steel production
	Washing machine production	Housing starts	Stocks of finished goods	Motor vehicle production (4m lag)
	Floor space under construction	Imports of industrial supply & materials		
	Beer production			
R-squared	**0.90**	**0.90**	**0.91**	**0.63**

Source: Goldman Sachs Global ECS Research.

China: Demand growth more negatively impacted by waning stimulus

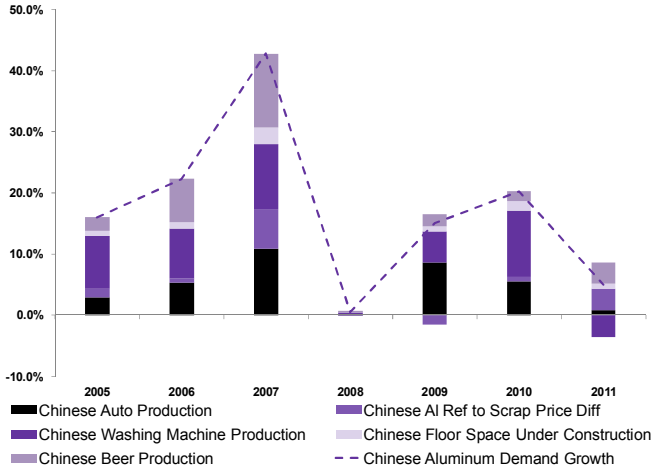
Our analysis broadly identifies five key drivers of Chinese aluminum demand: auto production (reflective of end-use demand from transportation sectors), washing machine production (reflective of exposure to consumers), floor space under construction (reflective of end-use demand from construction and infrastructure), beer production (reflective of food and packaging sectors), and aluminum refined to scrap price differential (reflective of substitution effects). These indicators combined have proven extremely predictive of demand historically (see Exhibit 25).

Exhibit 25: Actual vs. predicted Chinese aluminum demand
Mt



Source: WBMS, Goldman Sachs Global ECS Research estimates.

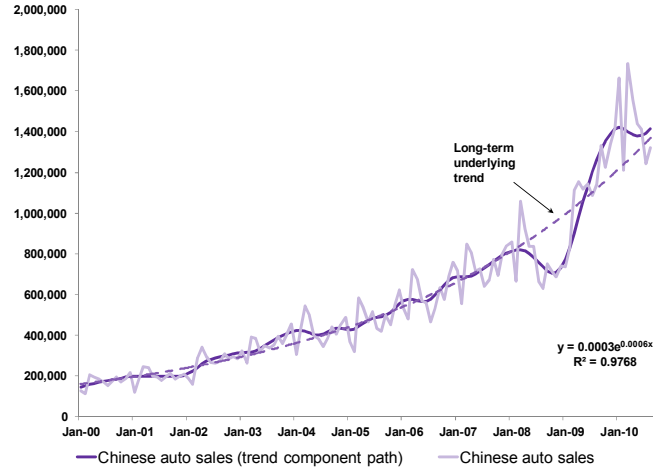
Exhibit 26: For 2011, we expect the winding down of stimulus programs will lead to a more significant slowdown in Chinese aluminum demand growth
Percentage contribution to Chinese aluminum demand



Source: WBMS, Goldman Sachs Global ECS Research estimates.

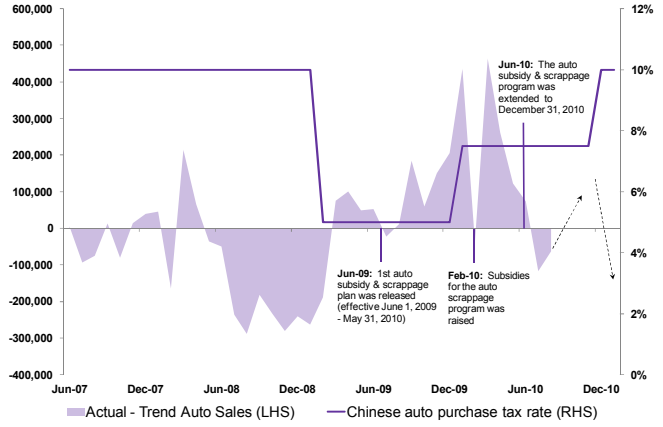
In particular, while the strong rebound in aluminum demand growth in 2009 has been broadly described as a stimulus-led recovery episode, our modeling framework has enabled us to more accurately segregate the source of growth. According to our analysis, the most significant growth drivers in the 2009 recovery were auto production and washing machine manufacturing, with both benefitting from an enormous boost to sales from the introduction of government subsidies and tax breaks (see Exhibit 26). Specifically, in addition to a home appliance program discussed above, the Chinese government implemented an auto stimulus program aimed at increasing domestic demand and encouraging replacements of high-polluting and older cars, which included three sets of policies: 1) auto scrappage subsidy program (expected to end on December 31, 2010), 2) auto purchase tax cut (expected to end on December 31, 2010), and 3) "auto and motorcycles to the countryside" program (the auto subsidy program was ended on December 31, 2009 while the motorcycle subsidies are expected to last till January 31, 2013). The combination of these programs substantially lifted auto sales above their underlying long-term trend (see Exhibits 27 and 28). On top of these stimulus programs that targeted aluminum-intensive sectors, the construction sector was also broadly supportive fuelled by stronger balance sheets of real estate developers in an early credit expansion cycle.

Exhibit 27: The combination of the auto subsidies and tax breaks lifted Chinese auto sales above their underlying long-term trend …
Auto sales in units



Source: Chinese Association of Automobile Manufacturers, Goldman Sachs Global ECS Research.

Exhibit 28: … with another round of rush buying expected before both programs finish by year end
Actual – trend auto sales in units



Source: Chinese Association of Automobile Manufacturers, Goldman Sachs Global ECS Research.

Stimulus programs have continued to lend support in 2010, driving an estimated 20.3% demand growth year over year. However, home appliance production has likely replaced auto production as the growth locomotive. This shift has been largely a reflection of the different life cycles of the stimulus programs, with the scope of the home appliance programs expanded twice this year while auto programs are set to finish by the year end.

Entering into 2011, we expect the expiry of auto stimulus programs and gradual phaseout of the home appliance scrappage and subsidy programs will lead to a more significant slowdown in Chinese aluminum demand growth. However, increasing scrap-to-refined substitution as a result of reduced scrappage availability from the auto stimulus program (and therefore a widening refined to scrap price differentials) will likely help keep overall demand growth positive at 5.0% year over year.

Developed market demand: Also slowing on waning stimulus

Similar to what we observe in China, developed market aluminum demand has also been closely tied to the auto and construction sectors and broad movements in IP. Thus, aluminum demand also fell victim to the sharp decline in developed market industrial activity and construction in recent years. In 2010, we estimate double-digit demand growth across the developed economies owing to a meaningful rebound in the auto and other aluminum-intensive industrial sectors from depressed demand levels in 2009, boosted by developed market auto scrappage programs and restocking in these industries. However, we anticipate the absence of these programs and restocking demand in 2011 should slow demand growth meaningfully in 2011, particularly in Japan where an anticipated decline in auto production, steel production and export demand is expected to hit aluminum demand relatively hard. On net, we expect 2011 year-over-year growth for the US, Europe and Japan, of 6.4%, 5.8% and 1.9% respectively.

Supply: Ample for the foreseeable future

We expect global aluminum supply to grow by just over one million tonnes, or 6.2% yoy, in 2011 on increased utilization of existing capacity and new projects. We maintain that excess production capacity will remain a key feature of the market, driving surpluses for the foreseeable future. The key question in terms of aluminum supply, then, is one of cost rather than quantity. Although we broadly expect rising production costs for existing capacity on higher energy costs, we continue to anticipate that the marginal cost, which drives structural prices, will increasingly be set by new lower-cost projects. Thus, we maintain that the aluminum market will remain amply supplied without requiring significantly higher prices.

Putting it all together: Surplus and lower prices still ahead

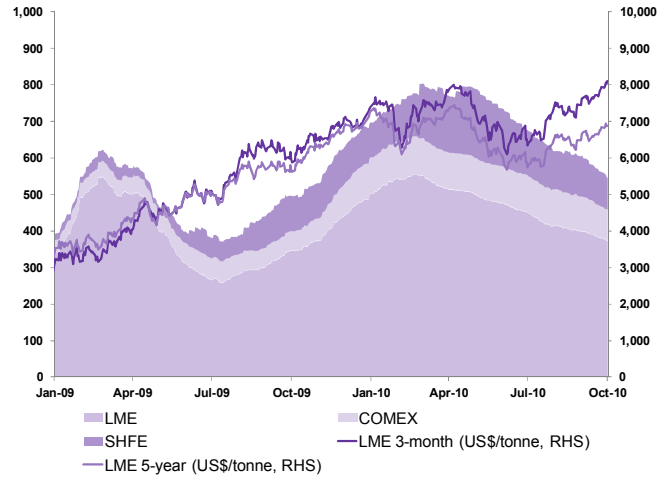
We believe that stronger than anticipated aluminum demand in 2010 has brought the market closer to balance through 3Q2010 and, combined with energy reduction measures in China, has brought some renewed optimism to aluminum producers heading into year end. However, given the current high prices and our softer demand growth outlook for 2011, we believe that the market is again setting up for another million tonne surplus in 2011. Furthermore, while clarity on end demand at this point in the recovery still remains somewhat uncertain for the global manufacturing sector, we do not expect a repeat of the strong restocking cycle that kept spot markets short of material in 2010. Therefore, we are forecasting capacity growth to again outpace demand growth through 2011, with a gradual build in surplus through the next 4 quarters. We also believe some of this new supply will likely be hedged given today's prices, capping upside in our view. In line with the average realized prices over the first three quarters of 2010, we maintain our forecast for prices to remain fairly stable with low cyclical leverage over the course of 2011. We've slightly adjusted our 3, 6 and 12-mo forecasts to $2,150/mt, $2,200/mt, and $2,200/mt, respectively, and introduce a 2011 average price forecast of $2,175/mt.

Exhibit 29: Goldman Sachs aluminum balance table

		GS Forecasts								GS Forecasts		GS Forecasts	
(Kmt)	2010Q1	2010Q2	2010Q3	2010Q4	2011Q1	2011Q2	2011Q3	2011Q4	2009	2010	2011	10 yoy%	11 yoy%
World Consumption													
USA	989	1,079	1,031	993	1,067	1,139	1,095	1,051	3,655	4,092	4,352	12.0%	6.4%
European Union	1,318	1,508	1,411	1,471	1,478	1,589	1,447	1,524	4,707	5,708	6,037	21.3%	5.8%
Japan	501	508	462	487	498	510	497	489	1,523	1,957	1,994	28.5%	1.9%
Total G3	**2,808**	**3,095**	**2,903**	**2,951**	**3,042**	**3,238**	**3,039**	**3,064**	**9,885**	**11,757**	**12,383**	**18.9%**	**5.3%**
China	4,055	4,161	4,630	4,323	4,428	4,476	4,763	4,355	14,276	17,169	18,022	20.3%	5.0%
South Korea	293	330	321	324	303	339	318	339	1,038	1,267	1,299	22.1%	2.5%
Rest of the World	2,564	2,474	2,550	3,094	2,786	2,627	2,636	3,159	9,945	10,682	11,207	7.4%	4.9%
Non G-3	**6,912**	**6,965**	**7,501**	**7,740**	**7,517**	**7,442**	**7,717**	**7,852**	**25,258**	**29,118**	**30,528**	**15.3%**	**4.8%**
World Consumption	**9,720**	**10,060**	**10,404**	**10,691**	**10,559**	**10,680**	**10,756**	**10,916**	**35,143**	**40,875**	**42,911**	**16.3%**	**5.0%**
World Production	**9,998**	**10,287**	**10,509**	**10,821**	**10,772**	**10,973**	**11,120**	**11,340**	**36,282**	**41,615**	**44,205**	**14.7%**	**6.2%**
Balance	**278**	**227**	**105**	**130**	**213**	**293**	**364**	**424**	**1,139**	**740**	**1,294**		
Price ($/mt)	**2,199**	**2,125**	**2,100**	**2,100**	**2,125**	**2,200**	**2,200**	**2,200**	**1,705**	**2,125**	**2,175**		

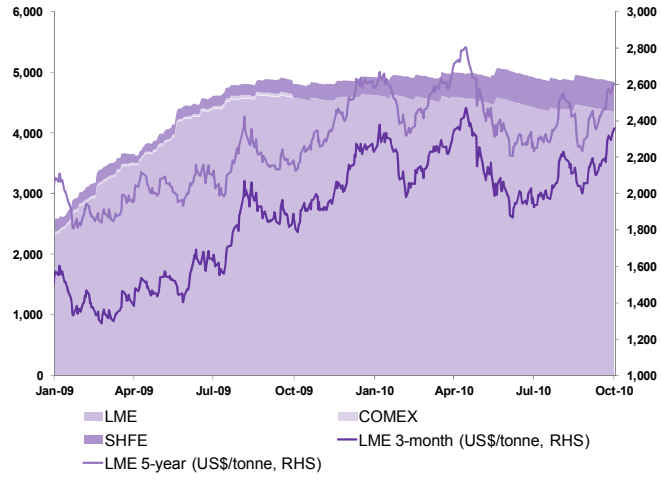
Source: CRU, WBMS, Goldman Sachs Global ECS Research estimates.

Exhibit 30: Copper exchange inventories vs. prices
Kmt, left axis; US$/mt, right axis



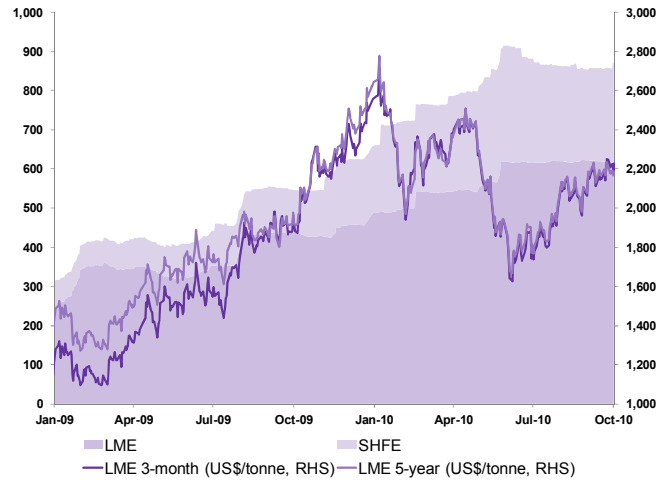
Source: LME, SHFE, COMEX, Goldman Sachs Global ECS Research.

Exhibit 31: Aluminum exchange inventories vs. prices
Kmt, left axis; US$/mt, right axis



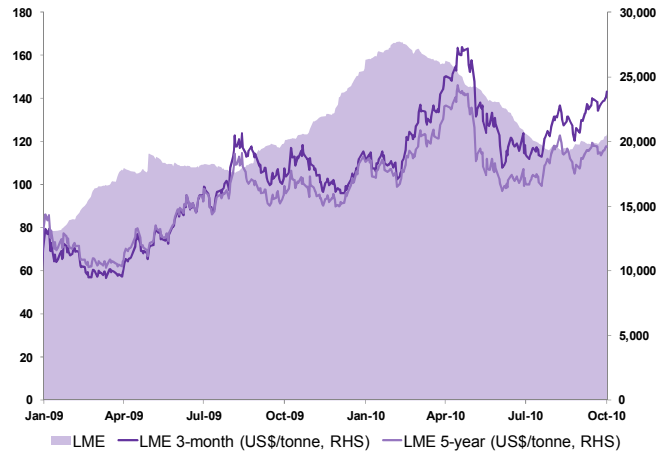
Source: LME, SHFE, COMEX, Goldman Sachs Global ECS Research.

Exhibit 32: Zinc exchange inventories vs. prices
Kmt, left axis; US$/mt, right axis



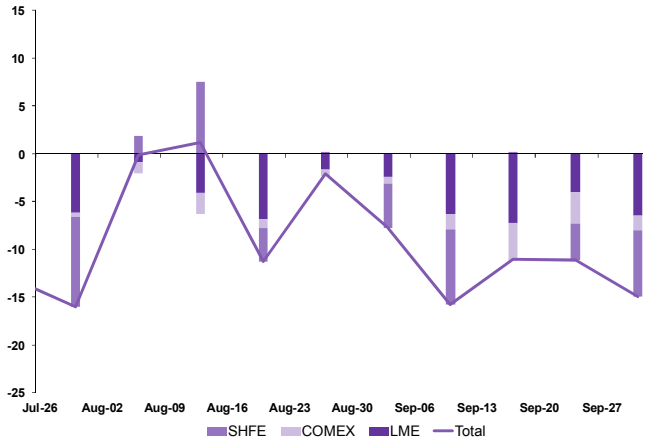
Source: LME, SHFE, Goldman Sachs Global ECS Research.

Exhibit 33: Nickel exchange inventories vs. prices
Kmt, left axis; US$/mt, right axis



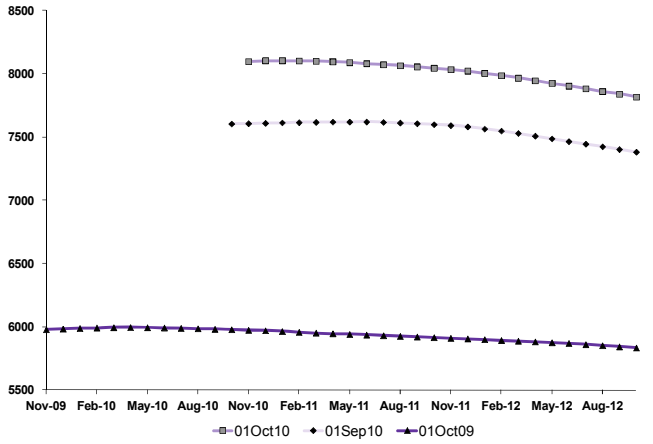
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 34: Copper weekly exchange inventories changes
Kmt



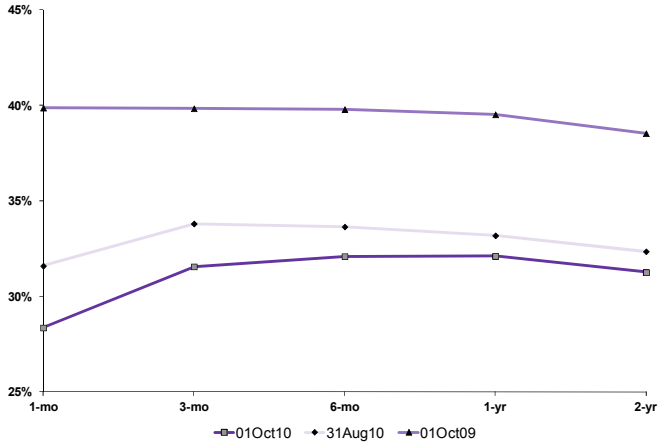
Source: LME, SHFE, COMEX, Goldman Sachs Global ECS Research.

Exhibit 35: Copper forward price curve
$/mt



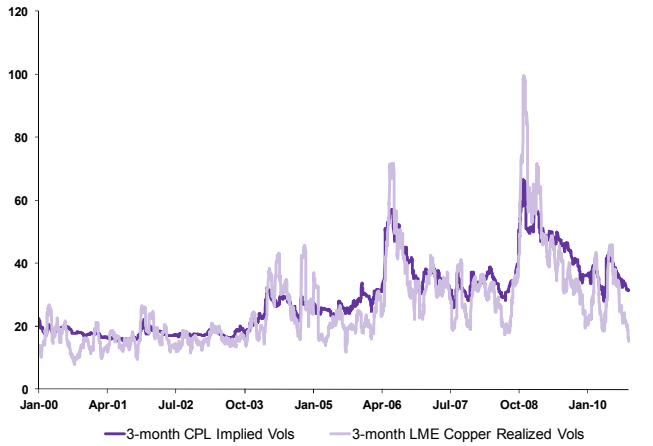
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 36: Copper term volatility
Implied volatility in percent



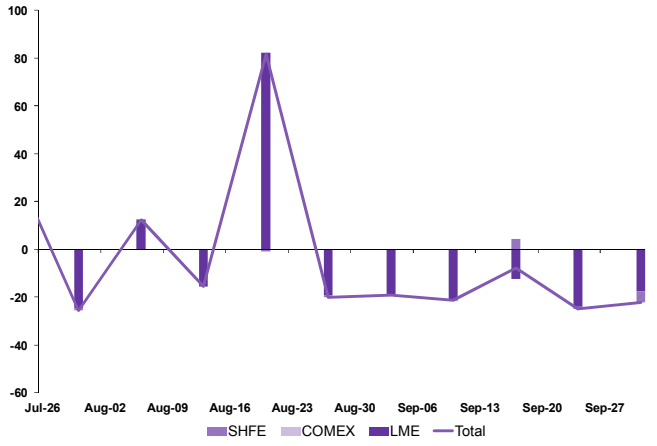
Source: Goldman Sachs Global ECS Research.

Exhibit 37: Copper realized vs. implied volatility
Realized and implied volatility in percent



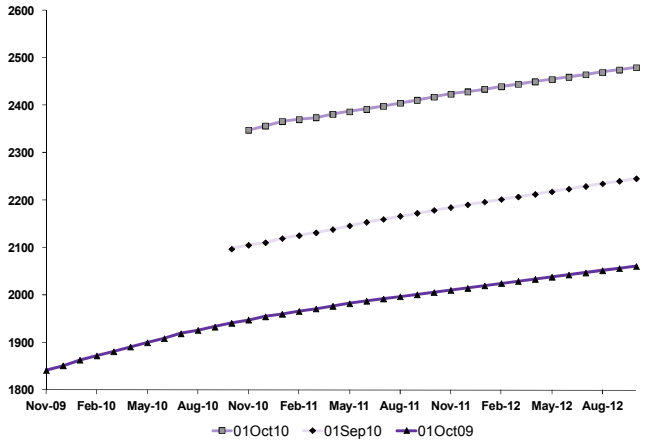
Source: Goldman Sachs Global ECS Research.

Exhibit 38: Aluminum weekly exchange inventories
Kmt



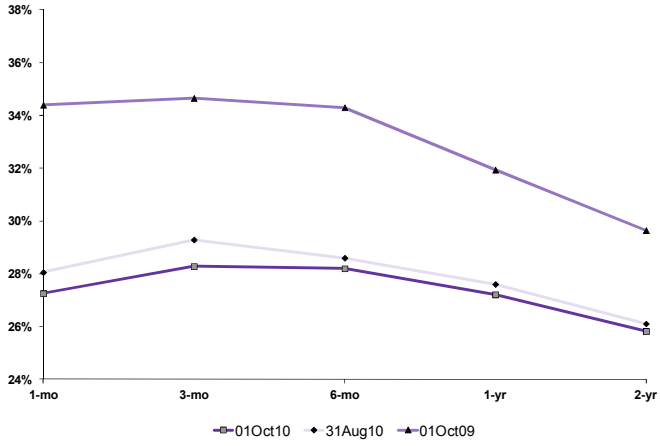
Source: LME, SHFE, COMEX, Goldman Sachs Global ECS Research.

Exhibit 39: Aluminum forward price curve
$/mt



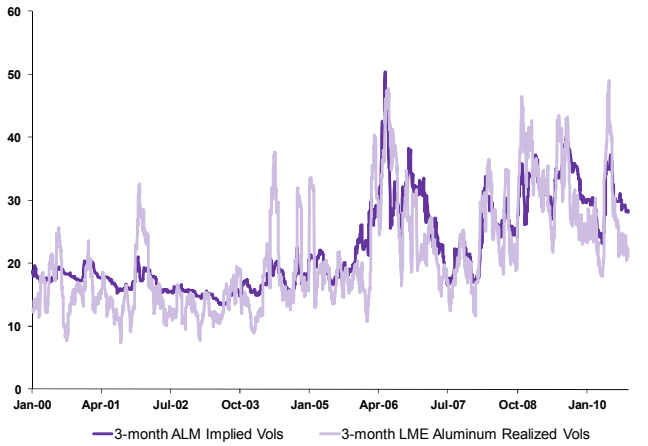
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 40: Aluminum term volatility
Implied volatility in percent



Source: Goldman Sachs Global ECS Research.

Exhibit 41: Aluminum realized vs. implied volatility
Realized and implied volatility in percent

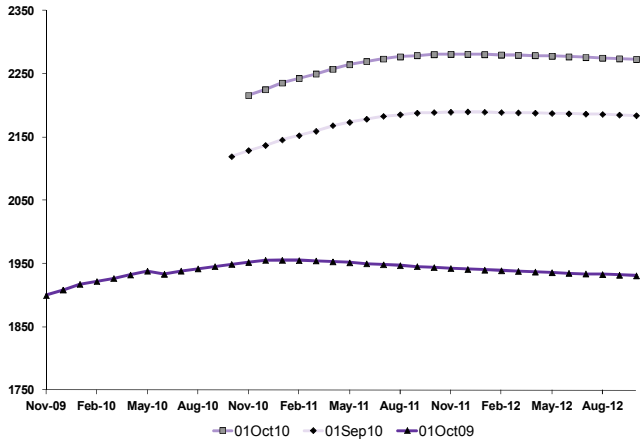


Source: Goldman Sachs Global ECS Research.

Exhibit 42: Zinc weekly exchange inventories
Kmt

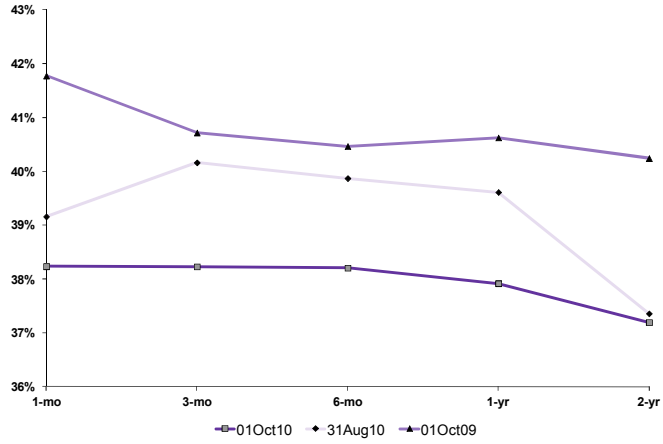
Source: LME, SHFE, Goldman Sachs Global ECS Research.

Exhibit 43: Zinc forward price curve
$/mt



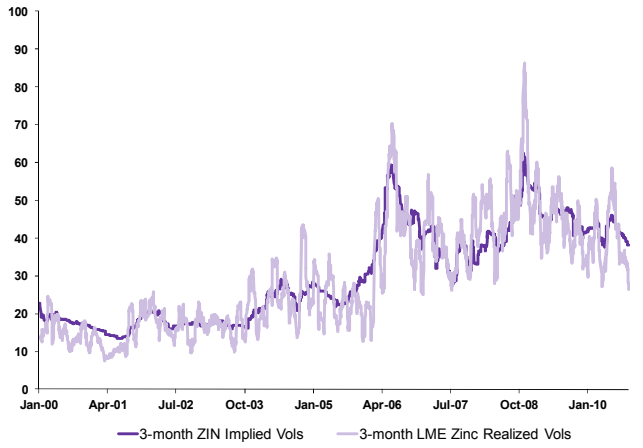
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 44: Zinc term volatility
Implied volatility in percent



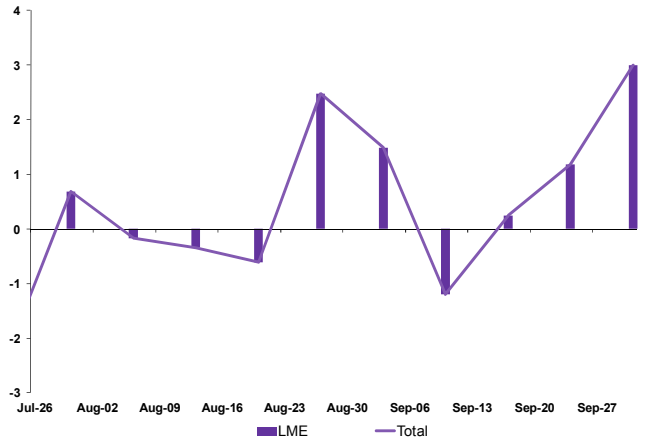
Source: Goldman Sachs Global ECS Research.

Exhibit 45: Zinc realized vs. implied volatility
Realized and implied volatility in percent



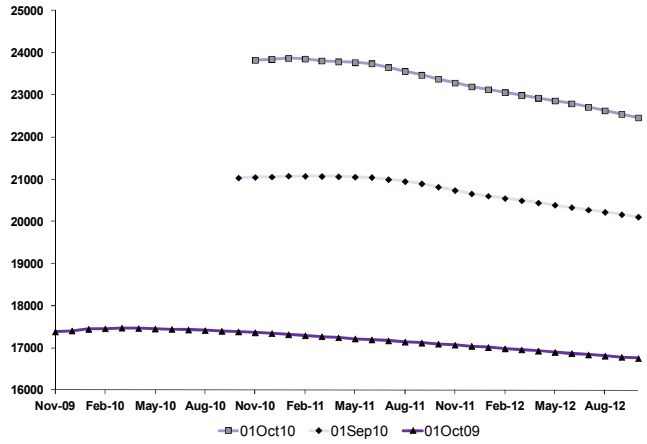
Source: Goldman Sachs Global ECS Research.

Exhibit 46: Nickel weekly exchange inventories
Kmt



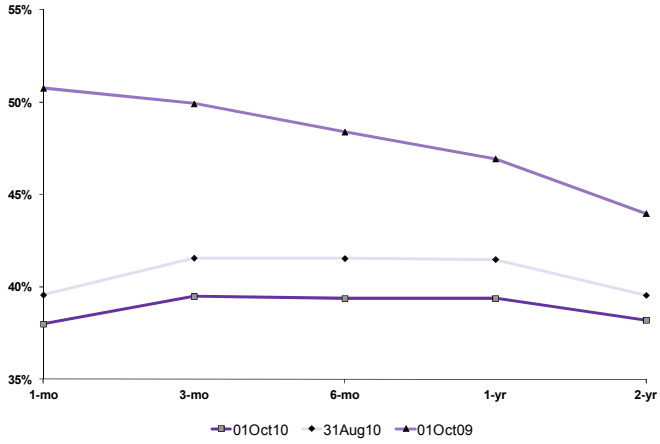
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 47: Nickel forward price curve
$/mt



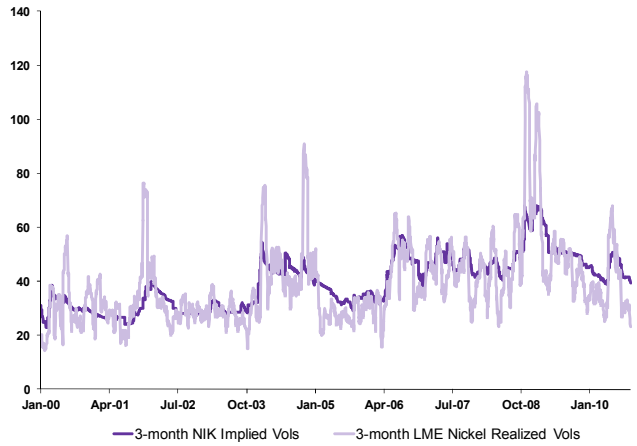
Source: LME, Goldman Sachs Global ECS Research.

Exhibit 48: Nickel term volatility
Implied volatility in percent



Source: Goldman Sachs Global ECS Research.

Exhibit 49: Nickel realized vs. implied volatility
Realized and implied volatility in percent



Source: Goldman Sachs Global ECS Research.

Reg AC

We, Joshua Crumb, Allison Nathan, Tiger Chen and Jeffrey Currie, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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