



Commodities Outlook

Supply momentum, supply curtailments and supply shocks

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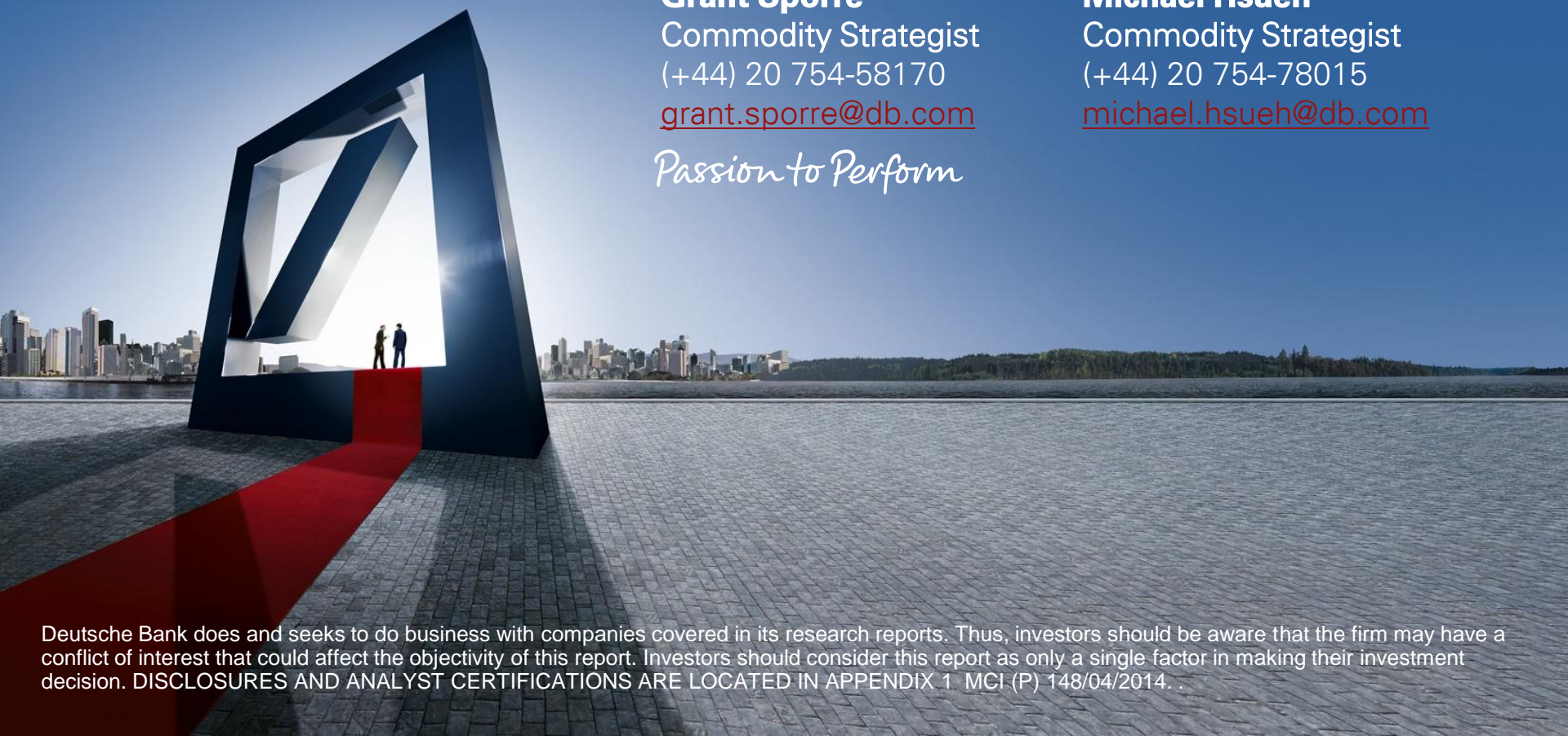
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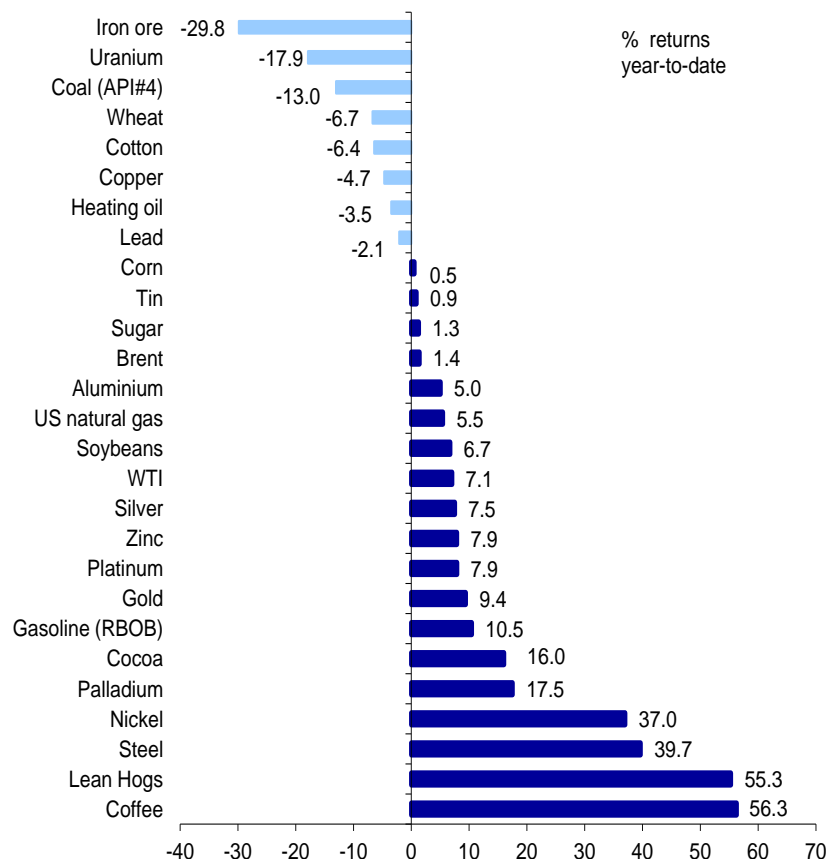


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2014 Winners & Losers



2014 Commodity Scorecard



Source: Deutsche Bank, Bloomberg Finance LP (data as of June 30, 2014)

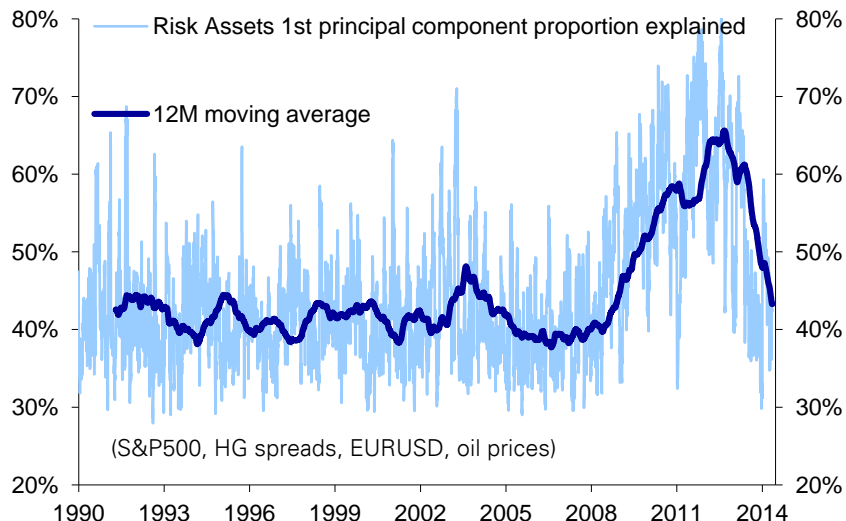
Outlook

- Commodity prices have become increasingly driven by supply developments in 2014.
- Indeed the price gains across the agriculture and livestock sectors have been triggered by crop disappointment in South America (coffee, soybeans) and the porcine virus in the US (lean hogs).
- Meanwhile the gains in nickel are largely attributable to the Indonesian export ban while strikes in South Africa have supported the PGM complex.

Correlation Subsidence

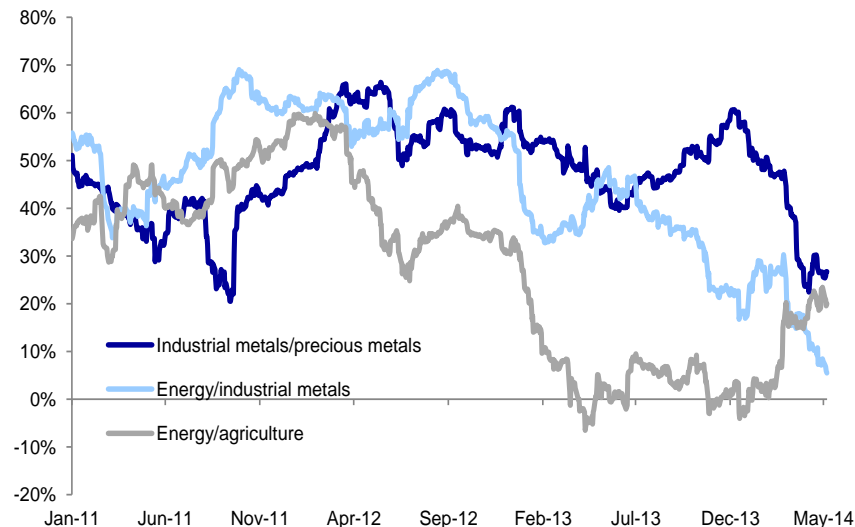


Cross Asset Correlation



Sources: Deutsche Bank, Bloomberg Finance LP

Cross Commodity Sector Correlation



Sources: Deutsche Bank, Bloomberg Finance LP

Outlook

- The correlation of commodities to other asset classes has collapsed to pre-crisis levels.
- Moreover the correlation between commodity sectors has also been on the decline.
- These suggest that commodity sector returns are increasingly being driven by sector specific fundamentals.
- It also restores the diversification properties of commodities as an asset class.

Commodities Dashboard



Metals Outlook For H2'14



Key Themes

- Gold to suffer as the interest rate cycle turns, pushing US real yields and the US dollar higher. PGMs to outperform on a slower than expected strike recovery and a strong Auto sector. High inventories will cap prices.
- The demand outlook is improving: A strong lagging correlation (1 – 3 months) in base metals with the demand weighted PMI's. The outlook is still being determined by individual supply side dynamics – supply shocks, supply curtailments and supply momentum.
- Bulk commodity prices to weaken on supply growth and slowing demand growth. Tentative cost support in the coals, but there is scope for further cost-out.
- Cautious energy on US oil supply growth, a declining call on OPEC spare capacity, but offset by rising geopolitical risk.

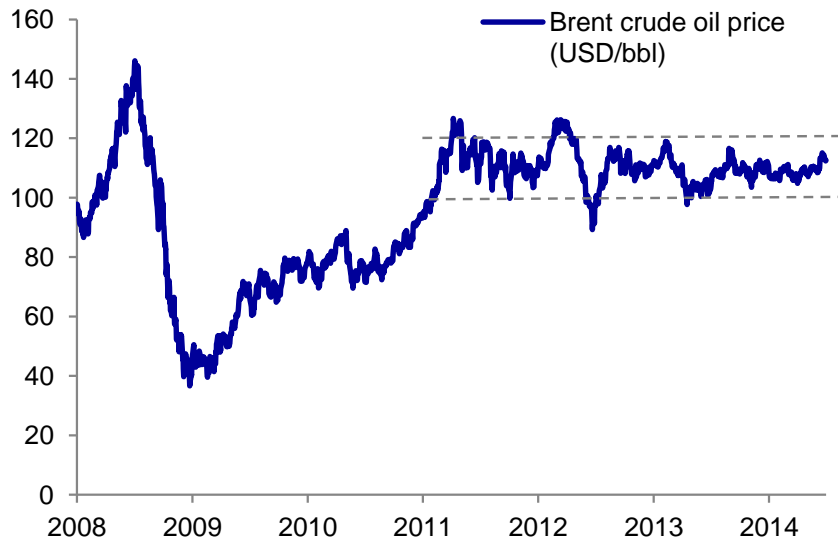


Energy

Oil Market Stability

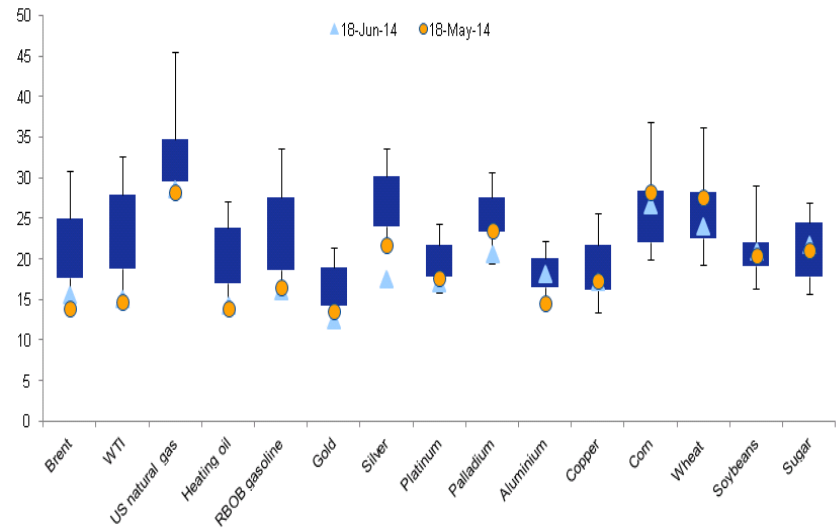


Brent Crude Oil



Source: Deutsche Bank, Bloomberg Finance LP

Commodity Implied Volatility



Sources: Bloomberg Finance LP, Deutsche Bank

Two-year historical range; body represents 25th to 75th percentiles, whiskers represent 5th and 95th percentiles.

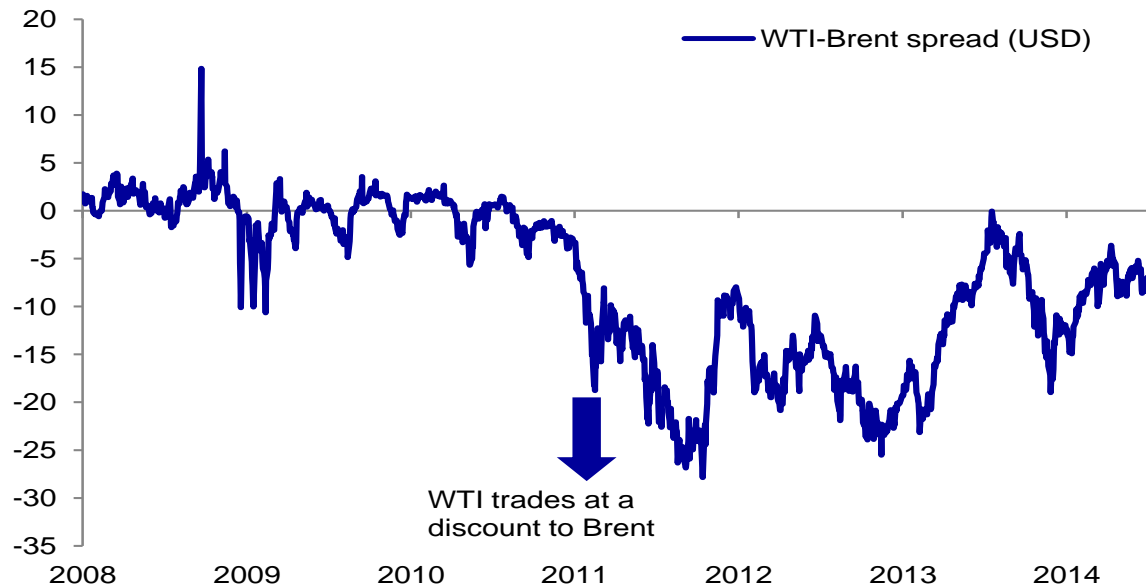
Outlook

- Crude oil prices have traded in a relatively tight range for the past three years.
- This stability has occurred at a time of rapid US crude oil supply growth, significant production outages across OPEC and non-OPEC countries and in the midst of pockets of heightened geopolitical risk such as sanctions against Iran, political instability in Ukraine and the latest escalation in violence across Iraq.

Oil Market Stress In The Arb



WTI-Brent Spread



Sources: Deutsche Bank, Bloomberg Finance LP (data as of June 30, 2014)

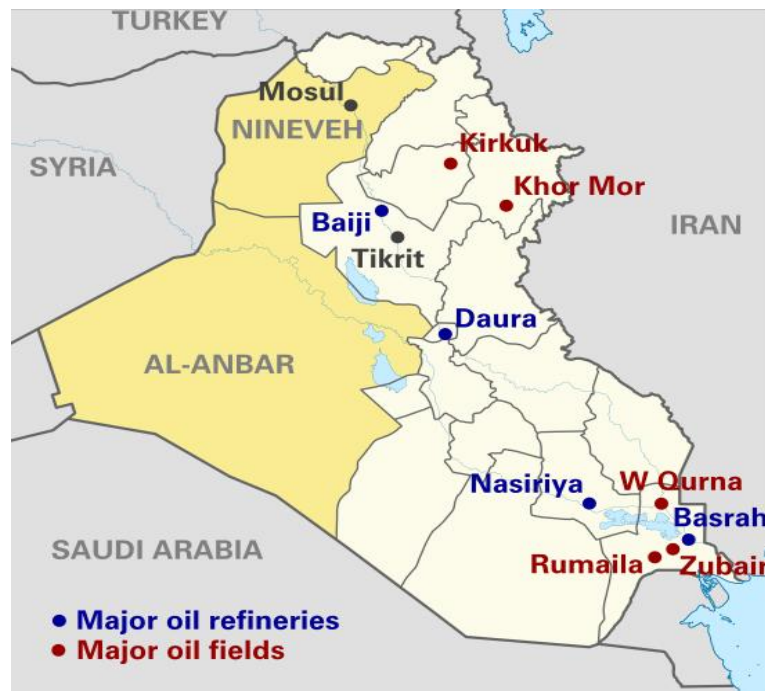
Outlook

- However, there has been considerable volatility in the price of regional crudes and specifically between WTI and Brent.
- An oversupplied US crude oil market has meant WTI has moved to a significant discount versus Brent.

The Threat To Iraqi Oil Infrastructure



Iraq's Major Oil Fields & Refineries



Outlook

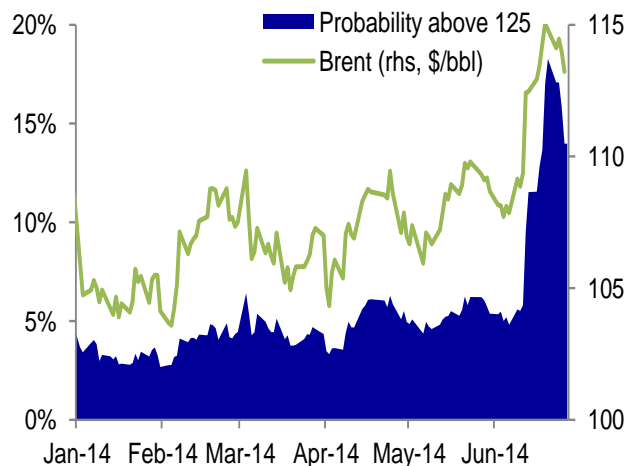
- ISIS has taken control of the northern and eastern parts of Iraq. However, around 75% of Iraqi oil production occurs in the south and approximately 85% of the country's oil reserves are also in the south.
- Iraqi oil production is currently around 3.3mmb/d and is forecast to rise to 4mmbd by the end of the year and 5mmbd before the end of the decade.
- The main threat has been to the country's refining capacity given the capture by ISIS of the Baiji oil refinery near Tikrit.

Sources: Wikimedia Commons, Deutsche Bank

The Role Of Iraq

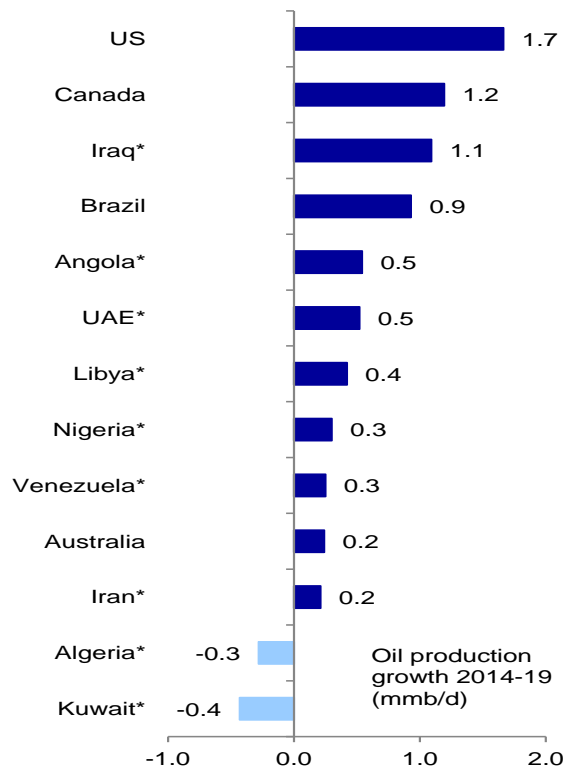


Brent Price Spike Risk (Dec'14)



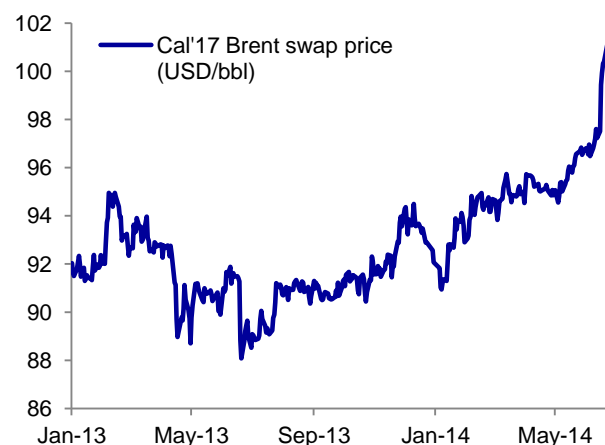
Source: Deutsche Bank, IEA

Oil Supply Growth To 2019



Sources: Deutsche Bank, IEA

Long Dated Brent Prices (Cal'17)



Source: Deutsche Bank, IEA

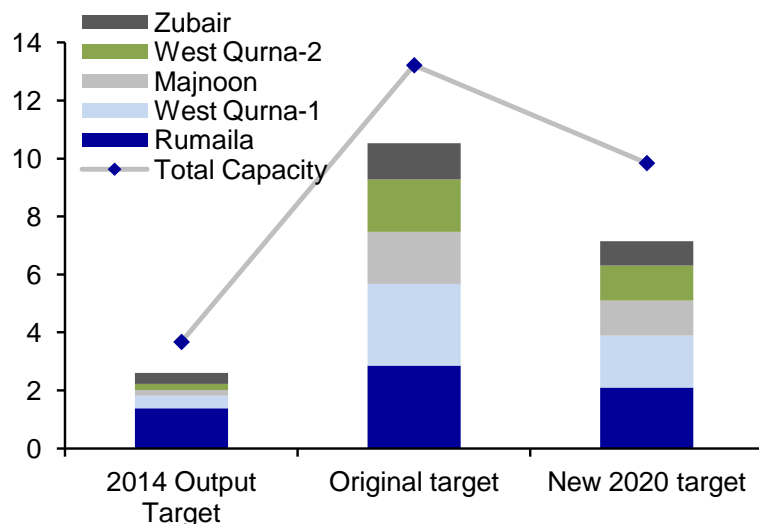
Outlook

- Iraq represents one of the major hopes in terms of oil supply growth over the next five years.

Iraq capacity expansion projects



Iraq oil project targets



Source: IEA, Wood Mackenzie, Deutsche Bank

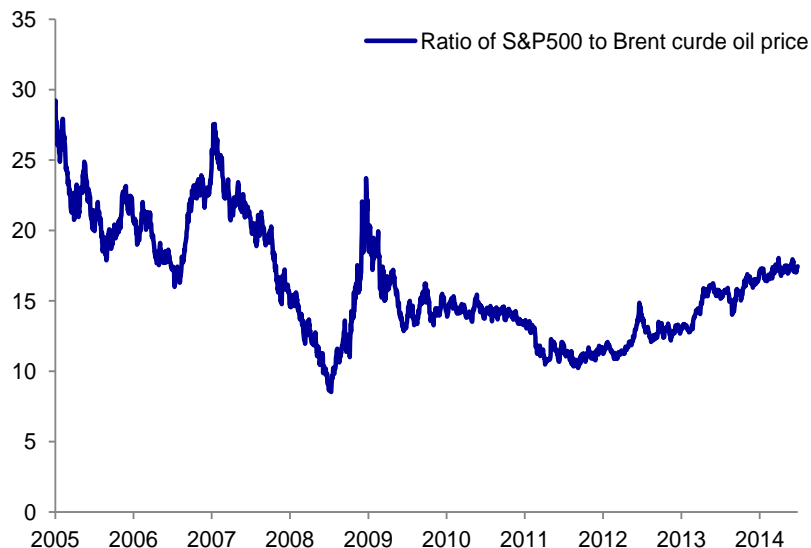
Outlook

- The more difficult factor to assess in Iraq is how much current events will retard the development of projects intended to expand capacity in the long term.
- Prior to events in June, the Iraqi government had already been in the process of renegotiating production targets. Now, even these lower revised 2020 targets are at risk. The sum of the revised targets implies 2020 total production of 9.8-10.2 mmb/d, whereas forecasts from the IEA and Wood Mackenzie suggest that total production may be only half that, in the range of 4.6-5.2 mmb/d by 2020.

Tipping Point For Consumers

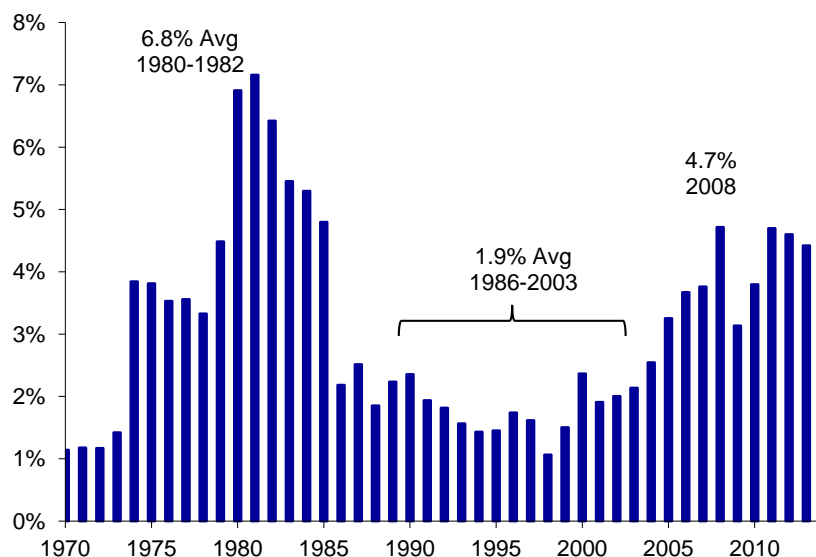


The S&P500 To Oil Price Ratio



Sources: Deutsche Bank, Deutsche Bank

Oil As A Share Of Global GDP



Sources: Deutsche Bank, IMF, EIA, BP

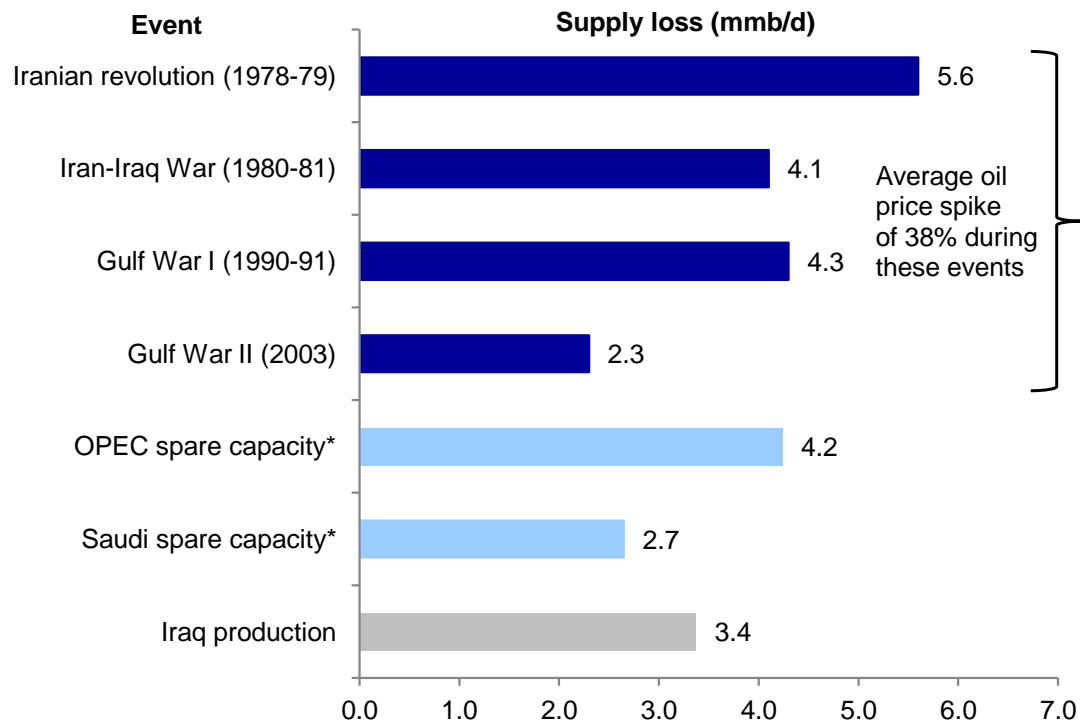
Outlook

- One way to assess oil market fundamentals and its impact on the economy is to examine the SP500 to oil price ratio. If rising oil prices are obstructing economic growth then the S&P500 to oil price ratio should be falling.
- Another way to assess at what level oil prices would need to rise to trigger a slump in the global economy is to examine the share of oil relative to world GDP.

Oil Supply Disruptions Compared



Iraqi Oil Production In Context



Source: Deutsche Bank, US DOE/EIA

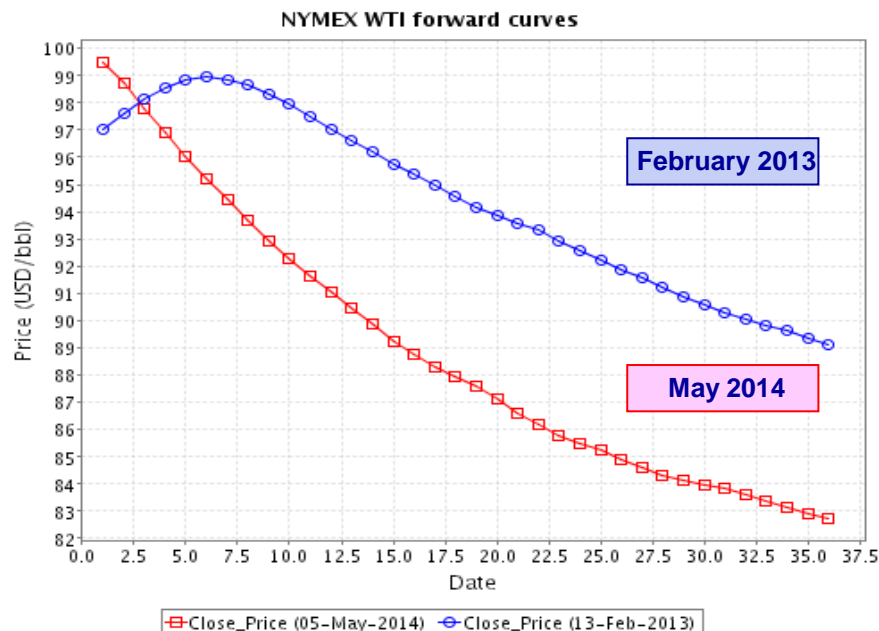
Outlook

- At 3.4mmb/d, Iraq's oil production is significant relative to Saudi spare capacity of 2.7 mmb/d.
- In the last four major oil price disruptions events, we find that oil prices rose by on average 38% in response to an average supply loss of 4.1mmb/d.

Developments In The WTI Forward Curve

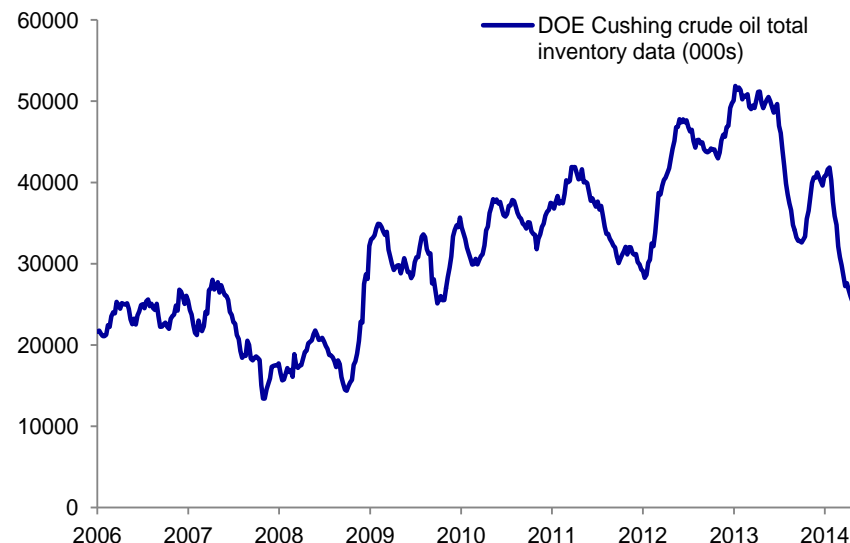


WTI Forward Curve



Source: Deutsche Bank, Bloomberg Finance LP (data as of May 5, 2014)

US Cushing, Oklahoma Crude Oil Inventory



Outlook

- Historically an oversupplied US crude oil market meant the WTI forward curve was in contango.
- However, pipeline expansions have helped to clear the excessive level of crude oil inventories in Cushing, Oklahoma and this has helped to tighten WTI fundamentals and push the forward curve into backwardation.

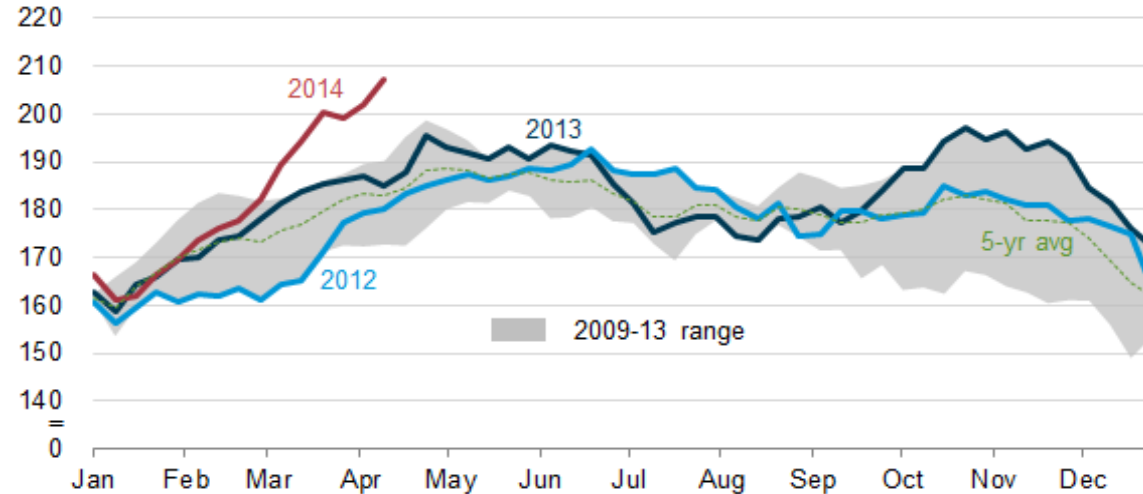
US Gulf Coast Crude Oil Inventories



Gulf Coast Inventories Hit A Record High

Gulf Coast commercial crude oil inventories

million barrels



Source: EIA

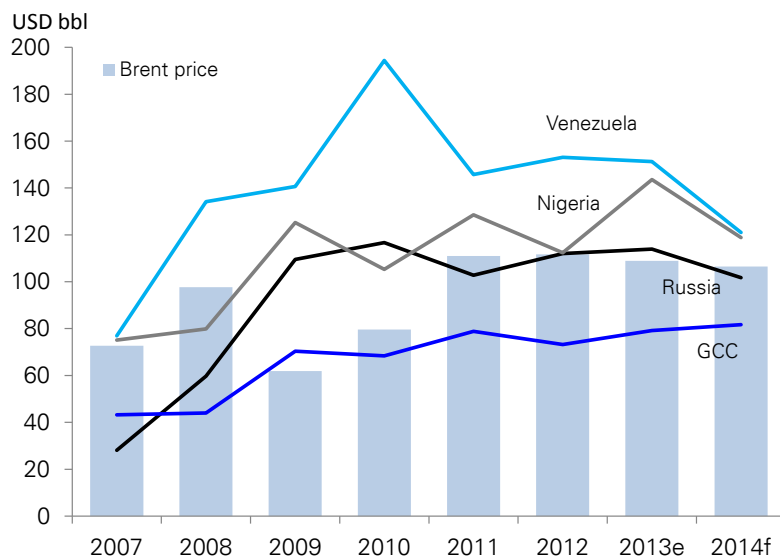
Outlook

- However, on a statewide basis, total US crude oil inventories excluding the SPR rose to a record high of 389 million barrels at the end of May with the US Gulf Coast responsible for a large share of the increase.
- Rapid US crude oil supply growth, the opening of the TransCanada Marketlink Pipeline from Cushing, OK to Houston, TX as well as seasonal maintenance in US refineries have contributed to US Gulf Coast inventories hitting a record high this year.

Tipping Point For Producers



Budget Breakeven Brent Oil Prices



Sources: Haver Analytics, JODI, Deutsche Bank

Budget Breakeven Brent Oil Prices (USD)

	2007	2008	2009	2010	2011	2012	2013e	2014f
GCC	43.2	44.0	70.4	68.4	78.8	73.2	79.1	81.7
Bahrain	66.9	80.0	82.9	103.9	118.1	127.1	125.3	134.9
Kuwait	32.6	42.1	47.0	45.7	47.4	53.6	68.3	71.9
Oman	99.3	96.4	69.9	80.2	112.3	112.5	80.4	75.7
Qatar	41.8	49.1	27.2	61.7	80.1	62.8	59.6	71.0
S. Arabia	52.7	47.0	72.6	70.6	84.5	80.9	91.4	93.4
UAE	25.1	44.5	105.8	86.4	95.0	77.7	72.2	70.4
Nigeria	75.1	79.9	125.3	105.3	128.5	112.3	143.6	118.8
Russia	28.1	59.7	109.5	116.7	102.8	112.0	113.9	101.7
Venezuela	76.9	134.2	140.7	194.4	145.7	153.1	151.3	121.0
Brent price	72.7	97.7	61.9	79.6	111.0	111.7	108.9	106.5

Sources: Haver Analytics, JODI, Deutsche Bank

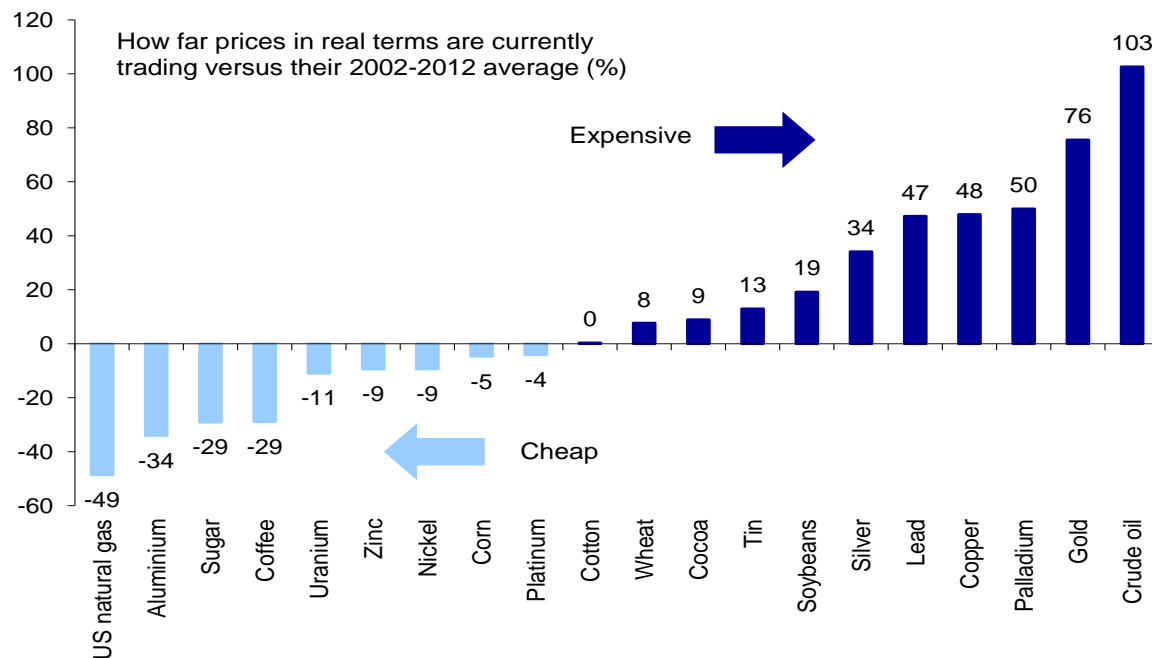
Outlook

- Generous social programmes have meant Middle Eastern government require much higher oil prices to balance their fiscal outlays.
- In Saudi Arabia, we estimate that the budget breakeven price have risen again in 2014 to a new record high.

Valuing Commodities In Real Terms



Commodities: What's Expensive & What's Cheap



Sources: Deutsche Bank, Bloomberg Finance LP

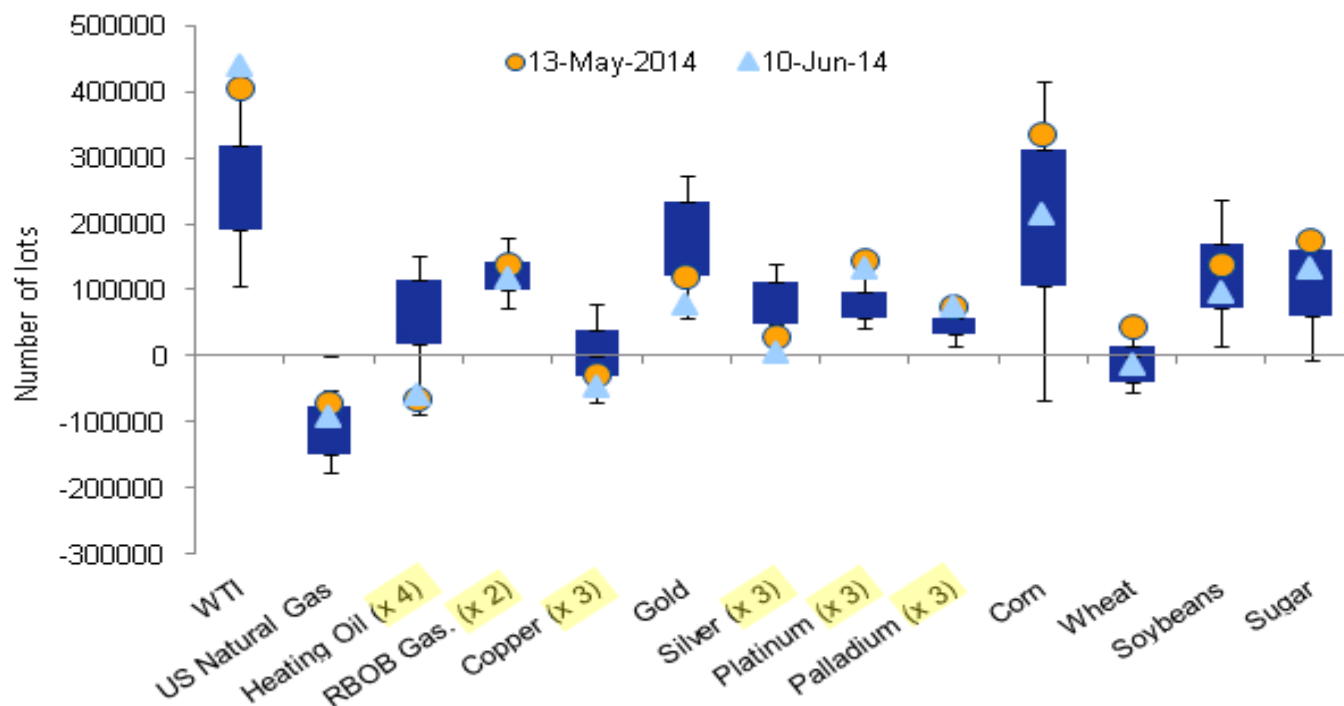
Outlook

- Crude oil is the most richly priced commodity in the world, trading at more than 100% above its long run historical average in real terms.

Aggressive Crude Oil Length



Speculative Positioning



Sources: CFTC, Deutsche Bank

Two-year historical range; body represents 25th to 75th percentiles, whiskers represent 5th and 95th percentiles.

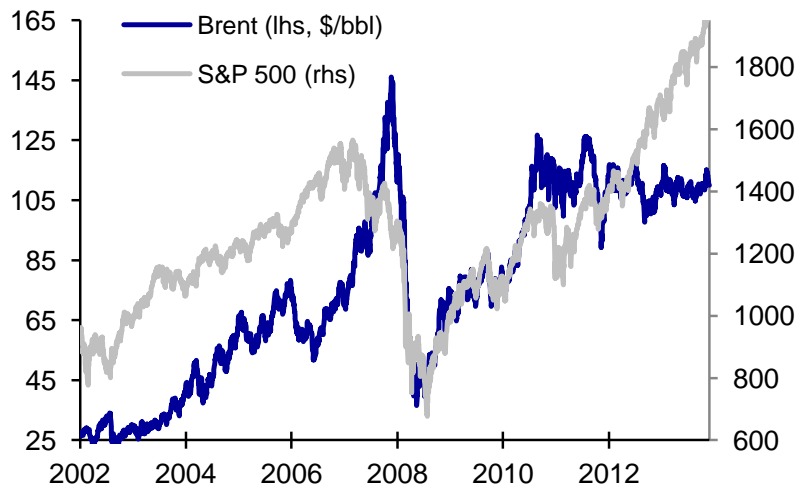
Outlook

- According to CFTC data, speculative positioning is mixed with aggressive length in WTI.

Oil, Equities & The Dollar

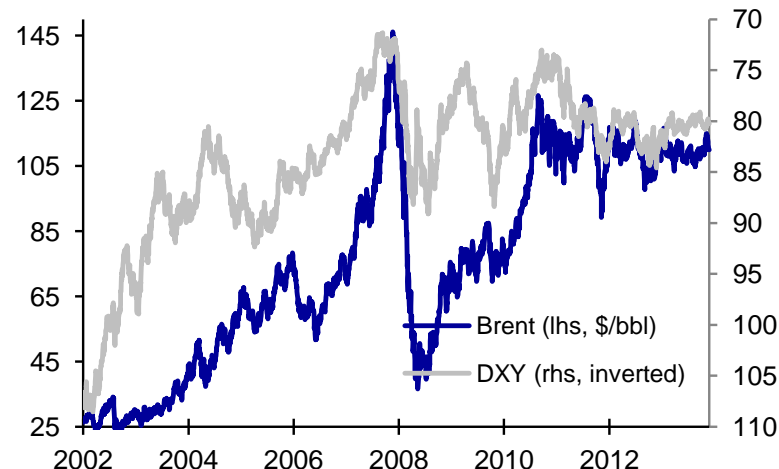


Equity Divergence since Jan-2013



Source: Bloomberg Finance LP, Deutsche Bank

Dollar Risk for Crude Oil



Source: Bloomberg Finance LP, Deutsche Bank

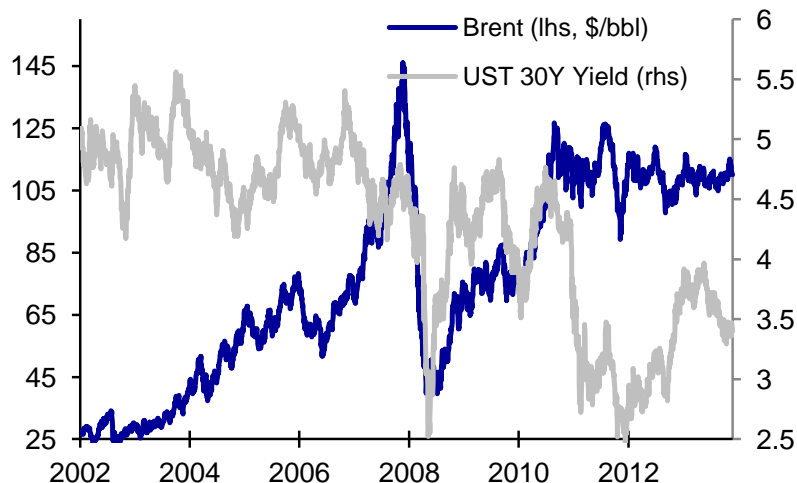
Outlook

- Crude oil prices have decoupled from the US equity market. No longer does a 50 point move in the S&P translate into a \$4/bbl rise in Brent crude. In contrast to the period of financial dislocation associated with the US financial crisis and Euro debt crisis, commodities in general are now showing lower correlations with financial assets and consequently, a greater influence of market-specific fundamentals.
- The exception to this is the US dollar. Our 12-month currency targets imply a 11% appreciation in the Dollar Index (DXY) over the next 12 months, and we believe this holds risks for the crude oil price.

Oil, US Treasuries & Implied Volatility

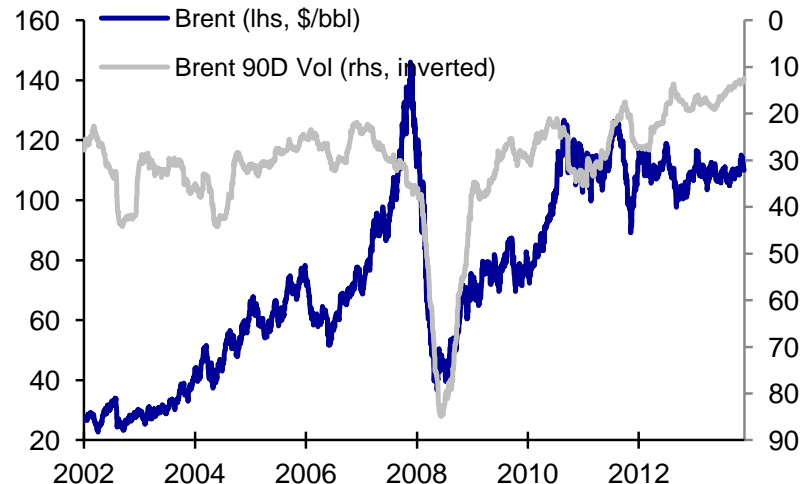


Inconsistent relationship with Bonds



Source: Bloomberg Finance LP, Deutsche Bank

Inverse relationship with Volatility



Source: Bloomberg Finance LP, Deutsche Bank

Outlook

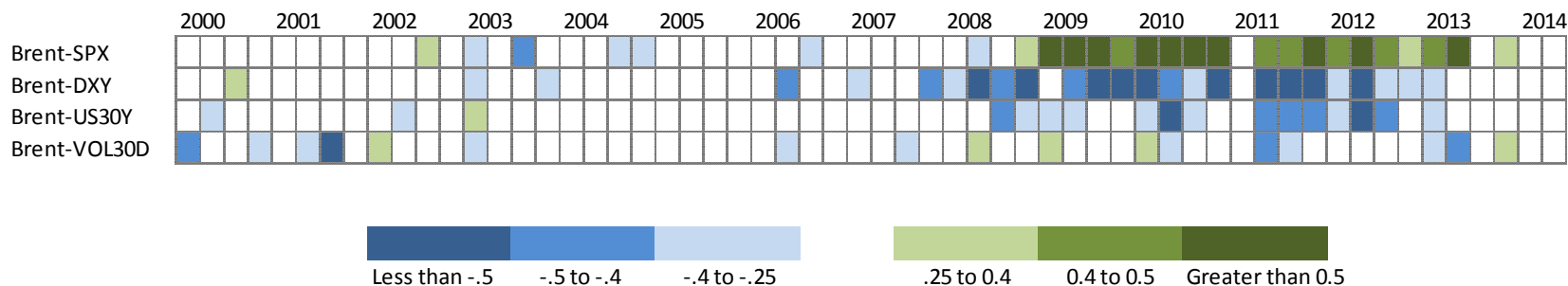
- Crude oil prices have had an inconsistent relationship with bond prices, with the clearest link occurring during times of sharply rising or falling risk perceptions, and increasing or decreasing investor allocations to commodities. This negative relationship held, for example over the 2008-2010 period.
- The relationship of crude oil prices to volatility is somewhat more well-behaved, although high implied vol can be associated with sharp moves both to the downside (2008 financial crisis) as well as the upside (1990 invasion of Kuwait), with the current period of low volatility being associated with relatively stable crude oil prices.

Oil Quarterly Correlations



Correlation with Financial Assets

Quarterly correlation of daily returns



Source: Bloomberg Finance LP, Deutsche Bank

Source: Bloomberg Finance LP, Deutsche Bank

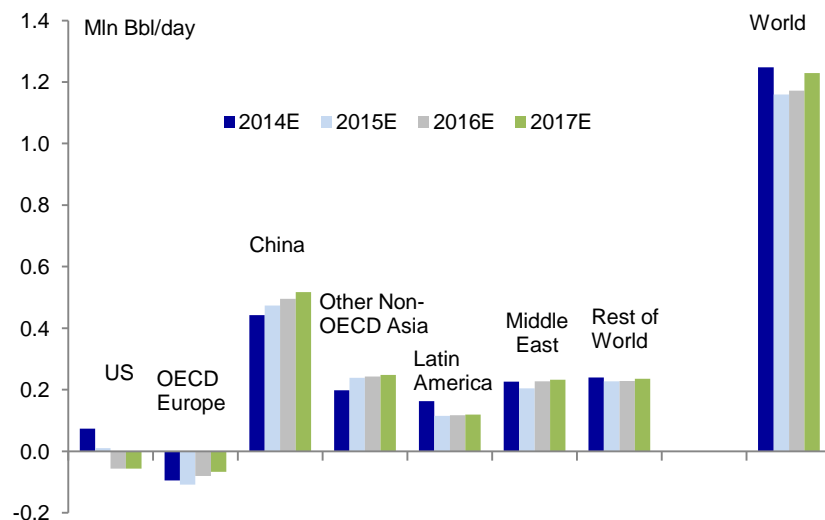
Outlook

- Historically there have been long periods when oil has shown very low correlations with financial assets.
- In the past decade the strongest relationships have been with the S&P500 and the US Dollar. However, the decoupling of oil and the S&P500 since 2013 suggests that this relationship may be weaker going forward. Impending US Dollar strength in the next several years will test the Oil/USD relationship.

EM oil demand growth dominates

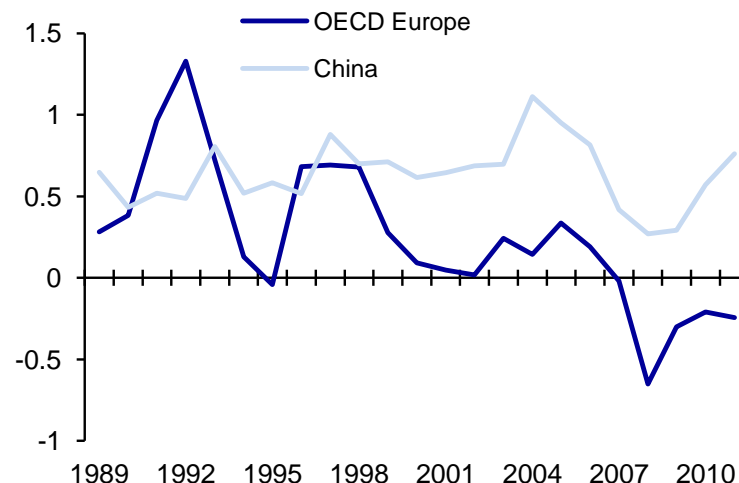


Global oil demand growth by key region/country (mbd)



Source: IEA, Deutsche Bank

Oil intensity of GDP growth (3y moving avg)



Source: IEA, Bloomberg Finance LP, Deutsche Bank

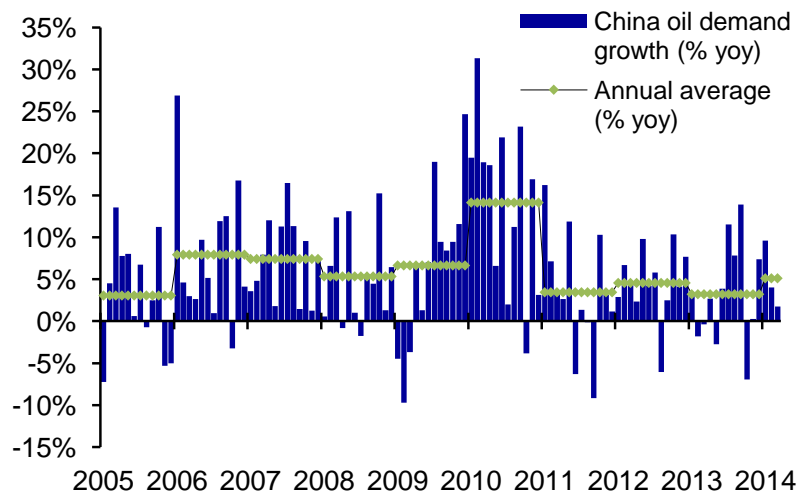
Outlook

- US oil demand will eke out minimal increases while European demand continues to contract. Positive GDP growth in Europe has increasingly been associated with low or negative oil demand growth as fuel efficiency gains dominate.
- EM Asia will contribute the greatest share of global oil demand growth this year, while the Middle East and Latin America will also be meaningful contributors. China will be the largest contributor to global oil demand on a growth basis this year, equal to 34% of the total. China's oil intensity of GDP growth averaged 0.76 over 2009-2011 but is on the decline. According to Asia equity research, oil intensity excluding outliers is now at 0.52 over the 2008-2013 period.

China oil demand growth

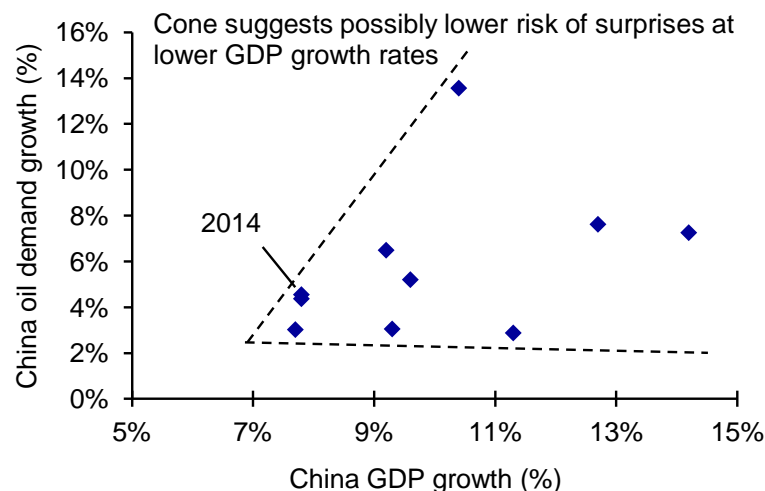


China oil demand growth



Source: Bloomberg Finance LP, Deutsche Bank

Relationship with GDP growth



Source: Bloomberg Finance LP, Deutsche Bank

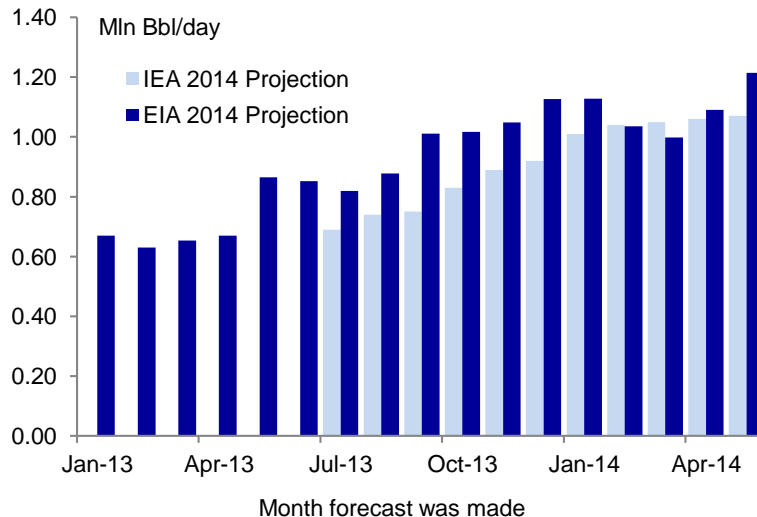
Outlook

- China's oil demand growth rate going forward is unlikely to be on par with the past decade, reflecting more efficient consumption patterns as well as lower GDP growth.
- Lower GDP growth rates over 2012-2014 have also been associated with a narrower range of associated oil demand growth rates, suggesting that demand surprises are less likely going forward. Government's shift of emphasis from export-oriented industry and fixed asset investment to domestic consumer-driven consumption supports this hypothesis.

2014 US supply growth estimates leveling out

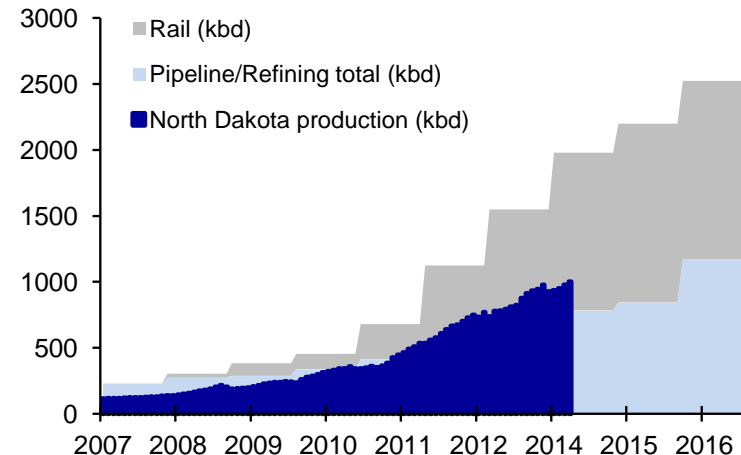


IEA and EIA 2014 forecasts



Source: US EIA, IEA, Deutsche Bank

North Dakota production and infrastructure growth



Source: Bloomberg Finance LP, Deutsche Bank

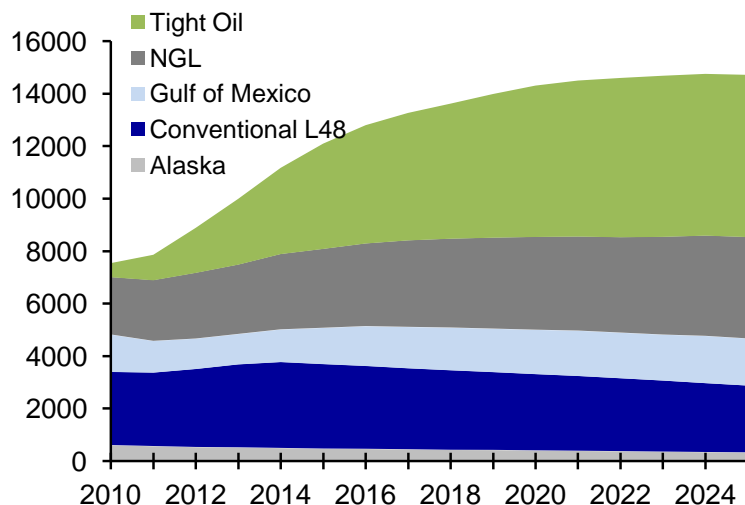
Outlook

- IEA forecasts of 2014 US supply growth have leveled out while EIA now shows growth of 1.2 mbd yoy. Based on total production of crude and NGLs, EIA forecasts appears closer to the actual rate of 1.29 mbd yoy.
- Evacuation capacity of infrastructure in North Dakota could expand significantly through 2016 if long-distance pipelines are approved (Enbridge Sandpiper and TransCanada Keystone XL), included in chart above. This would raise headroom for further expansion of Bakken production.

US supply growth owed to tight oil

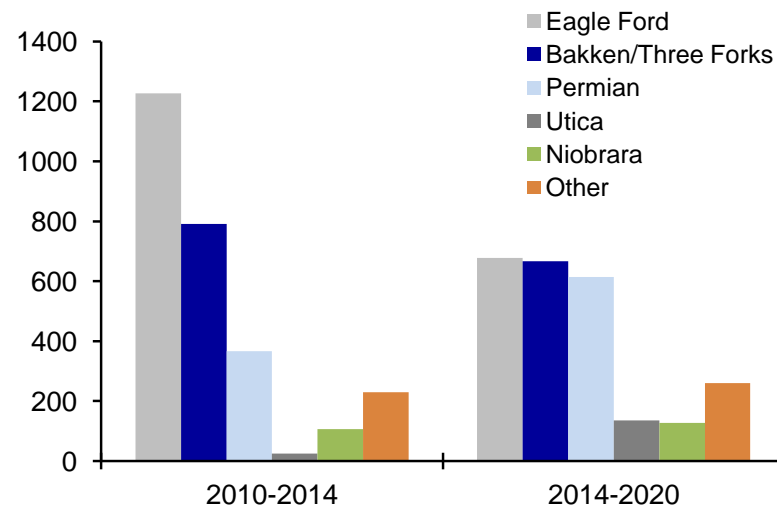


Tight oil represents most growth (kbd)



Source: US EIA, IEA, Deutsche Bank

US tight oil cumulative production growth (kbd)



Source: Bloomberg Finance LP, Deutsche Bank

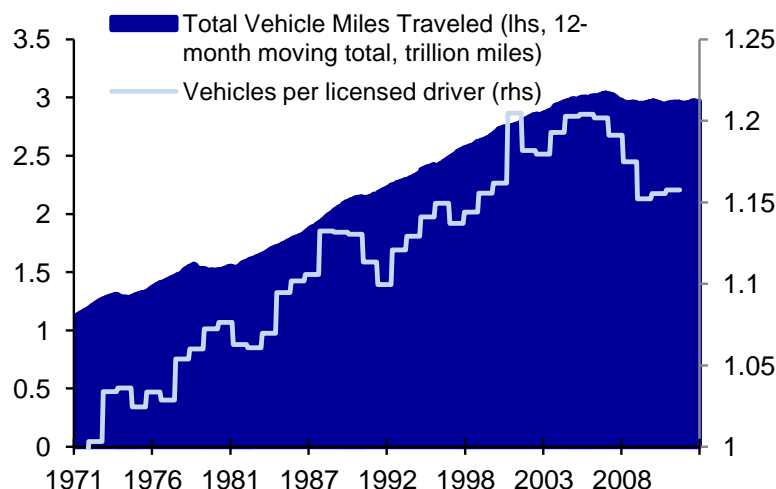
Outlook

- Tight oil will continue to dominate US oil supply growth, with NGLs providing a supporting role.
- Amongst tight oil plays, the Eagle Ford has been the top contributor to oil supply growth in the past 4 years. In the next 6 years to 2020, the Eagle Ford, Bakken/Three Forks, and Permian Basins will equally contribute roughly 650kbd cumulatively.
- Increased reliance on tight oil may strengthen price support around \$80/bbl as US drilling contracts tend to run on shorter timeframes (6 months to 1 year). Roughly 40% of US tight oil production has an incentive cost above \$80/bbl.

US demand drivers weakened since 2007

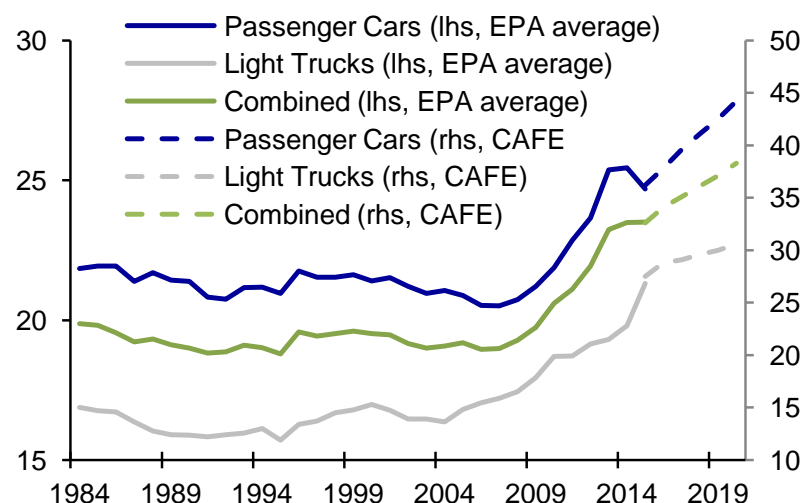


Vehicle miles travelled and vehicles per licensed driver



Source: US DOT, FHA, Deutsche Bank

Fleet average fuel efficiency by model year and CAFE standards (mpg)



Source: US EPA, Office of Transportation & Air Quality, Deutsche Bank

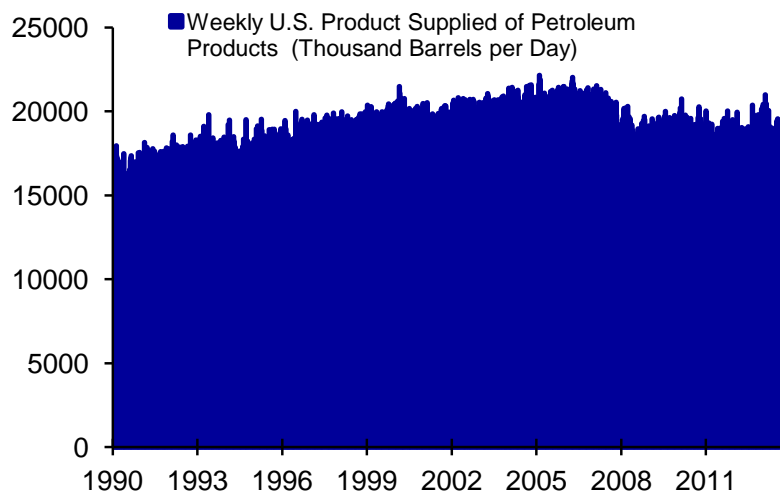
Outlook

- Transportation is the dominant mode of consumption for U.S. oil products. Finished motor gasoline makes up 46% of total U.S. product supplied. With the addition of distillate fuel oil this rises to 66% of total product supplied.
- Total vehicle miles travelled (VMT) has not risen above its monthly peak of 3.039 trillion miles in Nov 2007. January 2014 VMT was roughly equal to the January 2011 VMT figure.
- A further important driver is the fact that fleet average fuel efficiency for the model 2015 year has increased by 14% over the model 2010 year.

Stagnation in US demand growth

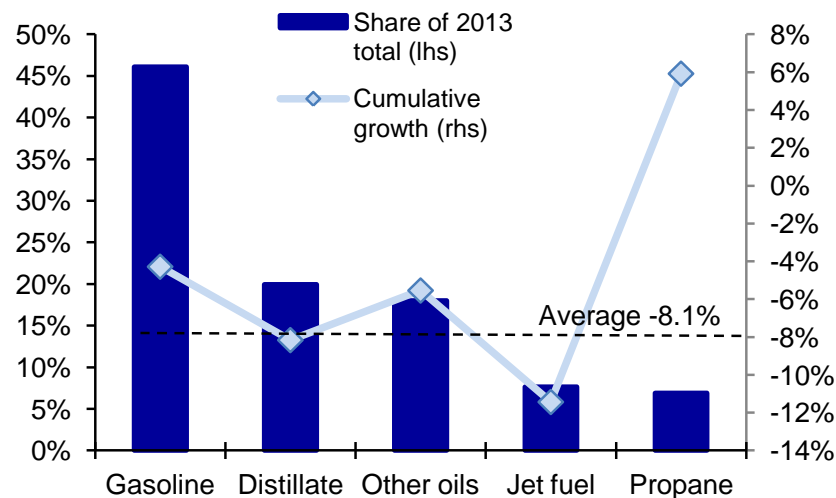


US product supplied (kbd)



Source: US EIA, IEA, Deutsche Bank

2005-2013 growth in US product demand



Source: US EIA, Deutsche Bank

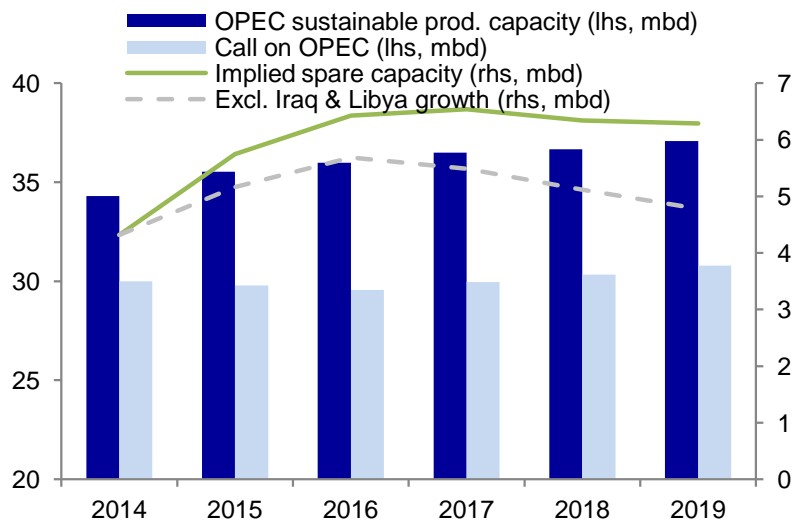
Outlook

- Consequently, U.S. monthly product supplied has not exceeded the high reached in December 2005. The Dec 2013 average, despite being a colder-weather month than Dec 2005 (696 HDDs versus 682), measured 7.7% lower in total product supplied compared to Dec 2005.
- Motor gasoline demand has been resilient as it has fallen by less than the overall oil product slate, while propane/propylene demand has actually increased.

OPEC Supply and Spare Capacity

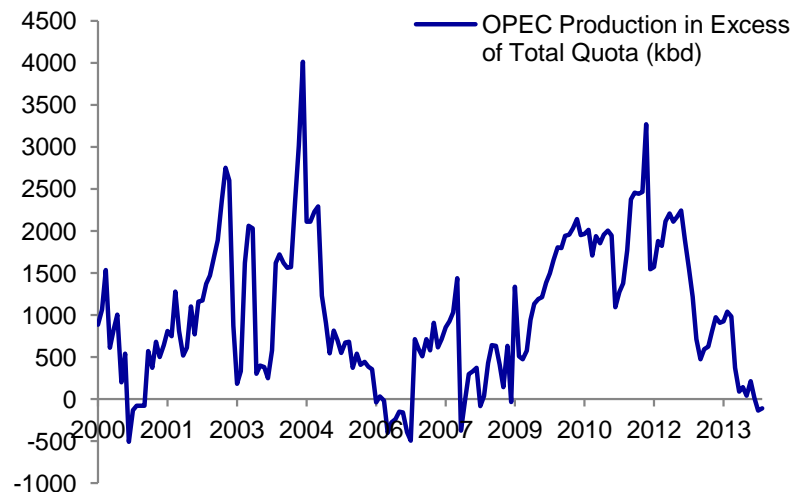


OPEC spare capacity rising (mbd)



Source: US EIA, IEA, Deutsche Bank

OPEC production likely to remain close to quota (kbd)



Source: IEA, Deutsche Bank

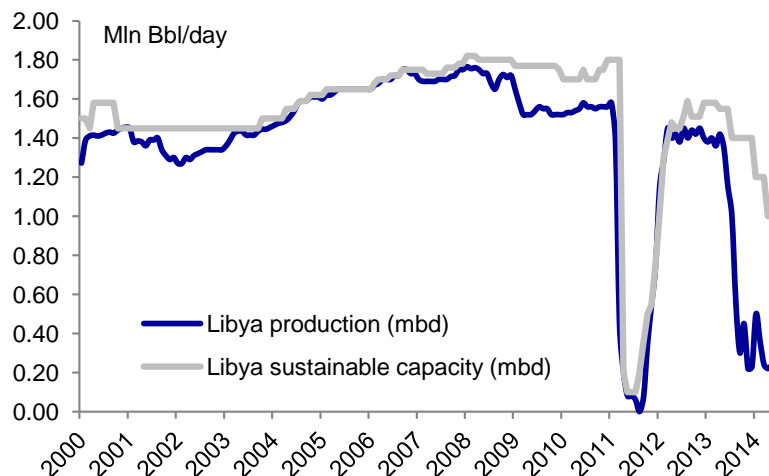
Outlook

- Despite political instability in Iraq and a slow progress in restoring Libyan production, medium-term prospects are in fact positive for OPEC spare capacity. Excluding risks to future development of Iraqi and Libyan oil production capacity, we would have expected OPEC spare capacity to build significantly from 4.3 mmb/d currently, to 6.3 mmb/d in 2019.
- Alternatively, in a risked scenario we can assume no change to Iraqi and Libyan sustainable production capacity. This would still give us overall growth in OPEC spare capacity to 4.8 mmb/d in 2019, and up to 5.7 mmb/d in 2016 as UAE, Nigeria and Angola raise capacity.

Libya and Iran Supply

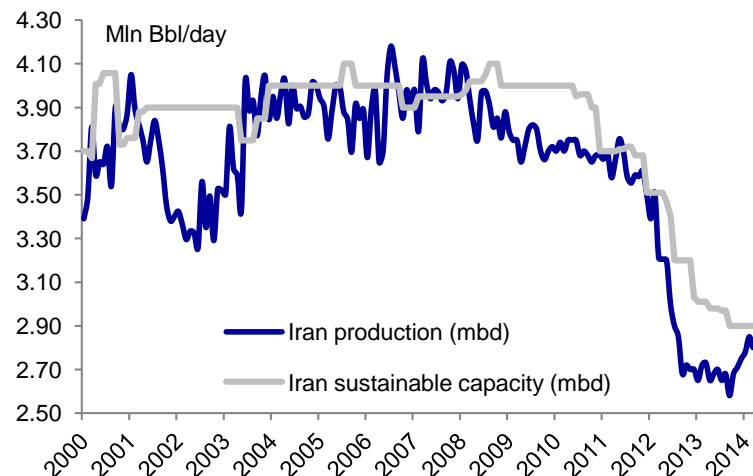


Libya production and capacity (mbd)



Source: Bloomberg Finance LP, IEA, Deutsche Bank

Iran production and capacity (mbd)



Source: Bloomberg Finance LP, IEA, Deutsche Bank

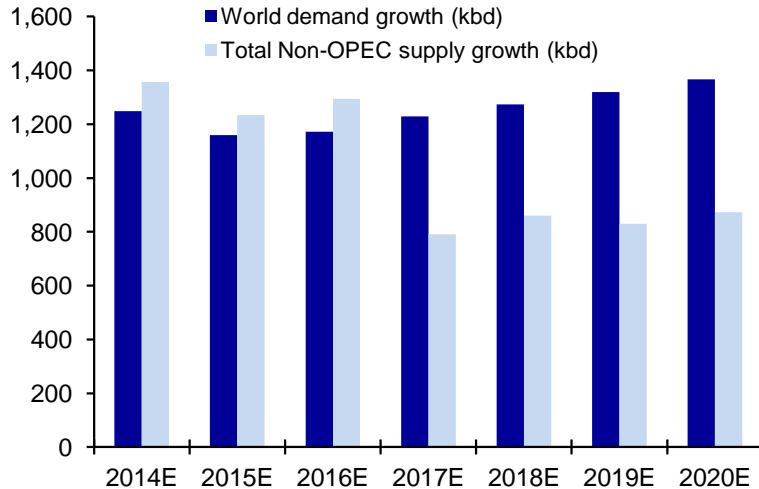
Outlook

- Signs of a recovery in Libya are in place, but physical constraints will translate into delays. Rebels have agreed to hand over the larger ports of Es Sider and Ras Lanuf, but exports from Hariga and Zueitina have been slow to start. The El Feel field has restarted but damage to oil pumps will delay El Sharara.
- Expectations in March were that Iran would offer to suspend production of medium-enriched uranium and accept limits on low-enriched uranium. Now that appears to be premature, as Iran is expressing a need to significantly expand its uranium enrichment capacity, showing a wide gap between Iran and the six major powers negotiating for an agreement.

Non-OPEC supply growth to exceed Demand growth

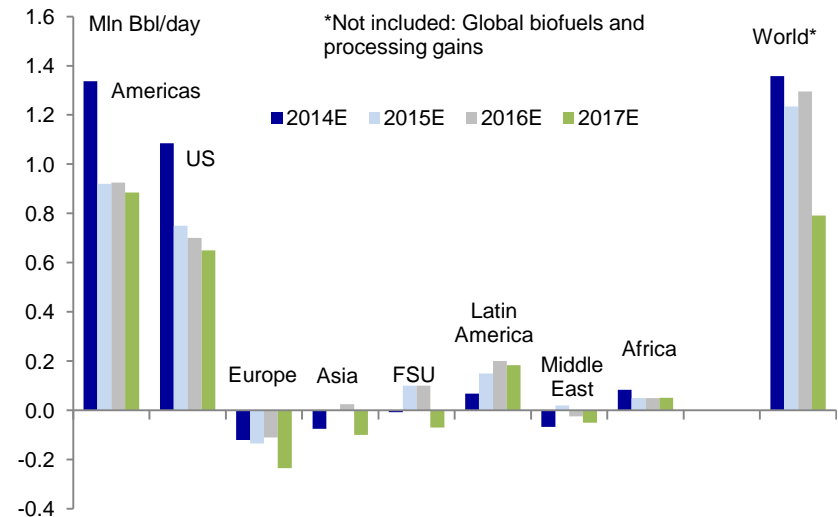


World demand and Non-OPEC supply growth (kbd yoy)



Source: IEA, Deutsche Bank

US the largest player in Non-OPEC supply growth



Source: IEA, Deutsche Bank

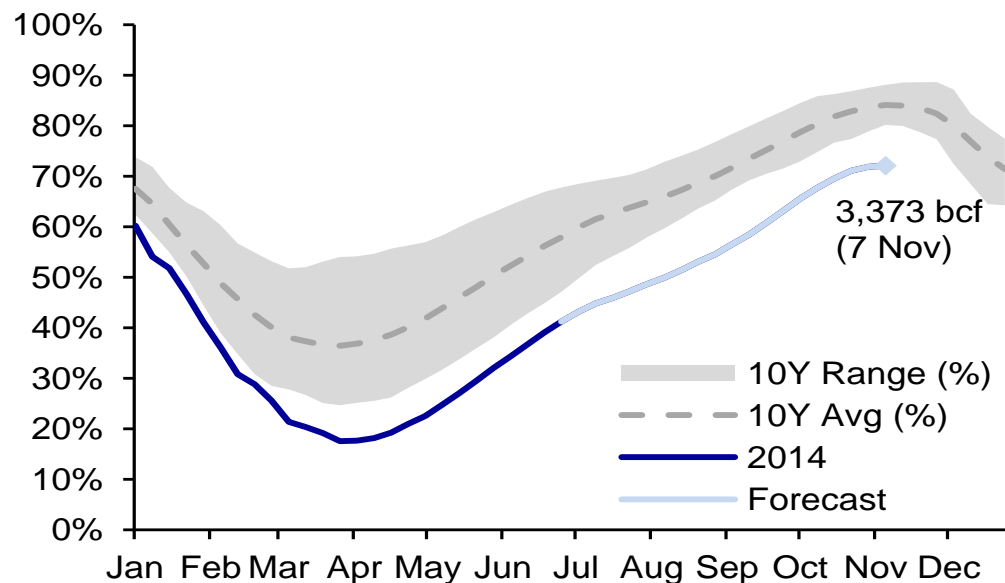
Outlook

- We expect total Non-OPEC supply growth to exceed world demand growth through 2016, suggesting that any crude oil price advances will be contained. A resumption of US dollar appreciation in accordance with what we expect to be the new long-term trend should also be a restraining influence on prices.
- Clearly the US is the strongest driver for increasing Non-OPEC supply. A moderation in US supply growth over the latter part of the decade means that the trend in increasing OPEC spare capacity is likely to reverse in the post-2016 timeframe, during which world demand growth will again outpace Non-OPEC supply growth.

US Natural Gas



End Of Season Storage Levels Are At Critically Low Levels



Sources: Deutsche Bank

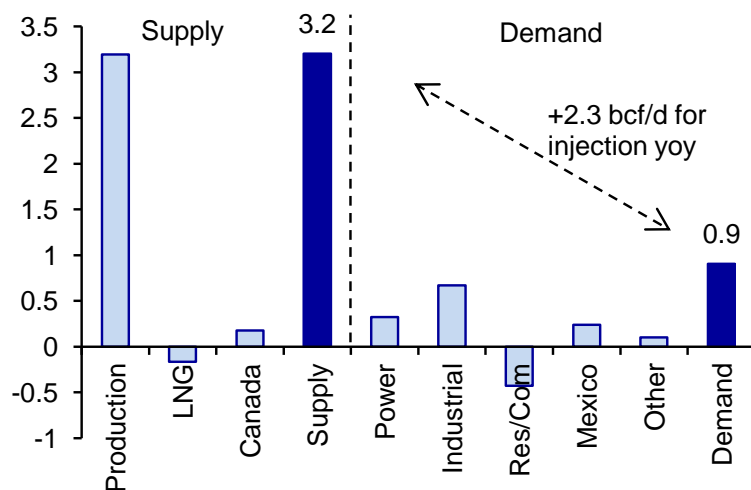
Outlook

- US natural gas storage levels are at critically low levels. Indeed they are at their lowest levels since 2000 in percentage terms and the lowest level since 2005 in absolute terms. In both these years natural gas prices spiked by more than 100%.
- We expect risks will be primarily weather dependent but any excessive summer warmth could deliver significant upside price spike risk.

Summer Gas S/D Assumptions

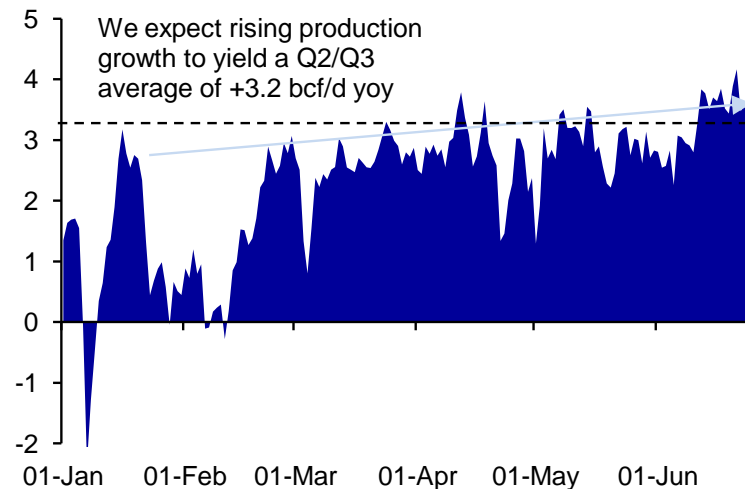


2.3 bcf/d additional gas available for injection



Source: US EIA, Deutsche Bank

Dry gas production growth (bcf/d)



Source: Bentek Energy, Deutsche Bank

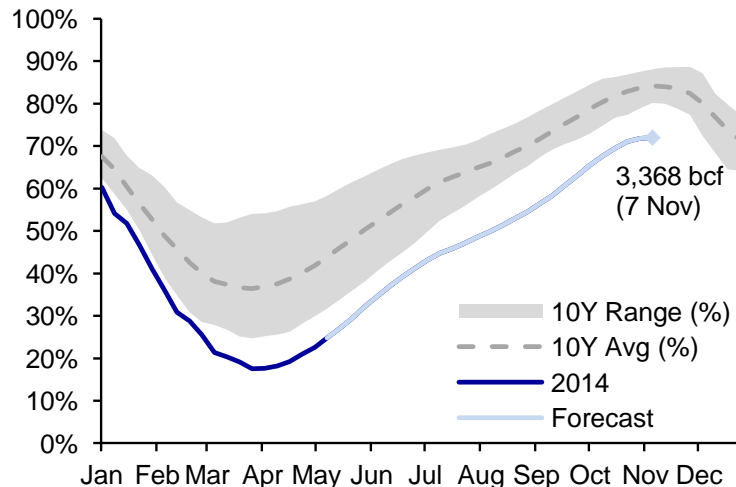
Outlook

- Stronger-than-expected natural gas supply growth this summer has been absorbed by rising industrial demand which reflects a multi-year project pipeline of investments. We upgrade our forecasts for industrial demand both this summer and through 2017.
- Dry gas production increases are indeed on the rise, registering +3.3 bcf/d yoy in June month-to-date, up from 2.9 bcf/d in May, Figure 4. This most likely contributed to injections exceeding consensus by 7 bcf in the week ending 20 June, and August natural gas prices consequently falling towards \$4.40/mmBtu.

US Gas Injection Season

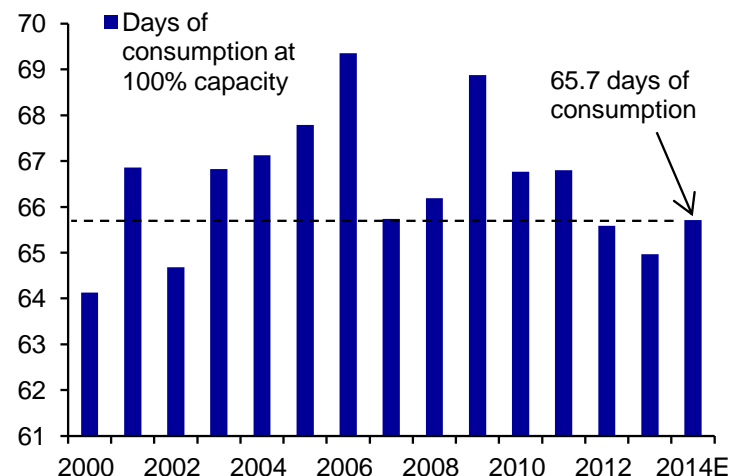


Injection season forecast



Source: US EIA, Deutsche Bank

Storage sufficiency in days of consumption



Source: US EIA, Deutsche Bank

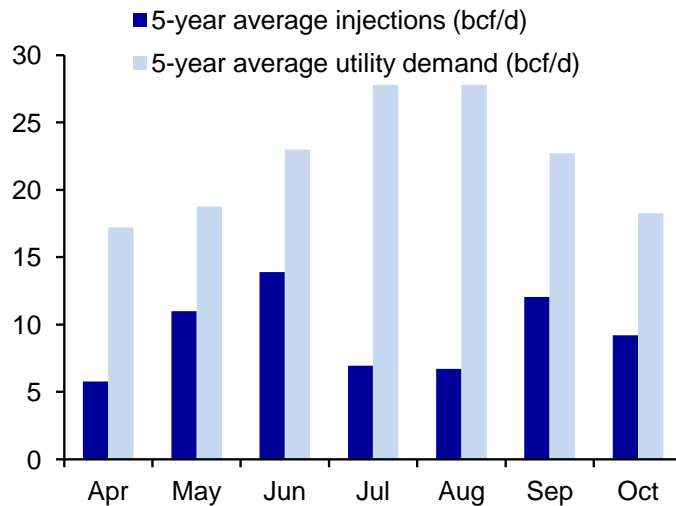
Outlook

- We mark down the November storage forecast by 100 bcf owing to slow injection progress in Q2, and raise our expectation of Q1-15 pricing by \$0.10/mmBtu to \$5.00/mmBtu. As the injection season is now almost halfway in volume terms of the typical injection profile, certainty is now higher regarding the likely pre-winter storage level and the potential for a tight winter.
- What should be considered a normal level of storage in percentage of working gas capacity? We would argue that 85% is the relevant standard, since total working gas capacity in 2014 is low relative to estimated consumption (65.7 days).

Q2 Is An Important Gas Injection Quarter

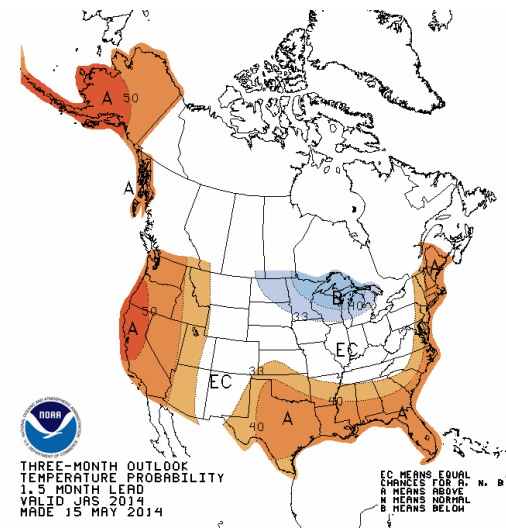


Jul/Aug Injections Are Weak



Source: US EIA, Deutsche Bank

NOAA Jul-Aug-Sep seasonal forecast



Source: NOAA National Weather Service

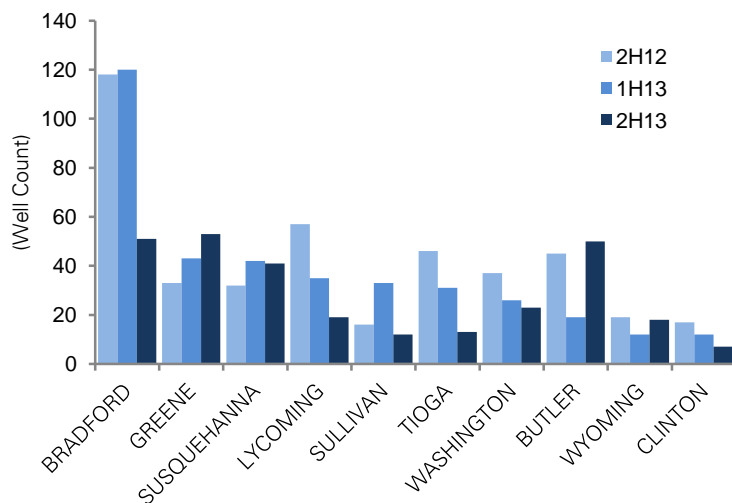
Outlook

- 47% of storage injections typically occur in Q2 because of two factors: (i) Utility demand is picking up from winter, but is still below the peak months of July and August. (ii) Depleted fields can inject at the fastest rates when they are empty. Depleted field storage represents the vast majority (81%) of US working gas capacity.
- NOAA seasonal weather forecasts indicate predominantly warm risks in the peak summer months, which means that injections will likely be suppressed as normal. Note that 2013 summer was also warmer than normal, meaning that year-on-year utility demand may be similar.

Gas production metrics signal slower growth

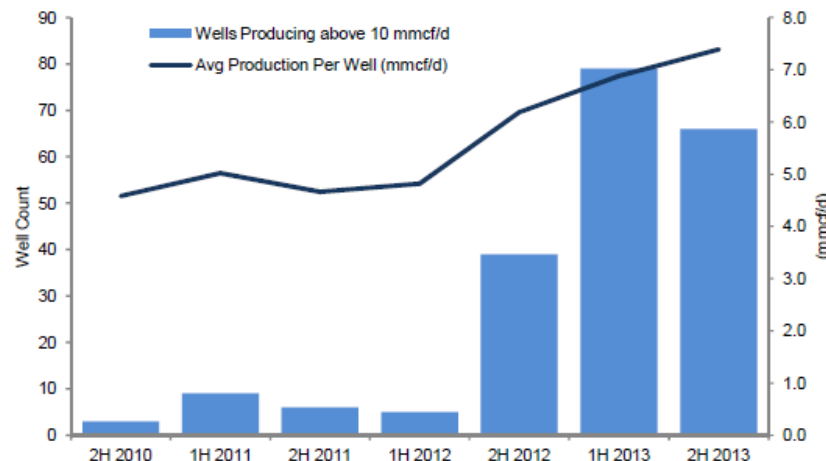


PA drilled/not completed inventory



Source: PA DEP, Deutsche Bank E&P Equity Research

Marcellus well performance



Source: Deutsche Bank E&P Equity Research

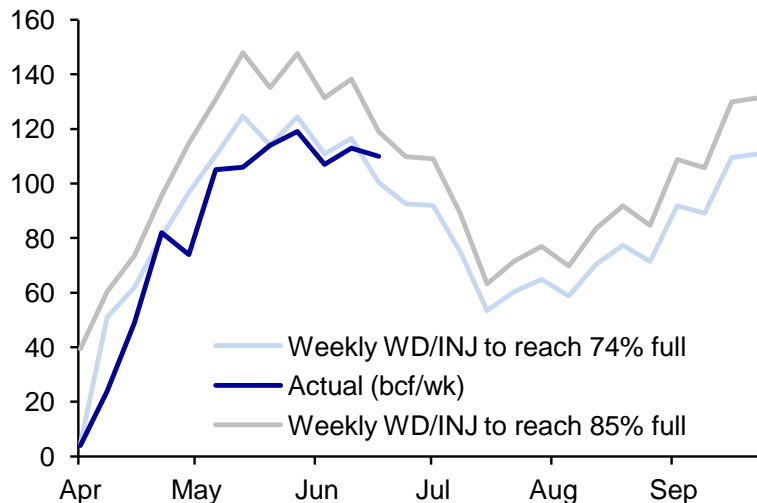
Outlook

- We assume dry gas production growth will average 3.2 bcf/d yoy over the course of Q2 and Q3. Well performance improvements appear to be levelling out as Reduced Cluster Spaced (RCS) completions became standard practice in 2H-13. Average initial production (IP) rates are growing at a slower rate.
- This in combination with the fact that national gas-directed rig counts remain near all time lows, suggests that upside production surprises may be harder to come by this year.

How much has gas injection disappointed?

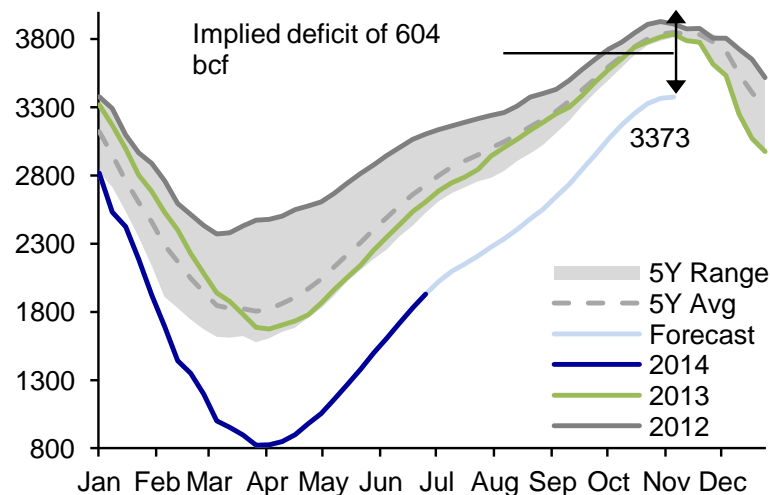


Required versus actual weekly storage WD/INJ



Source: PA DEP, Deutsche Bank E&P Equity Research

US gas storage injection profile



Source: Deutsche Bank E&P Equity Research

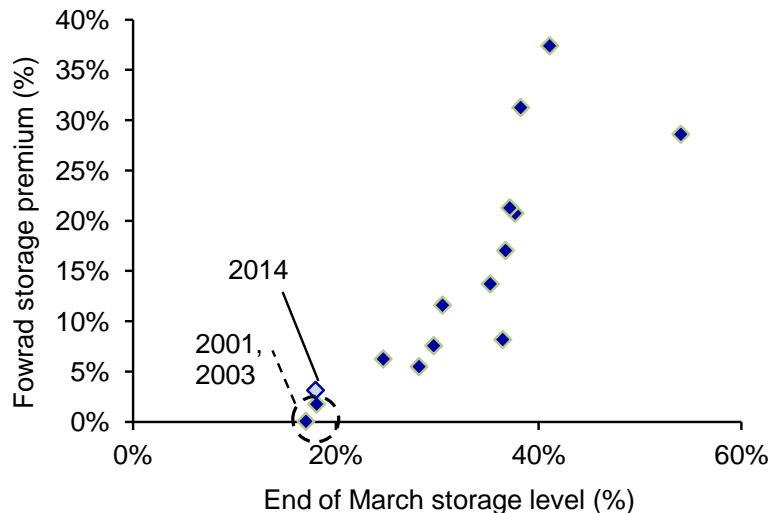
Outlook

- Injections have fallen short of the profile to reach 74% fullness in 9 out of the 12 weeks so far in this injection season.
- Achieving an end of season volume of 3,373 bcf would equate to 72% fullness on 7 November, reflecting the shortfalls already realised so far.
- Injection rates are unlikely to rise sufficiently to make a large difference to the November figure now. Whereas at the start of the summer, we estimated that dry gas production growth would have to measure +5.2 bcf/d yoy in order for storage to reach 85% full, we now estimate that production would have to grow by 7.9 bcf/d yoy to reach the same goal.

Low gas storage associated with low forward spreads



US gas storage level and storage spread



Source: Earthsat, Deutsche Bank

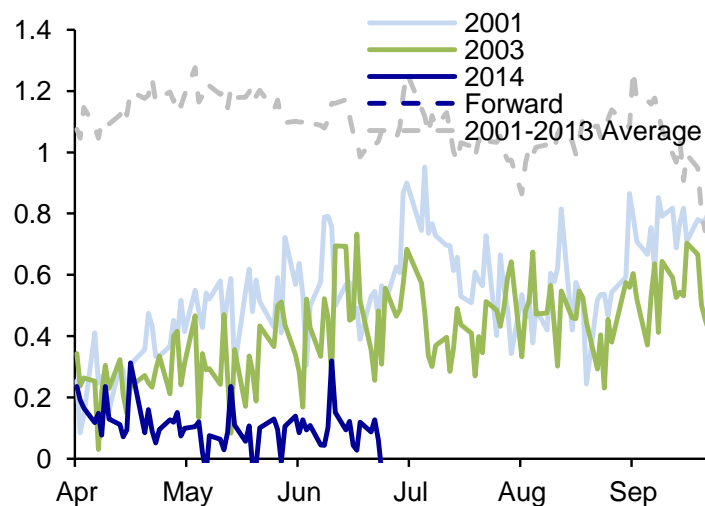
Outlook

- Plotting the historical end-of-March storage levels against forward storage spreads (Nov-Mar over Apr-Oct), we find that forward spreads are typically very low in years when storage finishes the winter at a low level.
- This paradoxical result is probably best explained by the fact that a shortage of gas in the prompt market causes front-end backwardation, offsetting the seasonal upward slope in next-winter prices. This can be interpreted as an expression of confidence in high storage fill over the summer, or confidence in the ability of supply growth to meet demand over the winter through production rather than withdrawals.

US gas out-turn storage spreads



Out-turn storage spread (\$/mmBtu)



Source: Earthsat, Deutsche Bank

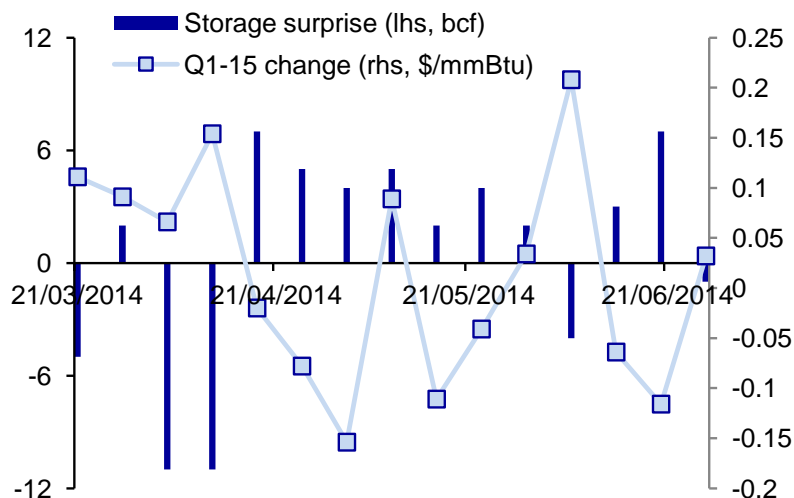
Outlook

- In both of the comparable years of 2001 and 2003, very low end-of-winter stocks were associated with very low forward storage spreads.
- In both of these years, storage spreads widened significantly on out-turn. We measure this by taking the forward Nov-Mar price on each given day, less Henry Hub spot. We believe \$0.40/mmBtu is a good estimate of the minimum incentive required to pay for operational costs.
- This year, the out-turn spread remains exceptionally low, expressing unprecedented confidence in supply.

Gas injection surprises met with large selloffs



Injection surprises and Q1-15 selloffs



Source: Bloomberg Finance LP, Deutsche Bank

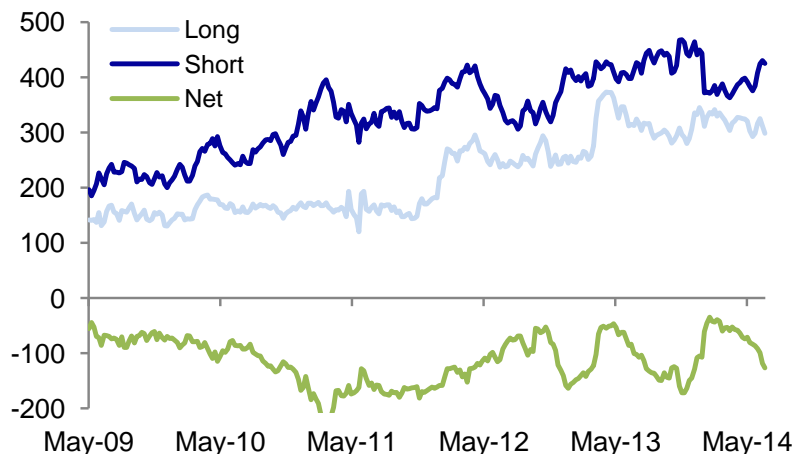
Outlook

- Small upside surprises in the weekly injection numbers in late April and May have been met with outsized selloffs in the Q1-15 contract. Larger negative withdrawal surprises in early April were met with similar-sized moves higher in Q1-15 contract.

Investor positioning in US natural gas

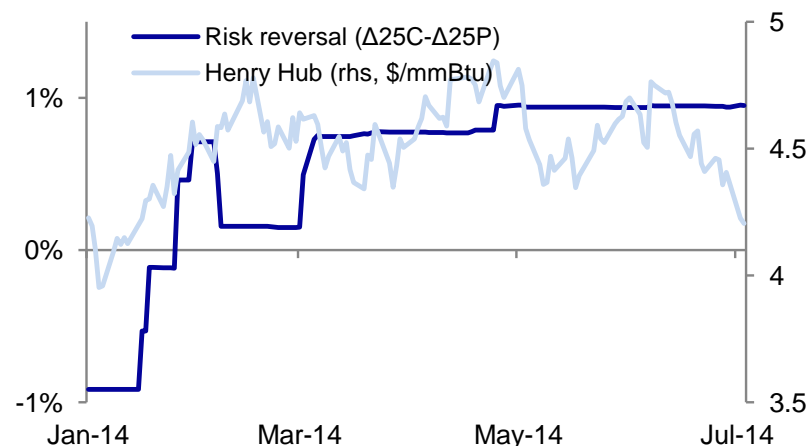


CFTC Positioning in US Natural Gas



Source: Bloomberg Finance LP, Deutsche Bank

Risk Reversal in US Natural Gas



Source: US EIA, Deutsche Bank

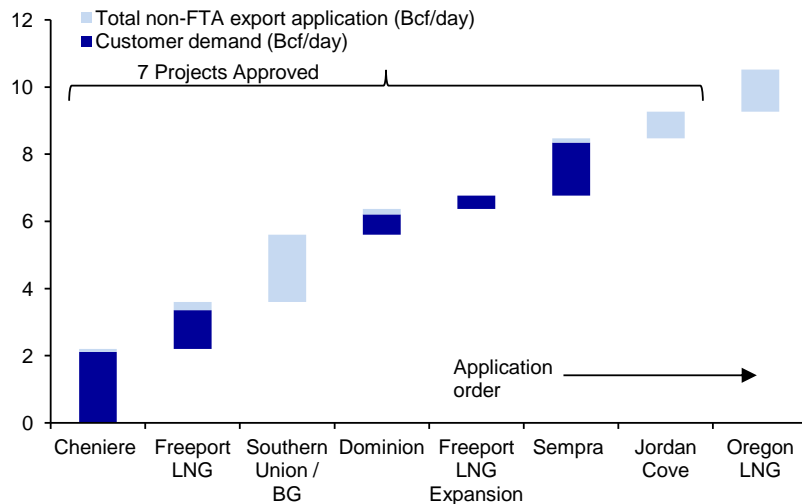
Outlook

- In the past several weeks, long exposure has been scaled back and short exposure increased, driving the net positioning level to -126k. The 5-year history of CFTC reports shows that positioning has ranged from -34k to -223k contracts.
- Despite the recent sell off in Henry Hub, the options market continues to price call options at a premium to put options, suggesting that investor sentiment still favours exposure to and/or protection from outsized upside moves.

Approved US LNG Exports Rise To 9.3 bcf/d

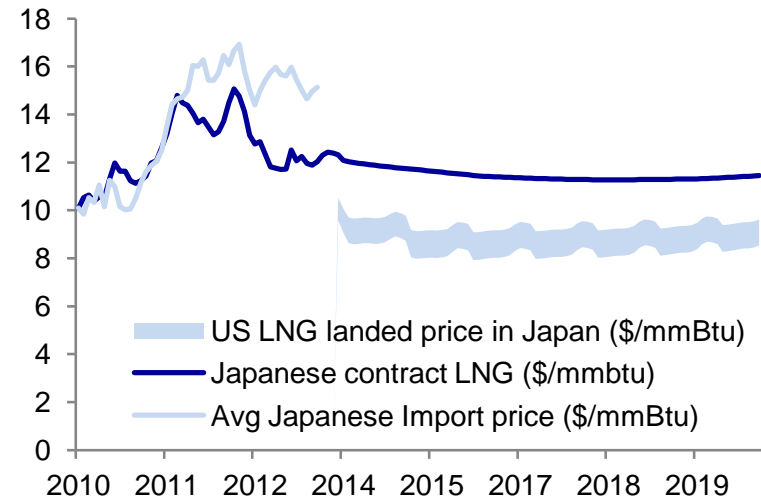


LNG Project Approvals (mtpa)



Source: US EIA, Deutsche Bank

Economics to Asia (\$/mmBtu)



Source: Bloomberg Finance LP, Deutsche Bank

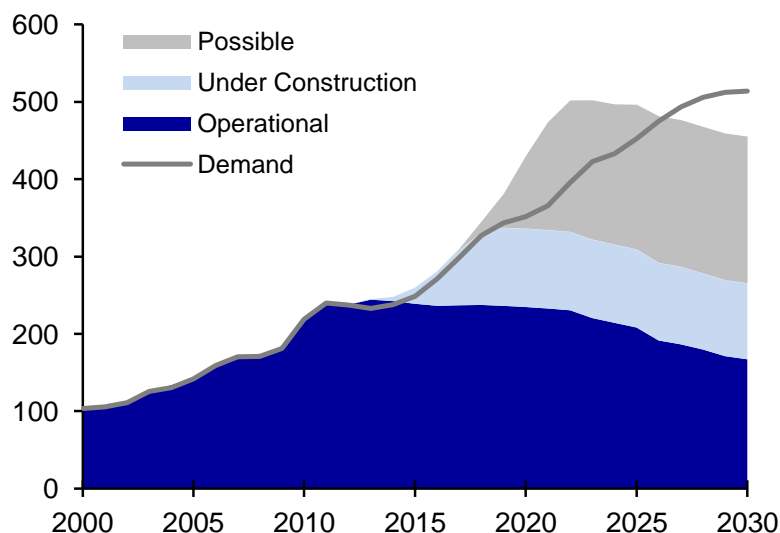
Outlook

- DOE has approved the 7th project which is the first greenfield project approved. An additional 2 project approvals would bring the total up to the 12 bcf/d threshold (High Level) specified in the NERA Economic Consulting report. We expect 1.5 bcf/d in operation in 2017 and as much as 7.5 bcf/d by 2020.
- While economics to Asia are clearly in the money, we believe that diversification of price risk is an equally important consideration for Asian buyers (and potentially better bargaining power in renegotiations).
- Economics delivered to Europe are less positive and therefore limited volumes are likely to be shipped.

Market Timing A Challenge For Further US LNG



High volume of possible supply in 2020 (mtpa)



Source: Wood Mackenzie, Deutsche Bank

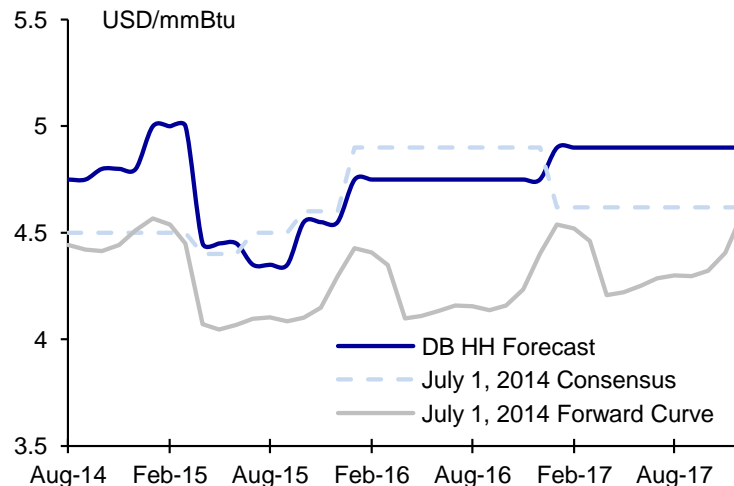
Outlook

- Including Sabine Pass (T1-4), Freeport and Cove Point in the LNG balance, forecast demand would be nearly satisfied in 2020 (short of 2mtpa).
- While this does not account for unplanned outages, it does highlight potential challenges for further US LNG export projects to secure pre-contracted demand in the 2020 timeframe, at which point in time a combined volume of 80mtpa in possible new projects may reach the market. This includes 32mtpa of possible new supply outside of North America in 2020.

Medium term US gas demand picture looks positive



Price forecast and consensus (\$/mmBtu)



Source: US EIA, Deutsche Bank

Outlook

- We believe the market has now come to terms with the fact that November 2014 storage will be significantly below normal. However, pricing does not reflect the risk that production growth will be insufficient to deal with a cold winter.
- In the longer term, investments in industrial capacity and LNG exports along with increased utility consumption will add significantly to demand through 2019.
- While drilling rig efficiencies have continued to improve, gas-directed rig counts remain near record lows. Therefore the stronger production increases necessary to balance in 2016 and 2017 are uncertain. As a result, if demand growth proceeds according to our model, prices may rise faster than we currently assume.



Metals & Bulk Commodities

Commodity summary

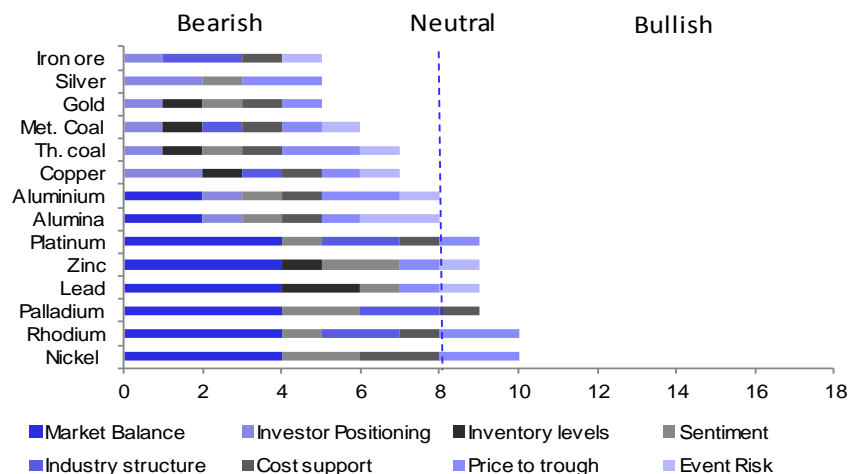


- **Base Metals:** improving global growth is supportive, but there are clear supply side differentiators.
 - Zinc / Lead: Chinese smelter profitability and mine closures leading to deficits. Upside price risks
 - Nickel has seen a dramatic shift with the Indonesian ban holding firm. Short-term risks but higher prices for longer.
 - Copper more mined supply will keep the market in a surplus, but probably not as much as the market expects. Financing unwind is a temporary distraction. In addition to cost curve and SRB behaviour is providing support.
 - Aluminium: Curtailments have tightened the market outside of China, impacting premiums. More cuts are needed preferably in China to turn bullish. Supply cuts are tempering supply growth rates.
- **Precious Metals:** a strong USD and rising bond yields offset by strong physical demand
 - Cautious Gold on a USD revival. H2 will see the Fed turn more hawkish in its messaging. A change in Indian import duties will be supportive at the margin.
 - Silver likely to re-rate as global PMI's improve. Cheap on a positioning and valuation perspective.
 - Improving platinum fundamentals as Auto demand in the Developed world remains robust. Protracted strike has helped the inventory situation. The strike is likely to have permanently impaired the SA supply base.
 - Palladium is a structural favourite and one of our top picks.
- **Bulks:** Supply curtailments versus supply momentum
 - Iron ore prices will ease lower as more supply hits the market. High cost supply will have to give way in order to balance the market. Domestic Chinese production, Indian exports and smaller Australian and Canadian producers.
 - Coal: Supply cuts in Met coal have provided the market with some support, whilst there have been minimal cuts in Thermal. More cuts required to balance market.

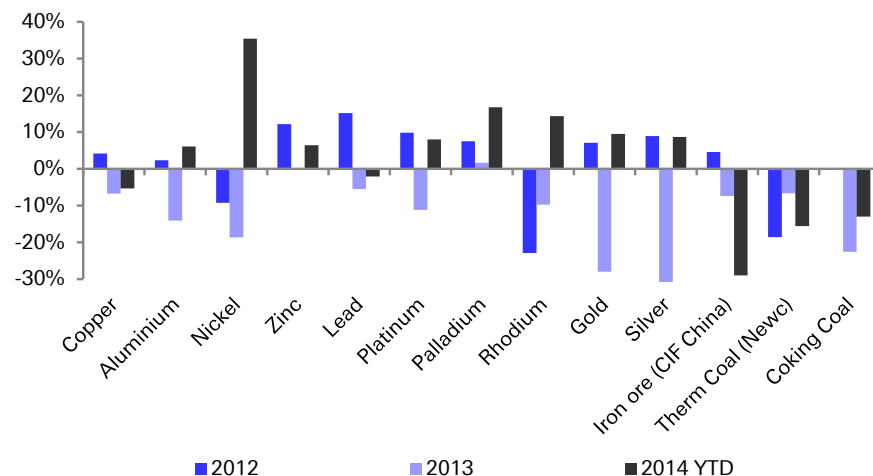
Ranking metals on fundamental and technical factors



Relative ranking matrix



Price performance Jan to Dec



Sources: Bloomberg Finance LP, Deutsche Bank

Outlook

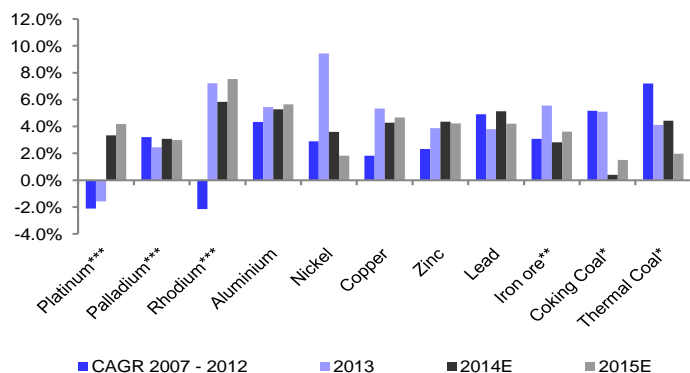
- We attempt to rank the relative attractiveness of metals according to fundamentals and technical factors.
- We are relatively more positive on nickel, zinc, lead, platinum and palladium based on market supply-demand balances.
- While we are relatively more cautious on gold, silver, alumina, met coal and iron ore
- However, it should be noted that a single variable can exert a very strong influence and so metrics are not necessarily independent.

Strong demand matched by supply growth

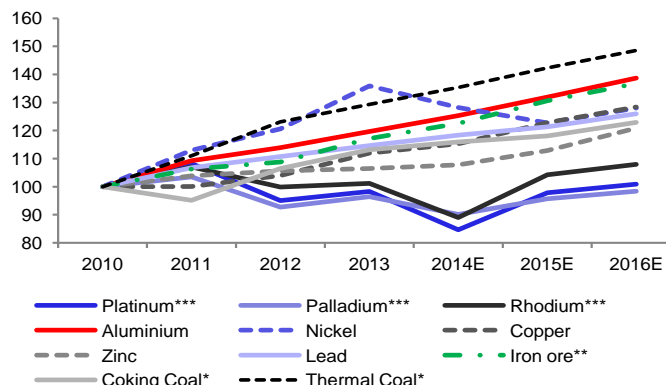
Downside risks from China, especially in Bulk commodities



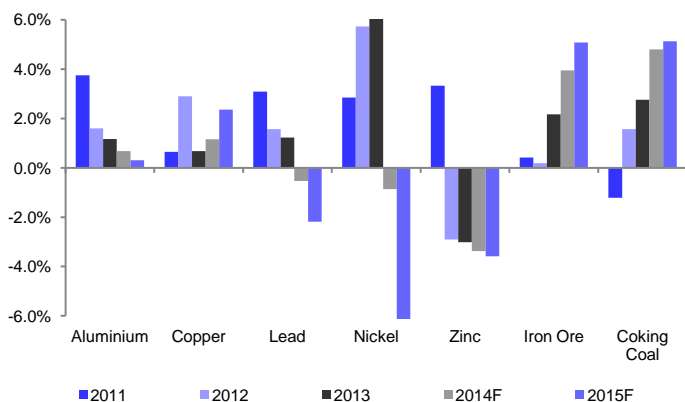
Industrial metal demand growth



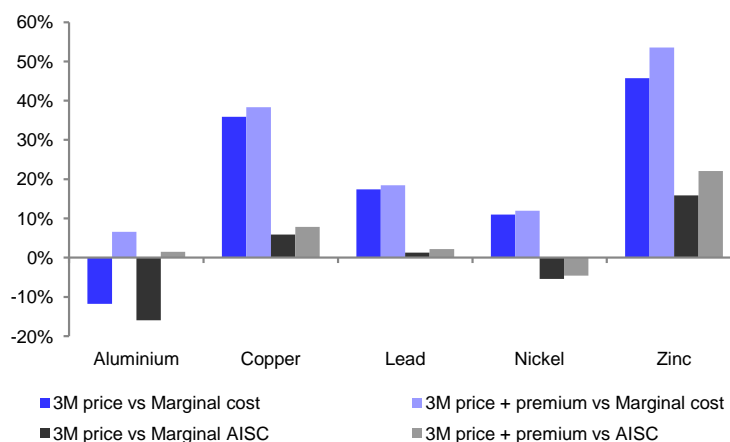
Industrial metal supply growth



Metal surplus / deficit as a % of demand



Industrial metal price versus marginal cost



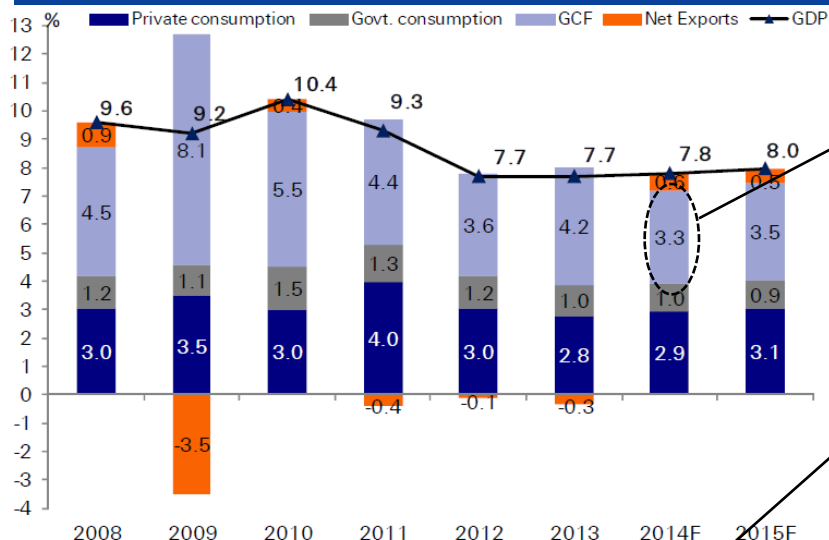
Sources: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie, AME

The changing demand picture from China....

...impacting materials



China: Contribution to GDP growth rate



Still positive, but in line with 2012 where demand disappointed on the down side

Impacts Steel consumption the most, negative read through for bulk commodities

Relatively more positive for copper and aluminium

A possible end to the pain in coal

FAI growth rate by sector

	Manufacturing	Mining	Transport infrastructure	Transport infrastructure railway	Real estate	Social services (environment, education, healthcare)	Agriculture	Others	Total FAI growth
Growth 2012	22%	11%	11%	5%	22%	19%	33%	24%	21%
Growth 2013	18%	12%	19%	8%	21%	26%	3%	22%	20%
Growth 2014	16%	6%	20%	10%	17%	25%	10%	16%	17%
Weight 2013	34%	3%	8%	1%	26%	11%	2%	16%	

Sources: Deutsche Bank, CEIC, Haver Analytics

The demand outlook is improving



Global demand weighted PMI

	2005 - current		Sept'08 - current	
	Correlation Coefficient	PMI lead (months)	Correlation Coefficient	PMI lead (months)
Copper	0.423	3-months	0.724	1-month
Aluminium	0.686	3-months	0.747	3-months
Nickel	0.523	3-months	0.699	1-month
Zinc	0.571	2-months	0.850	1-month
Lead	0.257	3-months	0.810	1-month

Source: Thomson Reuters Datastream, Deutsche Bank

Outlook

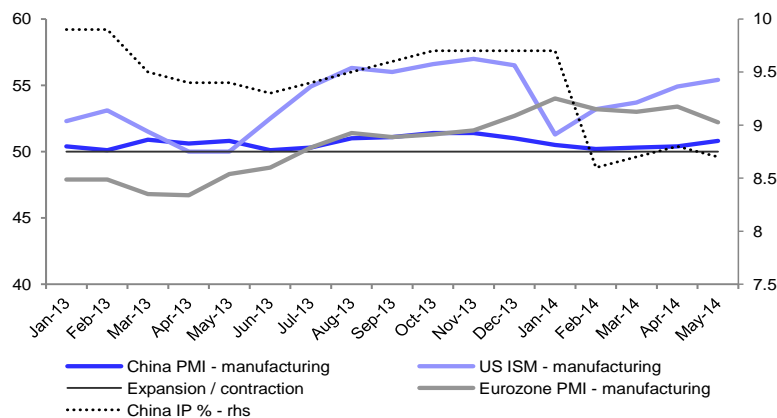
- Good correlation between the base metals and demand weighted global PMIs post the GFC
- Best correlation is a 1 to 3 month lag, with prices lagging the PMI's
- Zinc has the tightest correlation, Nickel has the weakest

The demand outlook is improving....

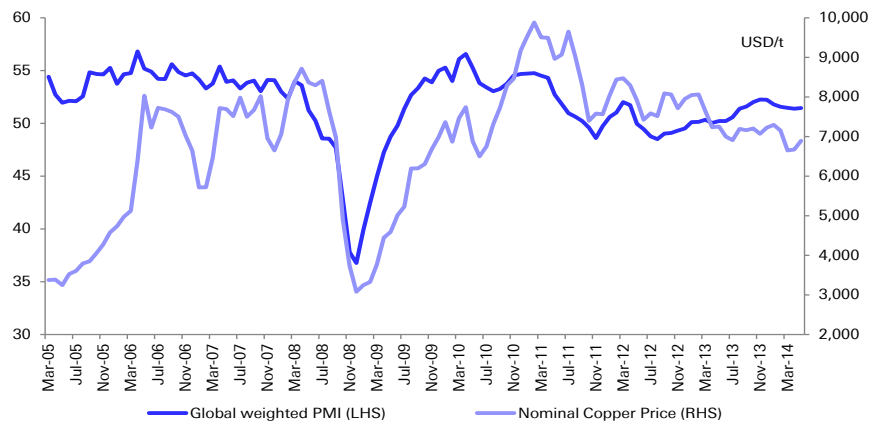
...at 40 – 50% of global demand, the China PMI is key



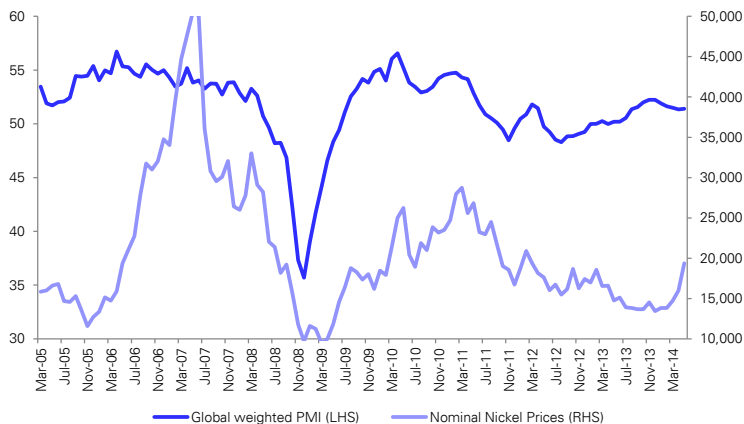
Regional PMIs / ISMs versus China IP



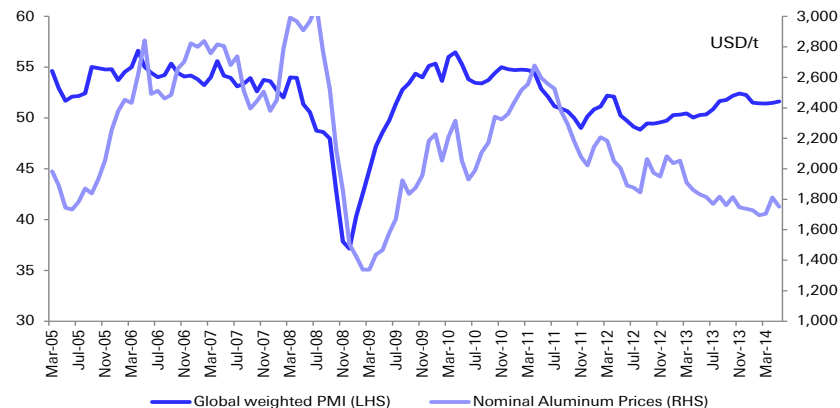
Global PMI vs Copper prices



Global PMI vs Nickel prices



Global PMI vs Aluminium prices

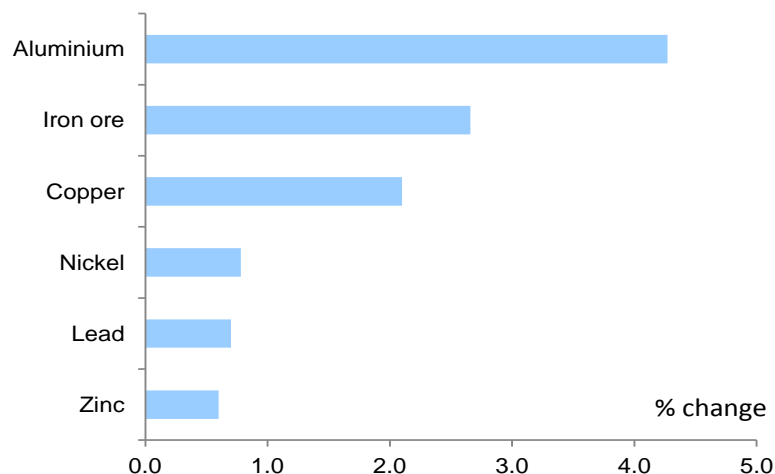


Sources: Deutsche Bank, Bloomberg Finance LP, Thomson Financial Datastream

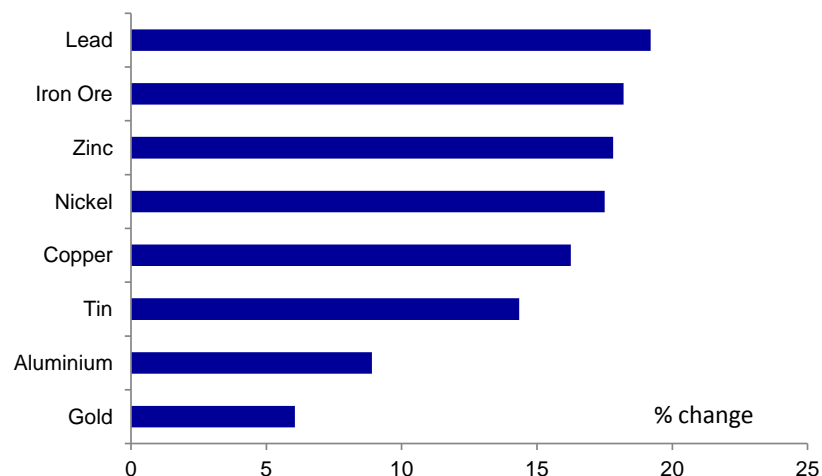
Metal Sensitivities To Chinese Growth



Consumption Sensitivity to GDP growth



Price sensitivity to GDP growth



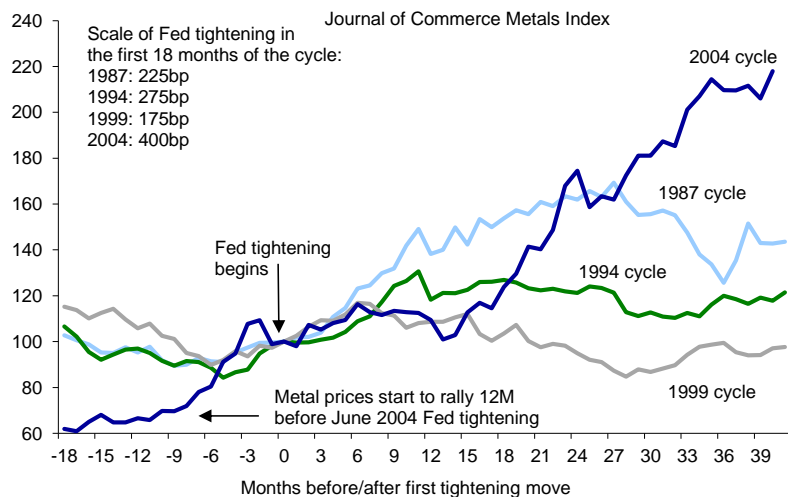
Source: Deutsche Bank, Bloomberg Finance LP

- China consumes 40% or more of most commodities and has been the main contributor to growth.
- Some conundrums in comparing consumption vs price.
- Aluminium due to ample supply
- Iron ore well correlated due to limited domestic supply

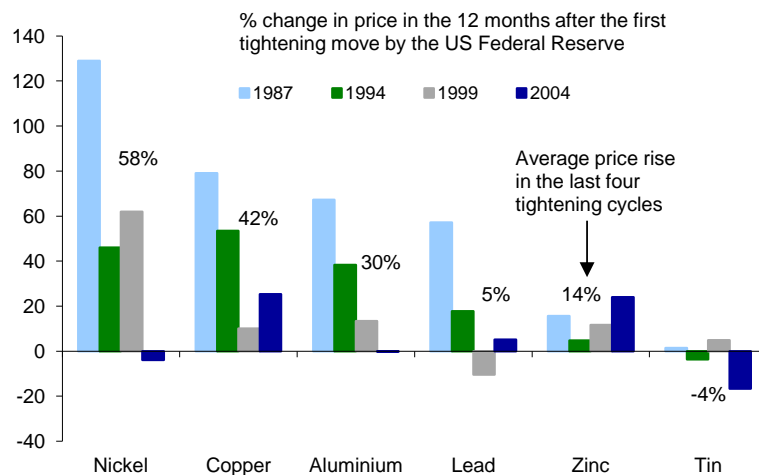
Fed Tightening & Industrial Metals



The Performance of Base Metals Around Fed Tightening Cycles



The Relative Winners & Losers During Fed Tightening Cycles



Outlook

- History would suggest that the start of a new Fed tightening cycle should be bullish industrial metal prices. We examined the performance of the Journal of Commerce metals index in the last four tightening cycles and found that to some degree the more aggressive the Fed raised rates in the first year of the turn in monetary policy the more powerful the rally in industrial metal prices.
- In terms of relative winners and losers nickel, copper and aluminium have typically displayed the strongest price rallies in the twelve months following the first tightening move in US policy rates.

The Inflection Points For Gold



#1 US Dollar Trade Weighted Index

- The US dollar trade-weighted index hit rock bottom on July 26, 2011 and has been strengthening modestly ever since.

#2 US Equity Risk Premium

- The ERP hit a record high in September 2012 and has been falling steadily ever since.
- The ERP is the difference between the expected rate of return on a risk free asset and the rate of return on the stock market.

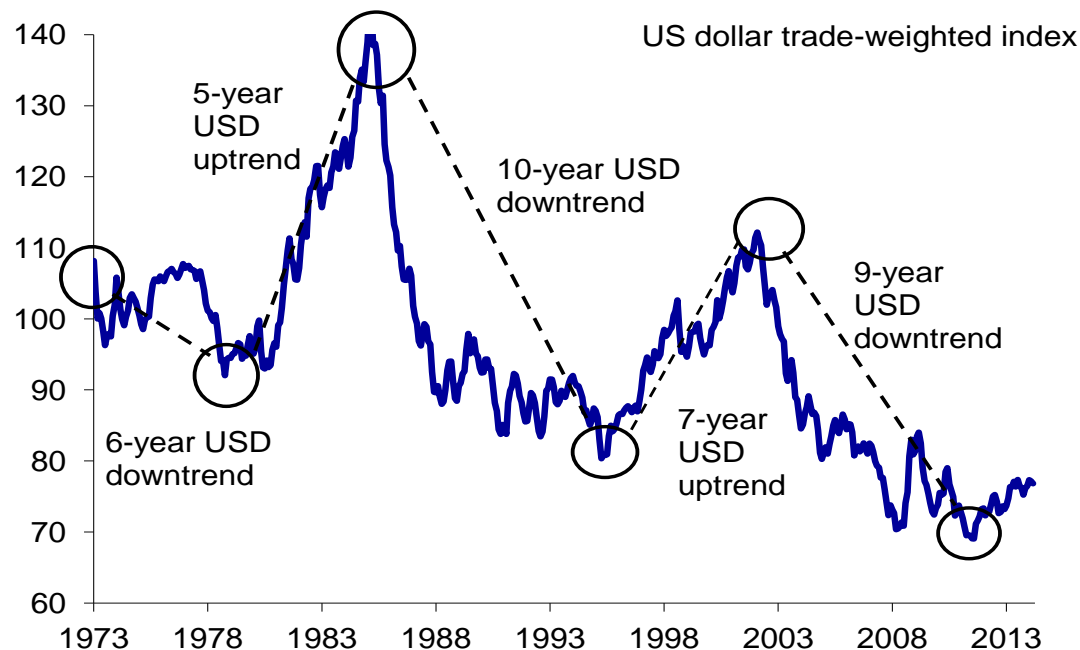
#3 US Real Interest Rates

- US long term real interest rates hit rock bottom on December 6, 2012. As the Fed prepared the market for QE tapering, real yields have been moving steadily higher. However, in the past month, real yields have started falling again.

US Dollar Cycles



Long Run Cycles In The US Dollar



Source: Deutsche Bank, Bloomberg Finance LP

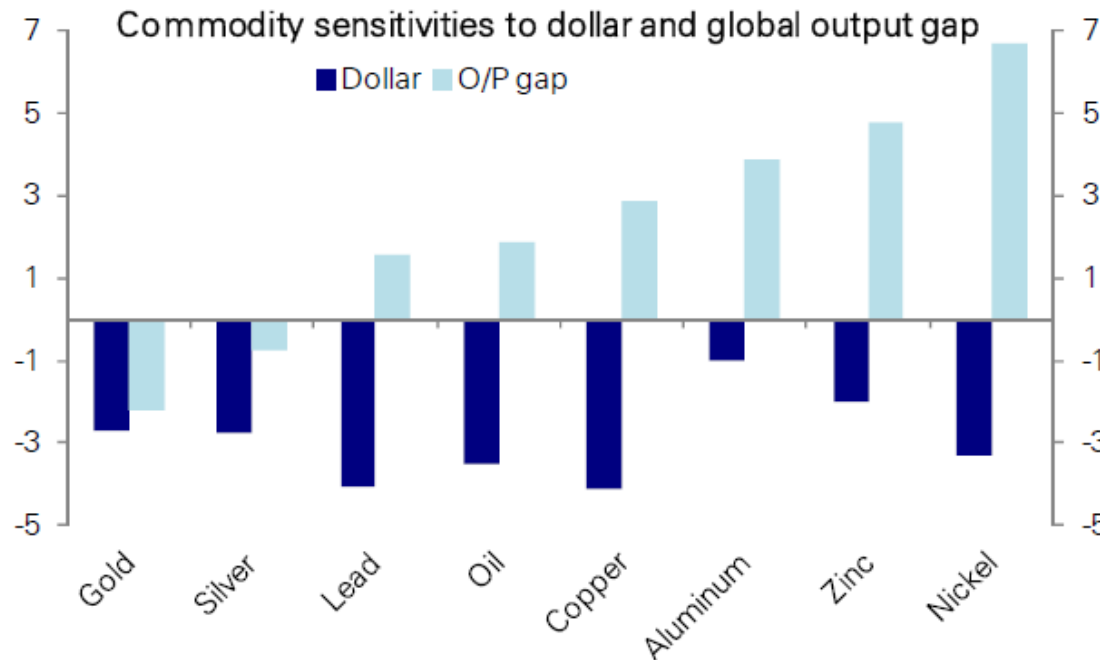
Outlook

- The US dollar has tended to display long run cycles of rising and falling for extended periods of time. Typically dollar cycles persist for around seven years.
- We believe a new long term uptrend in the US dollar is underway and that EURUSD and USDJPY will hit 1.10 and 125 over the next two years.

US Dollar Strength



Winners & Losers According To Global Growth & The US Dollar



Source: Deutsche Bank, Bloomberg Finance LP

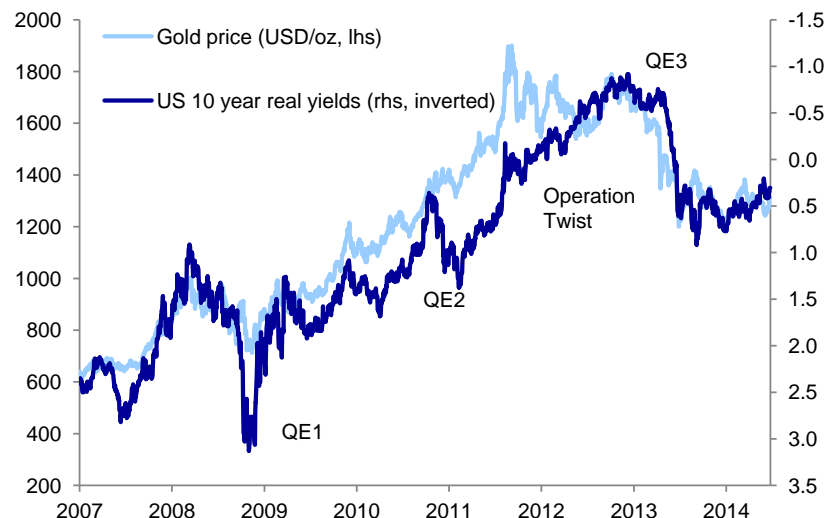
Outlook

- Industrial metals tend to be the relative out-performers when the US dollar is strengthening.
- The coefficients denote the percentage change in commodity prices for a 1% change in the US TWI and the global output gap.
- We find that precious metals and oil tend to weaken in a rising dollar environment while industrial metals tend to be more resilient and more closely tied to the global business cycle.

Fed Policy & QE Tapering

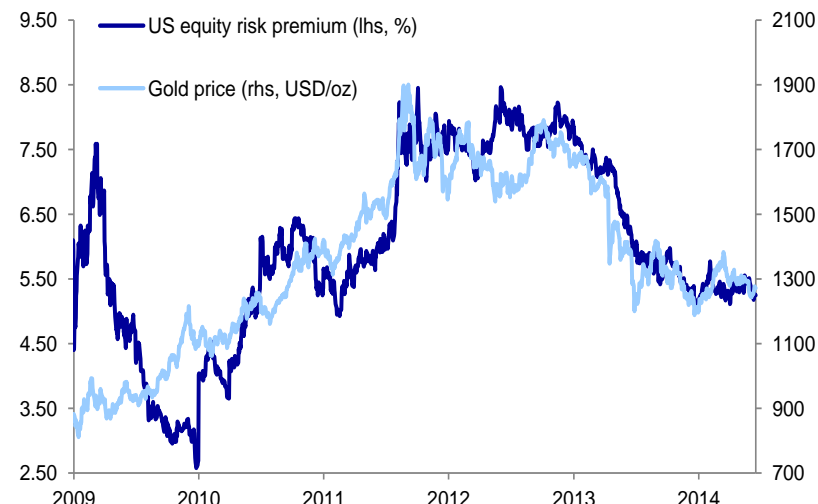


US Real Yields & The Gold Price



Sources: Deutsche Bank, Bloomberg Finance LP

Equity Risk Premium & The Gold Price



Sources: Deutsche Bank, Bloomberg Finance LP

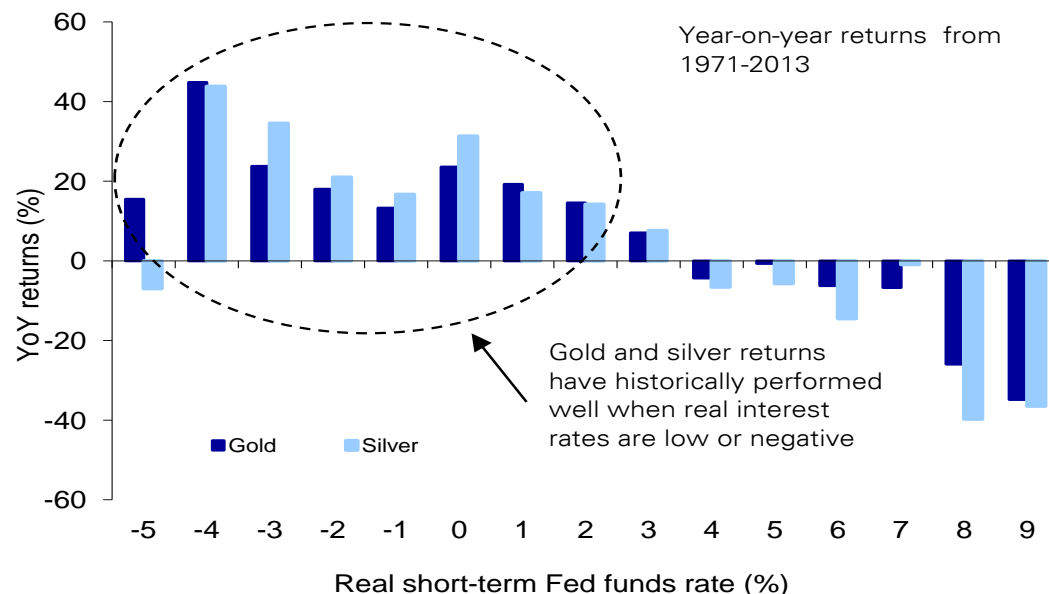
Outlook

- Weak US growth provides the best chance for gold to recover.
- However, we see US growth recovering, US real yields moving higher and the US equity risk premium resuming its downward march.
- The main adjustment that is still to occur is the US dollar which is still trading cheap on a PPP basis.

Gold Prices, The Fed & Real Interest Rates



Gold & Silver Returns & Real Interest Rates



Source: Deutsche Bank, Bloomberg Finance LP

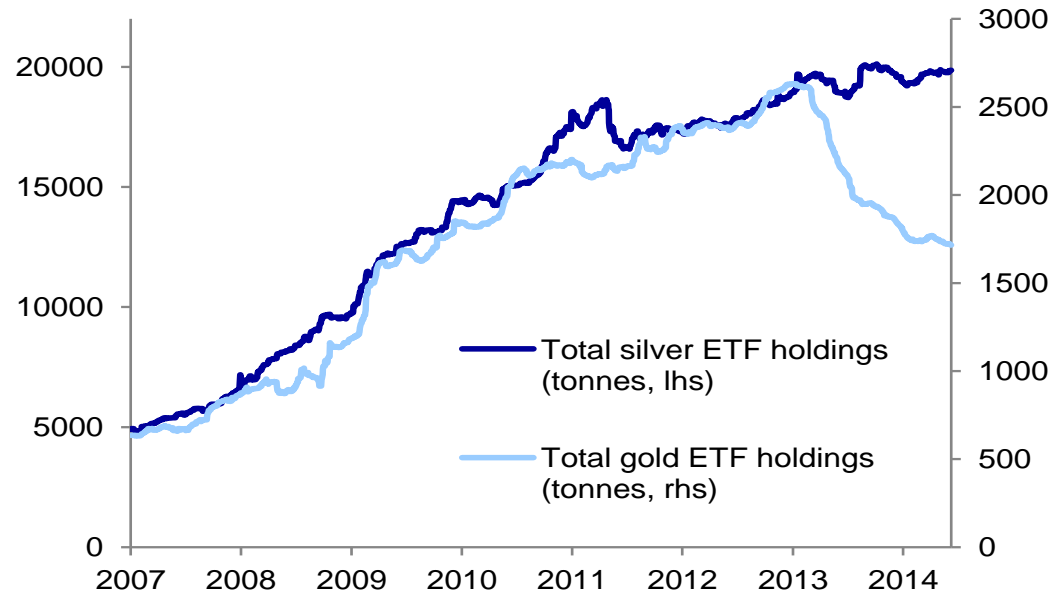
Outlook

- Gold and silver returns perform well when real interest rates are low or negative.
- However, while QE helped to push US real 10 year yields deeper into negative territory, the anticipation of QE tapering has pushed them significantly higher since the end of last year.
- This has introduced a strong headwind for gold and silver returns. This will likely intensify when the Fed eventually starts to raise short term interest rates.

Holdings In Precious Metals Exchange Traded Funds



ETF Gold & Silver Holdings



Sources: Deutsche Bank, Bloomberg Finance LP

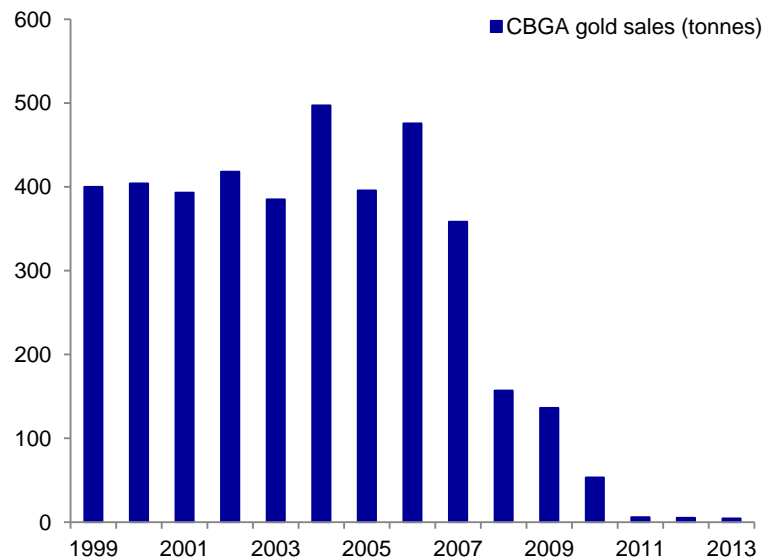
Outlook

- Gold ETF holdings peaked on December 31, 2012 and consequently just a few weeks after US real yields started to rise.
- Last year witnessed 869 tonnes of outflows from gold ETFs. This was equivalent to more than the inflows of the three previous years combined. So far this year, outflows have been a more moderate 48 tonnes.
- Silver ETF holdings have been more resilient relative to gold.

Central Bank Activity

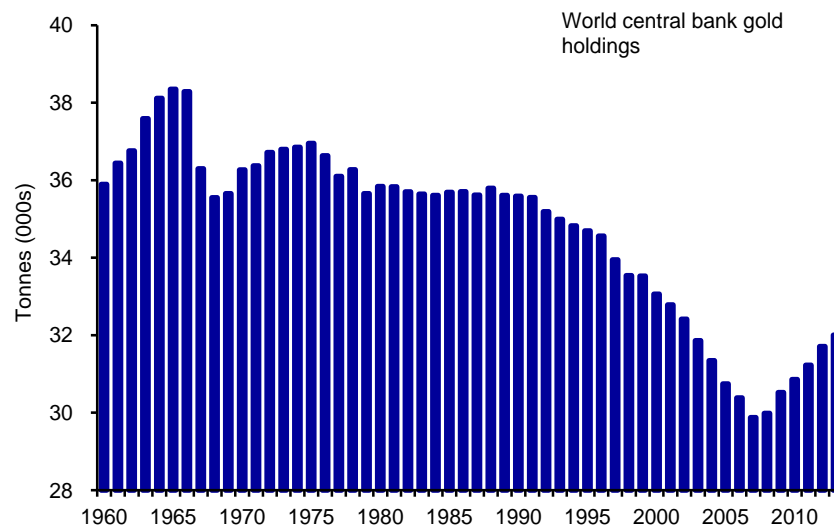


European Central Bank Gold Sales



Sources: WGC, IMF

Global Central Bank Gold Holdings



Sources: Deutsche Bank, IMF

Outlook

- Since the Washington Accord was first signed in 1999, there has been a significant scaling back in European central bank gold sales.
- Not surprisingly this has meant that market attention in terms of central bank gold activity remains largely focused on the role of emerging market countries.
- We find that on a global basis, central bank gold holdings have been rising for the past five years.

Gold Price Bubble



'When Can Gold Prices Be Considered Extreme?'

Indicator	Gold price level
Analyst forecasting error	1,300
In real terms (PPI)	1,455
As a share of global GDP	1,500
In real terms (CPI)	1,880
Versus base metals	2,100
Relative to per capita income	2,390
Versus crude oil	2,890
As a share of the S&P500	2,960
Average	2,059

Source: Deutsche Bank

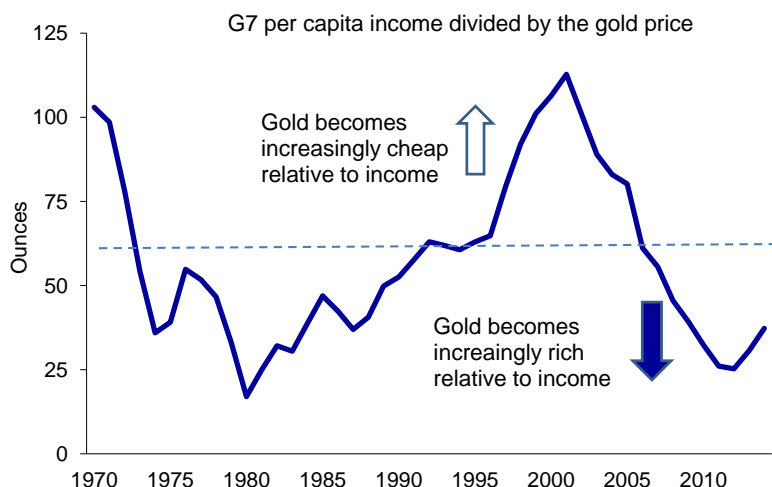
Outlook

- In June 2010, when gold prices were trading at USD1,200, we published research stating that gold prices would have to hit USD2,000 before they could be considered extreme.

Estimating Fair Value For Gold



Valuing Gold Relative To Per Capita Income



Sources: Deutsche Bank, IMF

'Fair Value' Of Gold Across Various Indicators

In real terms (PPI)	725
In real terms (CPI)	770
Relative to per capita income	800
Relative to the S&P500	900
Versus copper	1,050
Versus crude oil	1,400
Average	941

Sources: Deutsche Bank

Outlook

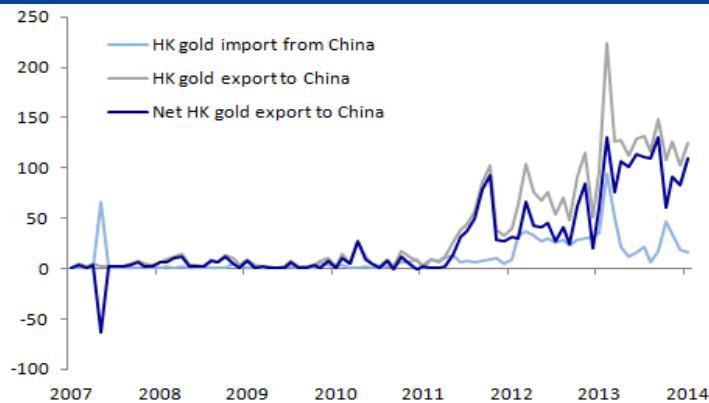
- Gold prices would need to fall towards USD725/oz to bring gold back towards its long run historical average in real terms (PPI adjusted).
- Against per capita income, gold prices would need to drop to USD800/oz.
- In terms of the average of the indicators we assess gold against, gold would need to fall to USD940/oz to be considered close to fair value.

The Fed, USD and Gold....

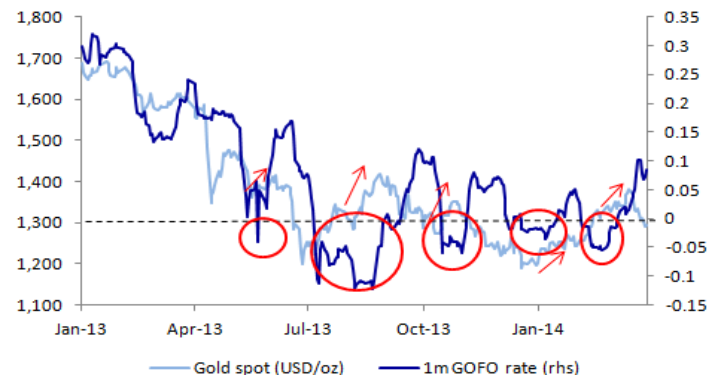
...Physical flows not quite at a tipping point



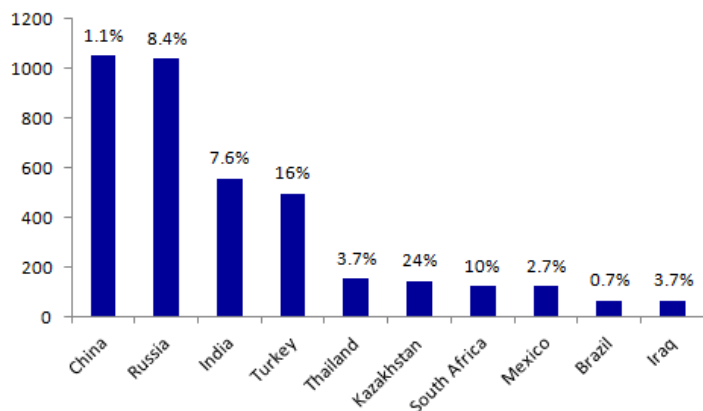
Exports to and from Hong Kong



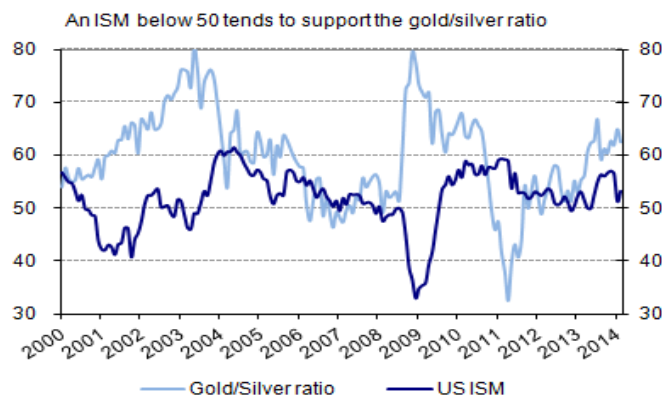
Gold vs the 1-month GOFO rate



EM Central Bank Gold Holdings & % of reserves (as of Mar 14)



Gold to silver ratio vs the ISM

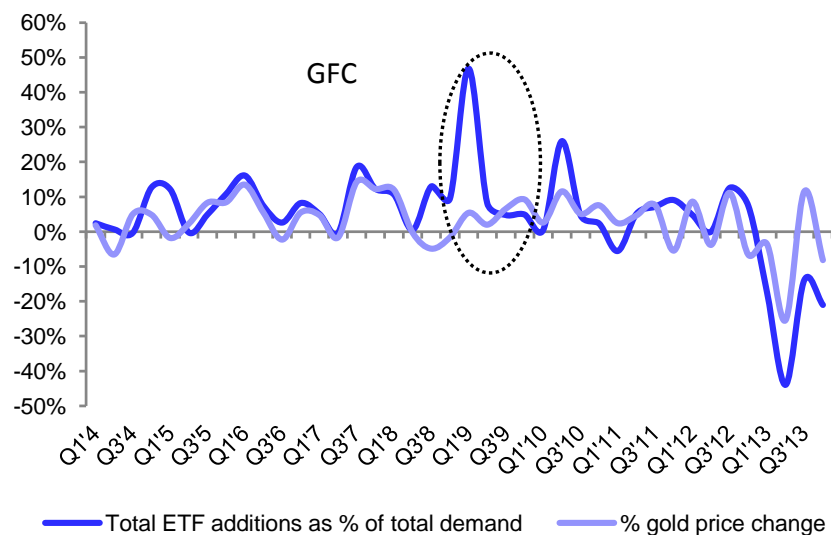


Sources: Deutsche Bank, Bloomberg Finance LP, Thomson Financial Datastream, NBS, World Gold Council, IMF

Investment flows still drive the price

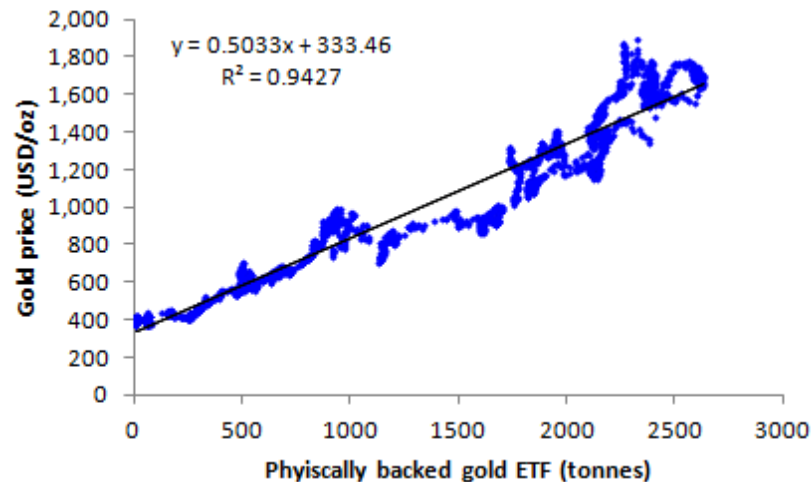


ETF flows versus the gold price



Source: Bloomberg, Deutsche Bank

ETF flows versus the gold price



Summary

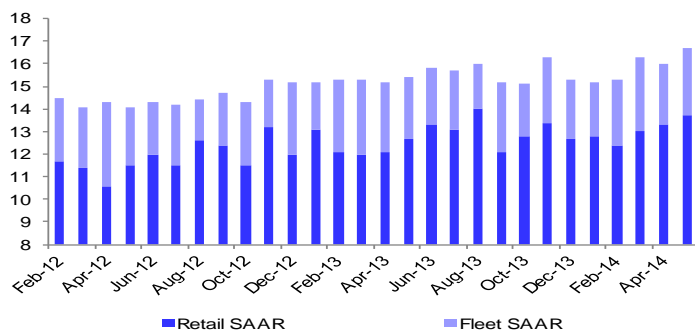
- Even though there are still ETF outflows, the momentum can lead to a short-term bounce in the price.
- Gold prices have exhibited a strong correlation with the level of physically backed ETF holdings.

PGMs: Limited price movements despite the strikes

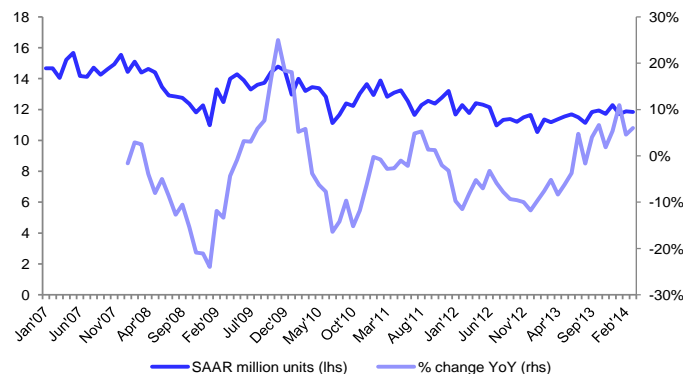
Good demand indicators in the developed markets



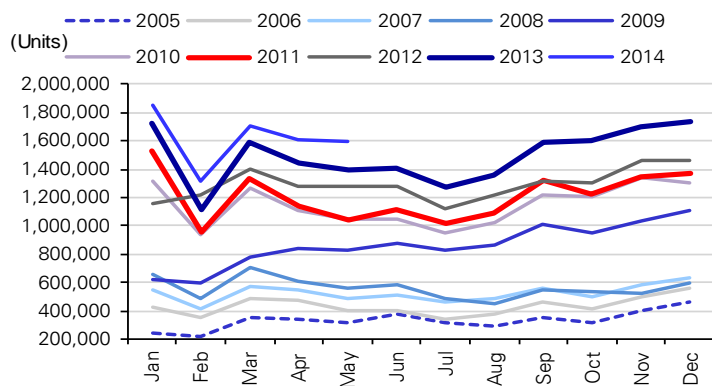
US monthly SAAR



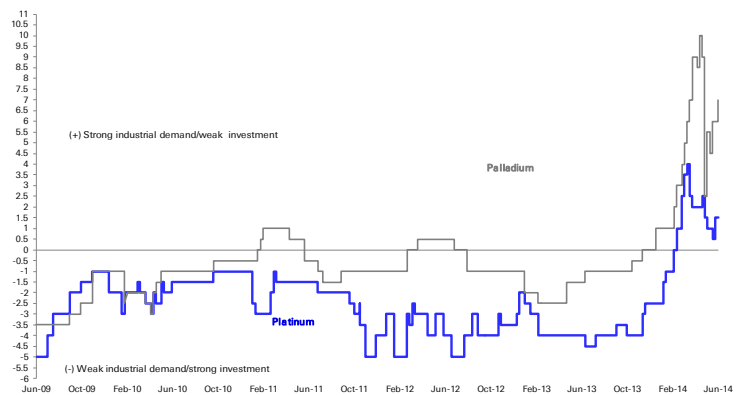
W. European monthly SAAR – continued recovery



Chinese passenger vehicle sales



US sponge vs Zurich ingot switch (USD/oz)



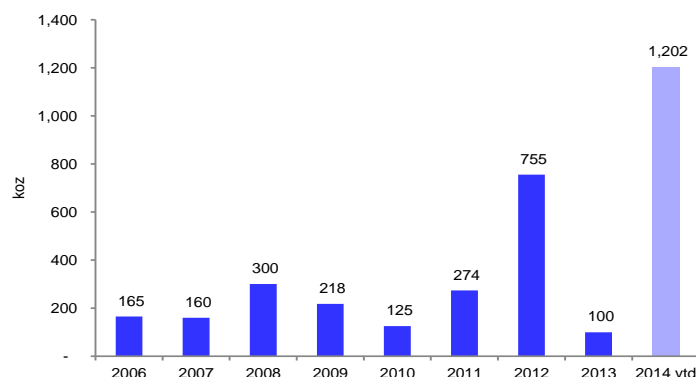
Sources: Deutsche Bank, Bloomberg Finance LP, Johnson Matthey, Mitsubishi

PGMs: Limited price movements despite the strikes

...but its all about inventories



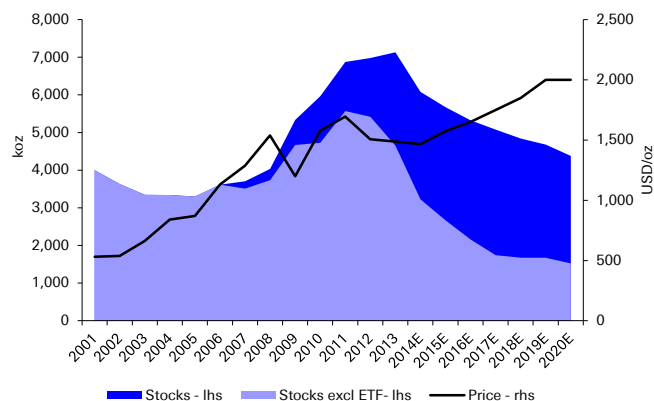
Estimated production losses from SA (end June) – koz of Pt



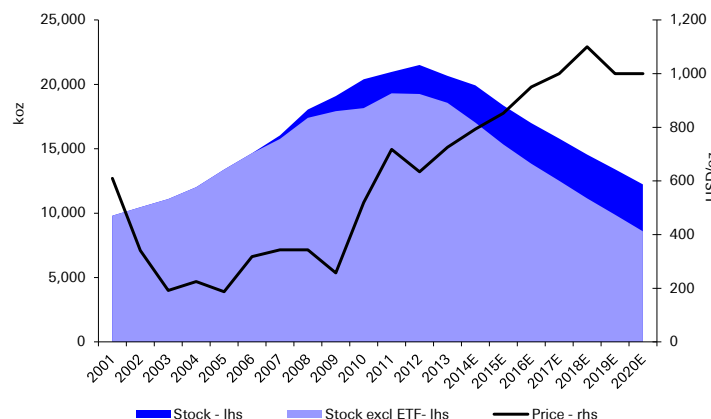
Estimating SA production for 2014

koz	Platinum	Palladium	Rhodium
January capacity	4,102	2,432	551
Initial disruption allowance	-70	-50	0
Forecast production	4,032	2,382	551
Production loss to end of June	-1,202	-765	-175
Ramp-up losses	-314	-200	-46
Stockpiles	400	120	80
Total	2,917	1,538	410

Global Platinum inventories



Global Palladium inventories

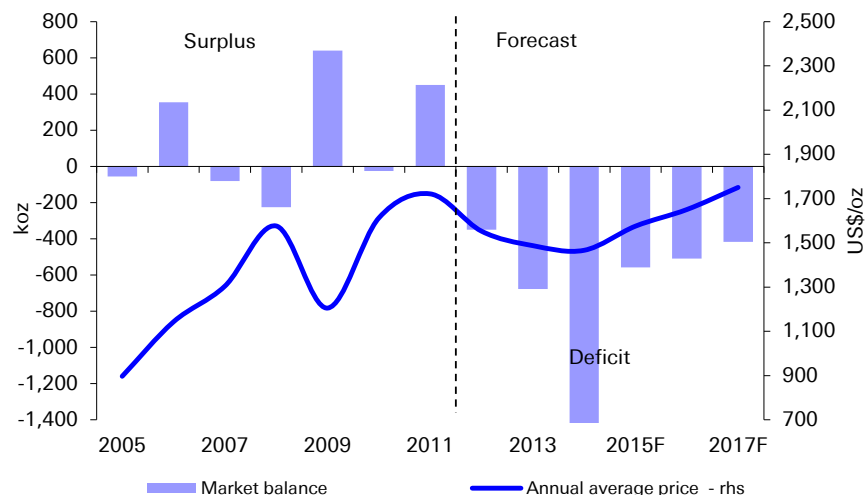


Sources: Deutsche Bank, Bloomberg Finance LP, Johnson Matthey, SFA Oxford, GFMS

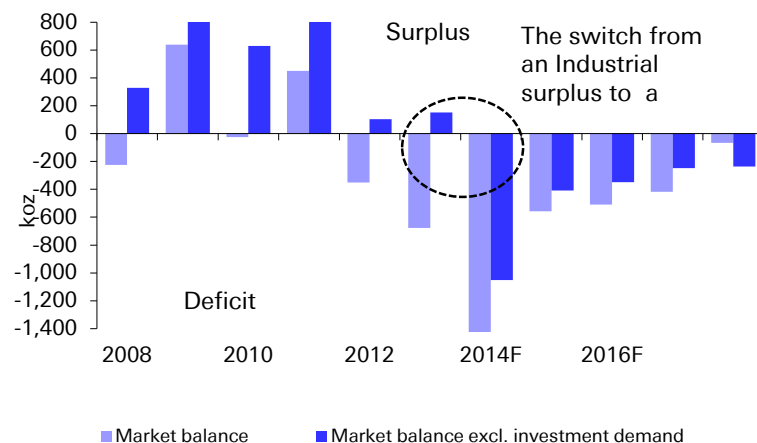
Pt: improved balances tempered by high stock levels



Platinum supply - demand



Surplus / Deficit without investment demand



Source: Johnson Matthey, Deutsche Bank, Bloomberg Finance LP

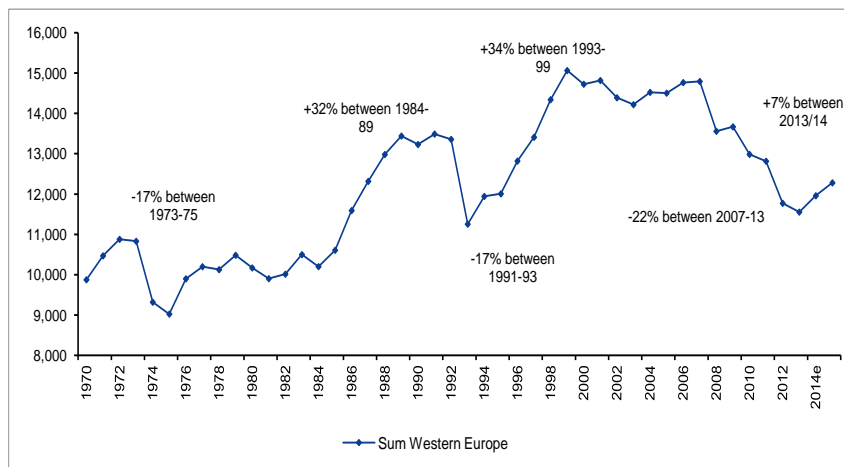
Outlook

- We continue to see improving fundamentals given ongoing strong vehicle growth in both the US and China (positive for Pd) and a rebound in Europe (positive for Pt and Rh).
- A continued recovery in European Auto sales in Q2'14 bodes well for 2014, compounded by EuroVI
- We forecast both markets will be in deficit this year and deficits are likely to increase over the medium term, but we forecast a modest drawdown of stocks.
- The worst of the gold and Rand headwinds in 2013 is likely to be over

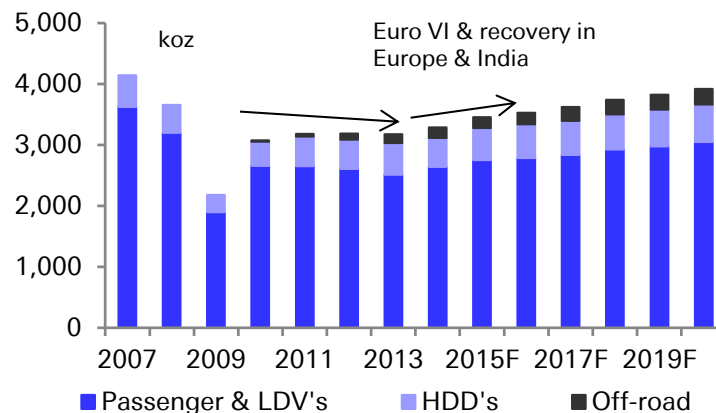
Stabilising European demand with a Euro VI kicker



W. European vehicle sales trends



Global autocat Pt demand



Source: Deutsche Bank, JMAT, SFA

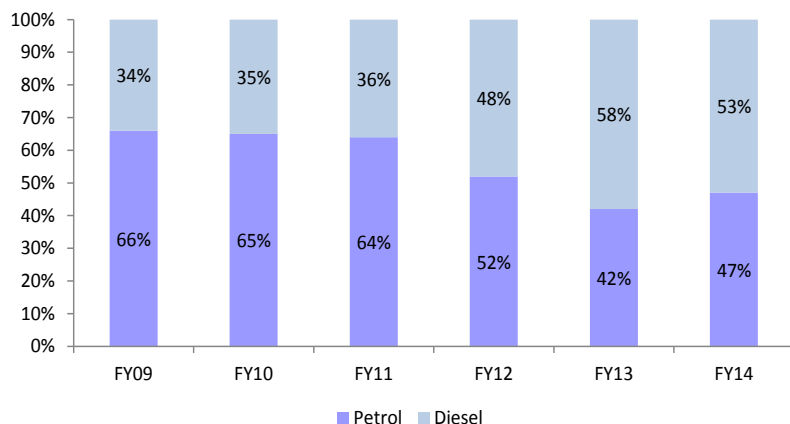
Outlook

- We see global autocat demand improving in 2014/15 (+4%), driven by improving European auto sales, Euro VI legislation, and an increase in off-road demand.
- Risks remain on the technology choice to cope with Euro VI: NOx trap vs. SCR (selective catalytic reduction) which is a low PGM option.
- Further risk on diesel market share in Europe, as the fuel economy on smaller petrol engines continuously improve.

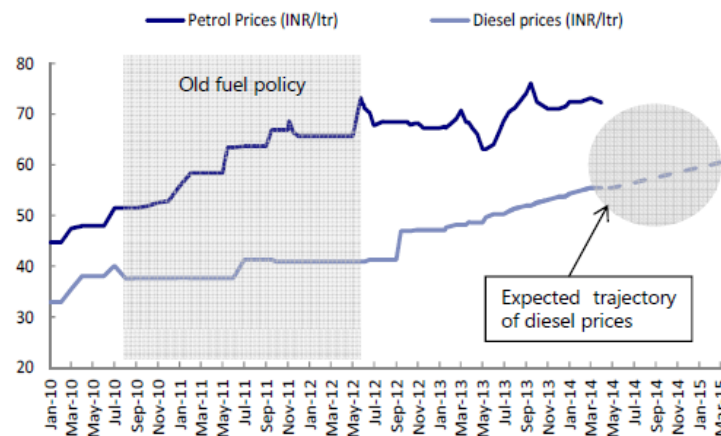
Some risks from diesel price hikes in India



Indian market share by power train type



Indian diesel and gasoline prices



Source: Deutsche Bank, Company reports, JMAT

Outlook

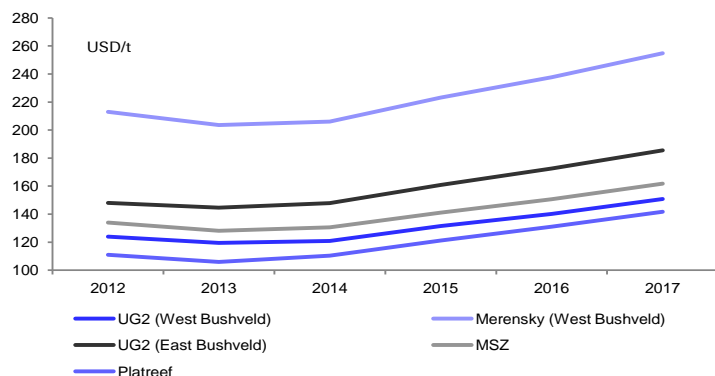
- During 2010 -2012, diesel costs in India were 25 – 40% below gasoline.
- Significant investment into diesel powertrains by OEMs.
- Reversal of the subsidy policy means that the price differential could narrow to less than 10% over time.
- Expectations are for the mix to settle out at 50:50.

PGMs: Longer-term impacts from the strikes

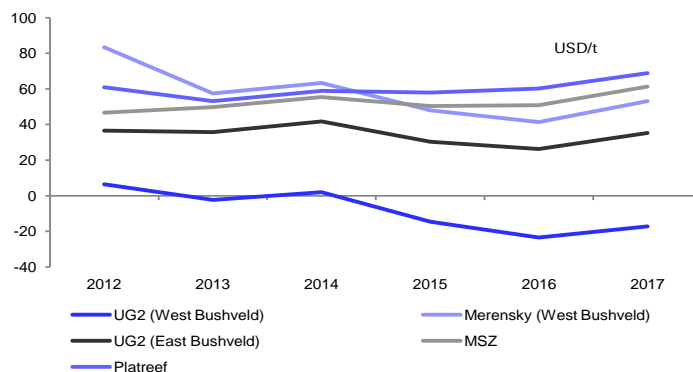
...an unlikely return to pre-strike levels



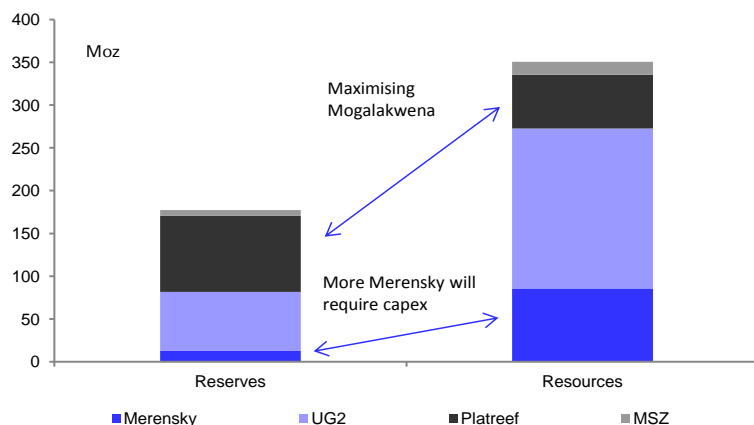
Revenue/t for the different ore bodies in Amplats portfolio



Profit/t for the different ore bodies in Amplats portfolio

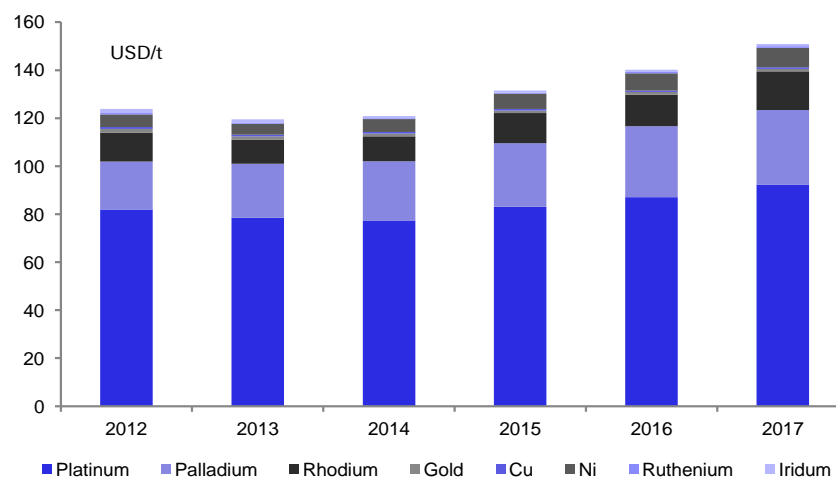


...the challenge: Amplats resource and reserve split by ore body type



Sources: Deutsche Bank, Bloomberg Finance LP, Company reports

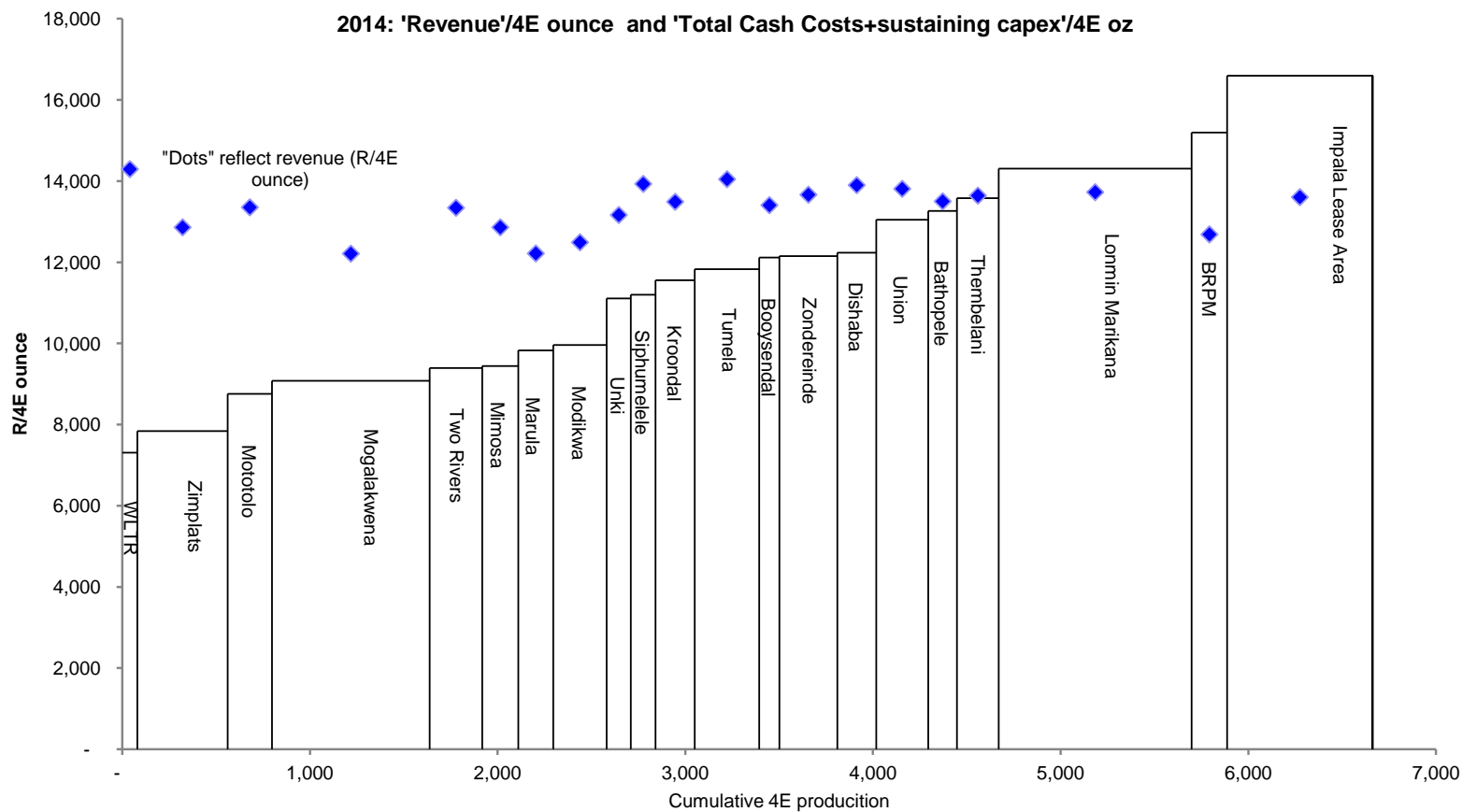
Importance of Rhodium in UG2 (West Bushveld)



...but the Rand is providing some relief



South African PGM cost curve

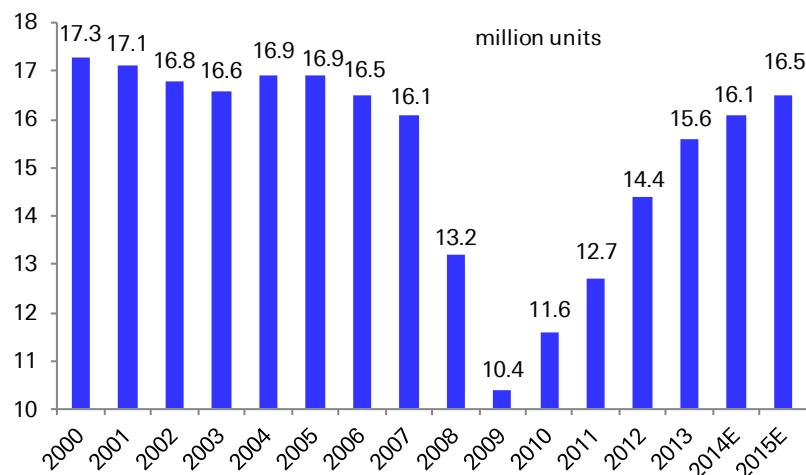


Source: Deutsche Bank

Palladium is a structural preference

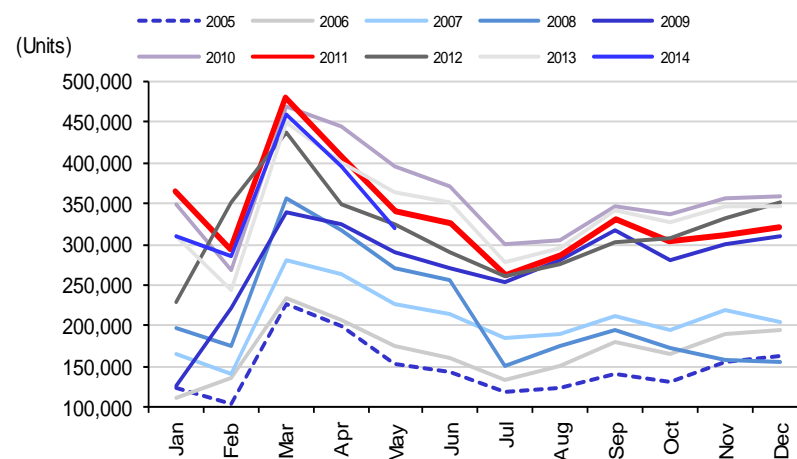


Annual US light vehicle sales



Source: Deutsche Bank, Bloomberg Finance LP, Wards, LMC Automotive, CAAM

China's commercial vehicle sales



Source: Deutsche Bank, China Association of Automobile Manufacturers (CAAM)

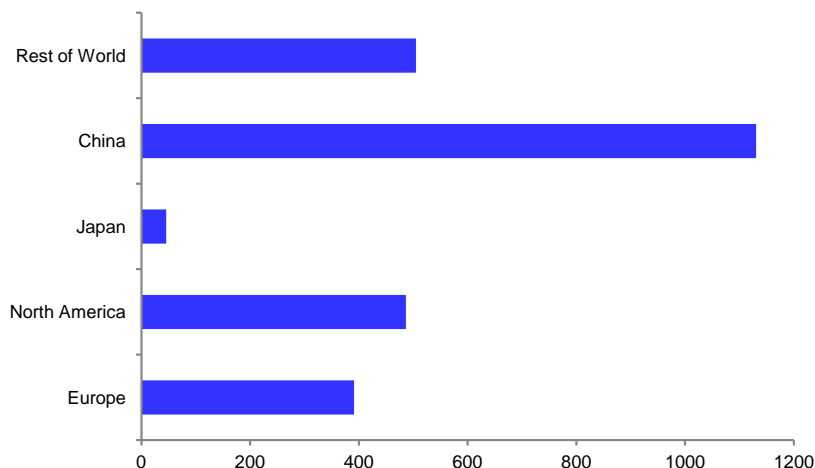
Outlook

- US and China to remain in growth territory. However, do not underestimate Europe's contribution to palladium demand in a recovery scenario.
- Momentum does favour platinum however, as European sales go from decline to growth
- After the government transition in March, reducing the extreme levels of air pollution in China has moved to the top of the political agenda. Stricter standards could lead to faster old vehicle scrapping and could in fact drive new car sales up.

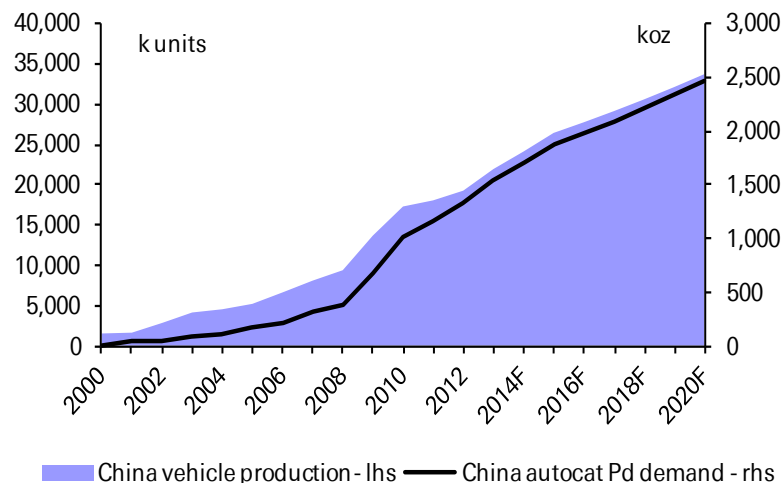
Chinese autocat palladium demand is set to rise (structural favourite)



Additional Pd demand from Autocats by the end of the decade



Pd demand from China autocat sector (Koz)



Source: JMAT, Deutsche Bank, Bloomberg Finance LP

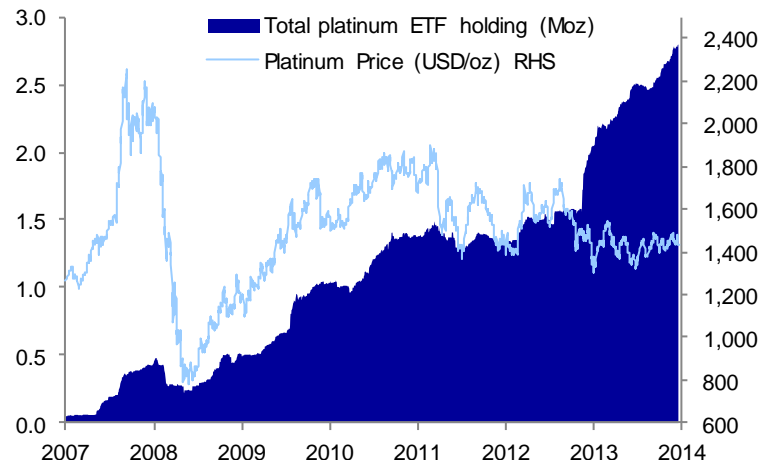
Outlook

- Meanwhile we expect PGM to play a greater part in reducing China's pollution problem.
- The combination of low penetration compared to other more developed markets and increasing emission standards is likely to push autocat demand for palladium higher by 120% by the end of decade.
- Pollution initiatives both positive and negative: a lower overall vehicle sales growth as numbers are limited in certain cities, offset by a quicker implementation of emission standards. Our take – net positive.

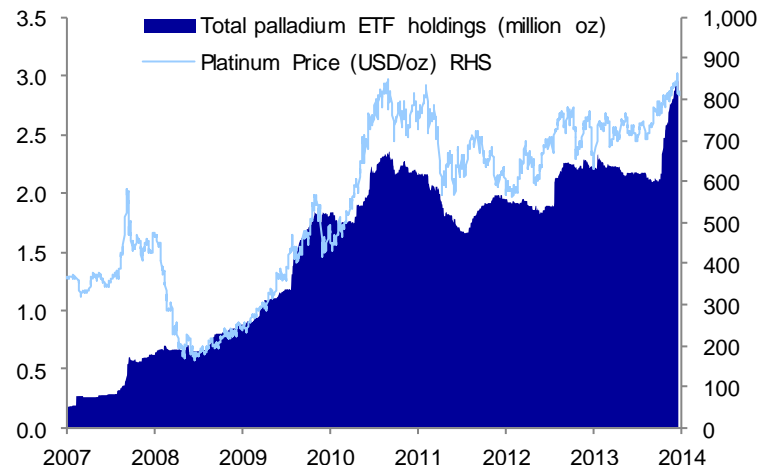
ETF inflows continue, boosted by new ETF's in SA



Platinum inflows boosted by the ABSA ETF



Palladium has seen modest inflows



Source: Deutsche Bank, Bloomberg Finance LP

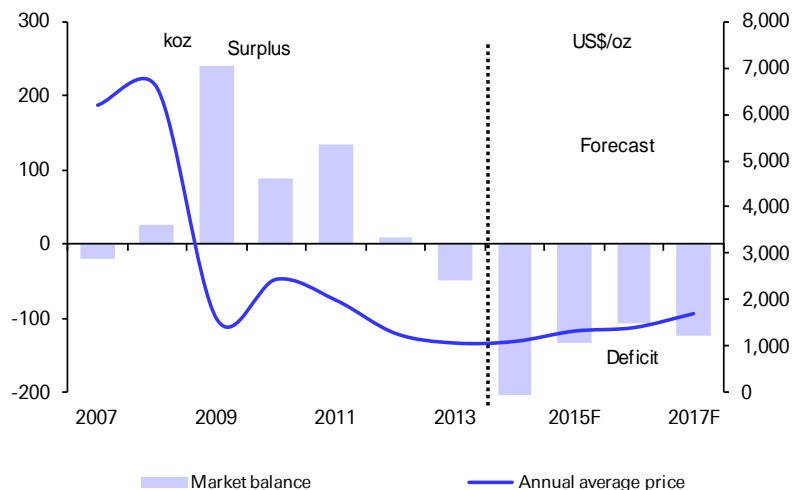
Outlook

- The ABSA ETF absorbed over 900koz of platinum, without impacting the price. (What would the price have done in the absence of ETF appetite?)
- Has been a good Rand hedge for the South Africans
- Total palladium holdings now at record levels boosted by two SA listed ETFs
- Inflows in platinum have continued despite our concerns of cannibalisation

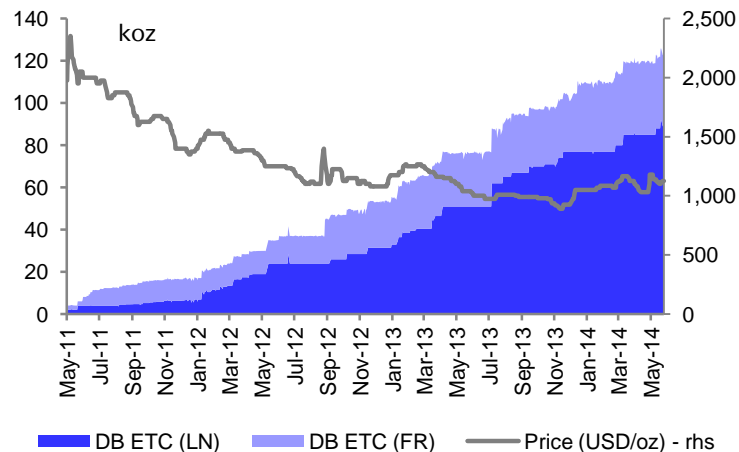
Rhodium – deficits will slowly draw down inventories



Rhodium supply – demand balance



Steady inflows into the ETF



Source: Deutsche Bank, JMAT, SFA Oxford, Bloomberg Finance LP

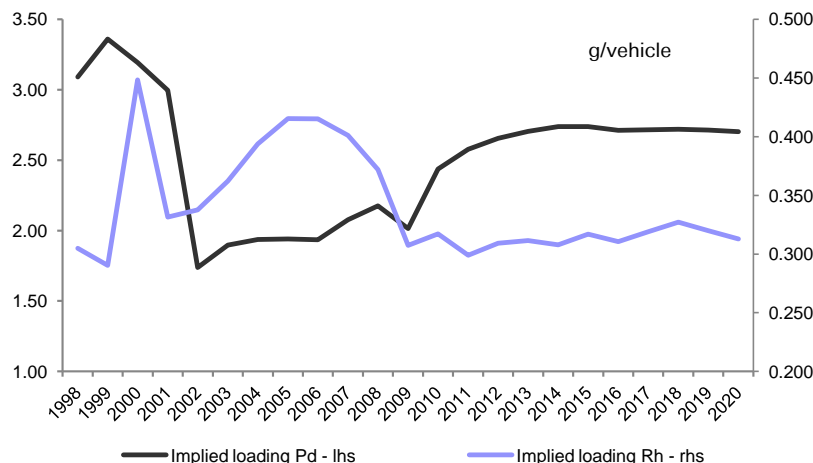
Outlook

- Inventories remain high, so forecast deficits are unlikely to draw down inventories too much.
- ...but the price differential versus palladium is making the metal more attractive.
- Rhodium is the most effective PGM at treating NO_x, but now has to compete with SCR.
- Overcoming the resistance with the auto manufacturers.

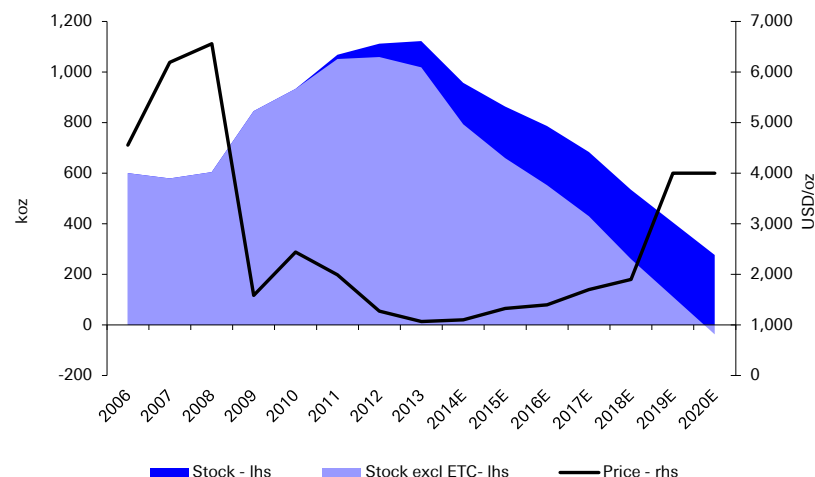
Rhodium – growth from China but also from NOx control



Rhodium Autocat loadings vs Palladium



Additional Rh demand from Autocats by the end of decade (koz)



Source: Deutsche Bank, JMAT, SFA Oxford, Bloomberg Finance LP

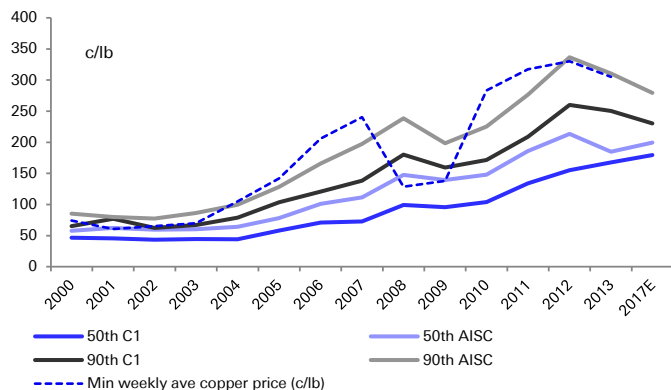
Outlook

- Rhodium is more exposed to the gasoline market, and should see increased demand to the end of the decade (c.260koz from Autocat by end of decade)
- Reverse substitution can save c. USD10 / autocat (not particularly compelling), or 12% of cost
- 2% change in Rh content, could increase demand by 60 – 70koz
- Inventories are still high and are only drawn down to critical levels by 2016

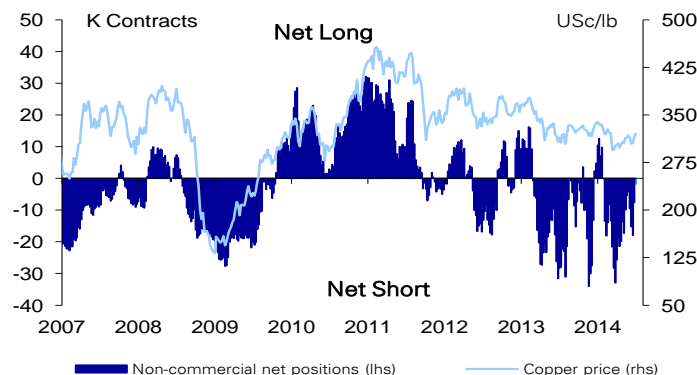
Copper: Lacklustre fundamentals, but solid downside support



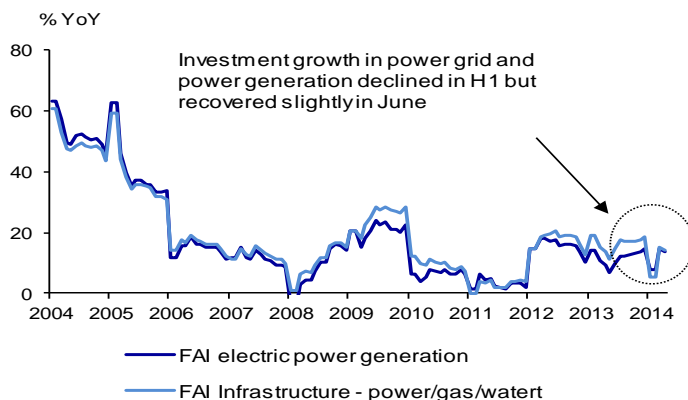
Surpluses for the next three years, but has cost curve support at 280c/lb



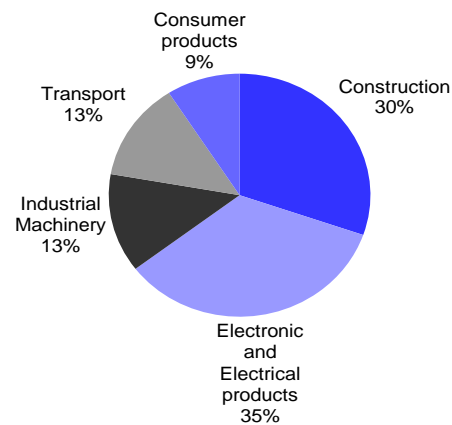
Non-commercial net positions on the Comex



Chinese FAI growth: Power generation and infrastructure



Global copper demand by market sector (2012)

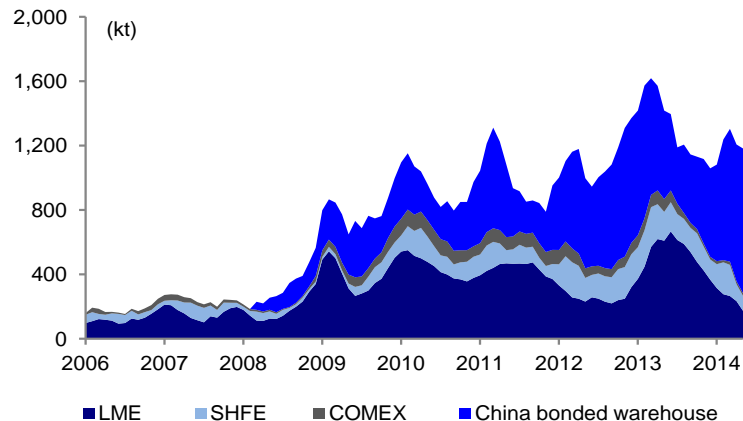


Sources: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie, CEIC, CFTC

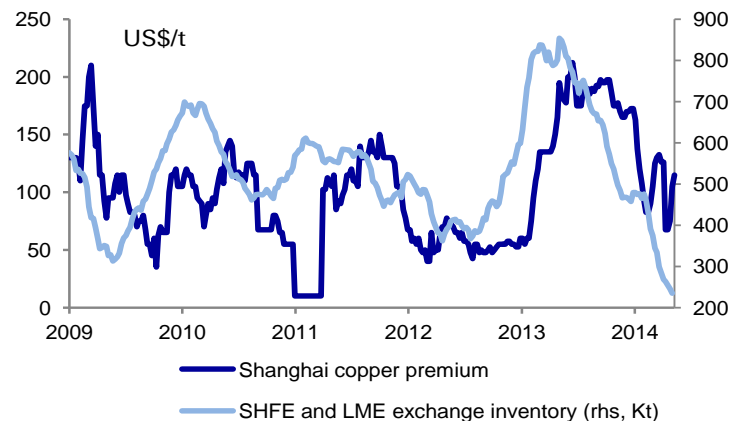
Copper – strong near-term tightness helped by SRB purchases



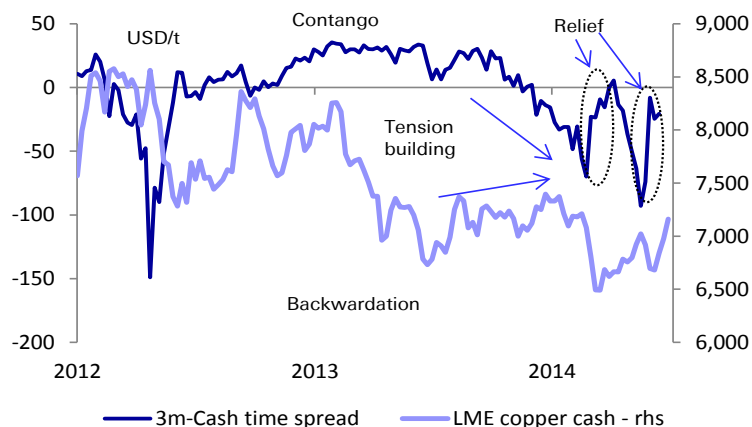
Global copper inventories – low exchange inventories



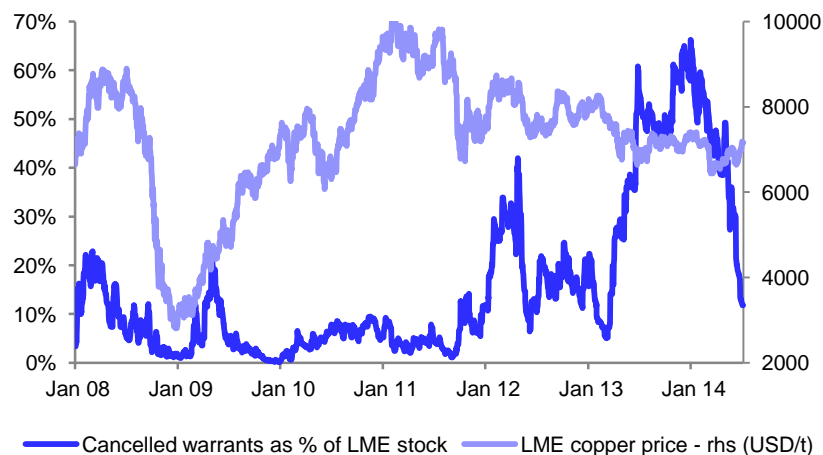
Shanghai physical premiums rebound



LME copper prices vs 3M – cash spread



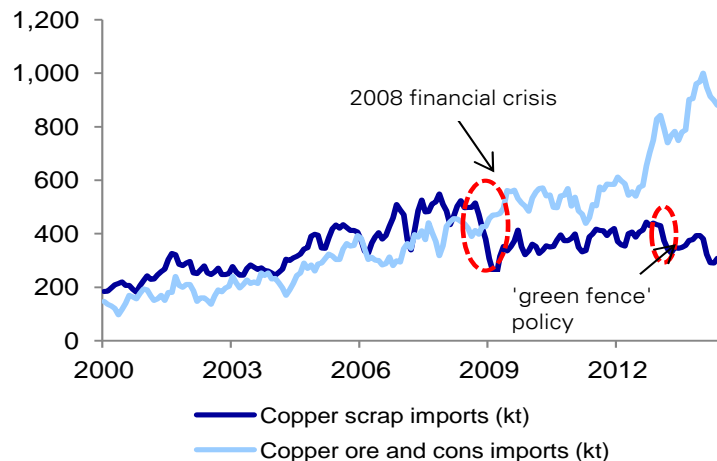
Cancelled warrants as a % of LME copper stocks



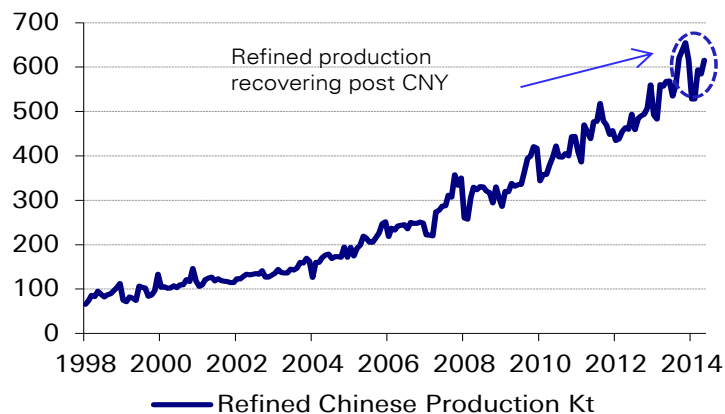
Source: Deutsche Bank, Bloomberg Finance LP, CEIC, NBS

Copper – a year of destocking?

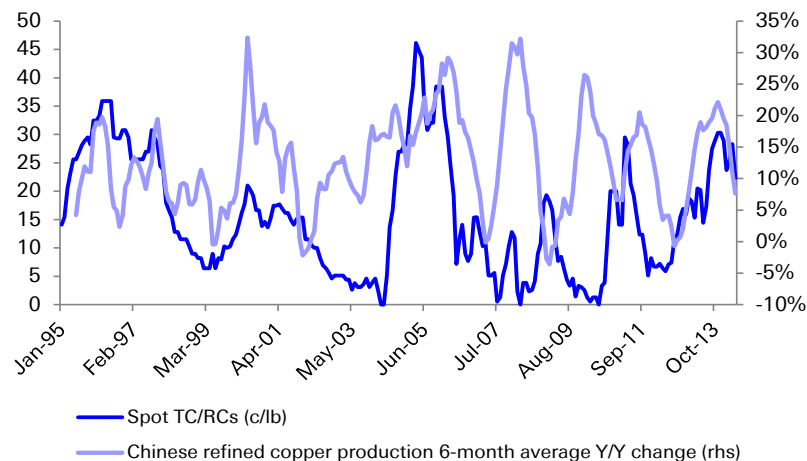
China copper concentrate vs scrap imports 3mma



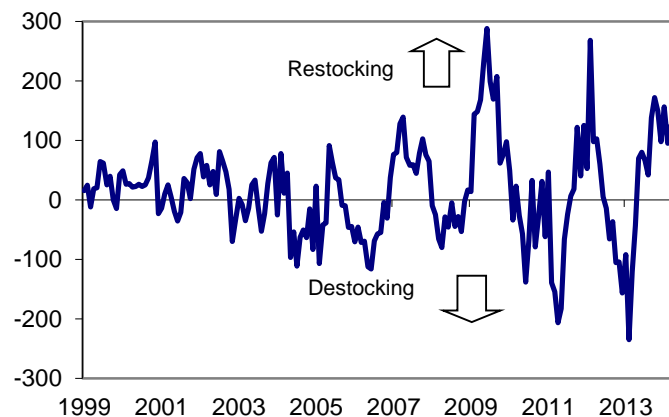
China refined copper production



Spot Copper TC/RC's (USD/t)



Chinese copper inventory model

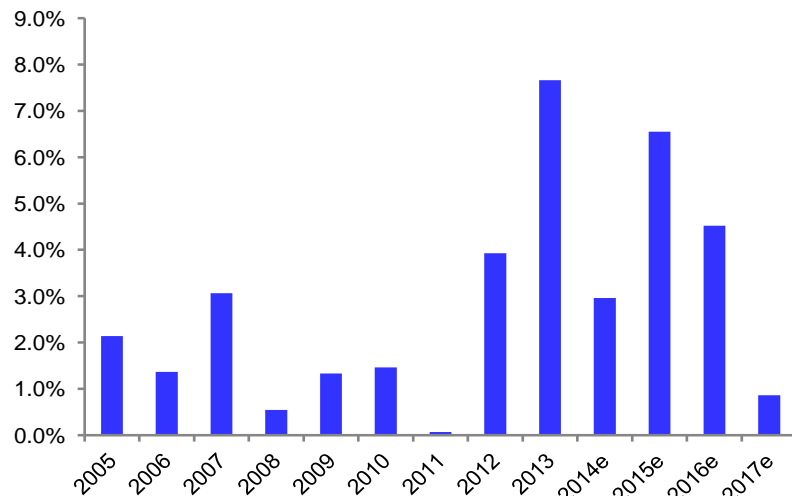


Source: Deutsche Bank, Bloomberg Finance LP, NBS, Wood Mackenzie.

Copper: The epitome of supply momentum

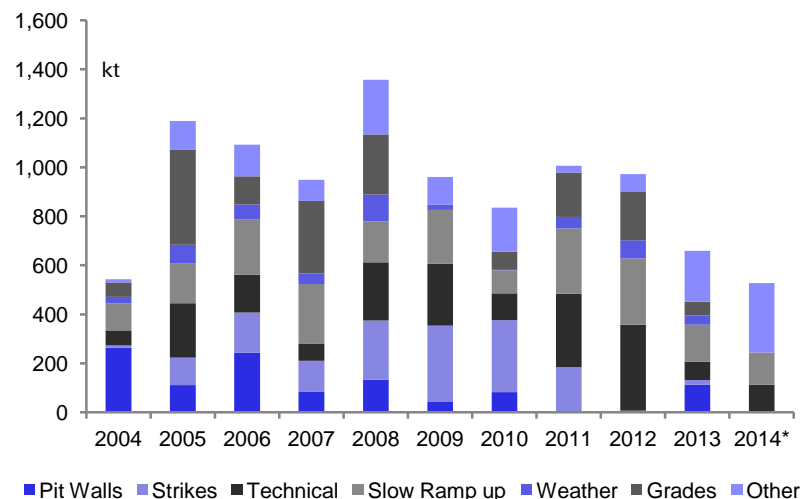


Strong mined supply growth over the next few years



Source: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie, *YTD

Supply disruptions muted in 2013



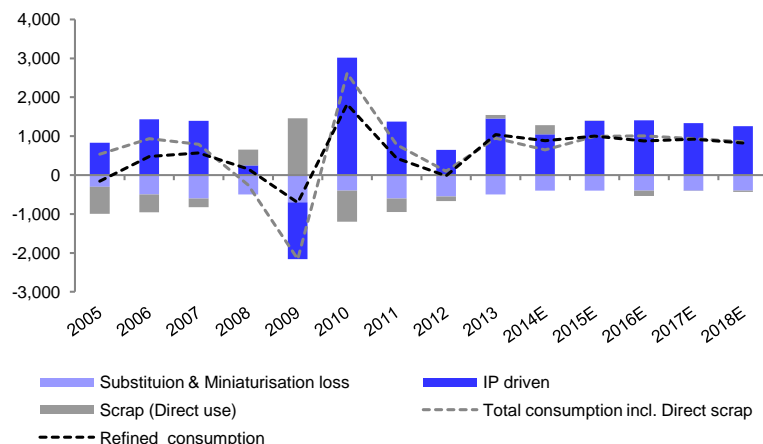
Outlook

- Level of copper disruption in 2013 is much lower than previous years – 660kt or 3.5% of production.
- 2014 is on track to hit 1Mt of disruptions or delays by year end. This equates to 5.4% of global demand
- Nature of supply becomes more risky into 2014 and 2015E due to greenfield projects, hence the increasing supply disruption.

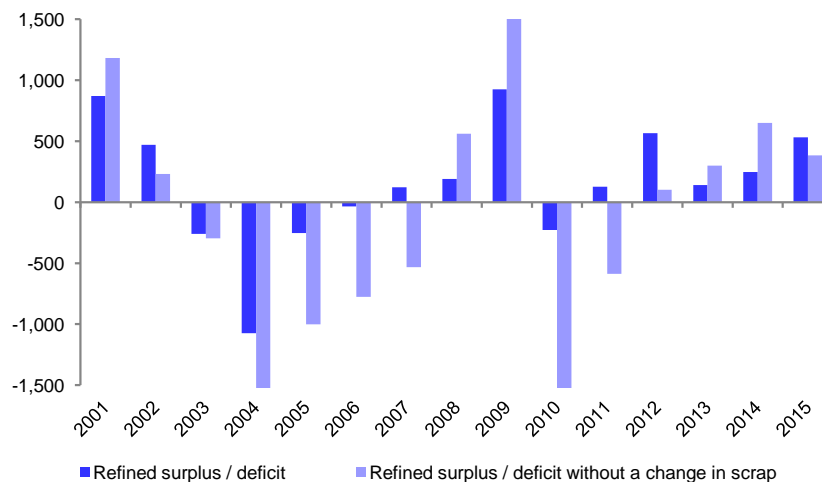
Copper: A lack of scrap has played its part



The drivers of global refined copper demand



Refined surplus/deficits (with or without changes in scrap supply)



Source: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie, SNL Metals & Mining

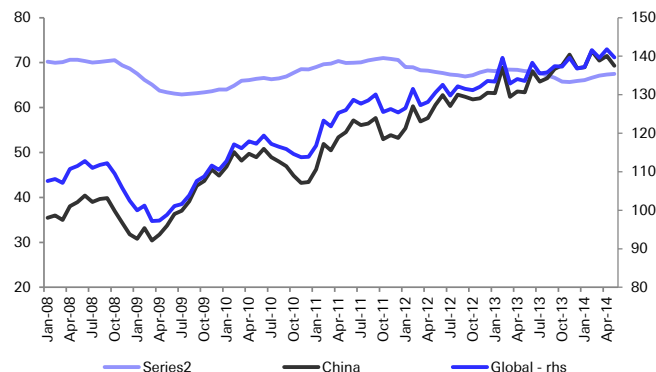
Outlook

- In 2013 the scrap market tightened even further, and there was a decline of 2%. The weak of economic activity in the two largest global suppliers of scrap, Europe and North America has led to only modest generation of scrap and a further decline in the average price of copper has disincentivised its collection.
- We forecast a further decline in the scrap market in 2014 of 4%.

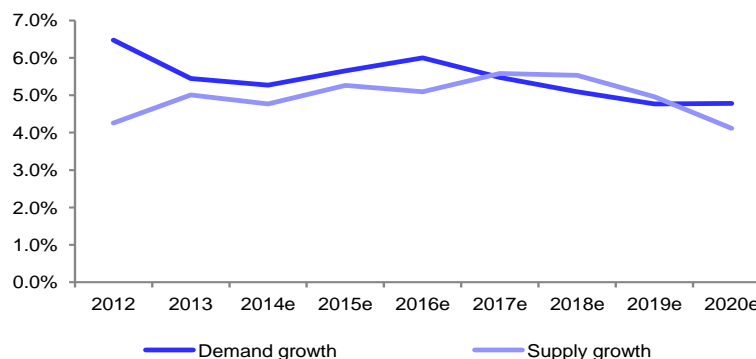
Aluminium: An Improving Outlook With Polarized Views



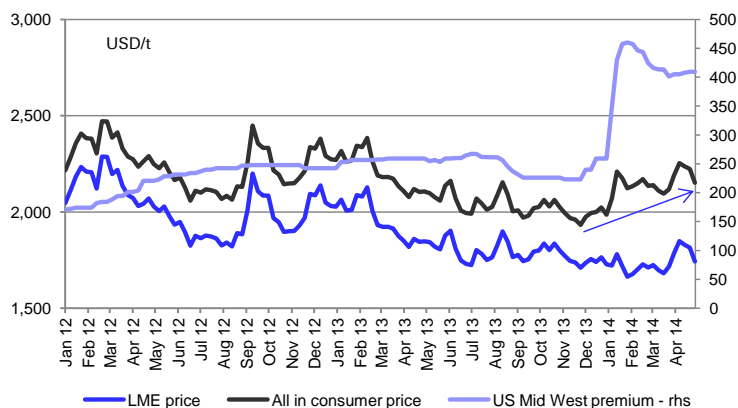
Global aluminium production (daily rate)



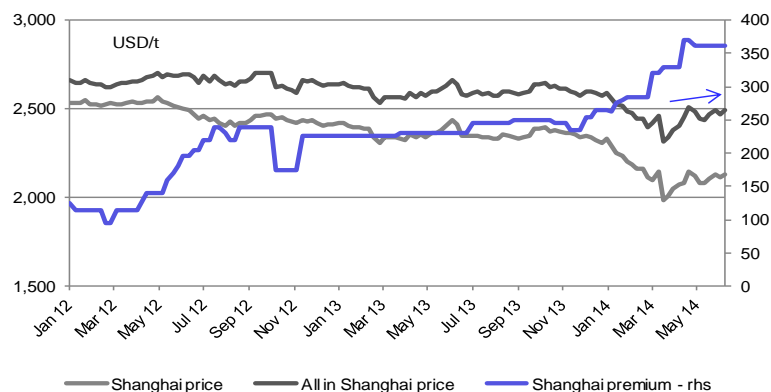
Aluminium demand and supply growth rates



Aluminium LME and all-in price



Aluminium: Finding some support, but in need of Chinese closures for price rally



Sources: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie

Aluminium Outlook: Strong global demand



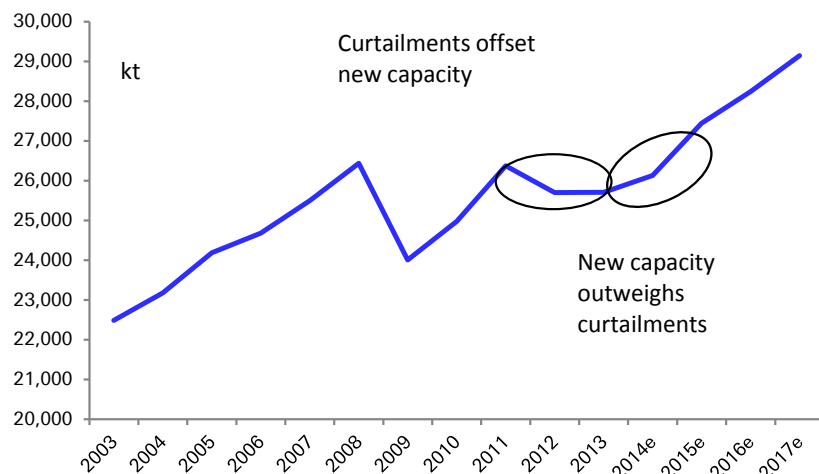
Region	CAGR (2013 - 2016E)	Drivers of consumption
North America	3.7%	Auto sector recovery and the strong market share gains made by aluminium in body parts
W. Europe	2.1%	Eurozone recovery aided by continued monetary easing from the ECB. The recovery in Auto sector is the key driver, along with light-weighting initiatives
Japan	-0.1%	Poor demographics combined with a relocation of export focused downstream production
Brazil	4.0%	Building and construction, driven by a house refurbishment and new home development programme
India	4.0%	A revival of growth post the resounding election victory of Modi. Election promises include materials intensive growth, especially in high speed railways, low cost housing and an acceleration of infrastructure investments, focused on electrification and the reactivation of the freight and industrial corridors
Russia	2.5%	Medium-term prospects dampened by rising political tensions
China	8.1%	Auto sales growth, although less effect from light weighting, Increasing mass transportation penetration, especially High speed train networks, Continued electrification, offset by property weakness.
Asia ex China / Japan / India	3.8%	Favourable demographic trends in Thailand, Indonesia and Malaysia, relocation of Japanese downstream capacity
Middle East	9.7%	Commissioning of several downstream facilities, which in turn is driven by a broad based demand growth as well as some relocation of capacity from Japan
Global	5.6%	

Source: Deutsche Bank, Wood Mackenzie, IMF

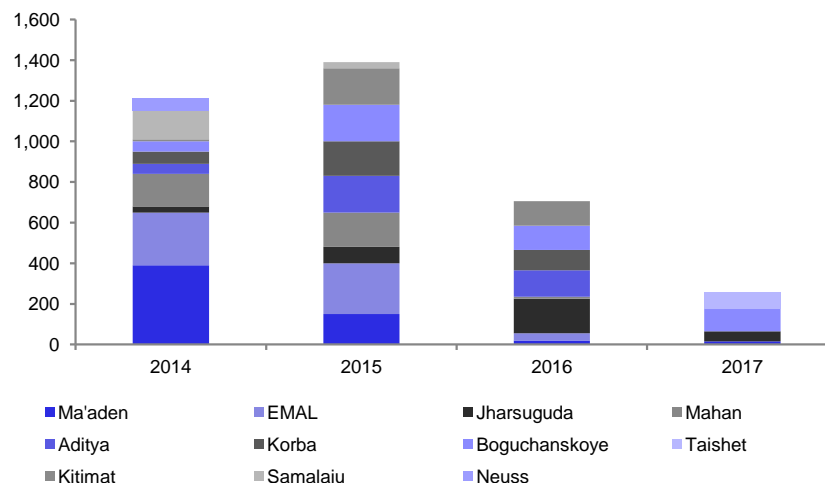
Further curtailments required in the medium-term



Aluminium production ex-China (kt)



Largest capacity additions over the next four years ex-China (kt)



Source: Deutsche Bank, Wood Mackenzie

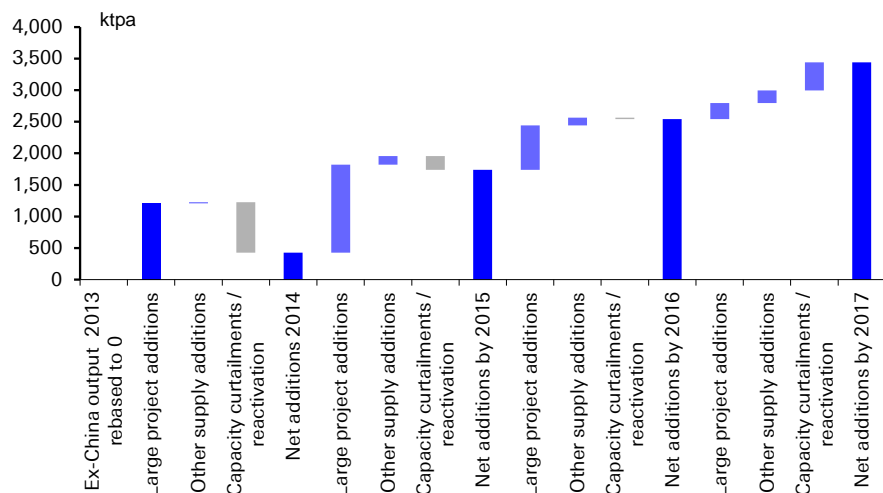
Outlook

- Net additions still amount to 3.5Mtpa by 2017E in the world ex-China
- Significant low cost production capacity from the Middle East and India, restarts in Germany, Rusal projects?

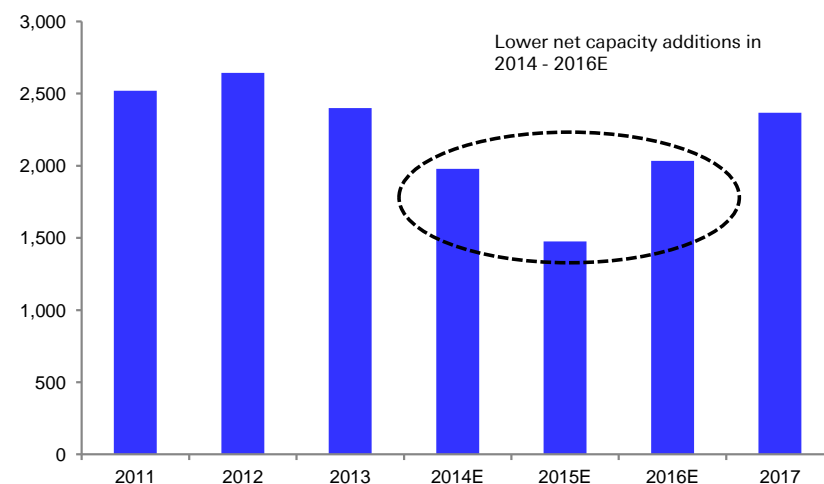
Further curtailments required in the medium-term



Aluminium production ex-China (kt)



Chinese capacity additions (kt)



Source: Deutsche Bank, Wood Mackenzie

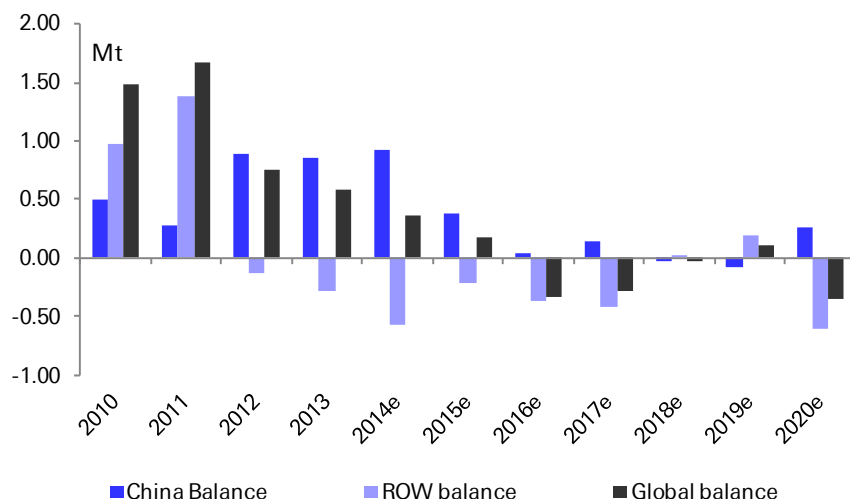
Outlook

- Over 3Mt of curtailments in China since 2013 – temporary or permanent?
- Simply slows additional tonnage to 1.5Mtpa instead of 2.5Mtpa.
- Further Chinese curtailments are very price dependant.

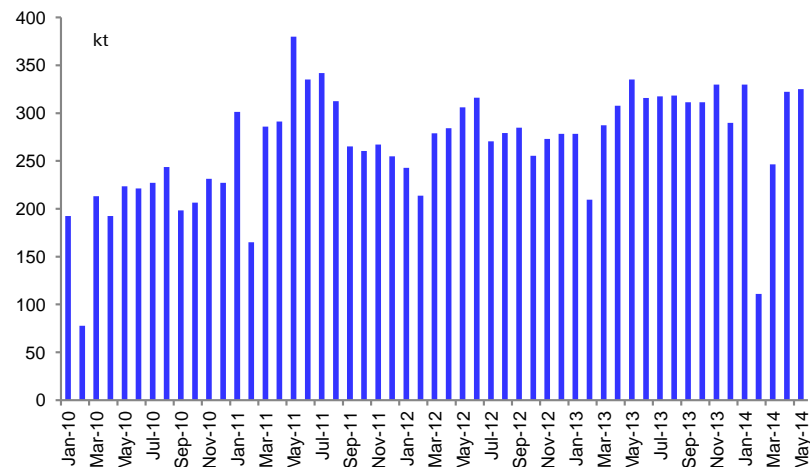
Aluminium: China balancing the ROW



China vs the ex-China balance



China net exports of semi-fabricated products



Source: Deutsche Bank, Wood Mackenzie, NBS

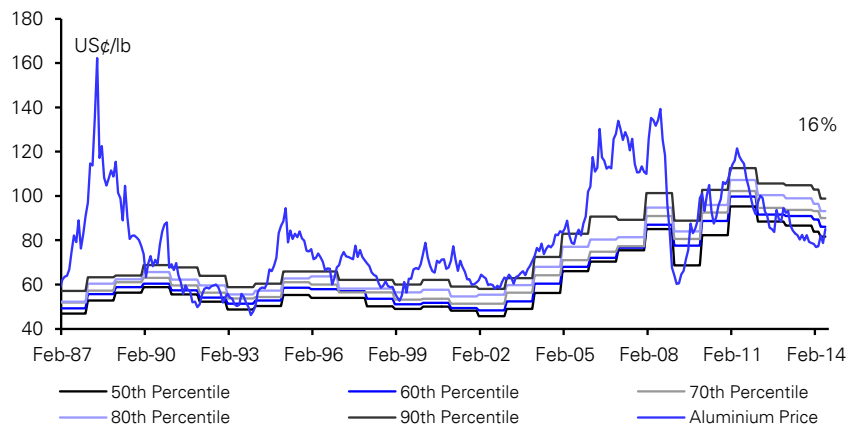
Outlook

- The ROW market is in a deficit whilst China is in a surplus
- Market is “balanced” through the exports of semi’s by China, although these exports have only shown modest growth since 2010

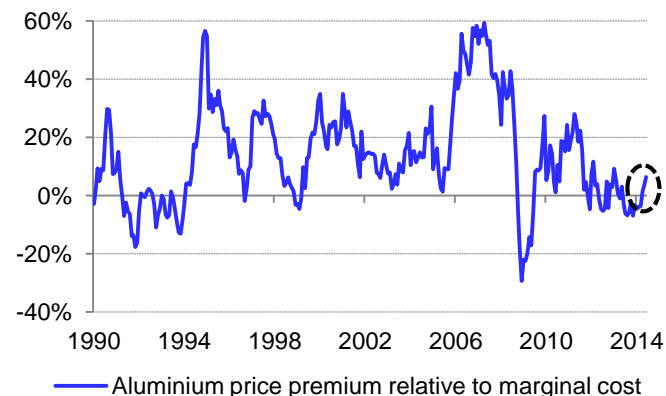
Producers feeling the pinch



Price at the 50th percentile without considering any regional premia



Price vs marginal cost



Source: Deutsche Bank, Wood Mackenzie

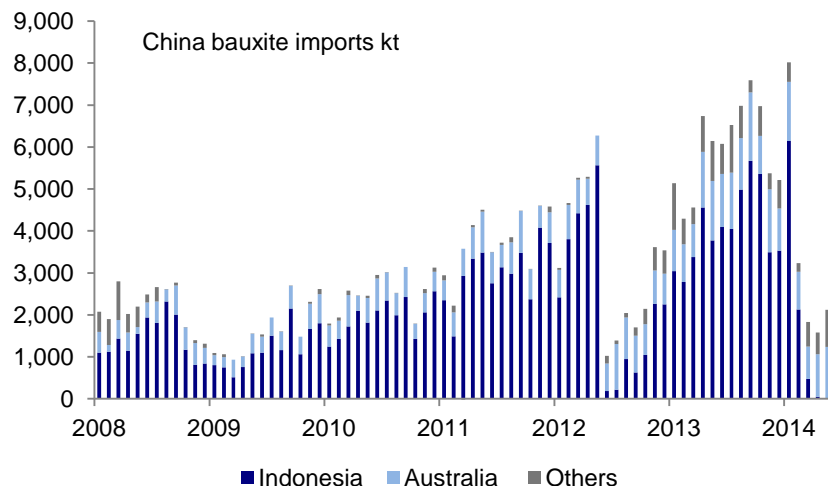
Outlook

- In the early Nineties, prices stayed at or below the marginal cost for 3 and a half years, with the collapse of the Soviet Union.
- The price recovery has meant that most of the industry is cash positive or cash neutral at worst.

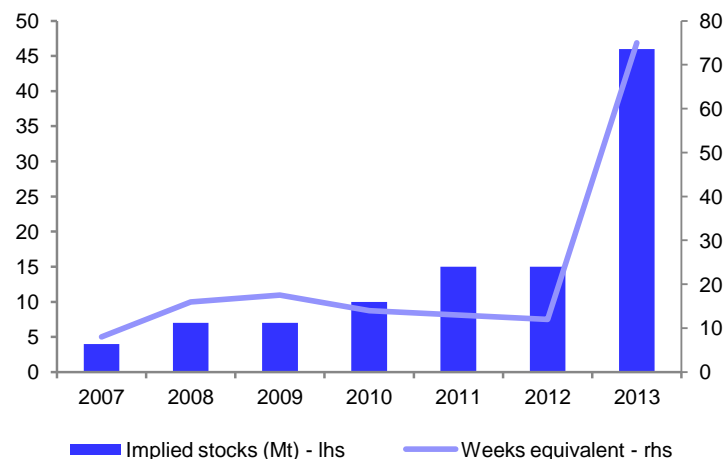
Alumina is unlikely to impose discipline, near term



China bauxite fell sharply in post the ban (kt)



China's bauxite stockpiles



Source: Deutsche Bank, China Customs Statistics

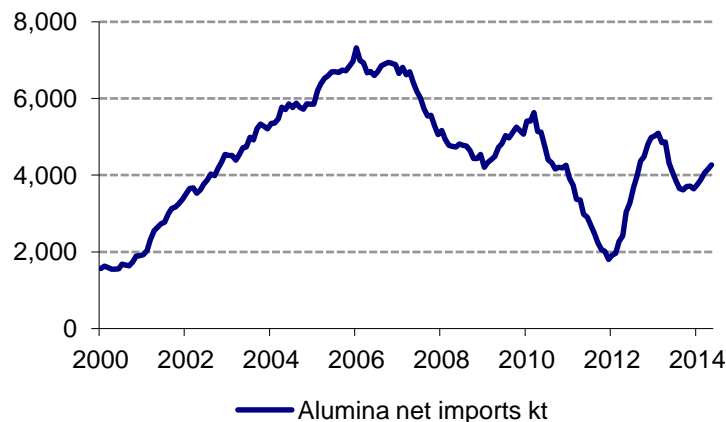
Outlook

- China has been diversifying sources of bauxite with more from Australia
- Indonesia's current account deficit is likely to lead to a reprieve on export quotas in our view. Export duties may rise however
- Bauxite stockpiles in China may be as high as 18 months, although China Hongqiao mentioned one year
- Gove shut-down is the only non-aluminium linked closure potential (2.7Mtpa)

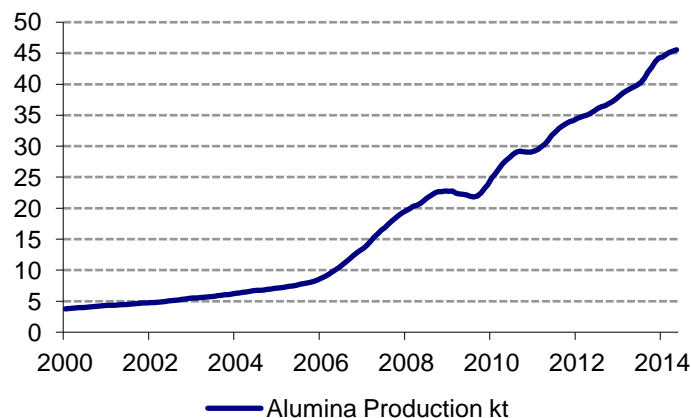
Bauxite may result in cost push inflation however



China Alumina net imports (kt)



China alumina production – 12 month rolling total (kt)



Australian alumina prices (FOB) – USD/t



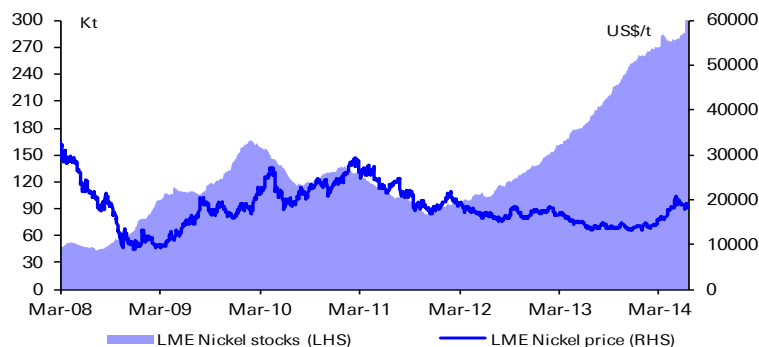
Estimating the additional cost to Chinese alumina and aluminium

USD/t	Bauxite	Freight	Caustic	Total Energy	Labour	Total Other Costs	Cash Cost (C1)
Current Alumina cost	74.7	35.1	51.3	65.6	16.9	33.0	276.7
Cost incl. Bauxite price increase	180	10.0	51.3	65.6	16.9	33.0	356.8
Additional alumina cost							80.1
Implied additional cost to aluminium							156.2

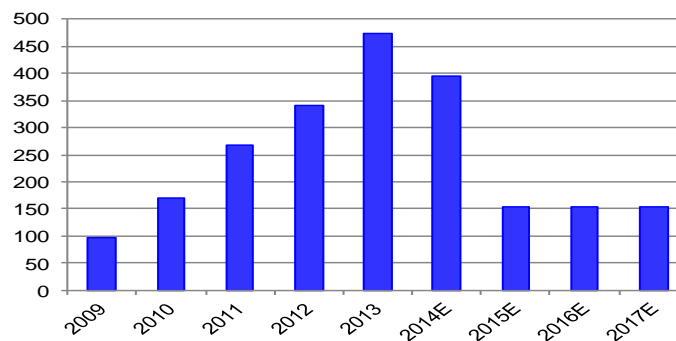
Nickel: Indonesia holds firm, bullish for longer



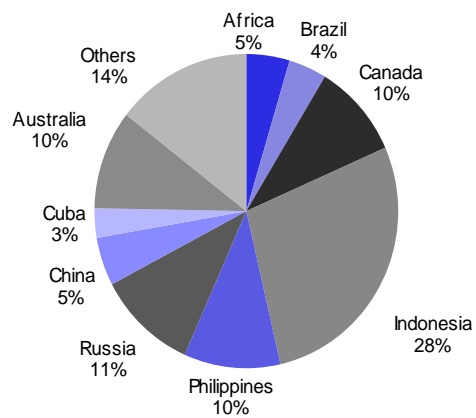
Nickel LME stocks versus Price



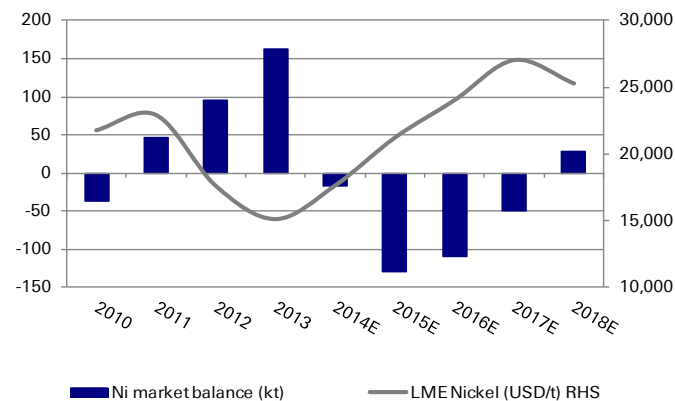
Nickel: Indonesian ore ban holds firm; Chinese NPI output estimates



Nickel mined supply by country / region



Nickel supply – demand balance

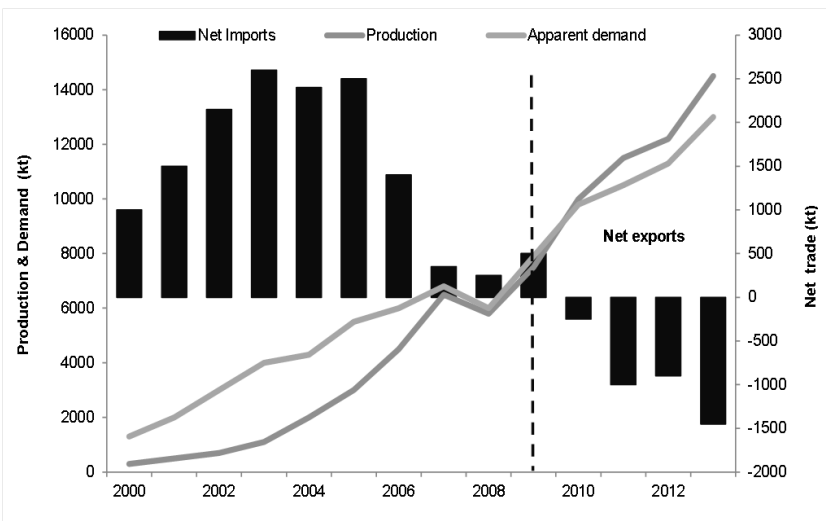


Source: Deutsche Bank, CEIC, Wood Mackenzie, Thomson Reuters Datastream

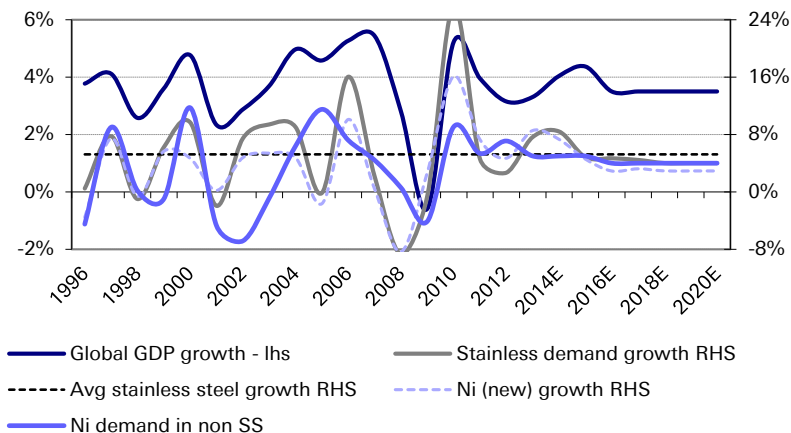
Nickel: strong growth driven by Chinese melt capacity in 2013; the outlook is more muted



China stainless steel apparent consumption



Global growth rates in Ni and Ni end products



Source: Deutsche Bank, CEIC, Wood Mackenzie

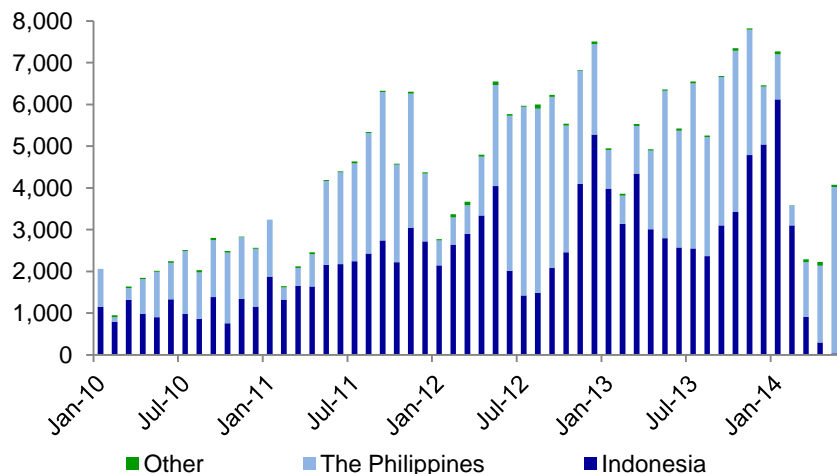
Outlook : Weaker demand in 2014 and 2015 as part of the adjustment to deficits

- Strong nickel consumption growth (9.4%) driven by robust Chinese melt capacity growth (9% globally)
- ...at the expense of hollowing out capacity in Europe
- Trimming back both SS and Non SS Nickel end demand – lower drill rigs counts, aircraft orders etc.
- Stainless Steel melt to fall back to 5% (at or below trend)
- More scrap and substitution into Ferritic grades

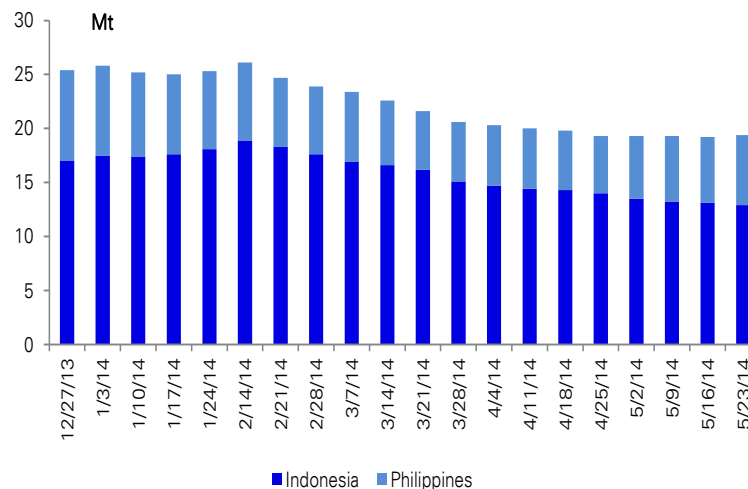
Nickel: Ore stockpiling – when will they run out?



China nickel ore imports



Nickel ore stockpiles in China



Source: Deutsche Bank, Wood Mackenzie, Ferroalloy.net, NBS

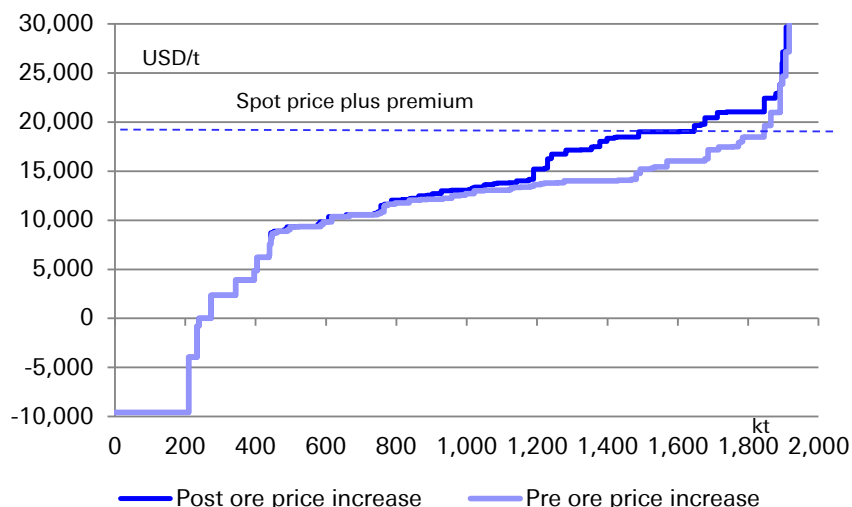
Outlook

- Total ban = 7 – 8 months of stocks; the impact is likely to be felt at the end of Q3.
- Smaller mills with smaller balance sheets may feel the impact sooner
- Chinese Port stocks have been drawn down.

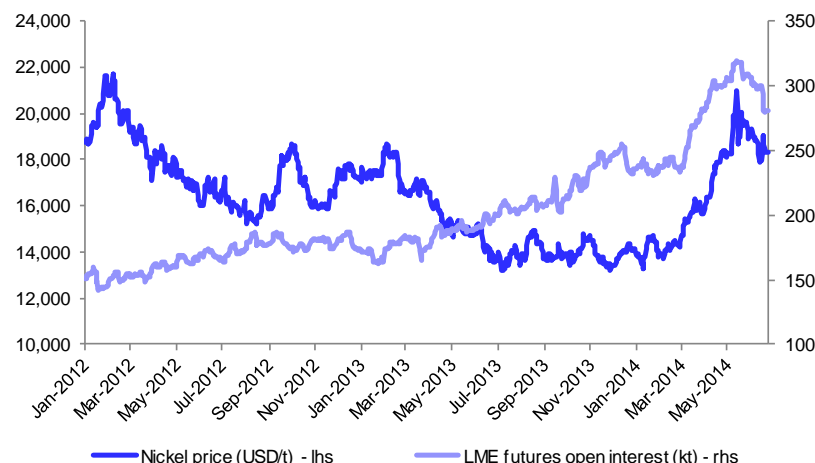
Nickel: An industry under pressure before the ban



Nickel C1 cash costs Q1'14, with higher ore costs



Open interest on the LME



Source: Deutsche Bank, Wood Mackenzie, CRU

Outlook

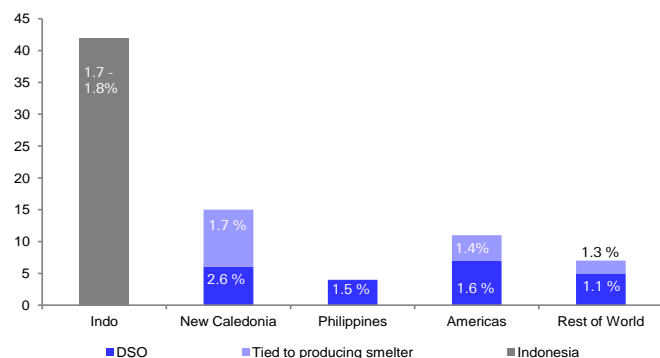
- 30 – 35% of the industry was loss making despite costs easing, now most of the industry is EBITDA +ve
- Philippine high grade ore has nearly doubled to US\$100/t since the ban putting pressure on costs.
- Higher ore prices equate to USD5,000 – 6,000/t in C1 cash costs, taking a large proportion of Chinese NPI to c.USD19,000/t
- Short term pricing has been driven by speculative interest

Nickel: Filling the gap will take time and money

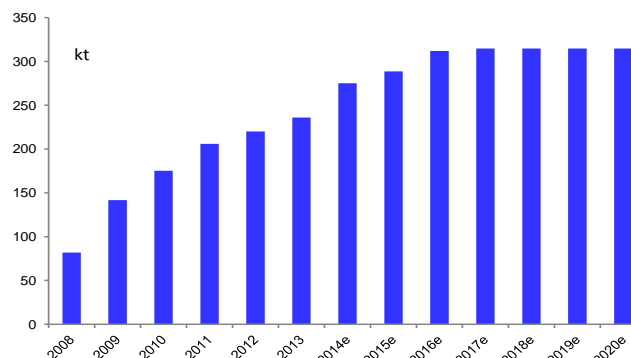
Philippines



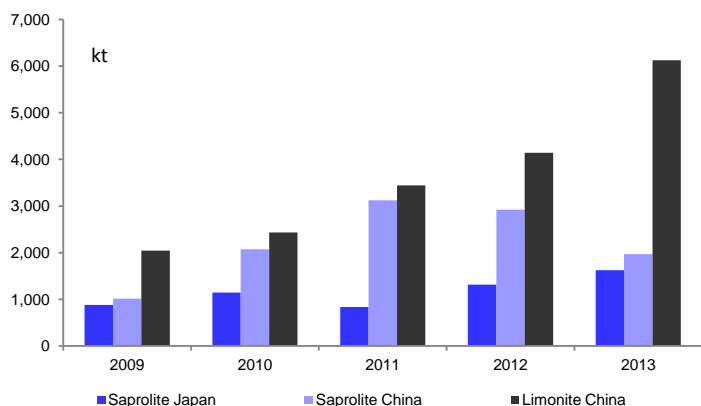
Global Saprolite grades



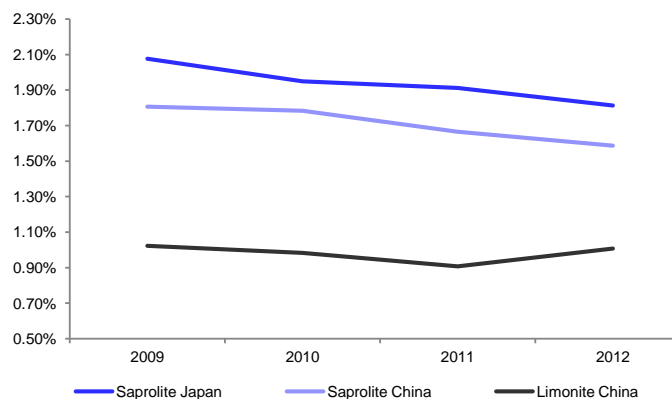
Philippine nickel production



Nickel Asia ore sales by destination



Nickel Asia's ore grades

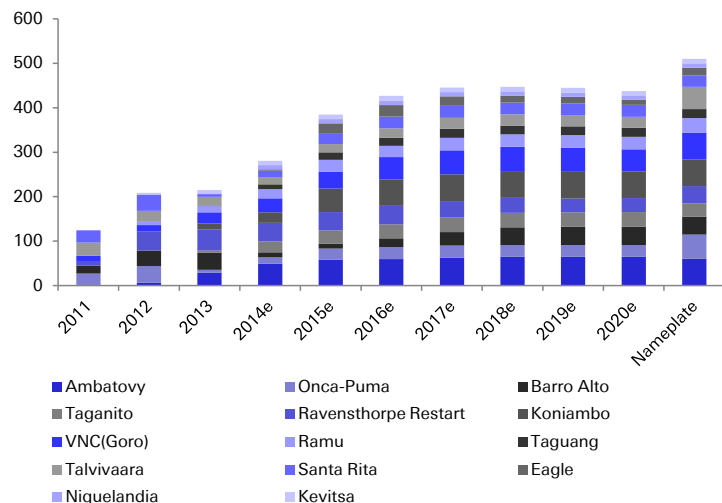


Nickel: Filling the gap will take time and money

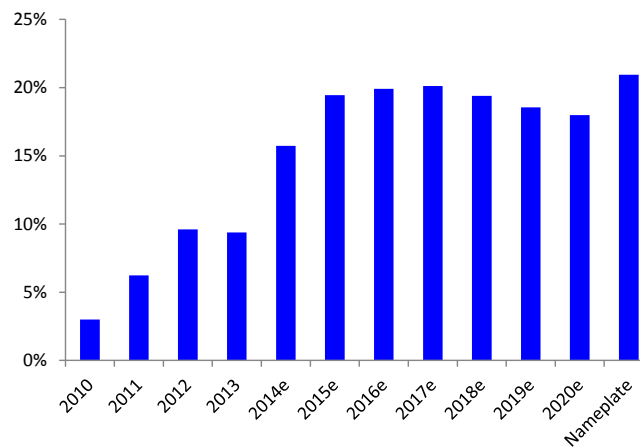
Indonesia and elsewhere



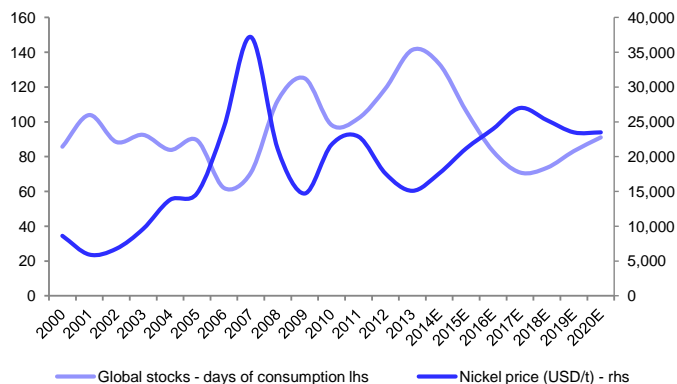
Potential Nickel project ramp-up from the last wave of investment (kt)



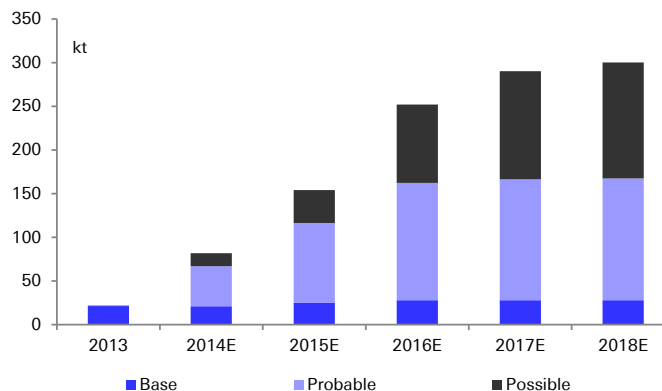
Nickel supply additions outside of Indonesia as a % of world supply



Global Nickel inventories versus annual average pricing



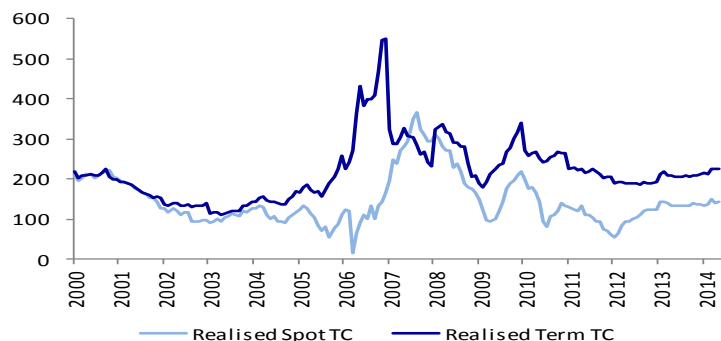
Nickel Asia's ore grades



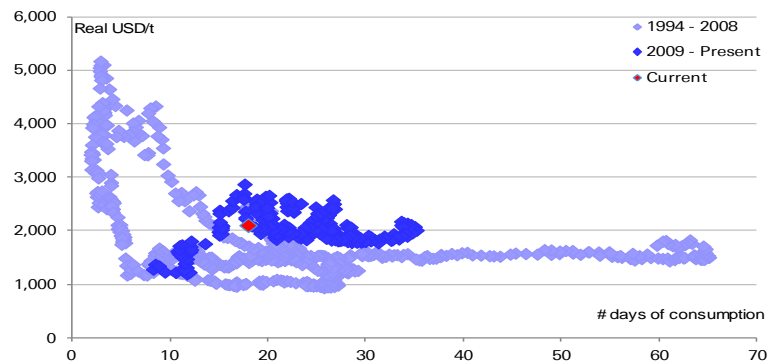
Zinc: Chinese mine output restrains smelter output



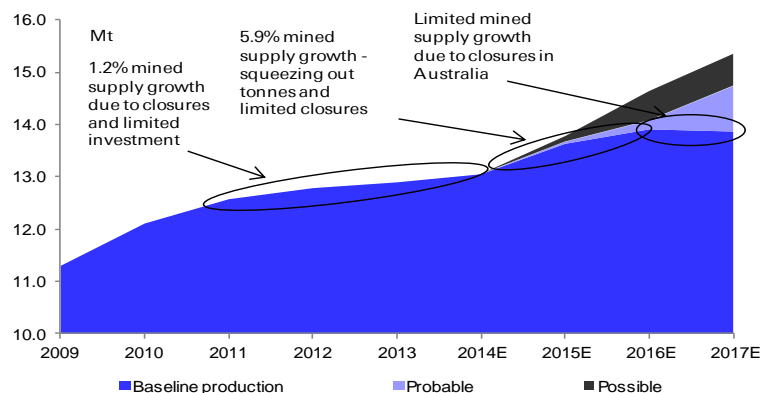
Zinc TC's (USD/t)



Zinc “pinch point”: LME inventory vs days of consumption

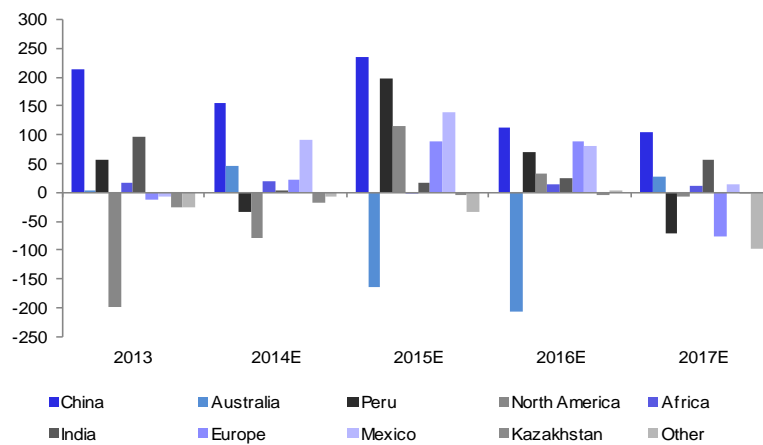


A brief burst in mined supply, should keep the concentrate market in surplus



Sources: Deutsche Bank, Bloomberg Finance LP, Wood Mackenzie

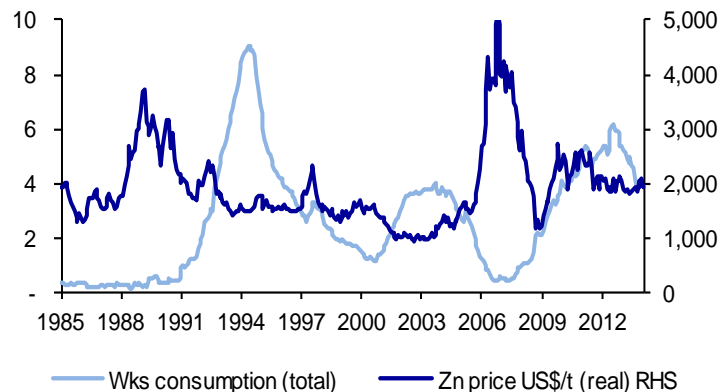
Regional supply changes



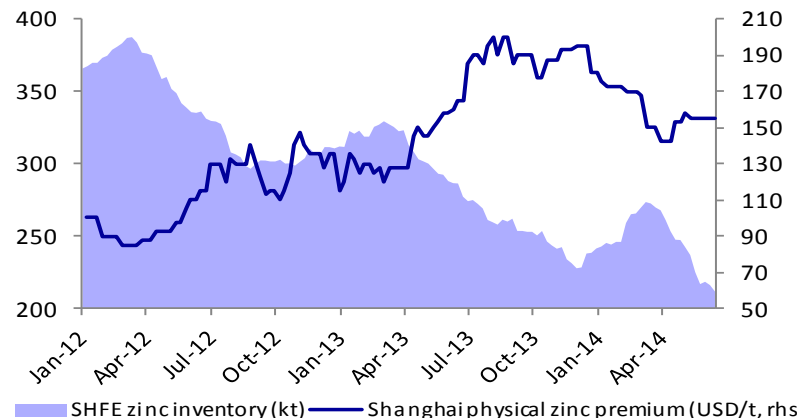
Zinc – Inventory & premiums



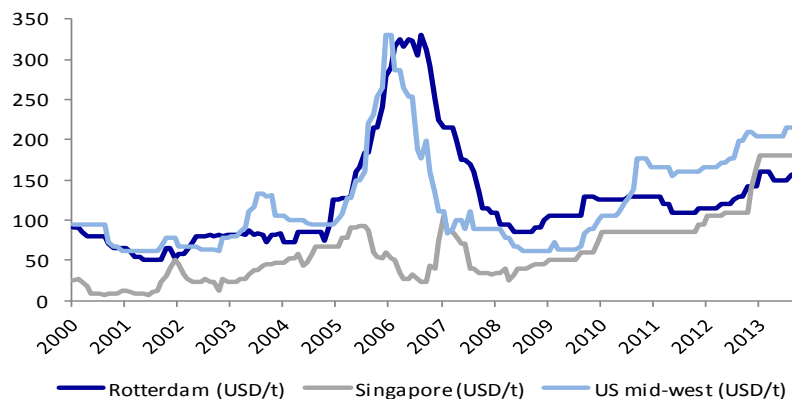
Zinc inventory (wks consumption) vs zinc prices



Zinc SHFE inventory vs Shanghai physical premium



Zinc physical premium



Outlook

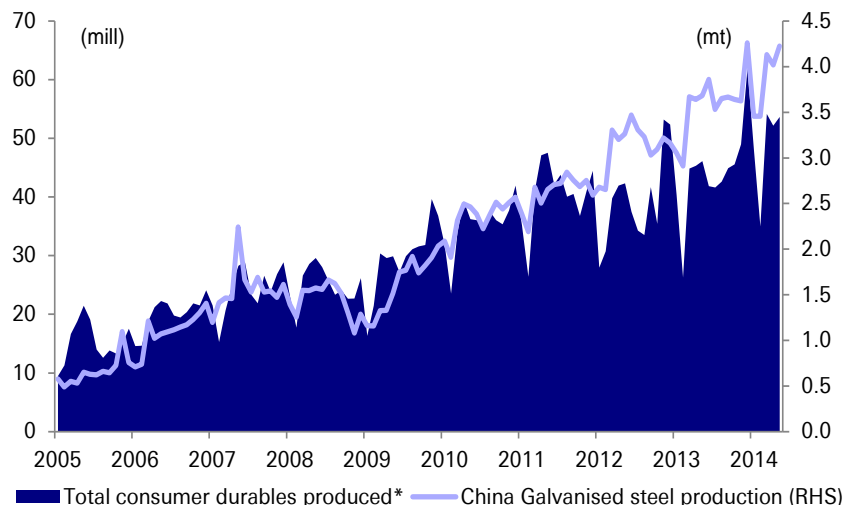
- The Zinc market is likely to be in a definitive deficit for 2014.
- Over the next couple of years, we expect that zinc could remain in a small deficit market which could eventually tighten up physical availability.
- Zinc exchange inventories in terms of days of consumption have been declining over the past 6 months.

Source: Deutsche Bank, Bloomberg Finance LP, CEIC, NBS

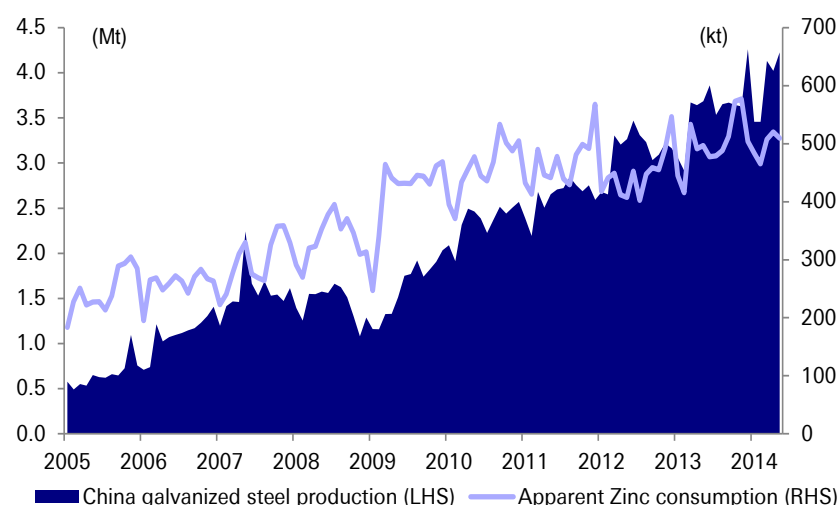
Demand: Near term outlook



China durable consumer sales vs galvanised steel production



Chinese galvanized steel production vs apparent zinc consumption



Source: Deutsche Bank, NBS, CEIC, Bloomberg Finance LP

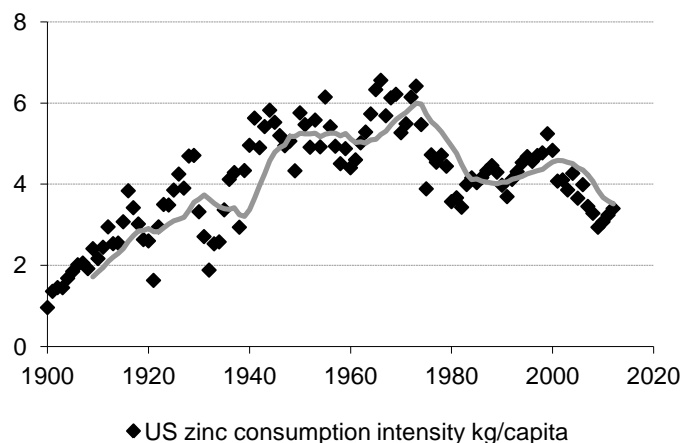
Outlook

- Strong growth in the automobile and white goods sectors has boosted galvanised steel consumption.
- A recovering profile in China's refined zinc production and net imports is a further indicator of improving apparent demand.
- Chinese apparent zinc demand is up a modest 4% y/y to May, at odds with much stronger galvanized steel sheet output.

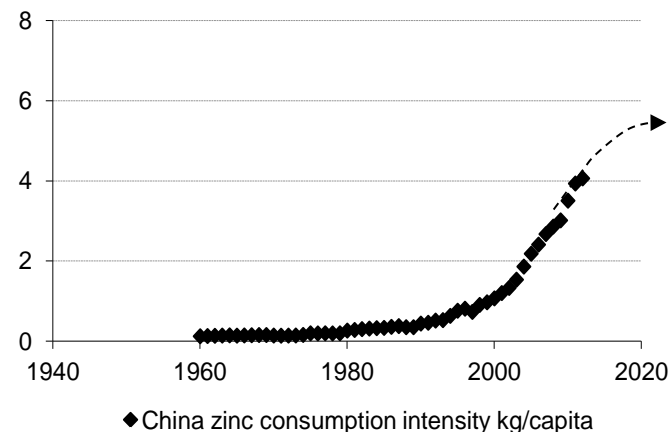
Demand: Medium term outlook



US zinc consumption intensity kg/capita



China zinc consumption intensity kg/capita



Source: Deutsche Bank

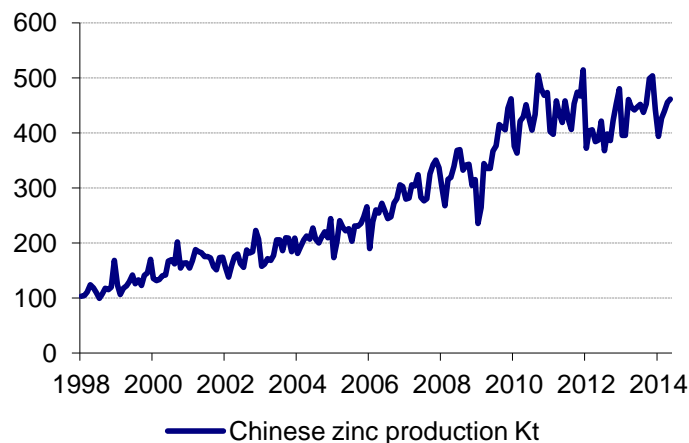
Outlook

- Over the medium term as China's shift from an asset heavy to consumer economy will change zinc consumption. Zinc could benefit in two ways.
- 1) Although the construction industry accounts for 55% of end demand for zinc, at least 40% of demand is related to consumer products & transport.
- 2) China will seek to upgrade its economy and use more zinc in corrosion resistance.

Supply: The Chinese smelter conundrum

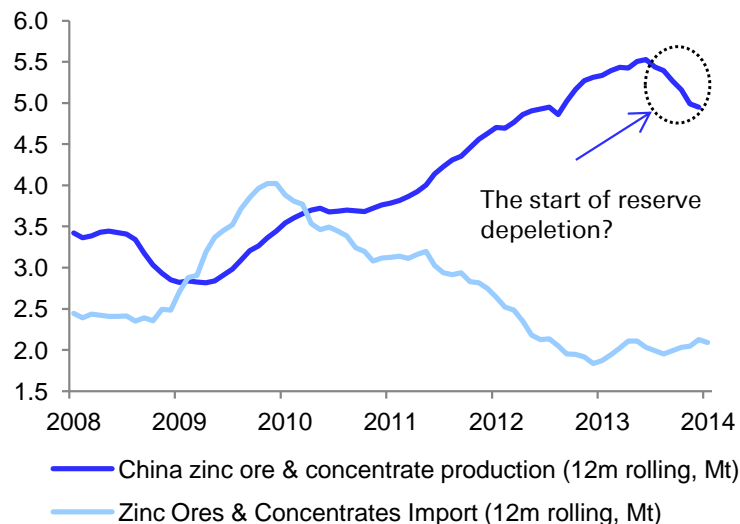


China's refined zinc production



Source: Deutsche Bank, NBS

Chinese mined output vs cons imports



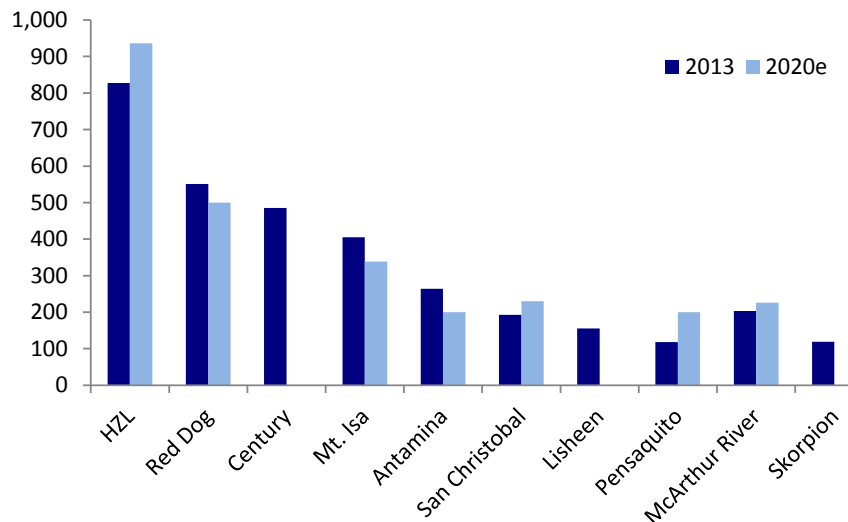
Outlook

- China's refined zinc production rebounded meaningfully in 2013, up 10% yoy. However output is up only 1.7% YTD, constrained by flat TC's, and a lack of domestic concentrate.
- Some Chinese zinc smelters continued to make losses partially due to environmental protection costs.

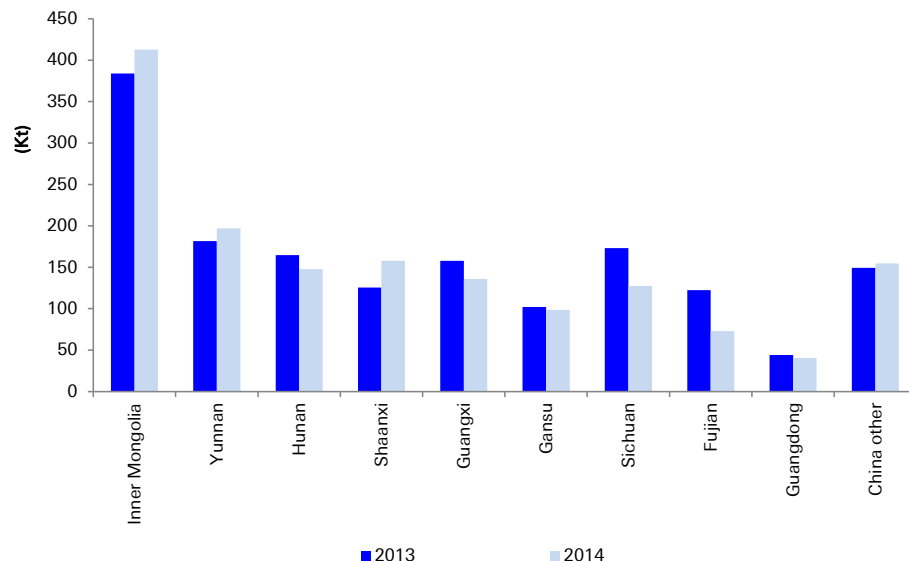
Supply: Fragmented industry, with environmental constraints



Top 10 zinc mine production in 2013 vs 2020e



Chinese mined production by region to Apr'14



Source: Deutsche Bank, Wood Mackenzie, NBS

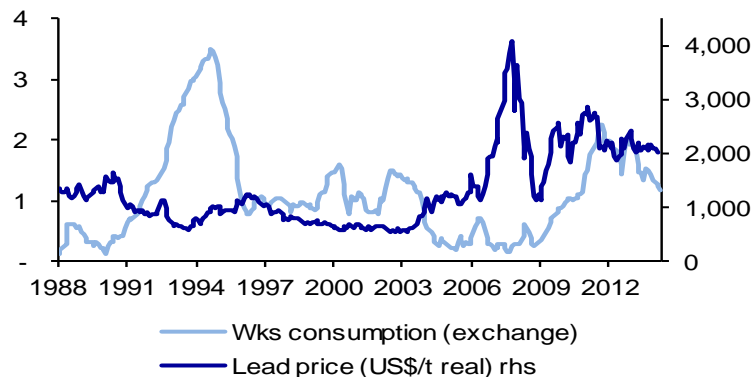
Outlook

- We believe that the key determinant for zinc's medium term outlook is mine supply. We forecast supply growth in the zinc market to see deceleration due to the closures of several large Western mines.
- This is a function of lower grades, deeper mines, challenging geology and slower expansion (lower by-product silver prices)
- Chinese mined production is also struggling, with increases in inner Mongolia being offset by supply elsewhere

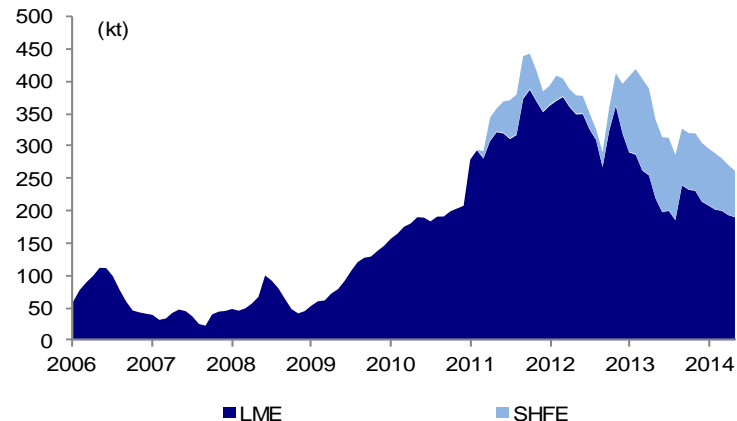
Lead– Inventory & premiums



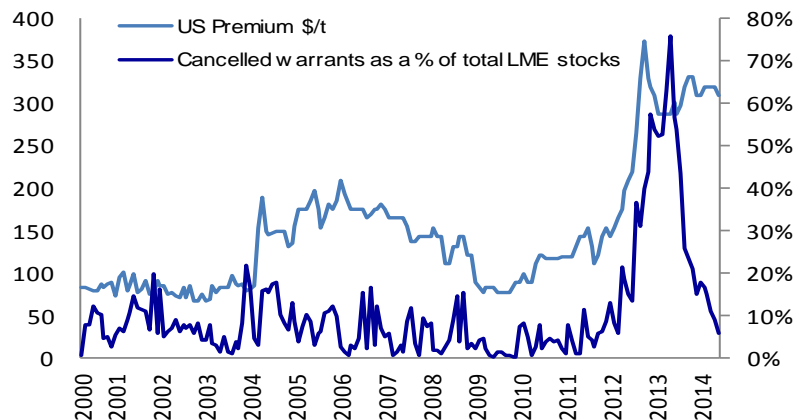
Lead inventory (wks consumption) vs zinc prices



Lead exchange inventory & cancelled warrants



US lead premium vs LME cancelled warrants as % of total



Outlook

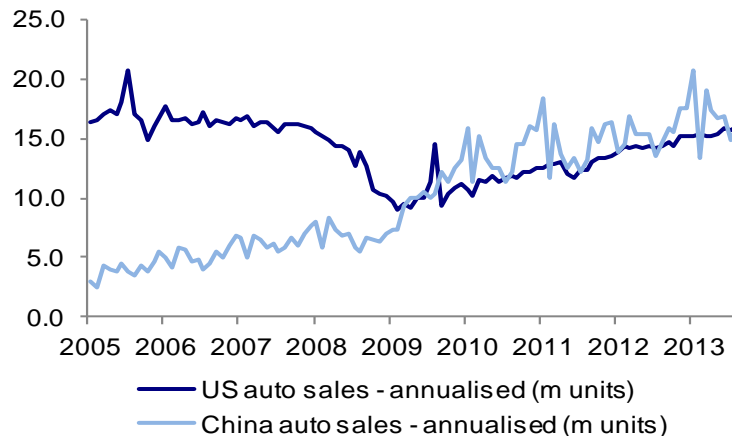
- Relatively healthy lead fundamentals is a function of strong auto sales production in the US & China as well as soft Chinese smelter production growth in our view.
- Lead exchange inventory declined moderately.
- Despite a sharp drop in LME cancelled warrants, physical lead market remains tight.

Source: Deutsche Bank, Bloomberg Finance LP, CEIC, NBS

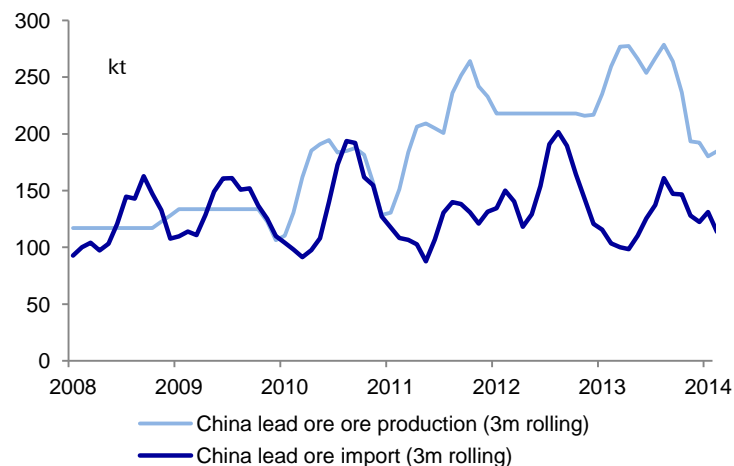
Lead: Market Outlook



US and China auto sales



China lead ore production vs imports (Kt)



Source: Deutsche Bank, CEIC, NBS, Wood Mackenzie

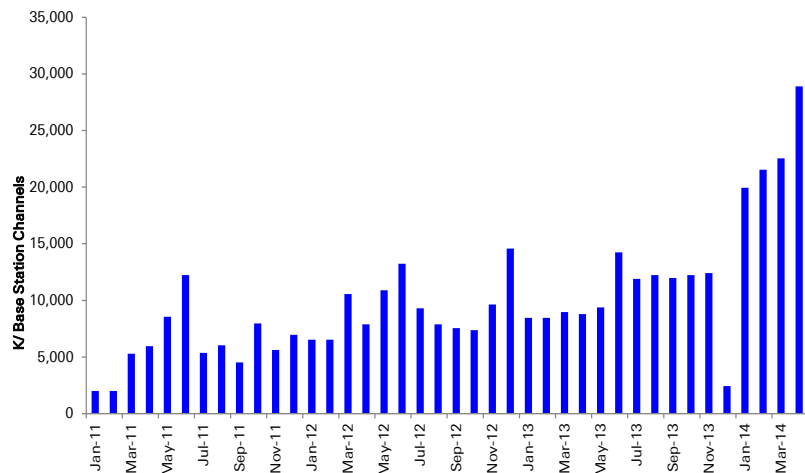
Outlook

- Strong US, China auto consumption growth and a steady recovery in parts of the European market supported OE (original equipment) battery demand.
- China's lead ore & concentrate imports recovered in Q4 last year and domestic lead ore production hit record highs. However, 2014 has seen declines once more.

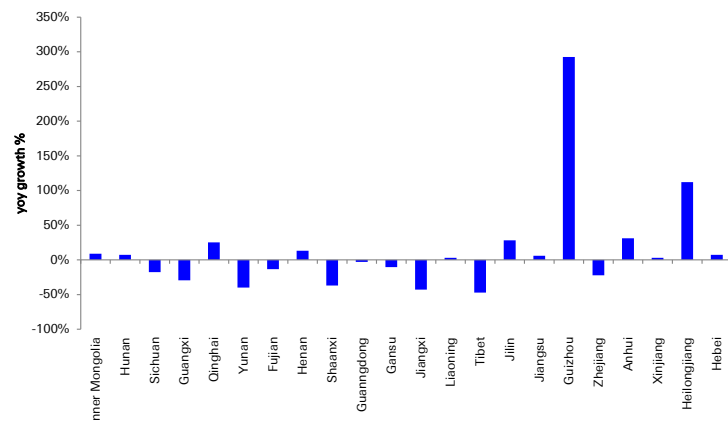
Lead: Mined supply continues to struggle in China



China base station output



China's April mine output - contraction in half the provinces



Source: Deutsche Bank, CEIC, NBS, Wood Mackenzie

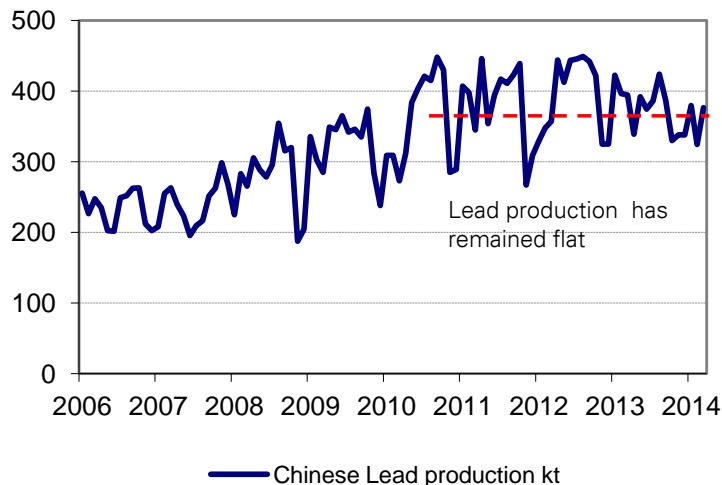
Outlook

- China Telecoms remains a key area of demand, in the near-term. Base station equipment is up 150% YTD
- China's mine production is down 8% yoy partially due to govt. Ordered closures, due to environmental reasons.

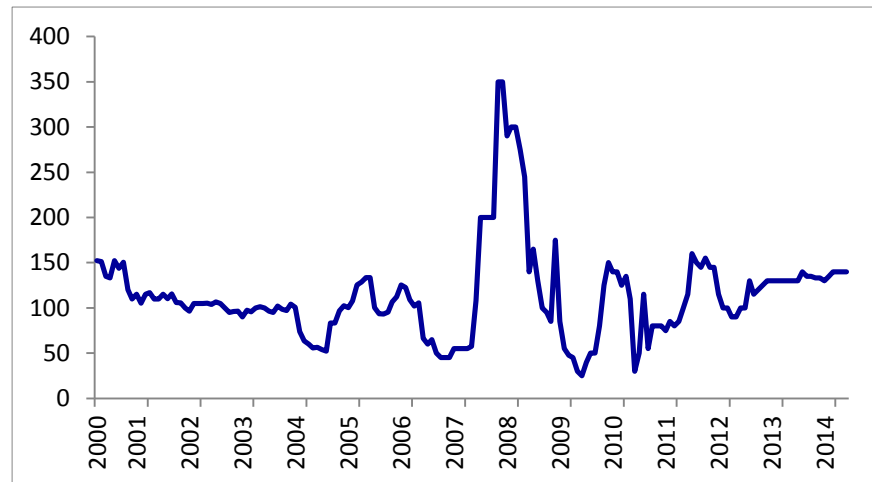
Lead: Market Outlook



China refined lead production (Kt)



Lead TCs (USD/t)



Outlook

- China refined lead production levels have stayed relatively flat over the past three years, coinciding with low TCs.
- We expect that global mine growth to slow substantially from 10% to 2% in 2014. In China, ore reserves are declining and could result in future mine closures.

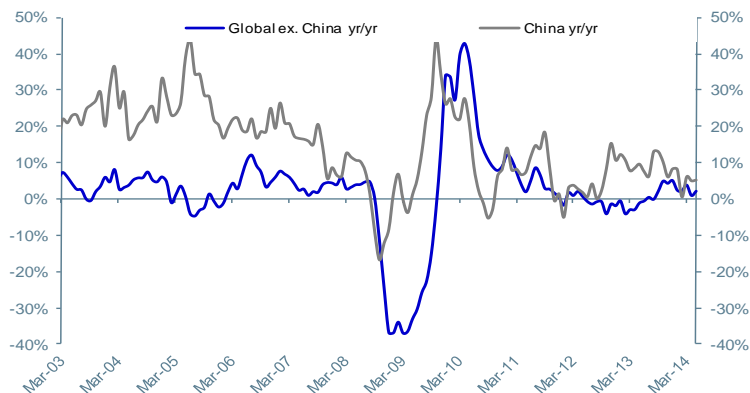
Source: Deutsche Bank, Bloomberg Finance LP, CEIC, NBS

Bulks: Hardest hit, but finding tentative cost support

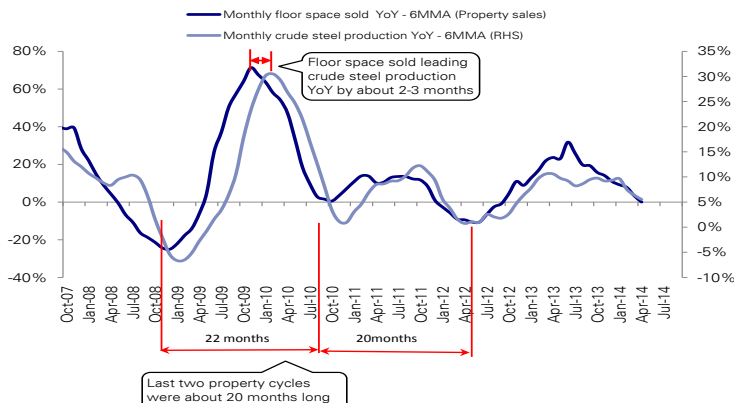
...supply keeps coming in both iron ore and coking coal



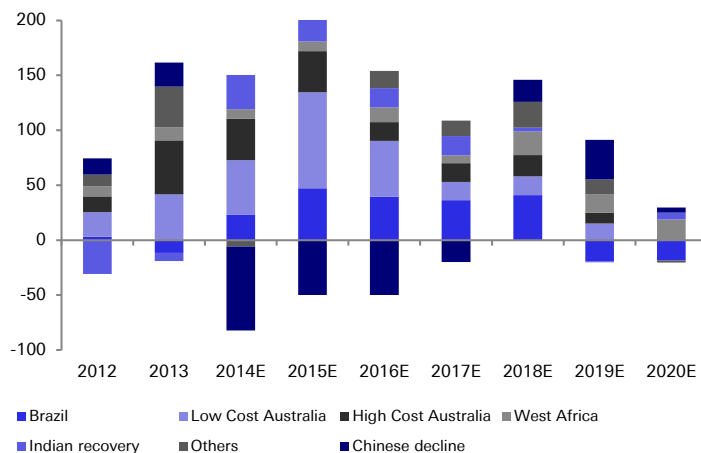
Global steel monthly steel progression Y/Y



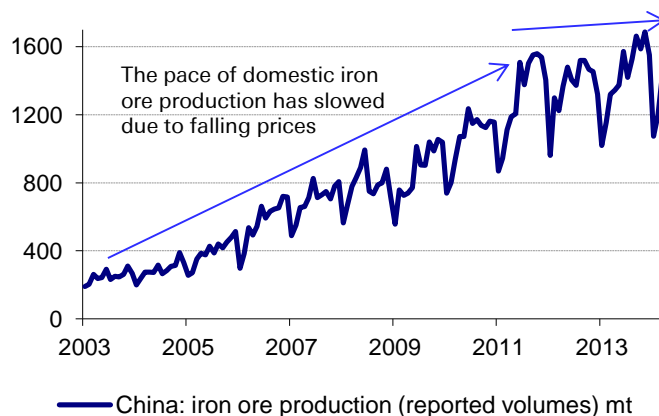
China property sales vs Crude Steel production



Iron ore mined supply growth by region (Mt)



Chinese iron ore production - annualised

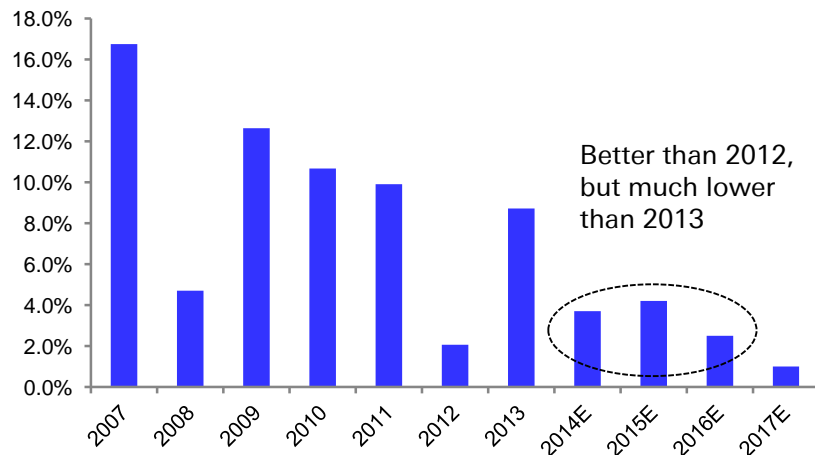


Sources: Deutsche Bank, Bloomberg Finance LP, World Steel Association, NBS, Wind

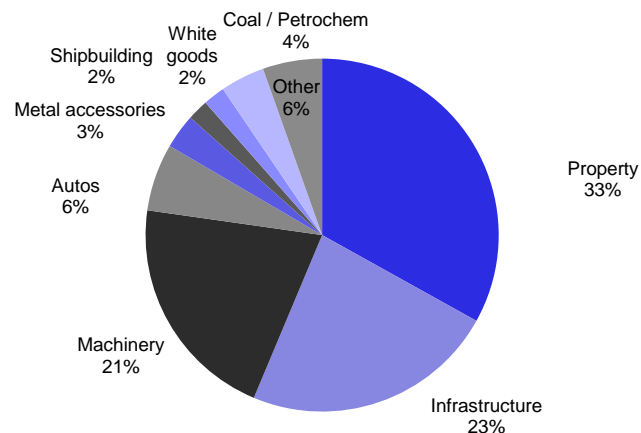
Some risks in China over the medium term



Chinese Crude steel production growth forecasts



China's consumption by end use in 2013



Source: Wind, Mysteel, CISA, NBS, AME, Deutsche Bank

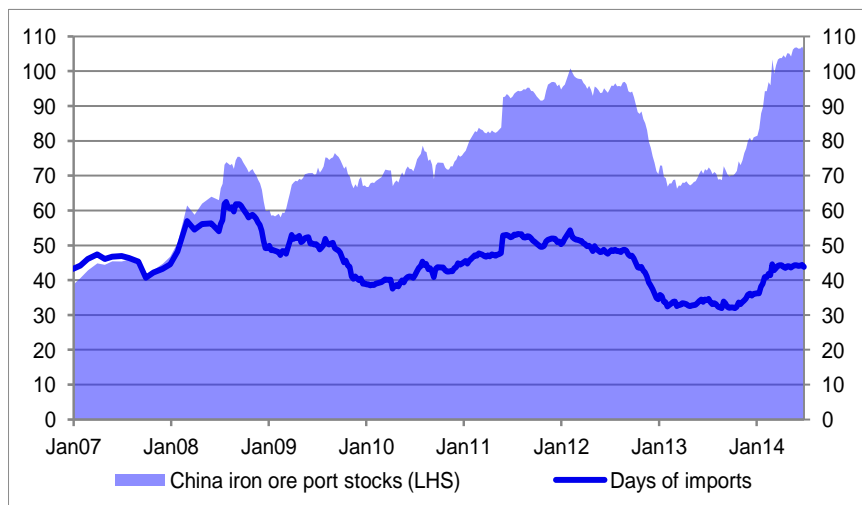
Outlook

- Continued growth in China, but it is dependant on the property sector not slowing down too much
- ...Forecasting 3.7% in 2014 which is well down on 2013 at c. 9%. But better than 2012 at 2.1%.
- Property sector remains the key risk. We expect a cyclical pick-up in Q4 after price cuts of c.20%

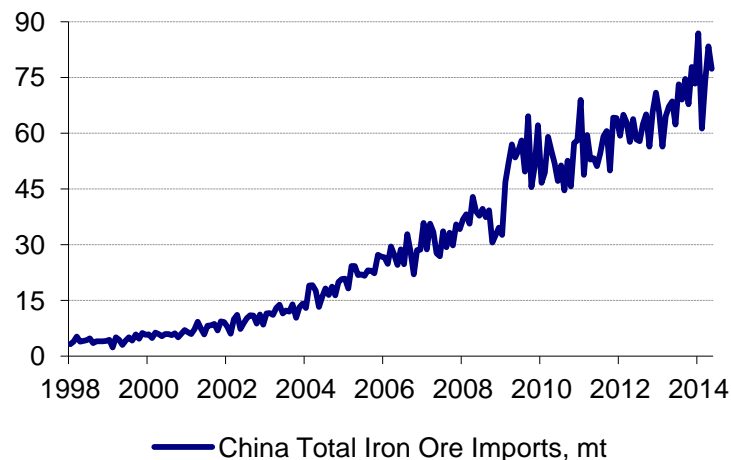
Strong Chinese imports



Iron ore port inventory



Chinese ore imports (monthly)



Source: NBS, Bloomberg Finance LP, Antaike, Deutsche Bank

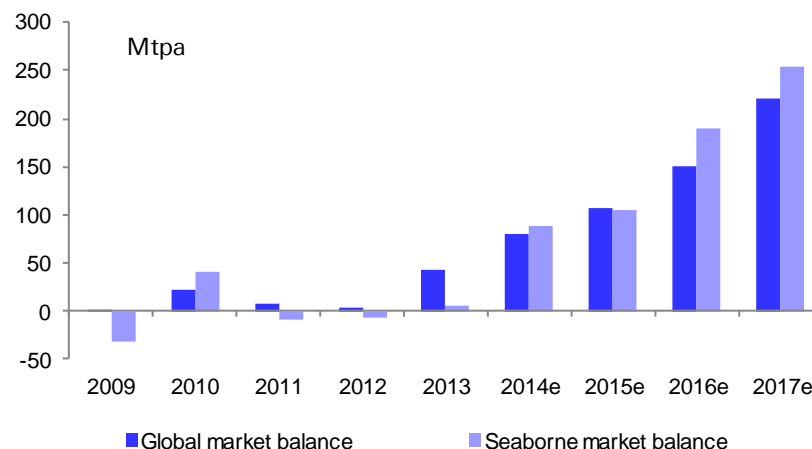
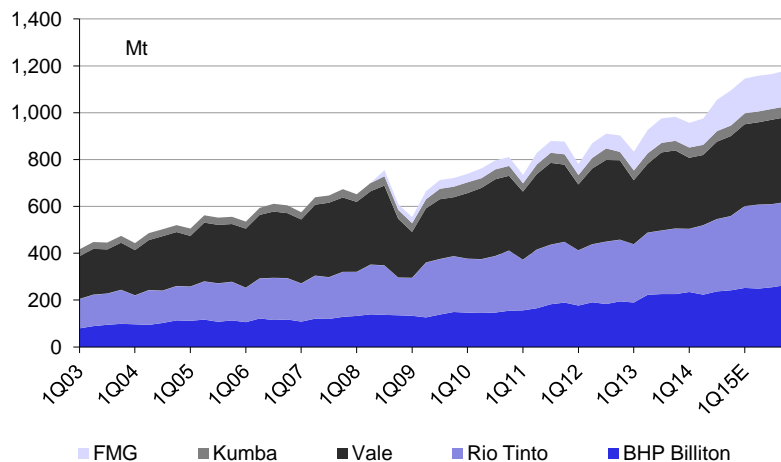
Outlook

- China imported record quantities of iron ore in 2013, and as a result port stocks have reached record levels. Still well off the peak on a Days of Import basis.
- Usual start of year volatility, but the run rate is well ahead of 2013, with record levels of port inventories.

Iron ore: Supply is coming



...but its likely to be a steady stream, and not a wave



Source: Company reports, Deutsche Bank

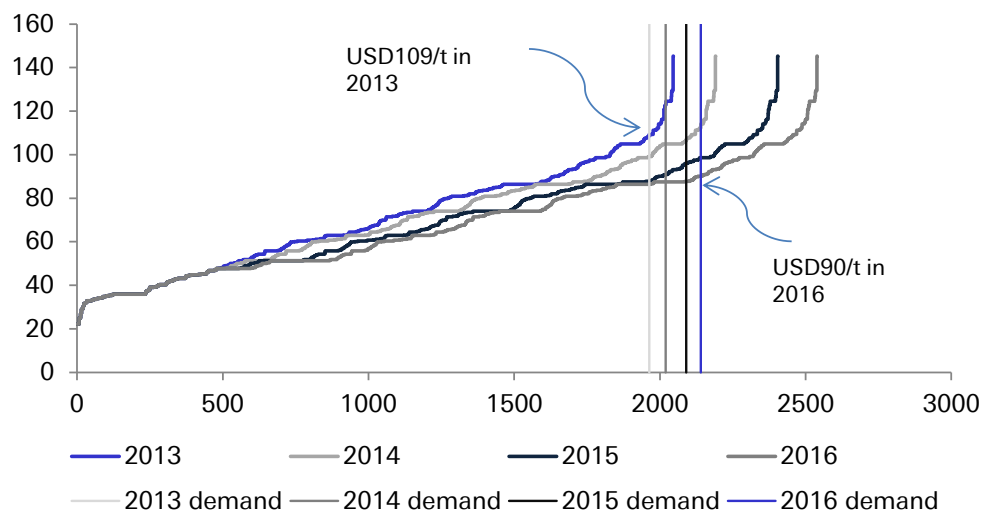
Outlook

- An average of c.130Mtpa based on the DB equity analyst forecasts
- Total of 340Mtpa of new seaborne iron ore capacity hitting the markets over the next three years
- 2015 will be the peak year for additions at just shy of 8%% Y/Y growth. We forecast only 3.4% growth in 2014E, but this includes Chinese high cost curtailments

Iron ore: Seeking out the resistance points



Adjusted iron ore cost curve – demand intersections



No growth scenario (Mt)	2013	2014E	2015E	2016E
Basic cash cost	96	90.0	79.2	66.5
Cash charge	109	95.5	83.4	81.3
Cash charge + sustaining capex	110	99.1	87.8	86.5

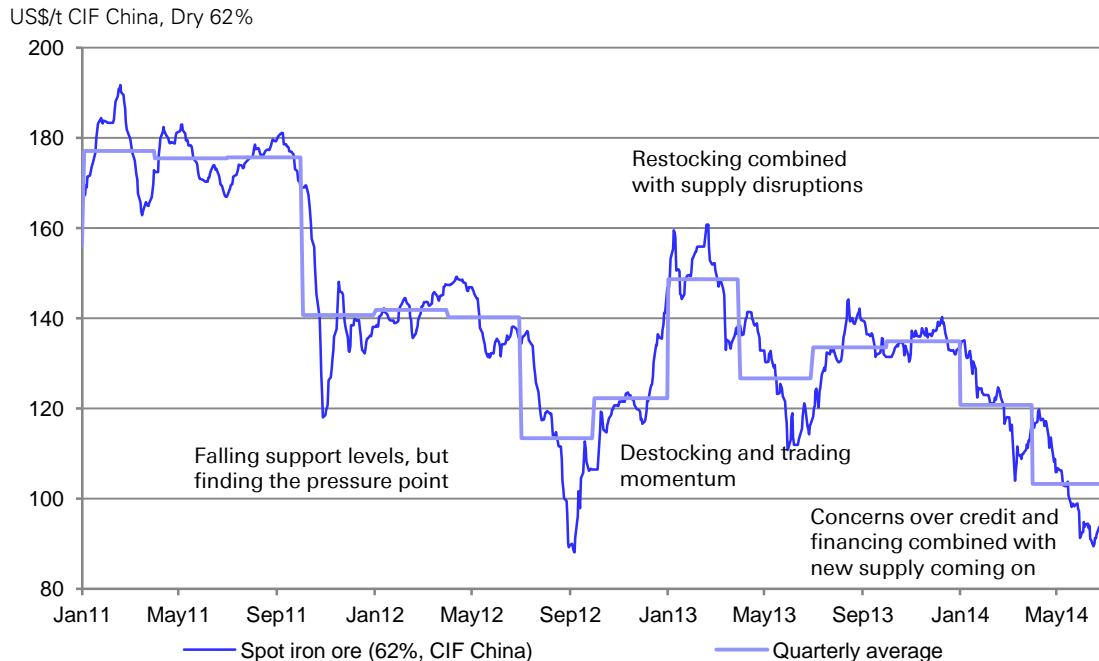
Base case (Mt)	2013	2014	2015	2016
Demand forecast	1,964	2,019	2,089	2,139
Basic cash cost	96.1	91.8	87.5	81.1
Cash charge	103.3	99.9	89.3	84.1
Cash charge + sustaining capex	109.2	104.6	96	90.1
Min price	111	91		
Ave price	130	114		
Max price	159	135		

Bulks: Hardest hit, but finding tentative cost support

...Ultimately pricing levels give us an idea where support levels are



Spot iron ore price CIF China 62% (USD/t)



Sources: Deutsche Bank, Bloomberg Finance LP, Thomson Datastream

Bulks: Hardest hit, but finding tentative cost support

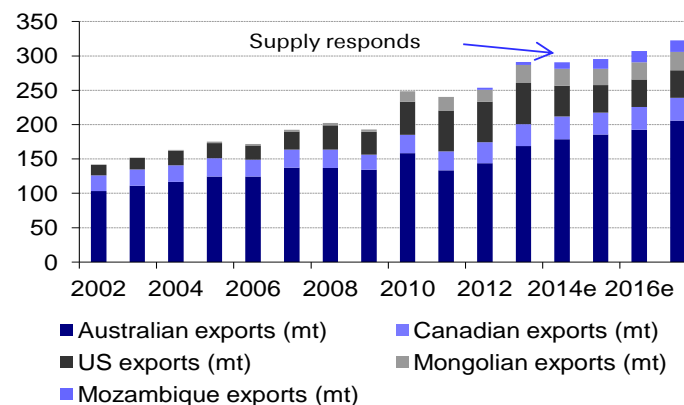
...supply keeps coming from Australia, squeezing out the US



Queensland Coal exports

QLD Port (Mt)	May'14	MoM change (days adjusted)	YoY change	2014 YTD	YoY YTD ch.
Gladstone	5.65	-3.25%	5.71%	28.53	29.74%
Abbot Point	2.17	15.93%	15.17%	8.92	8.93%
Dalrymple Bay	6.14	4.18%	9.84%	26.64	5.04%
Hay Point	3.45	-16.17%	12.21%	17.25	21.21%
Total	17.41	-1.76%	9.54%	81.34	16.58%

Coking Coal exports by region



Outlook

- Curtailments in the coking coal market are over 18Mtpa mostly in the US
- However, the Australian recovery will still result in modest net additions
- Demand from China in the form of imports has been lacklustre, but should recover on the back of a narrowing arbitrage

Sources: Deutsche Bank, Bloomberg Finance LP, AME, DTC, McKloskey

Bulks: Hardest hit, but finding tentative cost support

...Contrasting US closures with Australian exports



Company	Country	Mines	Region	volume impact (Mt)	Coal type	Announcement date	Notes
Alpha Natural Resources	USA		Capp	1.4	Low, mid and high vol	May-14	Lowered sales guidance by 1.4Mt
Arch Coal	USA	Cumberland River, Sentinel, Beckley & others	Capp	1.1	high vol	Apr-14	Sales guidance lower by 1.1Mt, half from lower output, half from switch into thermal
Beacon Hill	Mozambique		Tete	0.8	high vol	May-14	Will not resume sales until prices recover
Cliffs	USA	Pinnacle	Capp	2.3	low-vol	Jun-14	Idle for 6 months
CONSOL	USA	Buchanan	Capp	0.5	low vol	Apr-14	Sales guidance in Q1 results
CONSOL	USA	Bailey, Enlow Fork	Napp	0.3	high vol	Apr-14	Sales guidance in Q1 results
Drummond	USA	Shoal Creek	Alabama	0.3	mid vol	Apr-14	Idling longwall for 6 weeks
Glencore Xstrata	Australia	Ravensworth	New South Wales	2.1	semi-soft	Mar-14	Production will be suspended in Sept.
Mechel Bluestone	USA	No35, 58, 65, Coal Mountain No. 1, Red Fox Surface	Capp	1.6	Low vol, mid vol, high vol	Apr-14	Suspended operations
Patriot Coal	USA	Wells Complex (Black Stallion, CC10 mines & Wells prep plant)	Capp	1.3	high vol	Apr-14	Aligning production with sales
Rio Tinto	Australia	Hail Creek	New South Wales	0.3	semi soft	Apr-14	Shifting production from Hail Creek into the thermal coal market
Solid Energy	NZ	Stockton	NZ	0.5		Jun-14	Cut staff with production going from 1.9 - 1.4Mtpa
Vale	Australia	Integra Mine	NSW	1.5	Premium semi-hard, semi-soft	May-14	Idling 2 mines, with coal being sub-economic. 500 jobs lost
Walter Energy	Canada	Brazion (Brule & Willow Creek) & Wolverine mine	British Colombia	3.6	mid vol, low vol PCI, HCC	Apr-14	Wolverine idled in April, remainder idled by July
Total				17.6			

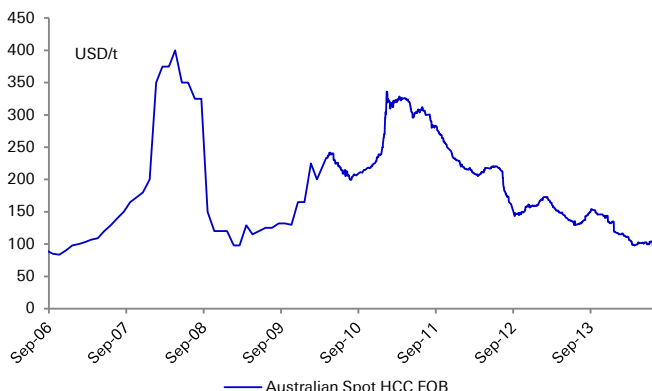
Sources: Doyle Trading Consultants

Bulks: Hardest hit, but finding tentative cost support

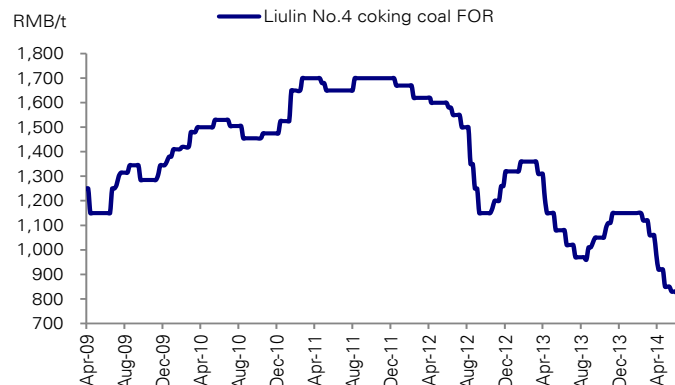
...Tentative signs of stabilisation



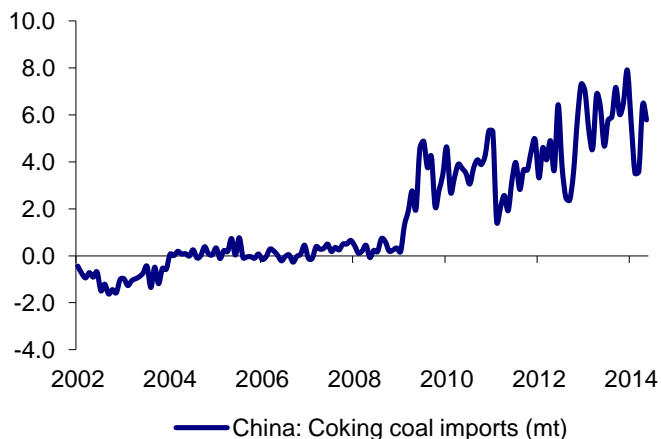
Spot hard coking coal prices FOB East Coast Australia



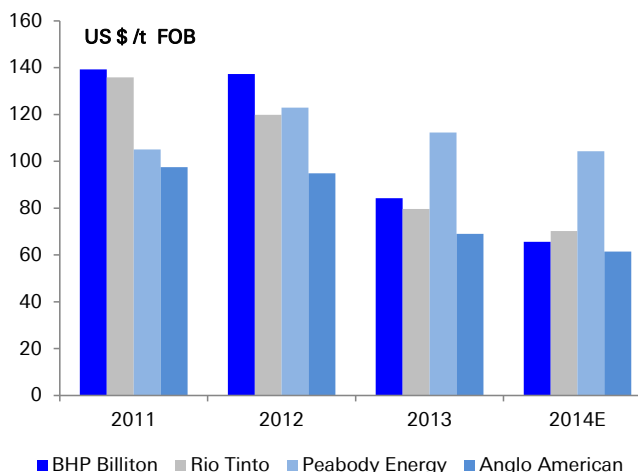
Chinese domestic Met coal price



Chinese Coking Coal imports (monthly)



Cash cost for the major producers 2011 - 2014E



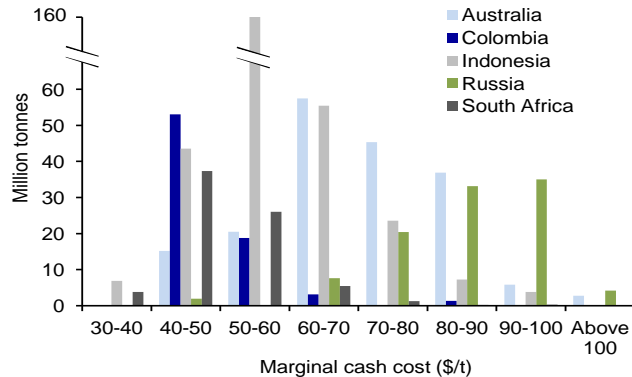
Sources: Deutsche Bank, Bloomberg Finance LP, AME, SX Coal, Datastream

Thermal Coal: Following marginal cost lower

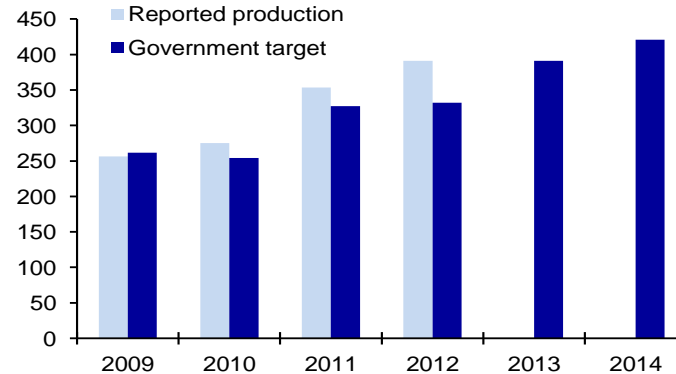
...Relying on India for demand



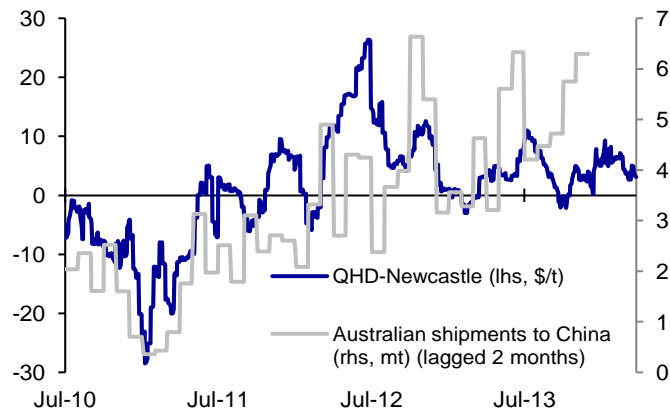
Global marginal cash costs (\$/t)



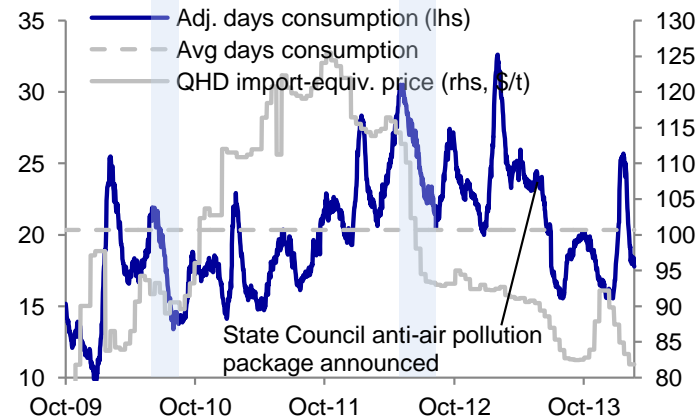
Indonesian coal production (Govt reported)



China import differential and monthly imports from Australia



China utility inventories and domestic coal price (lhs days, rhs \$/t)

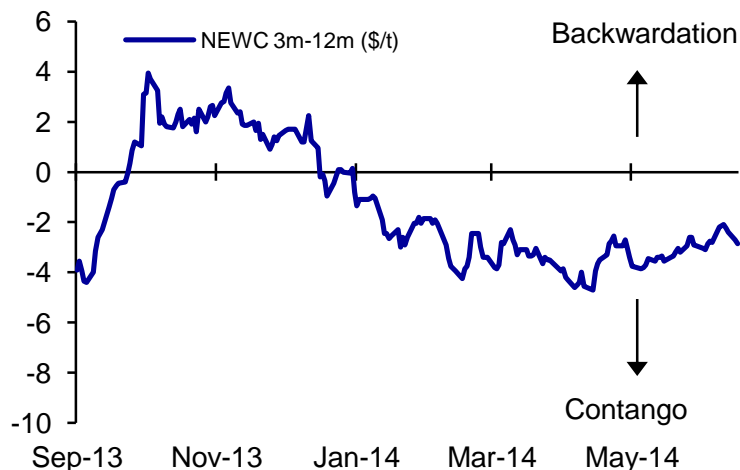


Sources: Deutsche Bank, Bloomberg Finance LP, AME, SX Coal, Wood Mackenzie

Thermal Coal: Seasonally weak market in Q3

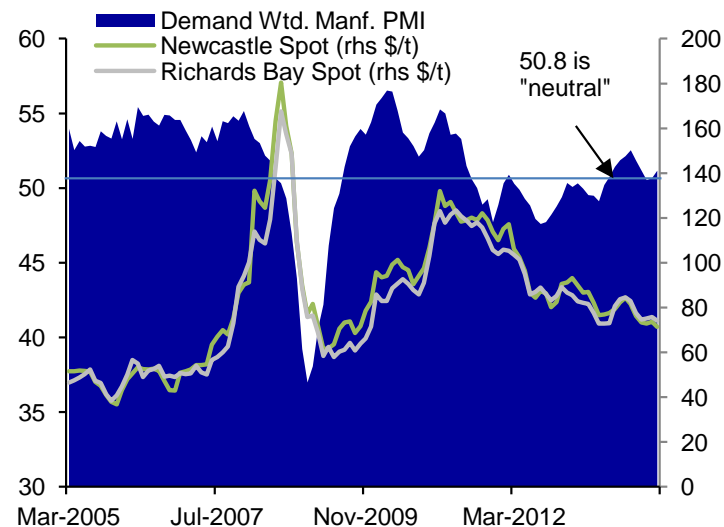


Front-end curve structure remains weak



Source: Bloomberg Finance LP, Deutsche Bank

Demand-weighted PMI



Source: Markit Economics, Deutsche Bank

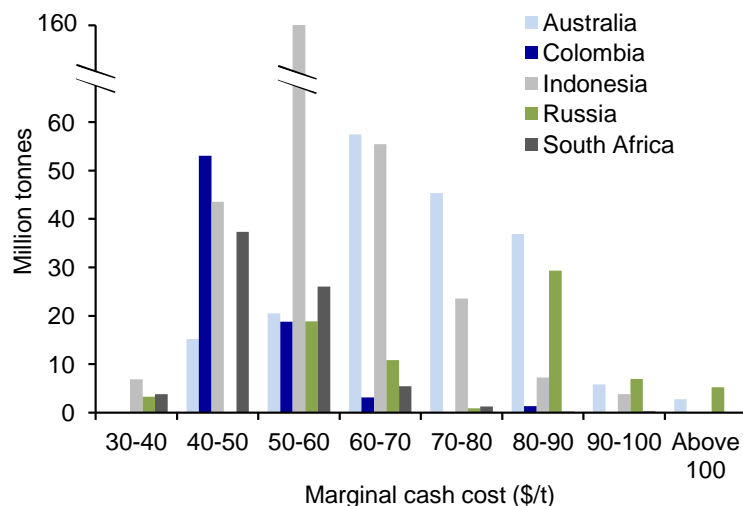
Outlook

- Front-end curve structure has remained in contango since January. Q3 is typically a weak quarter for coal markets after buying for the summer peak has concluded and before restocking for the winter takes hold.
- Manufacturing PMI hovers near the historically neutral level for coal prices, with advances in China, Japan and Taiwan offset by declines in Eurozone and South Korea conditions.

Little effect from lignite ban

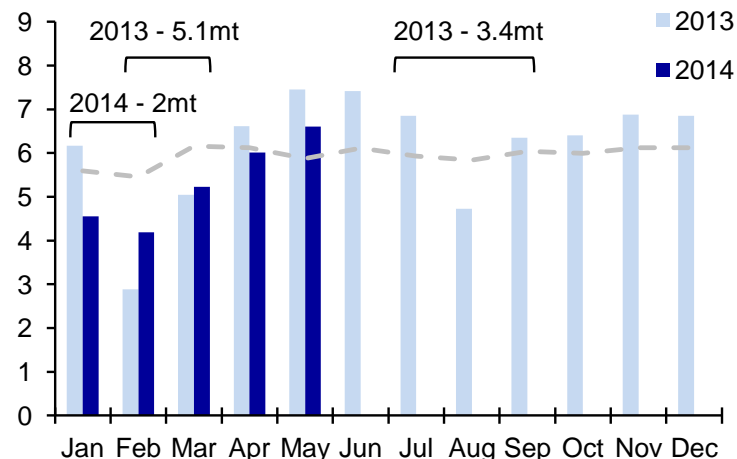


Marginal cash costs (\$/t)



Source: Wood Mackenzie, AME, Deutsche Bank

Colombia supply losses



Source: McCloskey, Deutsche Bank

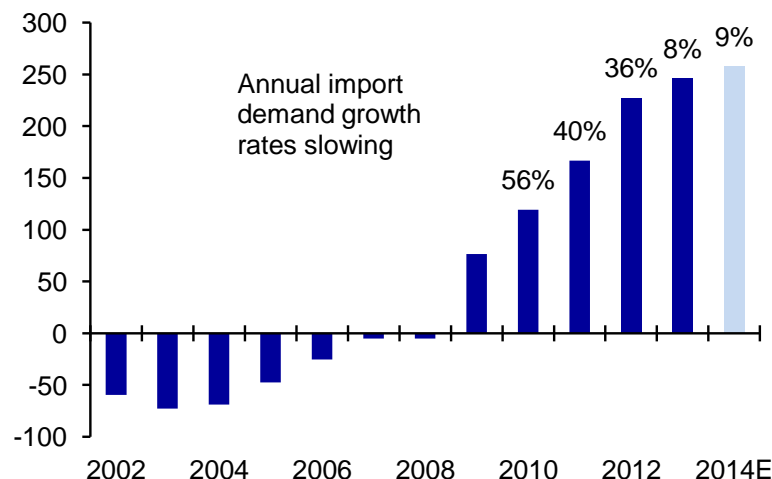
Outlook

- While the Chinese lignite ban is now taking effect on a trial basis in Fujian province, the parameters of the ban mean that it may have little real effect. The calorific-value limitations only apply in the case where the imported coal is transported more than 600km from port to customer. For most coal imported in Fujian, this is not the case.
- Producers in Australia are constrained by take or pay rail and port agreements, reducing their ability to respond to prices just below marginal costs. All Russian coal mines are privately owned and do not receive any government subsidies.
- Unplanned supply disruptions are minor so far this year, being limited to Drummond loss of 2mt in Q1-14.

China Thermal Coal Demand Growth Slowing



China Net Coal Import Demand (million tonnes)



Source: McCloskey, Deutsche Bank

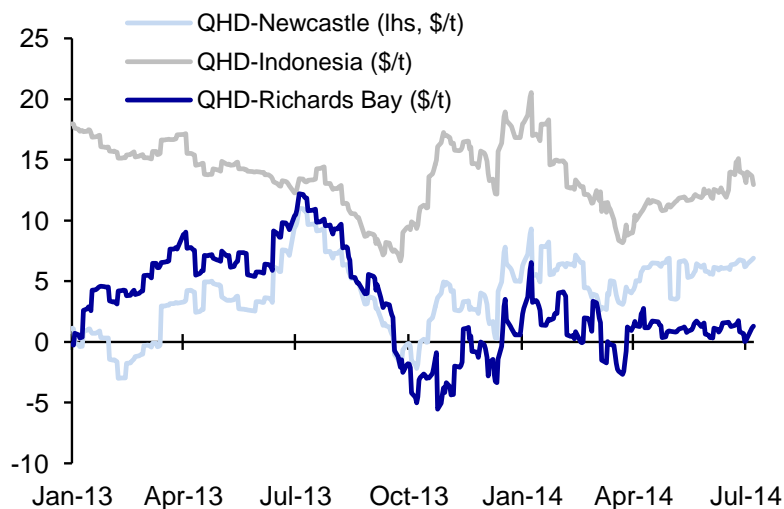
Outlook

- 2013 was the first time in five years when Chinese import demand growth was weaker than India. We view this as the first confirmation of our expectation that Chinese demand growth will be more substantially satisfied with domestic production growth than in the past. Nuclear power buildout in China will be the strongest of any country worldwide.
- While we expect total Chinese demand growth averaging 150mt in 2014 and 2015 including cement and chemical industry demand, the scale of investments in Chinese thermal coal mining capacity could potentially enable supply growth of as much as 200mt per year. However, coastal power plants will still find it expedient to import coal.

China Import Differential

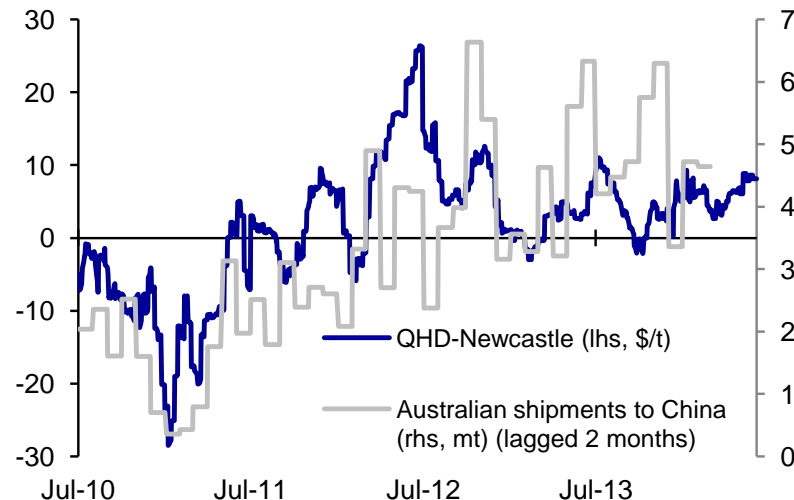


Import differential (\$/t)



Source: Bloomberg Finance LP, Deutsche Bank

Newcastle import differential and imports



Source: Bloomberg Finance LP, McCloskey, Deutsche Bank

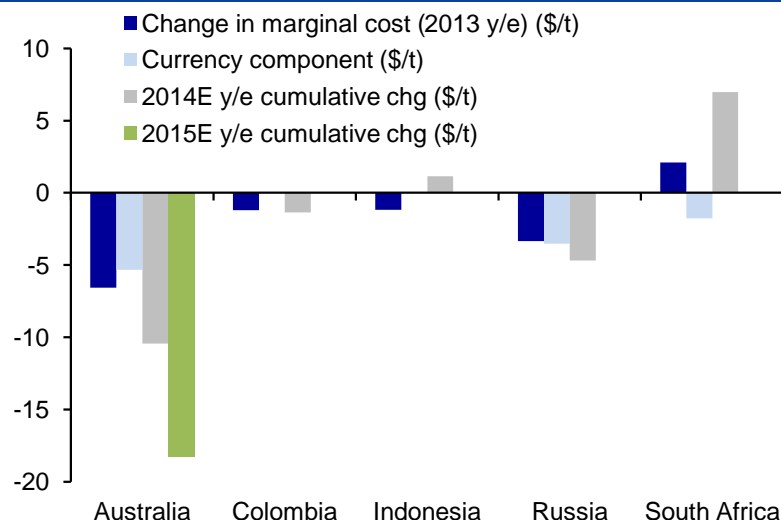
Outlook

- The China import differential for thermal coal has weakened for Richards Bay but remains viable for Indonesia and Newcastle. The lows seen in late 2013 and early 2014 did not result in an appreciable decline in demand for Newcastle coal.
- For an example from history where a drop in the differential did result in a change to import demand, we can look at the Newcastle import differential which ranged between -\$10/t and -\$20/t for several months in late 2010 & early 2011. During this period, China's imports from Australia fell to as low as 400,000 tonnes per month.

Declines in cash costs expected



Change in regional cash costs (\$/t)



Source: AME, Wood Mackenzie, Bloomberg Finance LP, Deutsche Bank

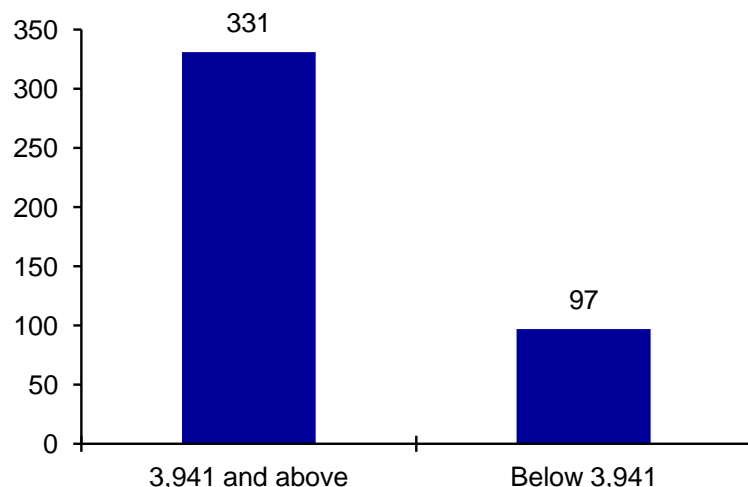
Outlook

- We now expect that the declines in marginal costs observed in 2013 will likely continue through the end of 2015 as oil prices recede further and producer currencies generally weaken versus the dollar. In Australia, we expect the currency to weaken by a further 16% by the end of 2015, which would result in a \$13/t reduction in USD marginal cost.
- Arguably, coal markets did not reach a significant price support level in 2013 as we did not see thermal coal mine closures. If we assume Australian marginal cost at \$84/t minus take-or-pay rail and port costs which are roughly \$20/t that suggests we may not see significant price support until the mid \$60's.

China Lignite Ban



Indonesian production by calorific value



Source: Wood Mackenzie, Deutsche Bank

Chinese lignite ban

Coal type	Distance over 600km	Calorific value (NAR)	Ash (%)	Sulphur (%)
Lignite	FALSE	No limit	30%	1.5%
Bituminous	FALSE	No limit	40%	3%
Lignite	TRUE	3,941	20%	1%
Bituminous	TRUE	4,300	30%	2%

Source: McCloskey, Deutsche Bank

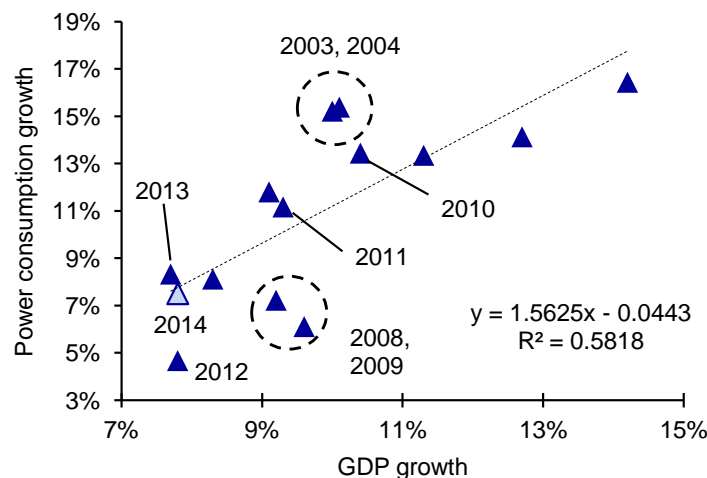
Outlook

- The establishment of a lignite ban in China first proposed in May 2013 is now considered official. The first stage in the process will be to institute a test bans in Fujian and Jiangsu provinces, followed by a gradual rollout to other provinces.
- The conditions of the ban differ depending on the type of coal imported (lignite or bituminous). Sulphur and ash restrictions will not be an issue for Indonesian coal, and calorific value thresholds are only applied to coal transported more than 600km within China.
- Therefore the practical effect will be limited. The establishment of a coal testing system at ports will make it easier to institute a more restrictive ban in the future, however.

Chinese coal demand factors

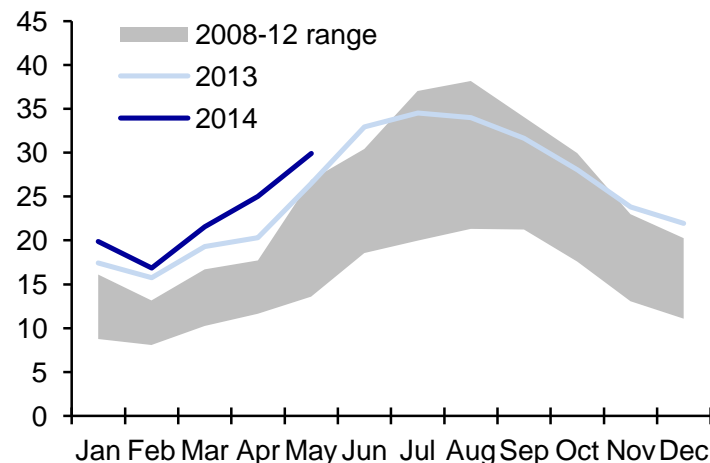


China power consumption growth and GDP growth



Source: World Bank, Bloomberg Finance LP, Deutsche Bank

China hydropower output in coal terms (mt/month)



Source: Bloomberg Finance LP, Deutsche Bank

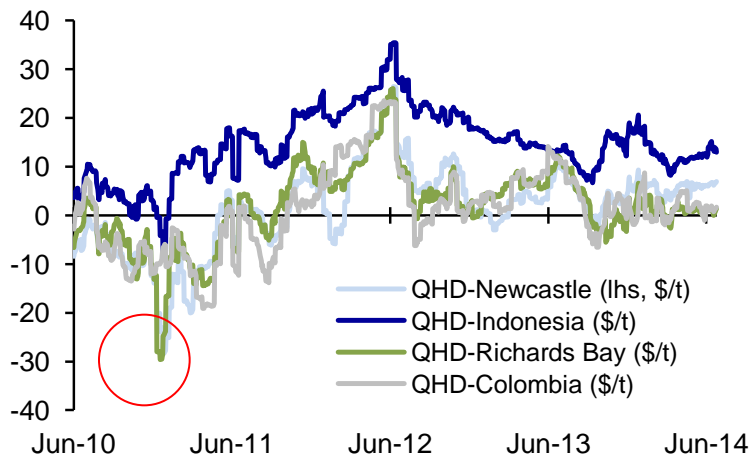
Outlook

- China power growth in 2013 was in line with the historical regression, suggesting that the country has not improved its energy intensity. So far in 2014, we see power growth of 7.5% against forecast GDP growth of 7.8%.
- Hydropower continues to grow, with utilisation this year in line with historical norms. In terms of coal demand, hydropower produced 29.9 metric tonnes equivalent of coal in May, versus 26.5 metric tonnes last year in May.

Chinese import price differential

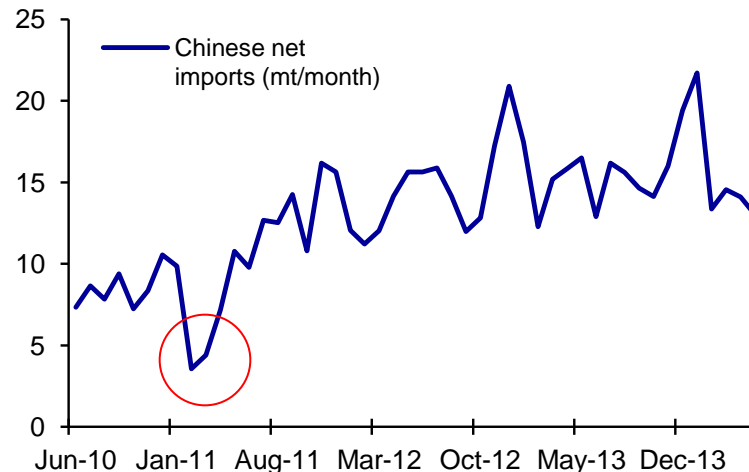


South China Capesize import differential to domestic coal (\$/t)



Source: Bloomberg Finance LP, Deutsche Bank

Chinese net imports of thermal coal (mt/month)



Source: Bloomberg Finance LP, Deutsche Bank

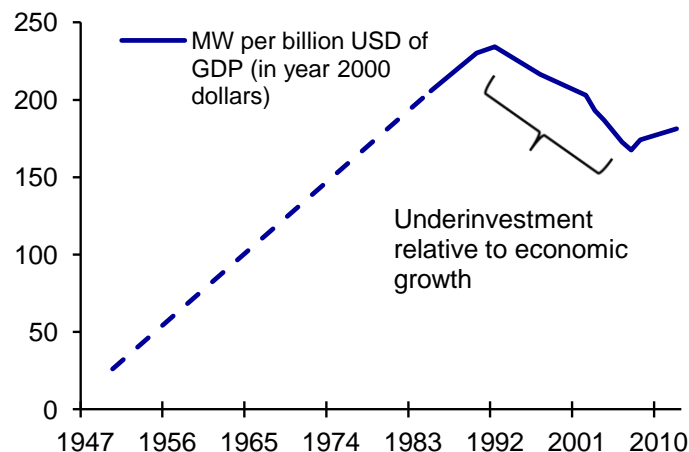
Outlook

- Chinese net imports are partly influenced by the difference between the cost of bringing domestic coal from Qinhuangdao port down to South China and the cost of importing coal from various major exporters including Australia, South Africa, Indonesia, Colombia, the United States.
- Another motivation for buyers is to put pressure on domestic prices which represent 70% of price exposure for coastal utilities. Calculation using Panamax rates will be lower.

Indian structural reform

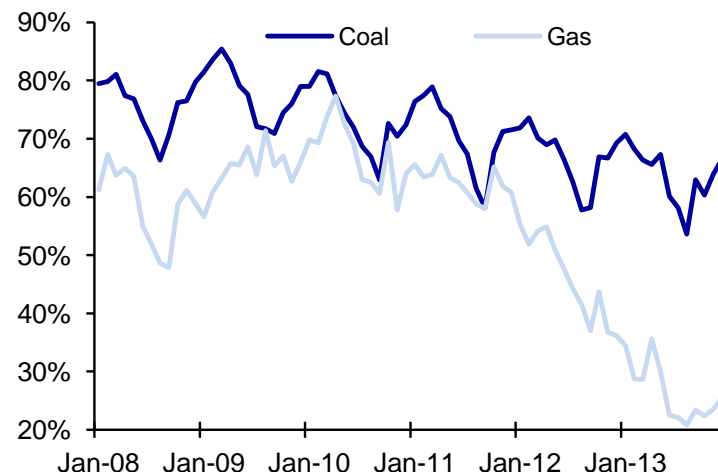


India power capacity in relation to GDP



Source: Council of Power Utilities, Central Electricity Authority, World Bank, National Accounts Statistics of India, Deutsche Bank

Plant load factor in India by fuel type (% of capacity)



Source: CEA, Deutsche Bank

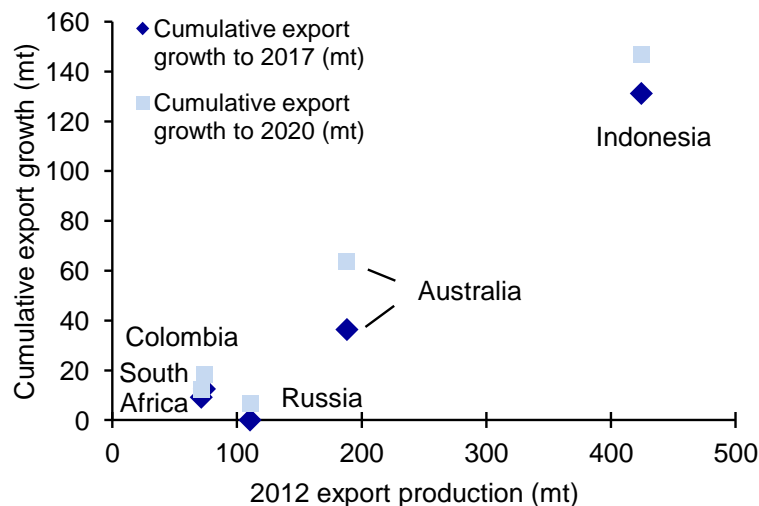
Outlook

- A legacy of underinvestment in the 1990s has left India with an undersized power generation sector relative to the size of the economy. Plant load factors are low owing to fuel availability and failure of SEBs to pay for electricity supplied.
- With the settlement of a cost-plus pricing structure for imports to satisfy FSAs, next steps are (i) the relief of the debt burden plaguing the State Electricity Boards (SEBs), and (ii) the implementation of variable tariffs reflecting the cost of imported fuel for both independent and public power generators.
- Higher tariffs are a must, and higher bids for power purchase agreements in Uttar Pradesh of INR 6/kWh give some hope.

Expansions by region

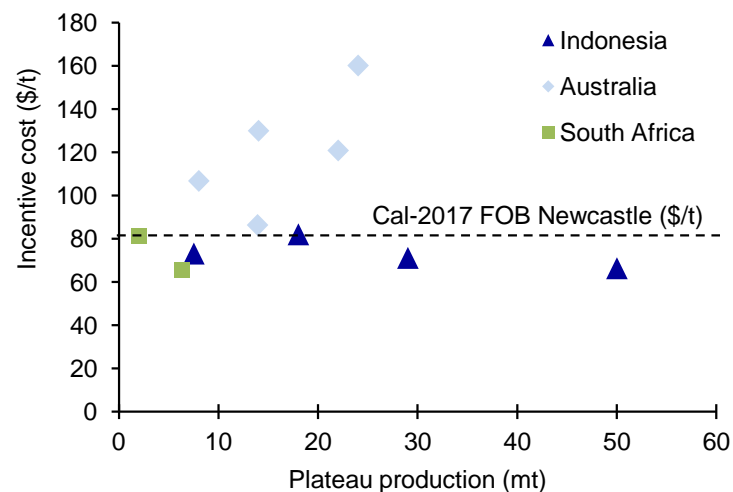


Projected volume increases by region (mt)



Source: Deutsche Bank

Incentive costs by region (\$/t)



Source: Wood Mackenzie, Deutsche Bank

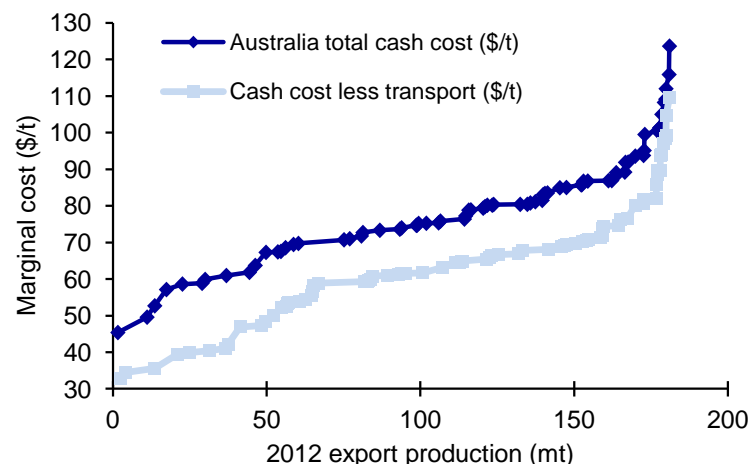
Outlook

- Clearly if demand is as low as we expect, this will require a recalibration of expansion plans, particularly in Australia where incentive costs are the highest.
- Producer cutbacks have now been announced at 3 existing mines in South Africa and New South Wales.
- Postponements of new projects are evidenced by efforts to offload capacity at port expansions. Glencore Xstrata has 5.7mt excess capacity at Wiggins Island (Gladstone), Yancoal declared \$50-55m take-or-pay liability for 2013 (NCIG), and Rio Tinto may have 9mt excess capacity at NCIG if it does not develop Mount Pleasant.

Australian Infrastructure Costs

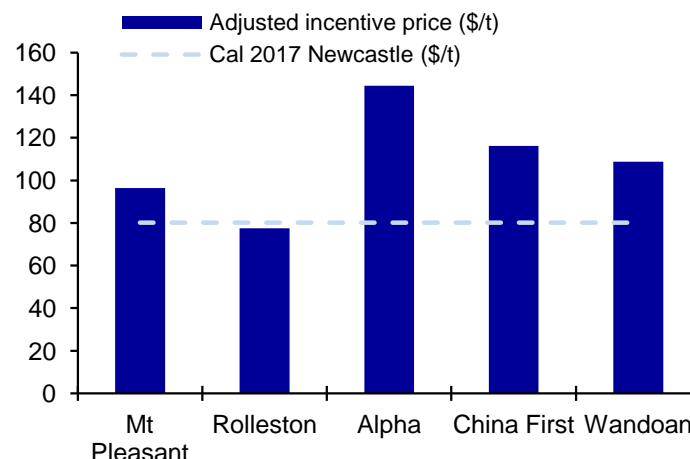


Australia cash costs versus Newcastle (\$/t)



Source: Bloomberg Finance LP, Wood Mackenzie, Deutsche Bank

Australian coal project incentive costs in 2012 dollars



Source: Wood Mackenzie, Deutsche Bank

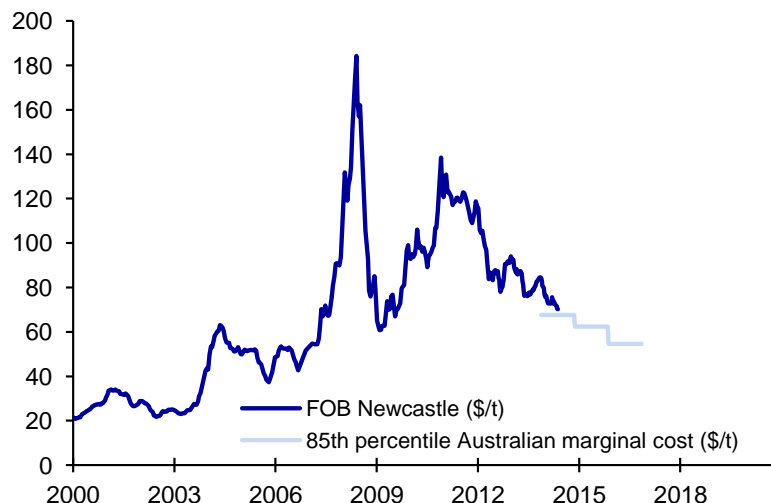
Outlook

- In 2012, large Australian producers did relatively little to curtail production in response to low prices, both because production was committed on long-term contract, and because take-or-pay infrastructure means that cash cost less transport is the more relevant cost measure. The lack of volume adjustment will be a downside risk in 2014 if global growth falls short of our forecasts.
- In our view, the high breakeven cost of Australian thermal coal projects means that these will be postponed or cancelled. Planned supply would otherwise come to market mostly over the 2017-2022 period.

Will FOB prices follow Australian marginal costs?

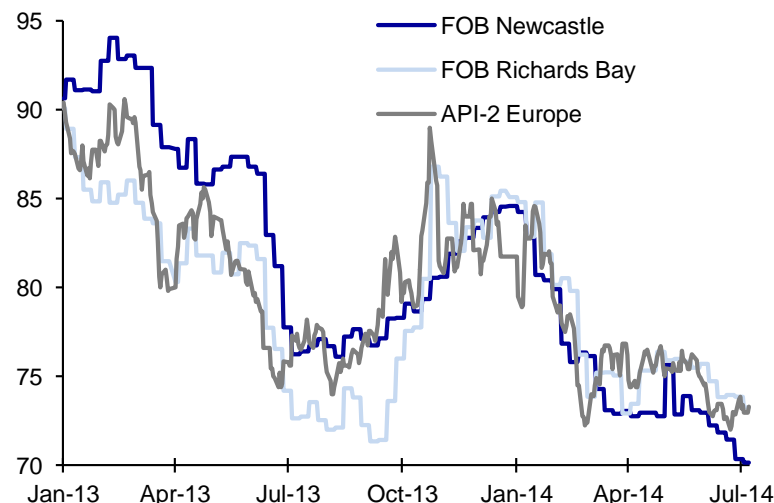


Australia marginal cash costs (\$/t)



Source: Wood Mackenzie, Deutsche Bank

Benchmark FOB coal prices (\$/t)



Source: Bloomberg Finance LP, Deutsche Bank

Outlook

- Rising benchmark FOB prices in the mid 2000's were matched by four consecutive years when global growth rates were at its 'potential' level, averaging 3.95% over the 2004-2007 period. Since then, we have only had one year (2010) when growth was near that level.
- We expect global growth will recover to 3.3% this year and 3.9% next year. This should help to absorb any excess volume, keeping prices near to just above current levels. If growth disappoints, market pricing will be challenged by a steady stream of planned expansions and falling marginal costs, and we believe downside risks are significant in this scenario.

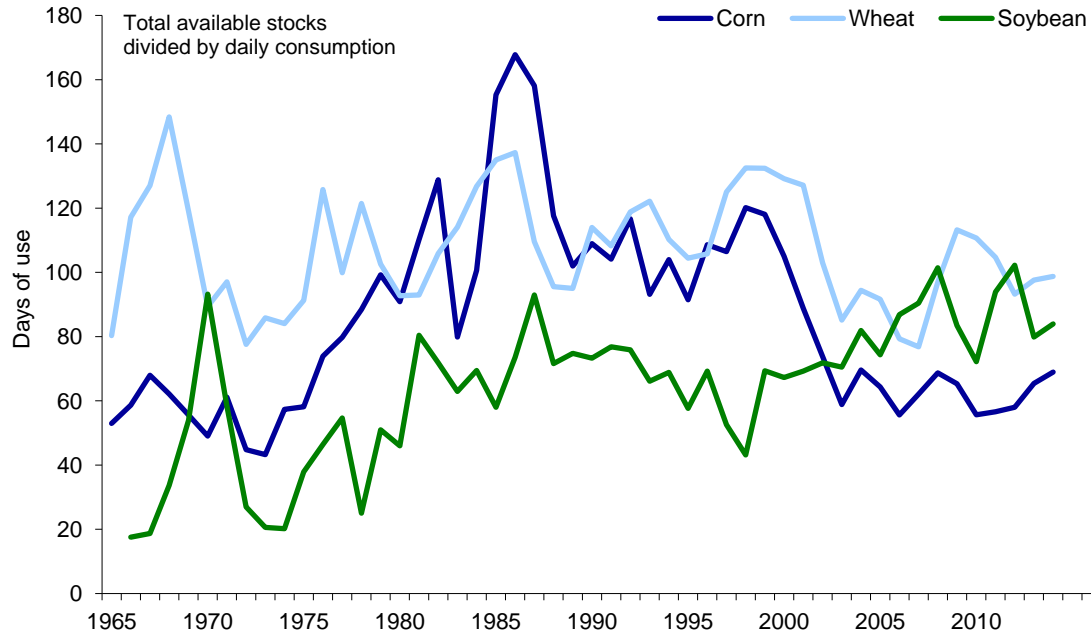


Agriculture

Agricultural Fundamentals



Inventory-To-Use Ratios



Sources: Deutsche Bank, USDA

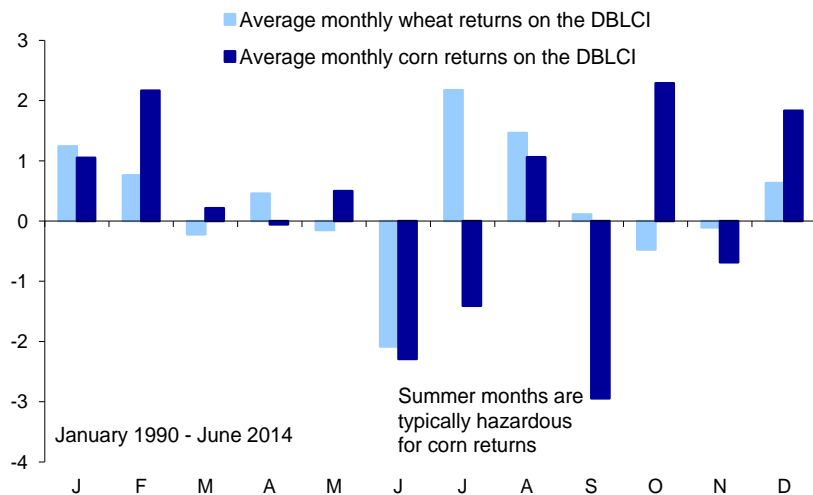
Outlook

- Global inventories across the agricultural complex are being rebuilt.
- This is being encouraged by a rebound in US production.

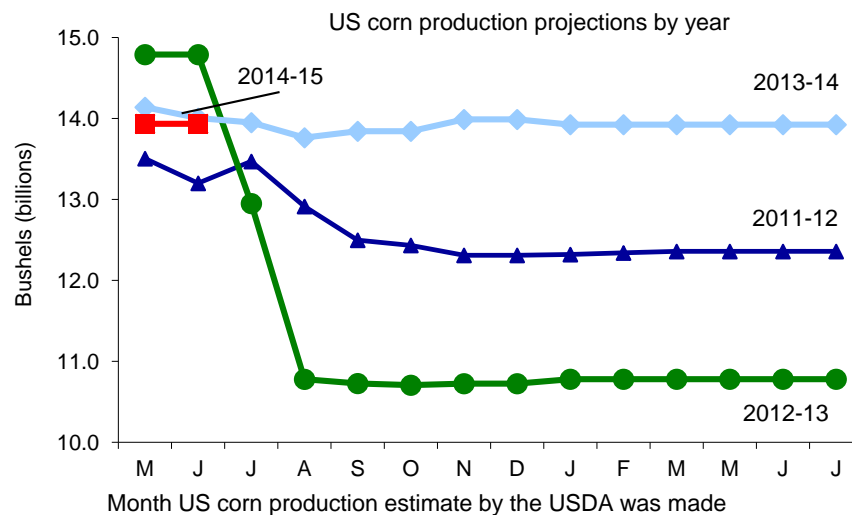
The US Growing Season



The Seasonality In Grain Returns



USDA Estimates Of US Corn Production



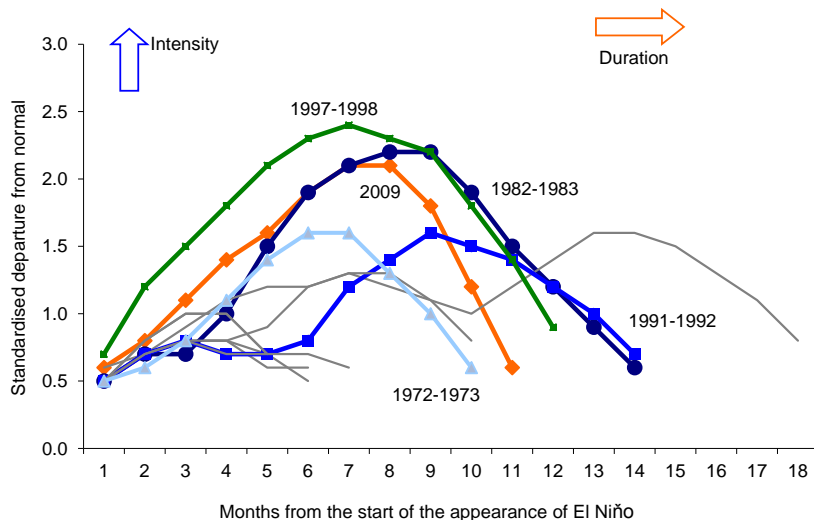
Outlook

- Since 1990, we find that June, July and September corn returns have declined almost 70% of the time.
- The summer months have typically been hazardous months for grain and specifically corn returns due to the US growing season and changes to the USDA's grain production projections.
- Favourable weather across the US is set to deliver a record US grain crop in 2014-15.

The Possible Implications Of An El Niño Event



Major El Niño Events Compared



Sources: NOAA, USDA, Deutsche Bank

Annual Production Changes In Major Grain Producing Regions During An El Niño Event

Corn	1972	1982	1991	1997	2009
Australia	-35%	-34%	37%	-32%	-13%
China	-10%	2%	2%	-18%	-1%
India	25%	-5%	-10%	3%	-15%
Wheat	1972	1982	1991	1997	2009
Australia	-23%	-45%	-29%	-16%	2%
Brazil	-65%	-17%	-7%	-26%	-15%
China	10%	15%	-2%	12%	2%
India	11%	3%	11%	12%	3%

Outlook

- An extreme El Niño event would tend to imply increased precipitation and flooding along the western coastline of the Americas and the Gulf of Mexico as well as droughts in Indonesia, Malaysia, the Philippines, Northern Australia and possibly even India.
- We find that Australian corn and wheat production has tended to decline by an average of 15% and 22% respectively in an El Niño year.



Appendix

Passion to Perform

Prices and Balances



2014 outlook

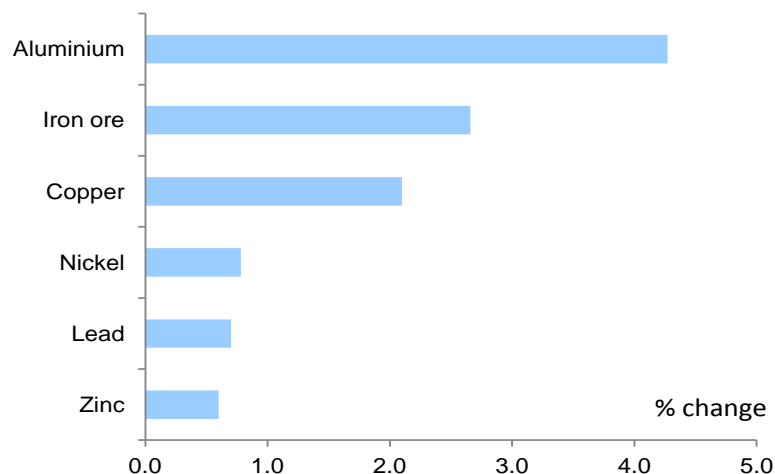


- A continued strengthening in the USD : Fed to become more hawkish in 2014H2
- Another year of strong demand: we are forecasting 7.8% Chinese GDP growth for 2014, predicated on recovering exports, easing credit conditions, and targeted stimulus measures. Europe's rebound to growth. Key risk – indebtedness in China
- EM currencies may continue to come under pressure due to current account deficits and money flows back to DM's. But commodity currencies are likely to suffer less, with an improving China outlook.
- Mining companies will continue to cut costs (and capex) in 2014, but momentum will slow, and there will be a cost to future medium-term growth and volumes (2016E).
- The momentum in supply growth (expansions already underway) will however see surpluses in most metals over the next two to three years. Curtailments which up to now have been modest could accelerate, especially in nickel and aluminium.
- Changing LME rules are likely to impact premiums, but at the expense of spot pricing.

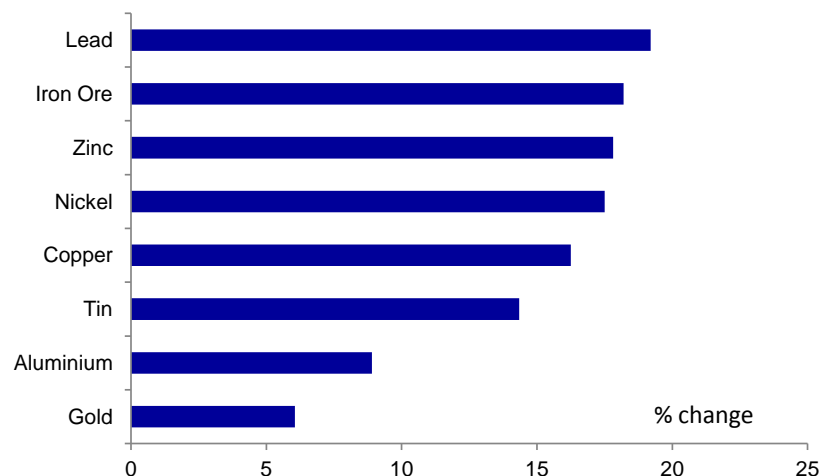
Metal sensitivities to Chinese growth



Consumption Sensitivity to GDP growth



Price sensitivity to GDP growth



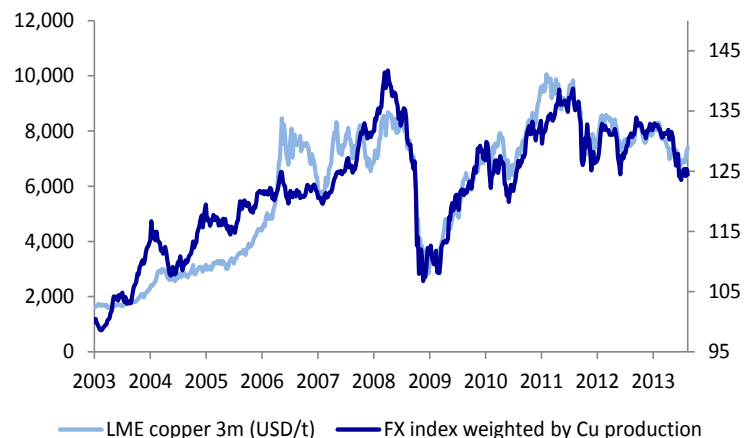
Source: Deutsche Bank, Bloomberg Finance LP

- China consumes 40% or more of most commodities and has been the main contributor to growth.
- Some conundrums in comparing consumption vs price.
- Aluminium due to ample supply
- Iron ore well correlated due to limited domestic supply

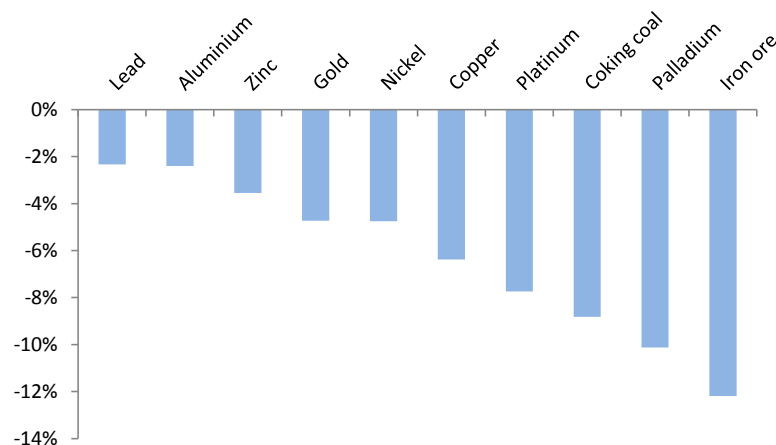
Commodities currencies & mining costs



Copper prices & FX index weighted by Cu production



Depreciation of currency baskets from peak to current levels



Source: Deutsche Bank

Outlook

- We believe that the recent EM-sell-off should be seen in the context of a broadening of the anticipated multi year trend higher in the USD.
- Weaker currencies can have deflationary repercussions for mining costs (in USD terms) and introduce additional downside risk for commodity prices if demand remains sluggish.

Supply – demand balances

Aluminium



		2010	2011	2012	2013	2014e	2015e	2016e	2017e	2018e	2019e	2020e
Primary Aluminium												
Chinese Production	Mt	17.2	19.8	22.4	24.8	26.8	28.3	30.3	32.7	34.8	37.0	39.7
growth	%	27%	15%	13%	11%	8%	6%	7%	8%	6%	6%	7%
Russia Production	Mt	3.9	4.0	4.0	3.7	3.4	3.6	3.9	4.3	4.9	5.1	5.1
growth	%	4%	1%	1%	-7%	-8%	5%	8%	12%	12%	5%	0%
Middle East Production	Mt	3.1	3.9	4.1	4.3	5.0	5.5	5.6	5.6	5.7	5.7	5.6
growth	%	25%	26%	5%	6%	17%	9%	2%	1%	1%	0%	-1%
Europe & N. American Production	Mt	8.5	9.0	8.5	8.5	8.2	8.4	8.7	9.0	9.2	9.2	9.2
growth	%	0%	6%	-6%	1%	-4%	3%	3%	4%	2%	0%	0%
Global Production	Mt	42.2	46.1	48.1	50.5	52.9	55.7	58.5	61.8	65.2	68.5	71.3
growth	%	12.5%	9.3%	4.3%	5.0%	4.8%	5.3%	5.1%	5.6%	5.5%	5.0%	4.1%
Global Capacity	Mt	50.2	52.9	56.2	62.3	66.9	70.1	72.7	74.2	75.2	75.2	75.2
utilisation rate	%	84%	87%	86%	81%	79%	79%	80%	83%	87%	91%	95%

Primary Aluminium Consumption												
China Consumption	Mt	16.7	19.5	21.5	23.9	25.9	27.9	30.2	32.5	34.8	37.0	39.5
growth	%	18.1%	16.4%	10.4%	11.3%	8.0%	7.8%	8.5%	7.5%	7.0%	6.5%	6.5%
China net imports (exports)	Mt	-0.4	-0.5	0.0	-0.3	-0.4	-0.4	0.0	-0.1	0.0	0.1	-0.3
Developing economies (ex China)	Mt	9.8	10.6	10.8	11.1	12.0	12.5	13.1	13.8	14.4	15.1	15.8
growth	%	11%	8%	3%	2%	8%	4%	5%	5%	5%	5%	5%
North America	Mt	5.3	5.4	5.9	5.9	6.1	6.4	6.6	6.8	7.1	7.2	7.3
growth	%	9.8%	1.7%	10.1%	0.2%	3.2%	3.8%	4.0%	3.5%	3.0%	2.0%	1.7%
Europe (EU-27)	Mt	7.9	8.3	8.3	8.4	8.6	8.9	9.1	9.3	9.4	9.6	9.8
growth	%	11%	6%	0%	1%	2%	3%	2%	2%	2%	2%	2%
OECD Consumption	Mt	13.7	13.9	14.5	14.4	14.7	15.1	15.5	15.8	16.0	16.2	16.4
growth	Mt	12%	2%	4%	-1%	2%	3%	2%	2%	2%	1%	1%
Global Consumption	Mt	40.7	44.5	47.3	49.9	52.6	55.5	58.9	62.1	65.2	68.3	71.6
growth	%	14.0%	9.2%	6.5%	5.4%	5.3%	5.7%	6.0%	5.5%	5.1%	4.8%	4.8%
Production adjustments	Mt				0	0	-300	-800	-1,000	-1,000	-500	-500
Market balance	Mt	1.48	1.67	0.75	0.58	0.36	0.17	-0.32	-0.28	-0.02	0.10	-0.35

Avg. LME cash price	\$/t	2,191	2,423	2,052	1,889	1,806	1,894	2,200	2,400	2,600	2,500	2,500
Avg. LME cash price	c/lb.	99	110	93	86	82	86	100	109	118	113	113

Sources: Deutsche Bank, Wood Mackenzie, WBMS

Supply – demand balances: Copper



		2010	2011	2012	2013	2014e	2015e	2016e	2017e	2018e	2019e	2020e
Chile production	Mt	5.48	5.31	5.53	5.87	6.10	6.32	5.98	6.06	6.26	6.02	6.24
Production Growth	%	0.4%	-3.2%	4.3%	6.1%	4.0%	3.5%	-5.4%	1.4%	3.2%	-3.8%	3.6%
Chile share of global production		34%	33%	33%	32%	31%	30%	28%	29%	29%	29%	31%
Peru production	Mt	1.20	1.20	1.26	1.32	1.31	1.52	2.03	2.30	2.30	2.26	2.24
Production Growth	%	-1.7%	-0.2%	4.9%	5.1%	-1.3%	16.0%	33.9%	13.2%	0.2%	-2.0%	-0.7%
USA production	Mt	1.13	1.13	1.17	1.26	1.29	1.42	1.42	1.41	1.39	1.27	1.24
Production Growth	%	-5.6%	-0.6%	3.5%	8.1%	2.6%	10.2%	-0.4%	-0.7%	-1.2%	-8.5%	-2.3%
China production	Mt	1.25	1.37	1.54	1.60	1.75	1.75	1.72	1.71	1.68	1.68	1.66
Production Growth	%	18.6%	9.1%	12.3%	4.1%	9.5%	-0.3%	-1.5%	-0.5%	-1.6%	-0.5%	-0.8%
Africa production	Mt	1.31	1.41	1.54	1.96	2.42	2.75	2.69	2.62	2.64	2.61	2.54
Production Growth	%	12.8%	7.8%	9.0%	27.2%	23.6%	13.6%	-2.4%	-2.6%	1.0%	-1.0%	-3.1%
Global Mine Production	Mt	16.15	16.16	16.80	18.08	18.62	19.84	20.73	20.91	21.66	21.63	21.37
World Mined Production Growth	%	1.5%	0.1%	3.9%	7.7%	3.0%	6.6%	4.5%	0.9%	3.6%	-0.1%	-1.2%
Copper smelting capacity	Mt	17.69	18.10	18.98	19.67	20.70	22.34	22.55	22.19	22.30	22.30	22.29
Utilisation	%	72%	70%	69%	73%	71%	71%	74%	76%	80%	81%	81%
Anode production	Mt	14.75	15.41	15.83	16.42	17.21	18.30	19.30	19.45	20.33	20.61	20.72
Production Growth	%	4.0%	4.5%	2.8%	3.7%	4.8%	6.4%	5.4%	0.8%	4.5%	1.4%	0.5%
Total scrap consumption	Mt	4.09	4.47	4.85	4.73	4.56	4.71	4.85	4.84	4.89	4.98	5.07
Consumption Growth	%	22.4%	9.2%	8.5%	-2.5%	-3.5%	3.4%	3.0%	-0.3%	1.0%	1.9%	1.8%
Total Sx/Ew Production	Mt	3.3	3.4	3.6	3.7	3.9	4.1	4.0	3.9	3.8	3.5	3.2
Global Copper Supply	Mt	18.95	19.73	20.15	20.77	21.76	23.05	24.01	24.15	24.87	24.91	24.73
Global Supply Growth	%	3.7%	4.1%	2.1%	3.1%	4.8%	5.9%	4.2%	0.6%	3.0%	0.2%	-0.7%
Chinese Consumption (real)	Mt	7.20	7.82	8.20	9.16	9.73	10.28	10.83	11.50	12.12	12.71	13.26
Consumption Growth	%	10.8%	8.5%	5.0%	11.7%	6.2%	5.7%	5.4%	6.1%	5.5%	4.9%	4.3%
Western Europe	Mt	3.38	3.20	2.93	2.88	2.94	3.03	3.03	3.04	3.03	3.01	3.00
growth	%	11.6%	-5.4%	-8.4%	-1.7%	2.0%	3.0%	0.0%	0.2%	-0.4%	-0.4%	-0.4%
USA	Mt	2.19	2.20	2.23	2.23	2.31	2.40	2.47	2.50	2.49	2.49	2.48
growth	%	6.4%	0.5%	1.4%	0.0%	3.7%	3.8%	3.1%	1.0%	-0.2%	-0.2%	-0.2%
Japan	Mt	1.06	1.00	0.99	0.99	1.00	1.02	1.04	1.05	1.05	1.05	1.05
growth	%	21.1%	-5.4%	-1.8%	0.1%	1.5%	2.0%	1.5%	1.0%	0.2%	0.2%	0.2%
Big 3 mature economies	Mt	6.63	6.40	6.15	6.10	6.26	6.45	6.54	6.58	6.57	6.55	6.54
Consumption Growth	%	11.2%	-3.4%	-4.0%	-0.8%	2.5%	3.1%	1.4%	0.6%	-0.2%	-0.2%	-0.2%
Other mature economies	Mt	1.57	1.37	1.21	1.23	1.22	1.25	1.25	1.25	1.23	1.21	1.19
growth	%	4.6%	-12.8%	-11.4%	1.7%	-0.6%	1.9%	0.4%	-0.2%	-1.4%	-1.4%	-2.1%
Other developing economies	Mt	3.25	3.30	3.37	3.78	4.05	4.39	4.64	4.88	5.14	5.40	5.65
growth	%	13.0%	1.8%	2.0%	12.2%	7.2%	8.4%	5.7%	5.2%	5.2%	5.0%	4.8%
Brazil/India/Russia Consumption	Mt	1.42	1.63	1.60	1.61	1.61	1.63	1.70	1.77	1.83	1.90	1.97
Consumption Growth	%	10.1%	14.1%	-1.8%	0.9%	-0.3%	1.7%	4.0%	3.9%	3.8%	3.8%	3.6%
Other	Mt	-0.42	-0.31	-0.27	-0.50	-0.36	-0.49	-0.62	-0.81	-0.84	-0.89	-0.91
Consumption Growth	%	-4.0%	-26.7%	-11.6%	81.7%	-26.5%	35.0%	25.3%	31.1%	3.8%	6.2%	2.0%
Global Consumption	Mt	19.17	19.61	19.59	20.63	21.51	22.52	23.39	24.32	25.14	25.94	26.69
Global Consumption Growth	%	10.5%	2.3%	-0.1%	5.3%	4.3%	4.7%	3.9%	4.0%	3.4%	3.2%	2.9%
Market balance	Mt	-0.23	0.13	0.57	0.14	0.25	0.53	0.62	-0.16	-0.27	-1.03	-1.95
Average LME cash price	USD/t	7,498	8,829	7,953	7,354	6,818	6,650	6,500	7,200	7,500	7,370	7,628
Average LME cash price	US\$/lb	340	401	361	334	309	302	295	327	340	334	346

Sources: Deutsche Bank, Wood Mackenzie, WBMS, ICSG

Supply – demand balances: Nickel



		2010	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Australia mine production	kt	180.9	191.2	237.3	272.7	221.8	215.3	237.3	215.4	211.6	209.6	209.6
Production growth		2.7%	5.7%	24.1%	14.9%	-18.7%	-2.9%	10.2%	-9.3%	-1.8%	-1.0%	0.0%
New Caledonia mine production	kt	130	129	138	137.3	179.5	217.2	243.8	257.9	261.2	263.3	259.0
Production growth		40.0%	-0.5%	7.1%	-0.7%	30.7%	21.0%	12.2%	5.8%	1.3%	0.8%	-1.6%
Canada mine production	kt	154.7	215.3	200.3	198.9	219.3	247.8	254.0	244.6	234.4	232.3	226.5
Production growth		18.7%	39.1%	-6.9%	-0.7%	10.2%	13.0%	2.5%	-3.7%	-4.2%	-0.9%	-2.5%
Russia mine production	kt	278.8	274.3	259.3	245.1	236.1	237.6	232.4	216.7	220.9	219.8	220.8
Production growth		2.7%	-1.6%	-5.5%	-5.5%	-3.7%	0.6%	-2.2%	-6.8%	1.9%	-0.5%	0.5%
Brazil mine production	kt	55.0	95.4	125.6	86.2	103.0	112.8	127.1	137.1	147.2	148.0	148.8
Production growth		24.7%	73.4%	31.7%	-31.4%	19.6%	9.4%	12.7%	7.9%	7.3%	0.5%	0.6%
Indonesia mine production	kt	293.2	465.1	545.9	639.3	109.6	268.9	524.4	522.6	522.6	522.6	522.6
Production growth		28.7%	58.6%	17.4%	17.1%	-82.9%	145.4%	95.0%	-0.4%	0.0%	0.0%	0.0%
Philippines mine production	kt	175.1	205.9	220.0	195.9	310.7	336.7	348.2	349.3	349.3	349.3	349.3
Production growth		23.7%	17.6%	6.8%	-11.0%	58.6%	8.4%	3.4%	0.3%	0.0%	0.0%	0.0%
Estimated Ni in Ore - for Ni Pig Iron	kt	363.3	570.7	664.6	770.5	344.0	518.5	789.4	799.2	802.4	804.6	804.6
Production growth		30.8%	57.1%	16.5%	15.9%	-55.4%	50.7%	52.3%	1.2%	0.4%	0.3%	0.0%
World mine production - base case	kt	1,656	1,991	2,175	2,287	1,785	1,979	2,143	2,214	2,305	2,397	2,434
World mine production growth rate		14.1%	20.3%	9.3%	5.1%	-22.0%	10.8%	8.3%	3.3%	4.1%	4.0%	1.5%
Possible projects					0	13	49	67	88	97	109	128
Disruption allowance						-30	-59	-64	-66	-69	-72	-73
Total world mine production	kt	1,656	1,991	2,175	2,287	1,768	1,969	2,145	2,235	2,483	2,584	2,639
Total Smelter output	kt	1,507	1,685	1,811	2,007	1,916	1,791	1,939	2,030	2,154	2,253	2,276
Implied smelter recovery	%	91%	85%	83%	88%	108%	91%	90%	91%	87%	87%	86%
Total refinery capacity	kt	2,224	2,679	2,960	3,203	3,284	3,320	3,372	3,317	3,317	3,317	3,301
Implied utilisation	%	65.9%	61.8%	59.7%	62.2%	57.2%	54.2%	55.6%	60.8%	65.2%	68.3%	70.3%
Base case refinery output	kt	1,465	1,655	1,767	1,992	1,875	1,746	1,776	1,872	2,016	2,116	2,171
Possible projects						3	53	99	143	147	148	148
Total refined availability / Output	kt	1,465	1,655	1,767	1,992	1,878	1,799	1,875	2,015	2,163	2,264	2,319
World refined availability growth rate		9.4%	12.9%	6.8%	12.7%	-5.7%	-4.2%	4.3%	7.5%	7.3%	4.7%	2.4%
Implied Refinery recovery from mined ore	%	88.5%	83.1%	81.2%	87.1%	106.2%	91.4%	87.4%	90.2%	87.1%	87.6%	87.9%
Global stainless production	mt	33.0	34.6	35.5	38.7	40.7	42.8	45.0	47.2	49.1	51.0	53.1
Growth		26.0%	4.6%	2.7%	9.0%	5.3%	5.2%	5.1%	4.8%	4.0%	4.0%	4.0%
Austenitic stainless demand	mt	23.9	25.1	26.1	28.8	30.1	31.5	32.8	34.7	36.3	37.8	39.3
Austenitic ratio		72.4%	72.6%	73.5%	74.4%	74.0%	73.5%	72.8%	73.5%	74.0%	74.0%	74.0%
Total nickel demand for stainless	kt	1,714	1,788	1,807	1,987	2,063	2,141	2,220	2,341	2,442	2,530	2,622
Nickel content		7.2%	7.1%	6.9%	6.9%	6.9%	6.8%	6.8%	6.8%	6.7%	6.7%	6.7%
Nickel scrap consumption	kt	722	715	704	734	774	835	877	936	989	1,037	1,088
Scrap ratio		42.1%	40.0%	39.0%	36.9%	37.5%	39.0%	39.5%	40.0%	40.5%	41.0%	41.5%
Primary Nickel in Stainless	kt	992	1073	1103	1253	1290	1306	1343	1405	1453	1493	1534
Primary Nickel in Non-Stainless	kt	510	536	568	576	605	623	642	661	681	701	722
Total world nickel consumption	kt	1,502	1,609	1,671	1,829	1,895	1,929	1,985	2,066	2,134	2,194	2,256
World nickel consumption growth	%	16.7%	7.1%	3.9%	9.4%	3.6%	1.8%	2.9%	4.1%	3.3%	2.8%	2.8%
Adjustments												
Balance	kt	-36.7	45.8	95.7	162.7	-16.4	-130.6	-109.6	-50.3	29.0	69.9	62.7
Reported stocks	kt	136.9	182.7	278.4	441.1	424.7	294.1	184.5	134.2	163.2	233.1	295.9
Stock to consumption ratio	w ks	4.74	5.90	8.66	12.54	11.66	7.93	4.83	3.38	3.98	5.52	6.82
Annual Average Prices	USD/t	21,745	22,888	17,591	15,102	17,613	21,194	24,000	27,000	25,250	23,500	23,500
Annual Average Prices	USD/lb	9.87	10.38	7.98	6.85	7.99	9.62	10.89	12.25	11.46	10.66	10.66

Sources: Deutsche Bank, Wood Mackenzie, WBMS, INSG

Supply – demand balances: Zinc



		2010	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
China mine production	Mt	3.7	4.3	4.5	4.7	4.9	5.1	5.2	5.3	5.4	5.5	5.6
China mine production growth	%	16%	15%	6%	5%	3%	5%	2%	2%	2%	2%	2%
Australia mine production	Mt	1.5	1.5	1.5	1.5	1.5	1.4	1.2	1.2	1.3	1.3	1.1
Australia mine production growth	%	13%	0%	0%	0%	3%	-11%	-15%	2%	13%	-3%	-18%
Peru mine production	Mt	1.4	1.2	1.2	1.2	1.2	1.4	1.5	1.4	1.4	1.4	1.4
Peru mine production growth	%	-2%	-15%	0%	5%	-3%	16%	5%	-5%	2%	0%	-1%
North America mine production	Mt	1.9	2.0	2.0	1.8	1.8	2.0	2.2	2.2	2.1	2.1	2.0
North America mine production growth	%	1%	5%	0%	-10%	1%	14%	6%	0%	-2%	1%	-5%
India mine production growth	Mt	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.8
India mine production growth	%	4.6%	3.5%	-1.7%	13.0%	0.3%	2.1%	2.9%	6.5%	-3.9%	-4.6%	-1.1%
European mine production	Mt	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.0	0.9	0.9	0.9
European mine production growth	%	3.2%	0.9%	1.4%	-1.3%	2.3%	9.6%	8.6%	-6.8%	-10.2%	-6.8%	0.9%
World Mine Production	Mt	12.11	12.57	12.78	12.89	13.05	13.67	14.63	15.35	15.88	16.26	16.28
World Mine Production Growth	%	7%	3.8%	1.7%	0.9%	1.2%	4.8%	7.1%	4.9%	3.5%	2.4%	0.1%

Concentrate for smelting	Mt	12.11	12.57	12.78	12.89	13.05	13.67	14.63	15.35	15.88	16.26	16.28
Secondary & other zinc	Mt	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.3	1.3	1.3
Losses	Mt	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.7	0.7
Total Refined output	Mt	12.71	12.97	12.45	12.92	13.43	13.97	14.96	15.69	16.24	16.86	16.88
World refined availability growth	%	14%	2.0%	-4.0%	3.7%	4.0%	4.0%	7.1%	4.9%	3.5%	3.8%	0.1%

China Refined Consumption	Mt	4.7	5.3	5.6	6.1	6.5	6.8	7.2	7.7	8.0	8.4	8.8
Consumption growth	%	14.8%	11.7%	6.6%	8.2%	6.8%	5.5%	6.1%	5.6%	5%	5%	4%
US Refined Consumption	Mt	1.2	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7
Consumption growth	%	6%	5.9%	6.2%	0.1%	2.6%	3.4%	3.1%	2.9%	3%	3%	3%
Europe Refined Consumption	Mt	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0
Consumption growth	%	20.5%	3.1%	-7.9%	-0.3%	1.2%	2.5%	2.1%	1.8%	1%	1%	1%
Brazil/India/Russia Refined Consumption	%	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5
Consumption growth	%	15.9%	7.8%	4.3%	2.0%	0.7%	3.9%	4.7%	5.2%	6%	5%	5%
World Refined Consumption	Mt	11.69	12.55	12.83	13.32	13.90	14.49	15.11	15.71	16.29	16.84	17.38
World Refined Consumption Growth	%	15.7%	7.3%	2.2%	3.9%	4.4%	4.2%	4.3%	4.0%	3.6%	3.4%	3.2%

Market balance	Mt	1.02	0.42	-0.37	-0.40	-0.47	-0.52	-0.15	-0.02	-0.05	0.01	-0.50
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Exchange stocks	Mt	3.48	3.90	3.52	3.12	2.65	2.13	1.98	1.96	1.91	1.92	1.42
Reported-stock-to-consumption ratio	Wks	15.5	16.1	14.3	12.2	9.9	7.7	6.8	6.5	6.1	5.9	4.2
Annual average LME cash prices	USD/t	2,158	2,212	1,965	1,940	2,072	2,320	2,390	2,460	2,530	2,600	2,600
Annual average LME cash prices	US\$/lb	98	100	89	88	94	105	108	112	115	118	118

Sources: Deutsche Bank, Wood Mackenzie, WBMS

Supply – demand balances: Iron ore global



Supply		2009	2010	2011	2012	2013	2014e	2015e	2016e	2017e	2018e	2019e	2020e
Brazil	Mt	285	349	373	372	366	418	463	508	545	596	587	568
growth	%	-12%	22%	7%	0%	-2%	14%	11%	10%	7%	9%	-2%	-3%
Australia	Mt	370	404	449	496	582	639	724	781	808	838	859	857
growth	%	16%	9%	11%	10%	17%	10%	13%	8%	3%	4%	2%	0%
South Africa	Mt	55	61	57	59	63	65	67	67	68	70	73	73
growth	%	12%	12%	-7%	4%	6%	3%	3%	1%	1%	3%	4%	0%
India	Mt	202	192	164	133	126	157	177	195	212	216	215	221
growth	%	3%	-5%	-15%	-19%	-5%	25%	13%	10%	9%	2%	0%	3%
China	Mt	237	310	340	355	376	300	250	200	180	200	236	241
growth	%	-21%	31%	10%	4%	6%	-20%	-17%	-20%	-10%	11%	18%	2%
CIS incl. Russia	Mt	161	181	189	192	197	207	216	223	239	246	249	251
growth	%	-6%	12%	5%	2%	3%	5%	4%	4%	7%	3%	1%	1%
North America	Mt	66	91	98	99	105	109	114	118	120	124	124	123
growth	%	-32%	37%	8%	1%	6%	4%	5%	3%	1%	4%	0%	-1%
West Africa	Mt	11	11	14	23	35	43	52	65	72	94	111	129
growth	%	2%	-1%	23%	67%	53%	25%	20%	26%	11%	29%	18%	17%
Other regions	Mt	96	113	137	136	156	160	175	184	187	193	195	194
Total iron ore supply	Mt	1,484	1,713	1,820	1,864	2,006	2,099	2,238	2,343	2,431	2,577	2,648	2,658
growth	%	-5.7%	15.5%	6.2%	2.4%	7.7%	4.6%	6.6%	4.6%	3.8%	6.0%	2.8%	0.4%
Demand		2009	2010	2011	2012	2013	2014e	2015e	2016e	2017e	2018e	2019e	2020e
Global steel production (crude steel)	Mt	1,235	1,430	1,534	1,543	1,606	1,660	1,722	1,771	1,807	1,846	1,874	1,897
Global BOF production	Mt	850	968	1,037	1,043	1,101	1,137	1,181	1,209	1,223	1,241	1,250	1,254
growth	%	-1.4%	13.9%	7.1%	0.6%	5.5%	3.3%	3.8%	2.4%	1.2%	1.5%	0.7%	0.3%
% BOF	%	69%	68%	68%	68%	69%	69%	69%	68%	68%	67%	67%	66%
European steel production (crude steel)	Mt	168	206	217	209	205	208	211	214	215	217	218	219
European BOF production	Mt	88	112	112	109	109	110	110	109	108	107	105	103
growth	%	-30%	28%	0%	-3%	0%	1%	1%	-1%	-1%	-1%	-1%	-2%
% BOF	%	52%	54%	52%	52%	53%	53%	52%	51%	50%	49%	48%	47%
Japan steel production (crude steel)	Mt	88	110	108	107	111	112	113	113	113	113	113	113
Japan BOF production	Mt	68	86	83	82	85	86	87	87	86	86	85	85
growth	%	-23%	26%	-4%	0%	3%	2%	1%	0%	0%	-1%	-1%	-1%
% BOF	%	78%	78%	77%	77%	77%	77%	77%	76%	76%	76%	75%	75%
India steel production (crude steel)	Mt	64	69	74	78	81	87	94	102	111	124	138	151
India BOF production	Mt	24	25	25	26	27	29	33	37	43	51	61	69
growth	%	3%	2%	1%	3%	5%	9%	12%	13%	16%	19%	20%	13%
% BOF	%	38%	36%	34%	33%	33%	34%	35%	36%	38%	41%	44%	46%
China steel production (crude steel)	Mt	577	639	702	717	779	808	842	863	871	882	882	882
China steel production (BOF)	Mt	521	572	631	644	700	725	755	771	775	780	774	767
growth	%	16%	10%	10%	2%	9%	3.6%	4.1%	2.2%	0.5%	0.7%	-1%	-1%
% BOF	%	90%	90%	90%	90%	90%	90%	90%	89%	89%	88%	88%	87%
Iron Ore													
China	Mt	824	910	996	1050	1137	1173	1218	1240	1242	1247	1233	1219
growth	%	13%	10%	10%	5%	8%	3%	4%	2%	0%	0%	-1%	-1%
Japan	Mt	109	134	132	132	136	138	139	139	138	135	135	134
growth	%	-22%	23%	-2%	0%	3%	2%	1%	0%	0%	-2%	-1%	-1%
S. Korea & Taiwan & other	Mt	63	79	95	93	95	91	97	102	106	109	112	112
growth	%	-12%	24%	21%	-2%	2%	-5%	7%	6%	4%	3%	2%	0%
Europe	Mt	123	158	158	153	155	159	158	156	155	153	151	148
growth	%	-30%	28%	0%	-3%	1%	2%	-1%	-1%	-1%	-1%	-1%	-2%
India	Mt	93	97	102	106	111	119	128	139	152	169	189	206
growth	%	3%	4%	5%	4%	5%	7%	8%	8%	10%	11%	12%	9%
Brazil	Mt	38	47	50	41	40	41	43	45	47	50	52	55
growth	%	-29%	23%	8%	-19%	-3%	3%	5%	6%	5%	5%	5%	5%
CIS	Mt	118	127	131	134	134	138	144	150	153	157	161	164
growth	%	-12%	8%	3%	2%	0%	3%	5%	4%	2%	3%	3%	2%
Total iron ore demand	Mt	1,482	1,691	1,812	1,860	1,964	2,019	2,092	2,143	2,171	2,201	2,215	2,220
growth	%	-4.36%	14.07%	7.20%	2.64%	5.56%	2.82%	3.62%	2.41%	1.33%	1.35%	0.64%	0.24%
Implied scrap ratio	%	25%	26%	26%	25%	24%	24%	24%	24%	25%	25%	26%	27%
Disruption allowance	Mt						0	40	50	40	100	150	150
Notional market balance	Mt	2	22	8	3	43	80	106	150	220	277	284	288
China imported fines (62% CFR)	USD/t	79.8	146.6	167.0	123.8	130.0	104.0	96.0	90.0	88.0	95.0	97.0	97.0

Sources: Deutsche Bank, Wood Mackenzie, AME

Supply – demand balances: Coking Coal



		2009	2010	2011	2012	2013	2014e	2015e	2016e	2017e
Australian exports	Mt	134	158	134	144	169	179	186	193	206
growth	%	-2%	18%	-16%	8%	17%	6%	4%	4%	7%
Canadian exports	Mt	22	27	28	31	32	33	32	33	33
growth	%	-18%	23%	2%	11%	4%	3%	-3%	3%	0%
US exports	Mt	33	48	59	59	60	45	40	40	40
growth	%	-7%	45%	24%	0%	1%	-24%	-11%	0%	0%
China exports	Mt	4	5	8	7	6	6	6	6	6
growth	%	-59%	39%	45%	-17%	-8%	0%	0%	0%	0%
Other supply	Mt	43	63	59	74	72	83	88	89	92
Disruption allowance			-20	-20	-15	-20	-20	-20	-15	-15
Global traded coking coal supply	Mt	236	281	268	300	318	326	332	346	362
growth	%	1%	19%	-5%	12%	6%	2%	2%	4%	5%
Japanese imports	Mt	66	77	69	72	71	75	75	76	76
growth	%	9%	17%	-11%	4%	0%	5%	1%	0%	0%
Korea & Taiwan imports	Mt	25	34	38	40	40	41	43	45	46
growth	%	-23%	36%	13%	4%	0%	4%	4%	3%	3%
European imports	Mt	46	52	53	53	54	54	54	53	53
growth	%	-30%	14%	2%	0%	0%	0%	0%	-1%	-1%
China imports	Mt	34	47	45	71	75	68	65	81	85
growth	%	912%	37%	-5%	58%	7%	-10%	-5%	25%	4%
India imports	Mt	31	34	34	37	43	46	49	53	58
growth	%	17%	11%	-1%	8%	16%	7%	8%	8%	10%
Brazil imports	Mt	11	14	13	11	13	13	14	15	16
growth	%	-32%	20%	-4%	-16%	19%	3%	5%	6%	5%
Other imports / inventory adjustment	Mt	12	20	24	21	21	21	22	23	24
Global traded coking coal demand	Mt	221	274	271	295	310	311	316	339	350
growth	%	-4%	24%	-1%	9%	5%	0%	2%	7%	3%
Notional market balance	Mt	15	7	-3	5	9	15	16	7	12
Contract Hard Coking Coal	USD/t	129	195	289	210	159	130	135	155	160

Sources: Deutsche Bank, Wood Mackenzie, AME

Supply – demand balances

Platinum



Platinum		2010	2011	2012	2013	2014F	2015F	2016F	2017F	2018F	2019F	2020F
South African supply	Koz	4,635	4,855	4,090	4,090	2,918	3,755	3,844	3,993	3,979	4,076	4,039
North American supply	Koz	200	350	310	340	328	310	310	295	300	300	300
Russian production	Koz	825	835	800	740	760	760	760	760	760	760	760
Zimbabwe	Koz	280	340	340	402	430	434	434	434	434	434	434
Other	Koz	110	100	110	200	205	195	200	205	210	215	220
Autocat recycling	Koz	1,085	1,240	1,130	1,240	1,398	1,526	1,652	1,784	1,934	1,897	2,007
Total supply	Koz	7,135	7,720	6,780	7,013	6,038	6,979	7,200	7,471	7,617	7,681	7,760
Supply growth	%	4.1	8.2	-12.2	3.4	-13.9	15.6	3.2	3.8	2.0	0.8	1.0
Total demand	Koz	7,160	7,270	7,130	7,690	7,465	7,537	7,709	7,888	7,683	7,682	7,911
Demand growth	%	15.2	1.5	-1.9	7.9	-2.9	1.0	2.3	2.3	-2.6	0.0	3.0
Autocatalyst	Koz	3,075	3,185	3,190	3,180	3,288	3,456	3,538	3,625	3,741	3,828	3,922
Chemical	Koz	440	470	450	510	525	540	539	544	548	554	559
Electrical	Koz	220	220	155	170	175	180	180	179	175	168	158
Glass	Koz	385	555	160	210	230	270	270	270	270	270	270
Investment	Koz	655	460	455	830	375	150	160	170	-170	-160	-150
Jewellery	Koz	1,685	1,665	1,890	2,010	2,070	2,108	2,158	2,198	2,194	2,090	2,212
Medical & Biomedical	Koz	230	230	235	240	247	253	260	266	273	280	287
Petroleum	Koz	170	210	205	150	175	180	185	196	192	193	194
Other	Koz	300	275	390	390	380	400	420	440	460	460	460
Market balance	Koz	-25	450	-350	-677	-1,426	-557	-509	-417	-67	-1	-151
Annual average price - rhs	US\$/oz	1612	1721	1553	1487	1466	1575	1650	1750	1850	2000	2000
Market balance excl. investment demand		630	910	105	153	-1,051	-407	-349	-247	-237	-161	-301

Sources: Deutsche Bank, JMAT, SFA Oxford

Supply – demand balances

Palladium



Palladium		2010	2011	2012	2013	2014F	2015F	2016F	2017F	2018F	2019F	2020F
South African supply	koz	2,640	2,480	2,157	2,257	1,639	2,101	2,224	2,220	2,357	2,350	2,396
North American supply	koz	590	900	895	928	976	969	951	944	938	931	924
Zimbabwe	koz	220	265	265	331	344	350	350	350	350	350	350
Russian production	koz	2,720	2,705	2,630	2,650	2,650	2,650	2,650	2,650	2,650	2,650	2,650
Russian stockdraw	koz	1,000	775	260	250	100	0	0	0	0	0	0
Russian sales	koz	3,720	3,480	2,890	2,900	2,750	2,650	2,650	2,650	2,650	2,650	2,650
Other mine	koz	185	155	160	150	180	180	180	180	180	180	180
Secondary Supply		1,315	1,695	1,670	1,792	1,926	2,044	2,172	2,314	2,470	2,643	2,837
Total supply	koz	8,670	8,975	8,037	8,359	7,815	8,293	8,527	8,657	8,945	9,104	9,337
<i>Supply growth</i>	%	7.5	3.5	-10.4	4.0	-6.5	6.1	2.8	1.5	3.3	1.8	2.6
Total demand	koz	9,195	7,870	9,350	9,373	10,178	9,788	9,858	10,024	10,216	10,400	10,569
<i>Demand growth</i>	%	24.5	-14.4	18.8	0.2	8.6	-3.8	0.7	1.7	1.9	1.8	1.6
Autocatalyst	koz	5,580	6,155	6,705	7,098	7,528	7,916	8,110	8,399	8,701	8,988	9,264
Dental	koz	595	540	530	460	450	445	430	415	403	390	375
Electronics	koz	970	895	760	690	601	511	441	373	306	241	176
Chemical	koz	370	440	530	510	510	551	553	560	567	575	584
Jewellery	koz	495	295	255	240	189	135	89	40	-3	-43	-82
Investment	koz	1,095	-565	470	275	800	130	128	126	124	122	120
Other	koz	90	110	100	100	100	101	106	111	117	127	133
Market balance	koz	-525	1,105	-1,313	-1,014	-2,363	-1,495	-1,331	-1,367	-1,271	-1,295	-1,232
Annual average price	US\$/oz	525	733	644	726	794	853	950	1,000	1,100	1,000	1,000
Market balance without investment	koz	570	540	-843	-739	-1,563	-1,365	-1,203	-1,241	-1,147	-1,173	-1,111

Sources: Deutsche Bank, JMAT, SFA Oxford

Supply – demand balances

Rhodium



Rhodium		2010	2011	2012	2013	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Total supply	Koz	975	1,043	974	986	867	1,017	1,053	1,091	1,114	1,152	1,176
<i>Supply growth</i>	%	1.9	7.0	-6.6	1.3	-12.0	17.2	3.5	3.7	2.1	3.4	2.1
South African supply	koz	632	641	576	569	421	542	553	566	564	576	574
North American supply	koz	10	23	23	24	24	26	26	26	26	26	26
Zimbabwe	koz	19	29	30	31	35	37	37	37	37	37	37
Other	koz	3	3	3	10	11	11	12	12	13	13	14
Russian sales	koz	70	70	90	80	80	79	78	78	78	78	78
Secondary	koz	241	277	252	272	297	322	347	372	397	422	447
Total demand	Koz	887	908	966	1,036	1,093	1,150	1,160	1,214	1,283	1,301	1,325
<i>Demand growth</i>	%	23.9	2.4	6.4	7.2	5.5	5.3	0.8	4.7	5.7	1.4	1.8
Autocat	koz	727	715	782	819	843	911	919	971	1026	1034	1042
Chemical	koz	67	72	81	79	85	91	98	105	112	120	128
Electrical	koz	4	5	6	7	7	5	5	4	4	0	0
Glass	koz	68	78	31	40	65	70	74	80	85	91	98
Investment	koz	0	0	36	60	60	40	30	20	20	20	20
Other	koz	21	38	30	31	32	33	34	35	36	37	38
Market balance	Koz	88	135	8	-50	-225	-134	-107	-123	-169	-149	-149
Annual average price	US\$/oz	2442	1990	1274	1,067	1,103	1,325	1,400	1,700	1,900	4,000	4,000

Sources: Deutsche Bank, JMAT, SFA Oxford

Gold supply demand model



Deutsche Bank Global Gold Supply/Demand Model

		2009	2010	2011	2012	2013	2014e	2015e	2016e
Mine Production	tonnes	2,575	2,741	2,839	2,864	3,019	3,025	3,050	3050
<i>growth</i>		6.6%	6.4%	3.6%	0.9%	5.4%	0.2%	0.8%	0.0%
Producer Hedging	tonnes	-257	-106	11	-40	-50	20	180	200
Official Sector Sales	tonnes	34	0	0	0	0	0	0	0
Secondary Supply, Scrap	tonnes	1,695	1,711	1,649	1,591	1,371	1,248	1,190	1,184
<i>growth</i>		28.8%	0.9%	-3.6%	-3.5%	-13.8%	-9.0%	-4.7%	-0.5%
Total Supply	tonnes	4,047	4,346	4,499	4,415	4,340	4,293	4,420	4,434

Jewellery	tonnes	1,814	2,020	1,975	1,896	2,210	2,280	2,350	2,430
		-21.3%	11.4%	-2.2%	-4.0%	16.5%	3.2%	3.1%	3.4%
Industrial, other	tonnes	410	465	452	407	405	420	420	420
		-11.1%	13.4%	-2.8%	-10.0%	-0.5%	3.8%	0.0%	0.0%
Total fabrication demand	tonnes	2,224	2,485	2,427	2,303	2,614	2,700	2,770	2,850
		-19.6%	11.7%	-2.3%	-5.1%	13.5%	3.3%	2.6%	2.9%
Bar & coin investment	t	791	1,218	1,519	1,289	1,654	1,246	1,163	1,155
ETF and similar	t	652	343	172	275	-869	-150	-50	0
Total investment demand	tonnes	1,443	1,561	1,691	1,564	785	1,096	1,113	1,155
<i>growth</i>		21.3%	8.2%	8.3%	-7.5%	-49.8%	39.6%	1.6%	3.7%
Official Sector Purchase		0	77	457	544	369	450	450	450
OTC investment & stock flows		380	223	-76	4	572	48	87	-20
Total Demand	tonnes	4,047	4,346	4,499	4,415	4,340	4,293	4,420	4,434

Gold bullion price	USD/oz	974	1,225	1,576	1,669	1,413	1,260	1,160	1,150
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Source: Deutsche Bank, WGC

Price forecasts



Bulk Commodities Price Forecasts

USD	Q2 14	Q3 14	Q4 14	2014	Q1 15	Q2 15	Q3 15	Q4 15	2015	2016	2017	2018
Iron Ore Spot Landed Fines Price in China CIF (t)	102.66	96.00	99.00	104.52	99.00	95.00	92.00	97.00	95.75	90.00	88.00	95.00
%Chg from previous forecast		0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.0%	0.0%
Hard Coking Coal JFY (t)	120.00	125.00	130.00	129.50	135.00	130.00	130.00	145.00	135.00	155.00	160.00	170.00
%Chg from previous forecast		-3.8%	-10.3%	-3.7%	-10.0%	-10.3%	-10.3%	-9.4%	-10.0%	-6.1%	-5.9%	-2.9%
Low-volatile PCI JFY (t)	95.00	100.00	105.00	104.50	110.00	105.00	105.00	120.00	110.00	125.00	130.00	140.00
%Chg from previous forecast		-4.8%	-2.5%	-4.6%	-2.0%	-2.5%	-2.5%	-11.1%	-2.0%	-7.4%	-7.1%	-3.4%

Source: DB Global Markets Research

Precious Metals Price Forecasts

USD/oz	Q2 14	Q3 14	Q4 14	2014	Q1 15	Q2 15	Q3 15	Q4 15	2015	2016	2017	2018
Gold	1290	1250	1200	1258	1175	1175	1150	1150	1163	1150	1125	1200
%Chg from previous forecast		0.0%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Silver	20	20	20	20	20	20	20	20	20	19	19	20
%Chg from previous forecast		0.0%	5.3%	0.2%	5.3%	5.3%	3.7%	3.7%	4.5%	0.0%	0.0%	0.0%
Platinum	1448	1460	1530	1467	1540	1560	1580	1620	1575	1650	1750	1850
%Chg from previous forecast		-14%	0.7%	-15%	-0.6%	-2.5%	-1.3%	-1.8%	-16%	0.0%	0.0%	0.0%
Palladium	816	790	820	793	835	815	860	900	853	950	1000	1100
%Chg from previous forecast		3.9%	6.5%	3.8%	5.0%	12%	2.4%	5.3%	3.5%	5.6%	0.0%	0.0%
Rhodium	1109	1080	1150	1102	1200	1300	1300	1500	1325	1400	1700	1900
%Chg from previous forecast		8.0%	9.5%	4.9%	9.1%	8.3%	0.0%	7.1%	6.0%	0.0%	6.3%	5.6%

Source: Deutsche Bank, Figures are period averages

Price forecasts



Industrial Metals Price Forecasts

Cash price	Q2 14	Q3 14	Q4 14	2014	Q1 15	Q2 15	Q3 15	Q4 15	2015	2016	2017	2018
Aluminium												
US\$/lb	83.4	82.6	83.9	82.4	83.9	85.1	86.2	88.5	85.9	99.8	108.9	118.0
USD/t	1838	1820	1850	1816	1850	1875	1900	1950	1894	2200	2400	2600
% Chg from previous forecast		1%	0.0%	15%	0.0%	-1.3%	0.0%	0.0%	-0.3%	0.0%	0.0%	0.0%
Copper												
US\$/lb	306.9	307.2	308.5	310.1	301.7	306.3	301.7	297.2	301.7	294.9	326.7	340.3
USD/t	6764	6770	6800	6834	6650	6750	6650	6550	6650	6500	7200	7500
% Chg from previous forecast		-0.4%	15%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead												
US\$/lb	96.2	95.3	97.5	96.4	102.1	103.2	102.1	106.6	103.5	105.5	106.6	107.8
USD/t	2121	2100	2150	2124	2250	2275	2250	2350	2281	2325	2350	2375
% Chg from previous forecast		0.0%	-4.4%	0.2%	-2.2%	-1.1%	0.0%	0.0%	-0.8%	0.0%	0.0%	0.0%
Nickel												
US\$/lb	840.2	834.8	870.0	803.0	952.8	934.7	960.8	998.2	961.6	1088.9	1225.0	1145.6
USD/t	18519	18400	19175	17699	21000	20600	21175	22000	21194	24000	27000	25250
% Chg from previous forecast		8.2%	0.9%	3.8%	0.0%	5.6%	5.9%	0.0%	2.8%	0.0%	0.0%	0.0%
Tin												
US\$/lb	1048.2	1060.3	1066.2	1050.0	1060.6	1087.7	1098.5	1109.5	1089.1	1115.0	1137.3	870.0
USD/t	23103	23370	23500	23143	23375	23972	24212	24454	24003	24575	25067	19175
% Chg from previous forecast		16%	0.0%	0.5%	0.3%	2.9%	3.9%	5.0%	3.0%	1.1%	22.0%	0.0%
Zinc												
US\$/lb	94.3	94.1	96.6	94.2	100.7	103.9	107.5	108.9	105.3	108.4	111.6	114.8
USD/t	2079	2075	2130	2077	2220	2290	2370	2400	2320	2390	2460	2530
% Chg from previous forecast		12%	14%	16%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Deutsche Bank, Figures are period averages

Appendix 1

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