

ENERGY & METALS CONSENSUS FORECASTS®

Commodity Price
Surveys Since 1995

WTI Al Cu Ni Pb Zn Sn Fe Au Ag Pt \$

Survey Date
February 20, 2017

Energy & Metals Consensus Forecasts surveys more than 40 energy and metals analysts every month for a range of commodity price forecasts. The results covering over 30 commodities – together with reference data, analysis, special surveys, and the underlying global macroeconomic outlook – are sent to subscribers by express mail and e-mail.

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Commodity Price Volatility – A Special Survey

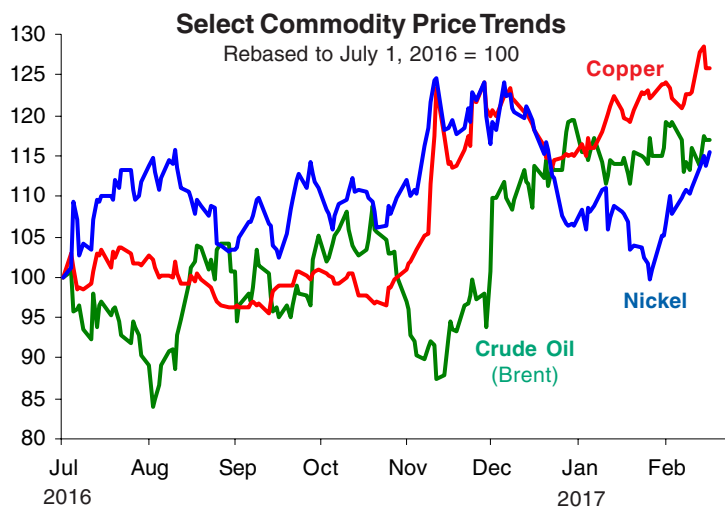
In addition to their point forecasts, we asked the panellists for their estimates of the high and low ranges within which a number of major commodities are likely to trade between now and the first quarter of 2018. The survey results, together with historical volatilities for selected **commodities** and **currencies** (where we also feature consensus range estimates over the next 12 months), are presented on pages 26-27.

Overview

Despite lingering global uncertainties, the resurgence in commodities that started in 2016 has extended into the first two months of 2017. Much doubt continues to surround the future direction of US policy (trade in particular) under its interventionist president Donald Trump. The same is true about politics in Europe amid the soon to begin Brexit negotiations, elections in the Netherlands, France and Germany, and solvency concerns for debt laden countries like Greece and Italy. Yet China, despite being plagued by capital outflows, has not suffered as dramatic

(continued on page 2)

Our next issue of **Energy & Metals Consensus Forecasts** will be available end of the day **March 24, 2017**.



(continued from front page)

a slowdown as some had feared. In fact, a degree of optimism now exists for most major economies following their lacklustre 2016 performance, which supports consumer confidence and demand. Whether **Brent** and **WTI** (pages 6-7) can break current resistance levels will hinge partly upon how well crude oil producers abide by their deal to slash output. Various sources – including the International Energy Agency – report that OPEC has thus far achieved record compliance to planned supply restrictions. However, an un-

even contribution has raised scepticism about its endurance, especially as it creates opportunities for US shale drillers to revive investment and production. **Nickel** (page 15) is forecast to strengthen during the next four quarters, reflecting demand for **Steel** (page 18) and fears about supply after the Philippines (a major provider to China) pressed ahead with an environmental crackdown on its mining industry. On page 5 we feature updated **Long-Term Forecasts** for over 25 commodities, covering the years **2017 to 2026**.

SUMMARY OF SELECT ENERGY & METALS CONSENSUS FORECASTS

See individual commodity pages for mineral specifications	See page	% change since end Dec. 2016	Spot Price Feb. 20 2017	(Nominal, Quarterly Averages) Consensus Forecasts			Forecast % Change to Dec. 2017 Quarter
				Jun. 2017	Sep. 2017	Dec. 2017	
Crude Oil - Brent (US\$/bbl)	6	-1.4%	56.10	55.68	57.71	58.73	+4.7%
- WTI (US\$/bbl)	7	+1.2%	54.37	54.31	56.55	57.50	+5.8%
Natural Gas (US, US\$/MMBtu)	9	-31.5%	2.520	3.080	3.154	3.262	+29.5%
Coal (Steaming, US\$/tonne)	10	+36.4%	81.86 ¹	74.31	70.52	69.34	-15.3%
Uranium (US\$/lb)	11	+30.9%	26.50	24.28	26.11	26.56	+0.2%
Aluminium (US\$/tonne)	12	+9.6%	1878	1725	1712	1717	-8.6%
Alumina (US\$/tonne)	13	-2.9%	339.3	288.8	281.1	279.4	-17.7%
Copper (US\$/tonne)	14	+9.1%	6002	5672	5577	5532	-7.8%
Nickel (US\$/tonne)	15	+8.6%	10875	10929	11065	11154	+2.6%
Lead (US\$/tonne)	16	+14.6%	2275	2190	2160	2158	-5.1%
Zinc (US\$/tonne)	17	+11.6%	2861	2754	2729	2736	-4.3%
Tin (US\$/tonne)	20	-6.5%	19735	21067	20555	20294	+2.8%
Steel (HRC, Europe, US\$/tonne)	18	+6.6%	618.0	548.1	514.6	475.1	-23.1%
Iron Ore (N. China. Fine, US\$/tonne)	19	+23.1%	69.55 ¹	66.16	60.73	58.69	-15.6%
Gold (US\$/oz.)	22	+7.7%	1236	1216	1224	1231	-0.4%
Silver (US\$/oz.)	23	+10.7%	17.97	17.26	17.56	17.79	-1.0%
Platinum (US\$/oz.)	24	+10.2%	1001	987.6	1020	1049	+4.8%
Palladium (US\$/oz.)	25	+14.2%	778.8	736.2	746.3	754.5	-3.1%

¹ Consensus Forecasts for the Current Quarter

NOTES, ABBREVIATIONS, WEIGHTS AND MEASURES

FEBRUARY 2017

- EIA – Energy Information Agency (USA)
- LME – London Metal Exchange
- LBMA – London Bullion Market Association
- LPPM – London Platinum and Palladium Market
- NYMEX – New York Mercantile Exchange
- COMEX – New York Commodities Exchange
- ICE – Intercontinental Exchange
- e – Estimate
- na – Not Available
- fob – Free On Board
- bbl – Barrel
- dltu – Dry long tonne unit (1/100 of a dry long tonne)
- dmtu – Dry metric tonne unit (1/100 of a dry metric tonne)
- MMBtu – Millions of British Thermal Units (Btu)
- All individual commodity forecasts on pages 6-25 (pages 4-23 in abridged versions) are listed in descending order of their approximate 1-year percentage change estimates. Consensus forecasts are mean averages of individual quarterly average forecasts.
- Historical price data in this publication has been provided by Commodity Research Bureau and other sources.
- Gross Domestic Product (GDP) is expressed in real (i.e. inflation-adjusted) terms. GDP and Industrial Production are expressed as average percentage changes over the previous calendar year unless otherwise indicated.
- 1 kilogram = 32.1507 troy ounces
- 1 short ton = 0.907 metric tonnes = 2000 pounds
- 1 kilogram (kg) = 2.2046 pounds
- 1 barrel = 42 US gallons
- 1,000 kilograms = 1 metric tonne = 2204.6 pounds
- 10 Therms of Natural Gas = 1 million Btu = 1MMBtu
- 1 long tonne = 1.016 metric tonnes = 2240 pounds
- 1 metric/long tonne unit (MTU/LTU) = 1/100 of a metric/long tonne

Economic growth rates provide a valuable insight into the behaviour of energy and metals prices, with industrial production growth forecasts in particular giving an overview of the likely demand for many commodities. The forecasts below are taken from the current issues of our publications *Consensus Forecasts – G7 & Western Europe, Asia Pacific Consensus Forecasts, Eastern Europe Consensus Forecasts* and *Latin American Consensus Forecasts*.

REAL GDP GROWTH

(% change on previous year)

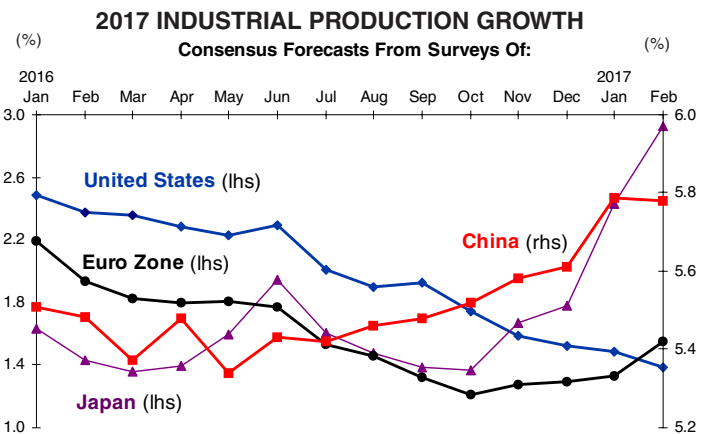
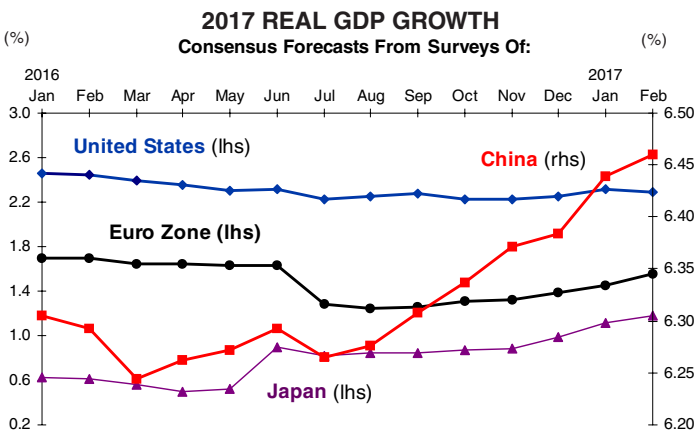
	2014	2015	2016	Consensus Forecasts	
				2017	2018
United States	2.4	2.6	1.6	2.3	2.4
China	7.3	6.9	6.7	6.5	6.1
Japan	0.2	1.3	1.0	1.2	1.0
Euro zone	1.2	1.9	1.7	1.6	1.5
World¹	3.1	2.8	2.5	2.8	2.9

¹ Country weights available to qualified subscribers upon request.

INDUSTRIAL PRODUCTION GROWTH

(% change on previous year)

	2014	2015	2016	Consensus Forecasts	
				2017	2018
United States	2.9	0.3	-1.0	1.4	2.3
China	8.3	6.1	6.0	5.8	5.4
Japan	2.1	-1.2	-0.5	2.9	1.6
Euro zone	0.9	2.0	1.4	1.5	1.6
World	3.2	1.5	1.6	2.7	2.8



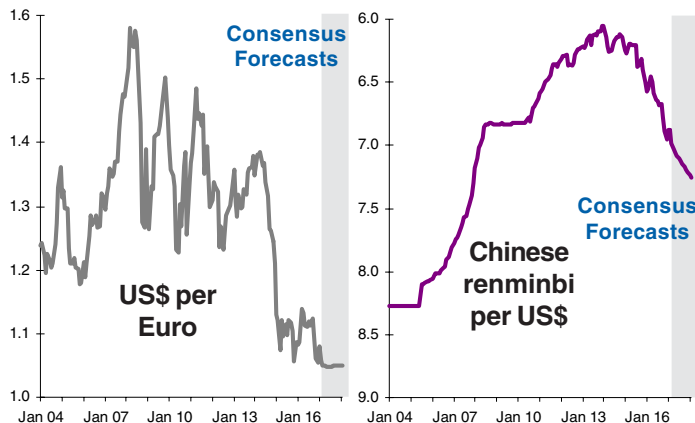
2017 GDP Growth Outlook Brightens

The UK, Japan and the Euro zone have seen 2017 economic forecasts upgraded sharply during the past seven months (table right and chart above). Renewed confidence in each largely reflects resilience in domestic demand, which has countered headwinds from global economic and political uncertainties. Growth across much of Europe has turned out to be better than expected, despite a negative shock from 'Brexit' and ongoing anxieties created by the Greek debt overhang and the Italian banking crisis. The positive performance is also due to improvements in currency competitiveness (euro and renminbi below), which has provided a lift to exports and industrial production.

Changes to Consensus GDP Growth Forecasts

	Jul. 11, 2016 Survey		Feb. 13, 2017 Survey		% -point Change	
	2017	2018	2017	2018	2017	2018
United Kingdom	0.7	1.5	1.5	1.3	+0.8	-0.2
United States	2.2	2.2	2.3	2.4	+0.1	+0.2
Japan	0.8	0.9	1.2	1.0	+0.4	+0.1
China	6.3	5.9	6.5	6.1	+0.2	+0.2
Euro zone	1.3	1.4	1.6	1.5	+0.3	+0.1
World	2.7		2.8	2.9	+0.1	

Source: Consensus Economics



EXCHANGE RATES

(per US dollar)

Source: Foreign Exchange Consensus Forecasts, February 13, 2017

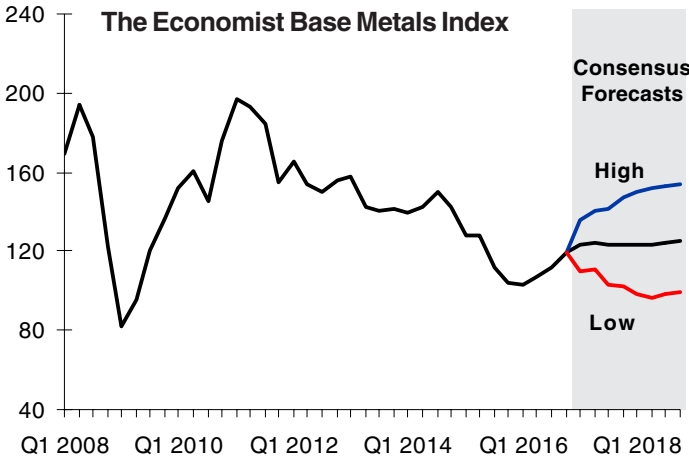
	Spot Rate Feb. 13, 2017	Consensus Forecasts			
		End May 2017	End Feb 2018	% change from spot	End Feb 2019
Euro¹	1.061	1.047	1.051	-0.9	1.071
Japanese yen	113.9	115.5	117.2	-2.8	118.1
Australian dollar¹	0.764	0.728	0.708	-7.4	0.720
Chinese renminbi	6.878	7.066	7.259	-5.3	7.278
Canadian dollar	1.309	1.356	1.351	-3.1	1.301
Brazilian real	3.116	3.338	3.459	-9.9	3.668
Indian rupee	67.00	68.63	69.31	-3.3	69.30

Moderation in US Dollar Strength

The revelation that US president Donald Trump (inaugurated on January 20) may seek a lower exchange rate has caused the US dollar to lose momentum. An absence of clarity regarding his policy intentions (and his ability to implement them) has fuelled global FX speculation, not least because

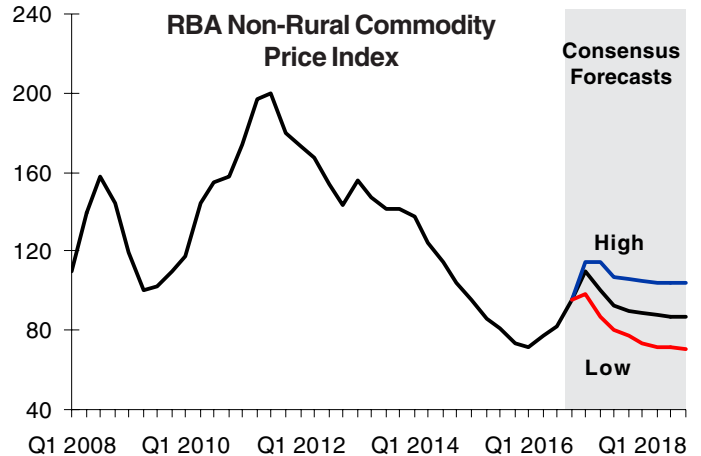
US dollar strength now seems incompatible with his agenda to bolster employment and exports. Most other currencies – including the euro, yen and renminbi, which had been under downward pressure due to ongoing concerns about the health and performance of their economies – have recovered from recent lows as a consequence.

Commodity price indices are useful aggregates of individual commodity price trends. We focus here on two commodity price indices: **The Economist Base Metals Index** (which weights the prices of major base metals according to their share of world trade in 2005) and the **Reserve Bank of Australia (RBA) Non-Rural Commodity Price Index** (which weights the prices of major minerals according to their share of Australian exports in 2014/2015). Both indices are expressed as US\$ prices in a given base year and track the performance of their particular subset of commodities. In addition to showing historical data from the two indices, we also show consensus forecasts for both over the next eight quarters. These are calculated from weighting consensus commodity price forecasts from this edition's survey. In the first two charts below, we also show the highest and lowest projections over the forecast horizon in order to illustrate the range of forecasts.



Weights By Share of World Trade:

Aluminium (47%), Copper (32%), Nickel (8%), Zinc (7%), Lead (3%), Tin (3%)



Weights By Share of Australia Export Values:

Coking Coal (21%), Thermal Coal (14%), Gold (13%), Iron Ore Lump (13%), Aluminium (11%), Alumina (10%), LNG (7%), Copper (4%), Nickel (4%), Zinc (2%), Lead (1%)

The Economist Base Metals Index is a sub-index of the headline Economist Commodity Price Index, containing six base metals: Aluminium, Copper, Lead, Nickel, Tin and Zinc. The index base year is **2005 = 100**, and the headline index is available in sterling and euros, as well as US dollars. It is published on a weekly basis. *Energy & Metals Consensus Forecasts* then converts this week-by-week data into quarterly averages and calculates the index forecasts by using our panellists' projections for the individual metals.

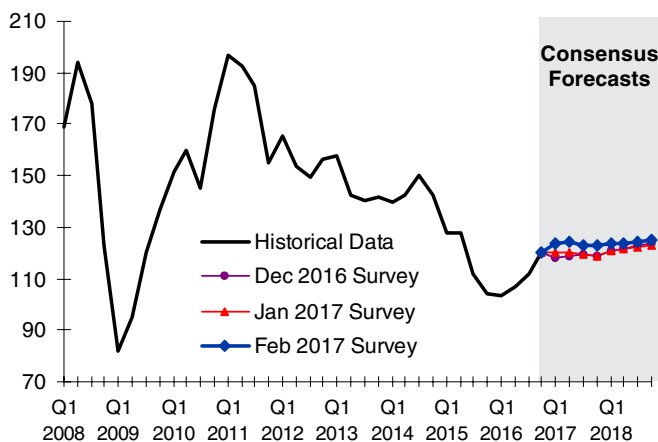
The RBA Non-Rural Commodity Price Index is a sub-index of the RBA's Headline Index of Commodity Prices. The index uses an Australian fiscal base year **2014/2015** (July to June) and weights major minerals (listed above) according to their share of Australian export values. Oil is excluded while liquefied natural gas (LNG) is included (it is some 7% of the index, but is not included in *Energy & Metals Consensus Forecasts* calculations, as we do not survey for LNG forecasts).

Recent Historical Data and Projections Using Consensus Forecasts

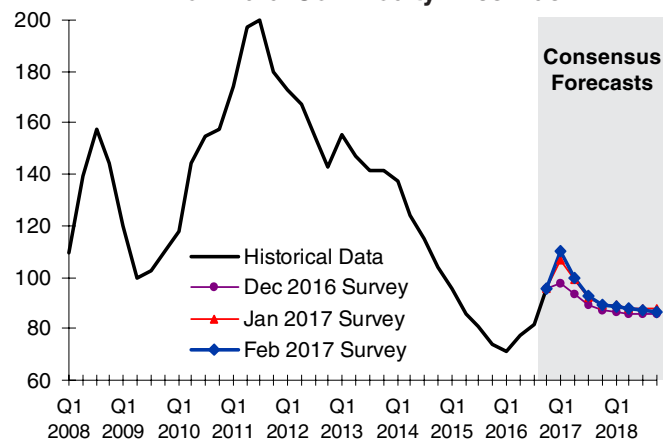
	2016			2017				2018			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Economist Base Metals Index	107.0	112.0	122.0	125.7	126.4	125.1	125.0	125.7	125.7	126.5	127.0
RBA Non-Rural Commodity Price Index	77.52	82.27	96.42	110.7	100.8	93.46	90.15	89.43	88.82	87.77	87.33

(all index values are quarterly averages)

Changes in the Consensus: The Economist Base Metals Index



Changes in the Consensus: RBA Non-Rural Commodity Price Index



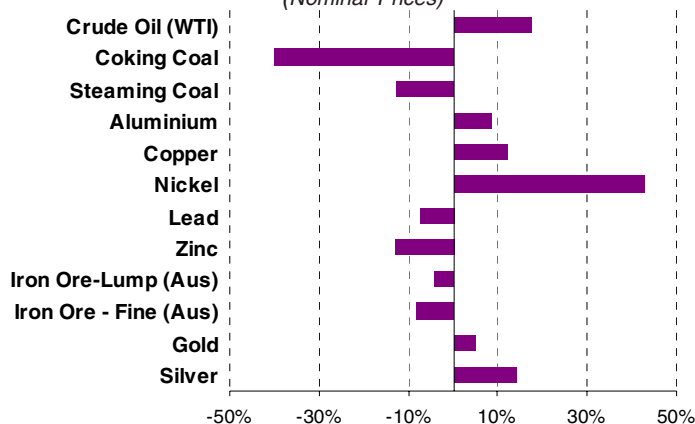
Individual nominal forecasts available in the Excel spreadsheet.

Long-term price forecasts provide a foundation for expected returns from both existing production facilities and those under development. In addition to their annual forecasts for the years 2017 to 2021, the table below summarises our panel's Long-Term 5-10 year average estimates (2022-2026) in nominal and real (inflation adjusted) 2017 dollar terms.

See individual commodity pages for mineral specifications	US\$ Average		Consensus Forecasts						
			(US\$ Nominal, Annual Averages)					Long-Term (2022-2026 Average)	
	2015	2016	2017	2018	2019	2020	2021	Nominal	Real
Crude Oil - Brent	52.40	43.74	56.60	59.80	62.03	64.32	66.15	69.50	61.85
- WTI	48.74	43.21	55.17	58.71	60.51	62.96	64.71	66.09	58.83
RBOB Gas (US)	1.913	1.453	1.737	1.901	2.025	2.190	2.240	na	na
Gas Oil (Europe)	495.4	396.5	499.6	535.4	581.6	601.0	611.0	na	na
Natural Gas - US	2.624	2.511	3.173	3.206	3.241	3.350	3.344	3.764	3.125
- UK, pence	42.95	35.27	46.48	42.92	39.67	46.00	55.00	na	na
Coking Coal - Contract	101.6	119.4	201.4	128.1	118.1	117.7	121.0	129.5	115.3
Thermal Coal - Contract	71.30	66.09	72.57	71.31	66.92	64.20	63.29	68.80	60.95
- Spot	56.84	54.42	74.01	66.08	60.54	59.64	61.02	67.55	60.16
Uranium	36.82	26.77	25.29	31.34	36.33	42.38	47.40	51.61	46.92
Aluminium	1662	1605	1722	1734	1734	1792	1872	2124	1870
Alumina	310.0	253.8	286.7	275.0	280.8	289.4	302.0	344.6	307.0
Copper	5502	4863	5597	5580	5813	6050	6274	6828	6274
Nickel	11829	9587	10942	11741	13134	14592	15607	18973	17045
Lead	1786	1870	2180	2087	2065	2031	2022	2130	1922
Zinc	1931	2093	2727	2689	2545	2449	2369	2501	2207
Cobalt	13.27	11.87	14.17	13.67	13.39	13.62	13.53	12.69	11.53
Tin	16083	18002	20641	20276	20583	20572	20149	22862	19846
Manganese	3.083	4.338	6.075	4.167	3.918	3.961	4.067	4.226	3.909
Molybdenum	6.691	6.507	6.972	7.178	7.328	7.664	8.154	7.757	7.055
Rutile	865.3	709.8	788.0	851.1	898.9	922.9	967.2	1068	968
Ilmenite	124.2	104.5	109.4	120.8	128.8	138.6	146.3	154.4	139.4
Zircon	1100	1032	956.1	1044	1113	1163	1207	1246	1114
Steel - HRC, Europe	432.9	458.3	523.3	454.9	445.1	449.5	456.2	na	na
HRC, USA	484.9	545.5	594.3	563.5	554.4	554.0	556.5	675.5	602.7
HRC, China	299.5	337.4	433.5	388.3	390.9	403.9	406.1	na	na
Iron Ore - Lump (Aust)	57.53	54.27	62.24	56.60	57.35	58.29	59.52	63.98	58.40
Fine (Aust)	45.43	48.08	53.34	46.30	47.37	48.34	49.01	54.20	48.71
Fine (Brz)	43.40	49.82	58.15	52.61	51.17	52.69	53.03	56.16	49.61
Gold	1160	1248	1220	1250	1284	1291	1282	1347	1227
Silver	15.69	17.08	17.42	18.17	19.04	19.42	19.88	21.16	19.68
Platinum	1044	986.3	1007	1085	1202	1238	1301	1411	1328
Palladium	687.5	612.2	740.0	798.4	849.1	883.1	882.3	852.7	800.4

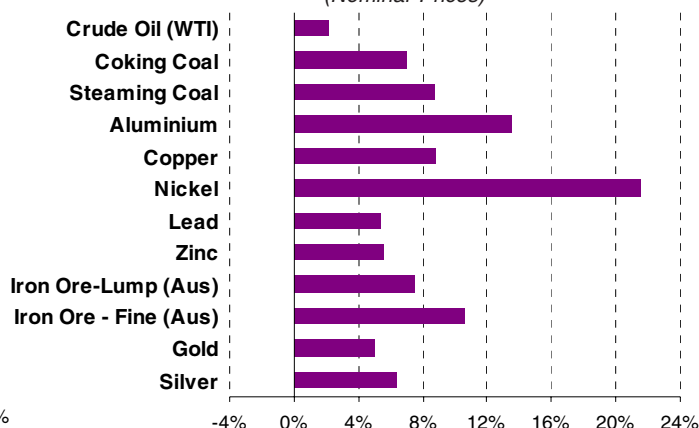
% Change Between 2017 and 2021

(Nominal Prices)



% Change Between 2021 and Long-Term Average

(Nominal Prices)



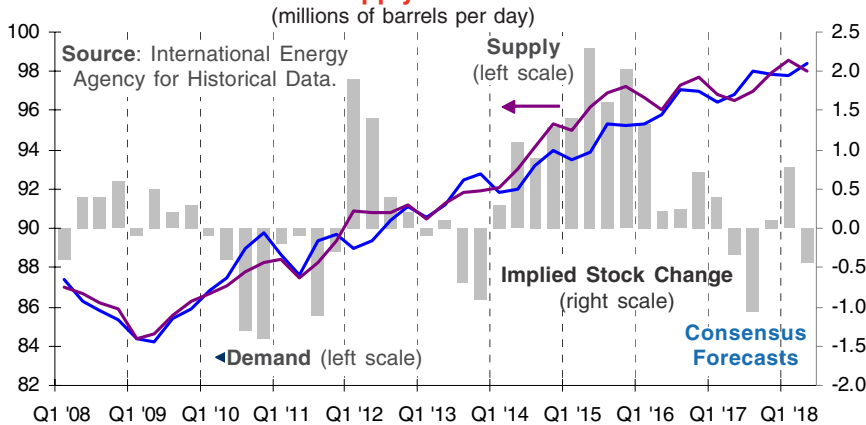
Brent Crude Oil Forecasts, US\$/barrel

Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

Survey Date Spot (Feb. 20): US\$ 56.10	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Lloyds Bank	55.00	60.00	65.00	70.00	24.8%	72.00	74.00	74.00	75.00
ANZ	59.50	66.00	66.00	65.00	15.9%	64.00	62.50	62.50	64.00
Citigroup	55.00	56.00	60.00	65.00	15.9%	59.00	63.00	61.00	58.00
Moody's Analytics	57.31	58.69	61.12	64.17	14.4%	64.72	65.42	64.99	66.14
BoA Merrill Lynch	55.00	59.00	66.00	64.00	14.1%	na	na	na	na
UBS	56.00	57.50	62.50	64.00	14.1%	65.00	65.00	65.00	65.00
BNP Paribas	54.00	57.00	59.00	62.00	10.5%	59.00	61.00	61.00	69.00
Credit Suisse	46.00	56.00	61.00	62.00	10.5%	65.00	65.00	65.00	65.00
Scotiabank	58.00	60.00	60.00	61.95	10.4%	61.50	63.50	63.50	65.45
ABN Amro	50.00	50.00	55.00	60.00	7.0%	60.00	65.00	65.00	60.00
GKI Research	57.00	57.00	60.00	60.00	7.0%	60.00	62.00	62.00	65.00
Societe Generale	52.50	55.00	57.50	60.00	7.0%	62.50	62.50	62.50	62.50
Australia Dept of Industry	54.34	56.30	58.00	59.98	6.9%	60.81	61.59	62.31	62.99
Deloitte Access Economics	57.26	57.85	58.43	59.02	5.2%	59.59	60.54	61.48	62.42
Capital Economics	54.50	54.00	56.50	59.00	5.2%	61.00	63.00	64.00	64.50
Macquarie	55.50	56.00	59.00	58.50	4.3%	57.00	55.50	54.50	56.00
Econ Intelligence Unit	56.50	54.50	55.00	58.00	3.4%	56.00	58.00	62.00	64.00
Investec	58.00	58.00	58.00	58.00	3.4%	58.00	58.00	58.00	58.00
Pezco Economics	53.59	54.93	56.30	57.71	2.9%	59.15	60.63	62.14	63.70
Morgan Stanley	57.25	58.29	58.53	57.39	2.3%	56.98	57.50	57.10	57.43
Deutsche Bank	53.00	53.00	57.00	57.00	1.6%	na	na	na	na
P K Verleger	54.00	54.27	54.67	55.08	-1.8%	55.48	55.90	56.31	56.73
China Int'l Capital Corp	55.00	50.00	51.00	55.00	-2.0%	52.00	48.00	51.00	52.00
Euromonitor International	54.53	54.30	54.35	54.56	-2.8%	54.84	55.16	55.46	55.73
Banco de Credito del Peru	54.50	52.00	54.00	54.00	-3.7%	54.85	55.85	56.35	56.95
Oxford Economics	45.79	49.19	55.00	52.00	-7.3%	50.00	51.00	51.50	51.50
Commonwealth Bank	55.00	60.00	55.00	50.00	-10.9%	53.00	55.00	55.00	52.00
Liberum Capital	50.00	50.00	50.00	50.00	-10.9%	50.00	50.00	55.00	55.00
Ecoanalitica	49.81	49.81	49.81	49.81	-11.2%	55.04	55.04	55.04	55.04
Consensus (Mean)	54.27	55.68	57.71	58.73	4.7%	58.76	59.62	60.14	60.71
High	59.50	66.00	66.00	70.00		72.00	74.00	74.00	75.00
Low	45.79	49.19	49.81	49.81		50.00	48.00	51.00	51.50
Standard Deviation	3.30	3.83	4.19	4.93		5.01	5.59	5.10	5.69

Survey of Jan. 16, 2017		Crude Oil Volumes - Supply and Demand Consensus Forecasts							
		2016 Q3	Q4	2017 Q1	Q2	Q3	Q4	2018 Q1	Q2
World	(millions of barrels per day)	97.30	97.66	96.84	96.51	96.96	97.93	98.53	98.02
Supply		97.05	96.50	96.44	96.84	98.02	97.83	97.76	98.45
Demand		0.25	1.16	0.40	-0.33	-1.06	0.10	0.77	-0.43
Balance									

Global Crude Oil Supply and Demand Balances

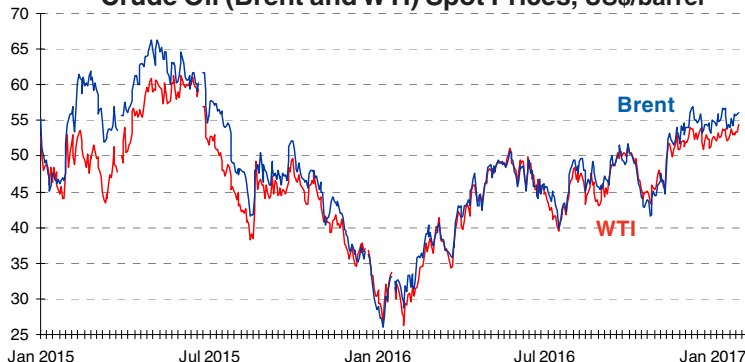


US Output Offsets OPEC Cuts

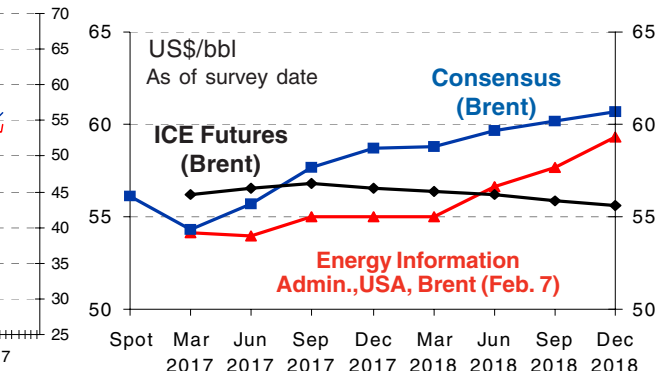
- ◆ Brent has met resistance around the US\$55 per barrel level as investors recognise that the high stockpile of global crude oil will take time to run down.
- ◆ Official OPEC production figures suggest initial compliance among members and other producers (including Russia) with the deal they struck in late November to reduce supply. However, their withdrawal looks set to be partly met by a surge in US output, as underlined by the rebound in latest US rig count statistics.

(Continued on page 7)

Crude Oil (Brent and WTI) Spot Prices, US\$/barrel



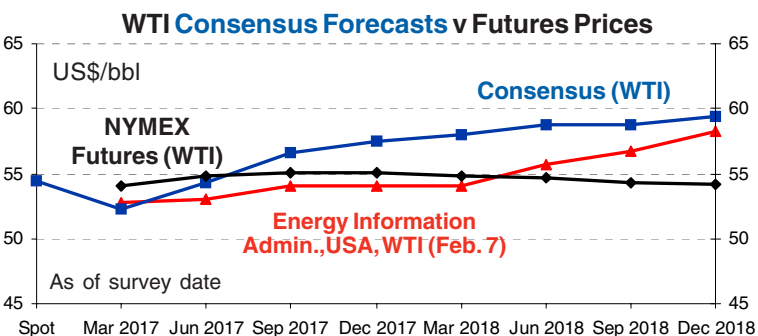
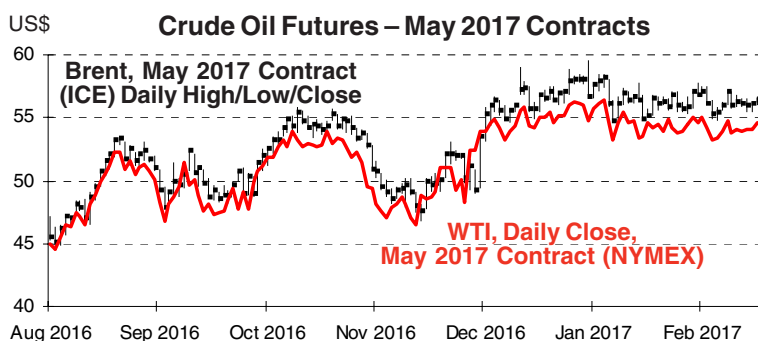
Brent Consensus Forecasts v Futures Prices



WTI Crude Oil Forecasts, US\$/barrel

Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

Survey Date Spot (Feb. 20): US\$ 54.37	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Lloyds Bank	53.00	57.00	62.00	67.00	23.2%	70.00	72.00	72.00	73.00
P K Verleger	54.00	56.27	62.87	63.34	16.5%	63.81	64.28	64.76	65.24
ANZ	57.50	64.00	63.50	62.00	14.0%	61.50	61.00	61.50	63.00
Citigroup	53.00	54.00	57.00	62.00	14.0%	57.00	60.00	58.00	54.00
UBS	54.00	55.50	60.50	62.00	14.0%	63.00	63.00	63.00	63.00
Moody's Analytics	52.90	55.50	58.09	61.16	12.5%	61.72	62.42	61.99	63.14
BoA Merrill Lynch	54.00	57.00	64.00	61.00	12.2%	na	na	na	na
ABN Amro	45.00	50.00	55.00	60.00	10.4%	60.00	65.00	60.00	55.00
BNP Paribas	52.00	56.00	56.00	60.00	10.4%	57.00	60.00	58.00	67.00
Credit Suisse	45.00	55.00	60.00	60.00	10.4%	62.50	62.50	62.50	62.50
Scotiabank	56.00	58.00	58.00	59.95	10.3%	59.00	61.00	61.00	62.95
Australia Dept of Industry	53.47	55.49	57.10	59.09	8.7%	59.95	60.72	61.43	62.11
Capital Economics	53.00	54.00	56.50	59.00	8.5%	61.00	63.00	64.00	64.50
Societe Generale	51.00	53.50	56.00	58.50	7.6%	65.00	65.00	65.00	65.00
Investec	58.00	58.00	58.00	58.00	6.7%	58.00	58.00	58.00	58.00
GKI Research	54.00	54.00	57.00	57.00	4.8%	57.00	59.00	59.00	62.00
Econ Intelligence Unit	55.27	53.47	53.84	56.76	4.4%	54.84	56.81	60.70	62.66
Morgan Stanley	54.78	56.40	56.74	56.63	4.2%	55.86	55.39	54.85	55.20
Macquarie	53.50	53.50	57.00	56.50	3.9%	54.00	52.50	51.00	52.50
Pezco Economics	52.37	53.68	55.02	56.39	3.7%	57.92	59.48	61.08	62.73
Deutsche Bank	51.00	51.00	55.00	55.00	1.2%	na	na	na	na
TD Economics	52.00	52.00	55.00	55.00	1.2%	56.00	56.00	57.00	57.00
China Int'l Capital Corp	48.00	49.00	50.00	54.00	-0.7%	51.20	46.00	49.00	50.00
Euromonitor International	52.92	53.22	53.53	53.87	-0.9%	54.21	54.54	54.82	55.05
Banco de Credito del Peru	52.50	51.00	53.00	53.00	-2.5%	53.50	54.50	55.00	55.60
CIBC	53.00	53.00	53.00	53.00	-2.5%	58.00	58.00	58.00	58.00
Oxford Economics	44.89	49.20	55.01	52.01	-4.3%	50.01	51.01	51.51	51.51
Econalítica	48.20	48.20	48.20	48.20	-11.3%	53.75	53.75	53.75	53.75
Commonwealth Bank	53.00	58.00	53.00	47.00	-13.6%	49.00	51.00	51.00	48.00
Consensus (Mean)	52.32	54.31	56.55	57.50	5.8%	57.95	58.74	58.81	59.35
High	58.00	64.00	64.00	67.00		70.00	72.00	72.00	73.00
Low	44.89	48.20	48.20	47.00		49.00	46.00	49.00	48.00
Standard Deviation	3.31	3.32	3.72	4.43		4.79	5.45	5.17	5.89



US Output Revival

- ◆ A near US\$10 per barrel increase in WTI during the past three months (bottom left chart, page 6) has encouraged shale producers to lift investment, redeploy labour and rigs, and to restart idle capacity.
- ◆ Renewed optimism in the domestic crude oil sector has been underpinned by expectations that US president Donald Trump and his new administration will adopt policies that back the American energy industry.
- ◆ Another incentive for US producers to bolster output comes from Republican proposed changes to US tax codes, which could drive a wedge between WTI and Brent.
- ◆ Some panellists speculate that border tax adjustments will materialise in mid-2017, but such a system is highly complex. In addition, it could be challenged by the World Trade Organisation, as a direct tax on imports would violate its rules of non-discrimination.

US Crack Spread

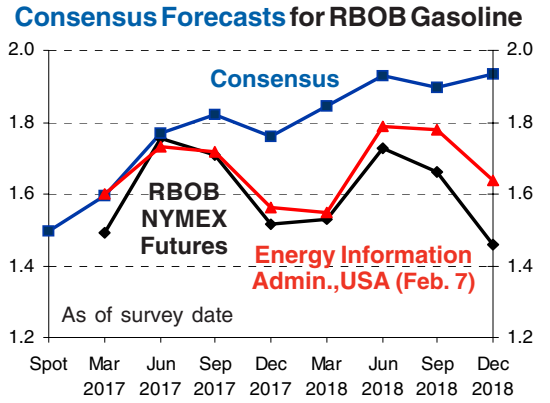
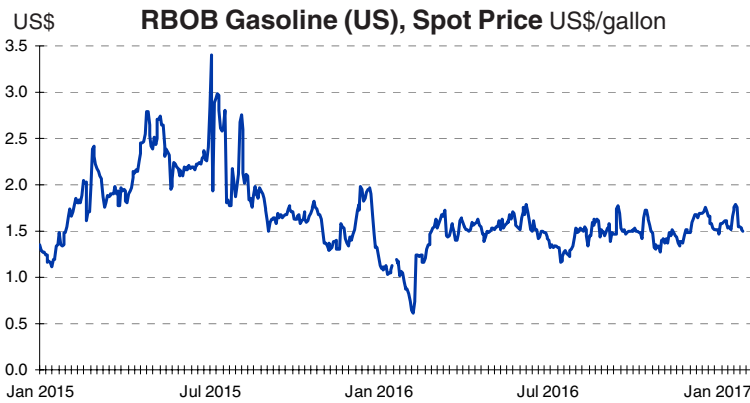
Crude oil is refined into numerous saleable products including gasoline and Gas Oil (or heating oil). The crack spread is used to estimate the profitability of refining the raw material. When the spread is positive, the price of the refined products is above that of crude oil, helping profitability. The chart opposite shows a commonly used 3:2:1 crack spread, reflecting a ratio of refinery output of 2 barrels of RBOB gasoline and 1 barrel of US heating oil from 3 barrels of WTI crude oil.



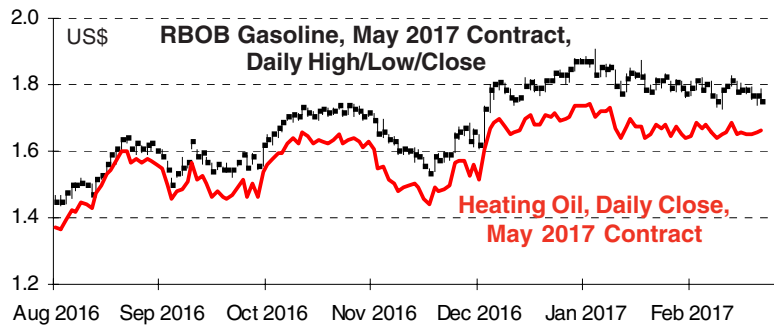
RBOB Gasoline (US) Forecasts, US\$/gallon, fob

Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

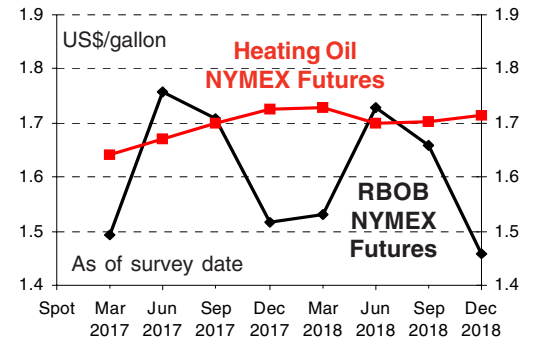
Survey Date Spot (Feb. 20): US\$ 1.495	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
GKI Research	1.650	1.750	1.850	2.000	33.8%	2.000	2.100	2.100	2.200
P K Verleger	1.489	1.610	1.805	1.806	20.8%	1.807	1.808	1.809	1.821
BoA Merrill Lynch	1.657	1.876	1.943	1.762	17.9%	na	na	na	na
BNP Paribas	1.670	1.930	1.830	1.740	16.4%	1.710	1.950	1.810	1.860
Societe Generale	1.580	1.740	1.730	1.670	11.7%	1.860	1.860	1.860	1.860
Deutsche Bank	1.523	1.706	1.776	1.588	6.2%	na	na	na	na
Consensus (Mean)	1.595	1.769	1.822	1.761	17.8%	1.844	1.930	1.895	1.935
High	1.670	1.930	1.943	2.000		2.000	2.100	2.100	2.200
Low	1.489	1.610	1.730	1.588		1.710	1.808	1.809	1.821
Standard Deviation	0.076	0.117	0.073	0.140		0.121	0.128	0.139	0.177



RBOB/Heating Oil Futures – May 2017 Contracts (NYMEX)



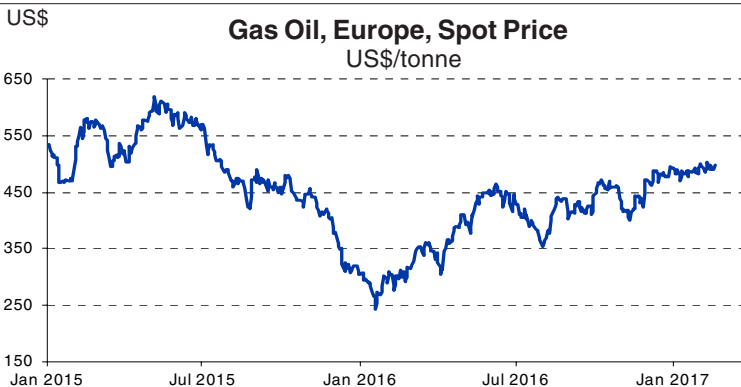
Futures Prices For RBOB and Heating Oil



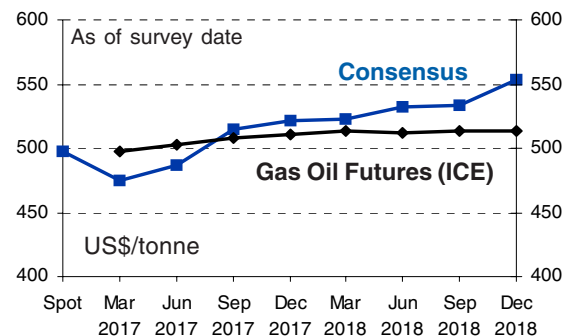
European Gas Oil Forecasts, US\$/gallon, fob

Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

Survey Date Spot (Feb. 20): US\$ 497.3	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
BNP Paribas	484.0	507.0	529.0	551.0	10.8%	529.0	544.0	544.0	611.0
BoA Merrill Lynch	476.7	495.3	557.3	544.6	9.5%	na	na	na	na
GKI Research	500.0	510.0	540.0	540.0	8.6%	540.0	560.0	560.0	560.0
Societe Generale	458.0	473.0	492.0	514.0	3.4%	548.0	548.0	548.0	548.0
Deutsche Bank	470.7	467.0	504.3	508.1	2.2%	na	na	na	na
P K Verleger	461.0	466.0	469.0	472.0	-5.1%	472.0	478.0	483.0	494.0
Consensus (Mean)	475.1	486.4	515.3	521.6	4.9%	522.3	532.5	533.8	553.3
High	500.0	510.0	557.3	551.0		548.0	560.0	560.0	611.0
Low	458.0	466.0	469.0	472.0		472.0	478.0	483.0	494.0
Standard Deviation	15.6	20.2	32.8	29.8		34.4	37.0	34.5	48.0



Gas Oil Consensus Forecasts v Futures Prices



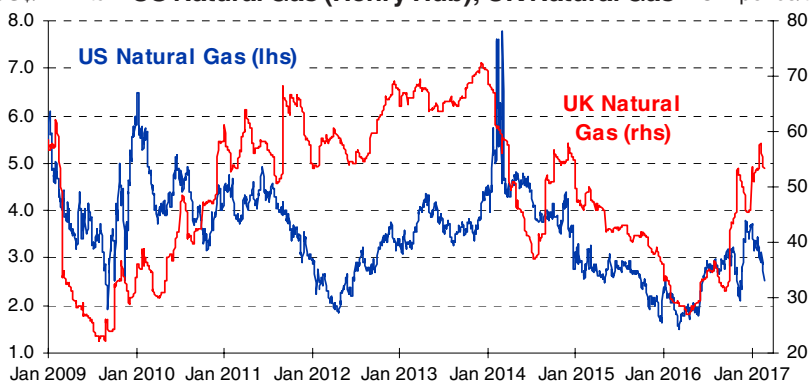
Natural Gas (US, Henry Hub) Forecasts, US\$/MMBtu Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

Survey Date Spot (Feb. 20): US\$ 2.520	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
BoA Merrill Lynch	3.400	3.300	3.500	3.800	50.8%	na	na	na	na
GKI Research	3.300	3.500	3.600	3.700	46.8%	3.700	3.600	3.700	3.800
Societe Generale	3.380	3.300	3.620	3.570	41.7%	3.860	3.860	3.860	3.860
Macquarie	3.200	3.150	3.500	3.500	38.9%	3.700	3.200	3.000	2.800
Scotiabank	3.400	3.050	3.100	3.450	36.9%	3.400	2.950	2.900	3.350
Morgan Stanley	3.546	3.355	3.368	3.437	36.4%	3.566	2.867	2.877	2.966
Econ Intelligence Unit	3.260	2.940	3.070	3.420	35.7%	3.270	3.120	3.440	3.740
Credit Suisse	3.149	2.907	3.149	3.391	34.6%	3.391	3.391	3.391	3.391
Capital Economics	3.360	3.000	3.125	3.375	33.9%	3.500	3.500	3.625	3.750
Euromonitor International	3.097	3.325	3.372	3.364	33.5%	3.344	3.328	3.289	3.271
Investec	3.300	3.300	3.300	3.300	31.0%	3.300	3.300	3.300	3.300
TD Economics	3.150	3.150	3.250	3.250	29.0%	3.300	3.300	3.300	3.300
UBS	3.500	3.250	3.000	3.250	29.0%	3.000	3.000	3.000	3.000
Citigroup	3.200	3.400	3.500	3.200	27.0%	3.100	3.000	2.900	3.000
China Int'l Capital Corp	3.000	2.450	2.850	3.150	25.0%	3.300	2.600	3.000	3.300
Deutsche Bank	3.250	3.100	3.000	3.150	25.0%	na	na	na	na
Lloyds Bank	3.100	3.000	3.000	3.100	23.0%	3.100	3.000	3.000	3.100
Moody's Analytics	3.250	3.000	2.970	3.040	20.6%	3.170	3.290	3.440	3.570
ABN Amro	3.000	2.750	2.600	3.000	19.0%	3.250	3.000	3.250	3.500
Liberum Capital	3.000	3.000	3.000	3.000	19.0%	3.000	3.000	3.000	3.000
CIBC	2.950	2.950	2.950	2.950	17.1%	2.800	2.800	2.800	2.800
Commonwealth Bank	2.839	2.646	2.719	2.838	12.6%	3.038	2.728	2.790	2.900
Oxford Economics	2.850	3.010	3.000	2.800	11.1%	2.672	2.698	2.725	2.753
Consensus (Mean)	3.195	3.080	3.154	3.262	29.5%	3.274	3.121	3.171	3.260
High	3.546	3.500	3.620	3.800		3.860	3.860	3.860	3.860
Low	2.839	2.450	2.600	2.800		2.672	2.600	2.725	2.753
Standard Deviation	0.195	0.251	0.277	0.261		0.295	0.317	0.322	0.349

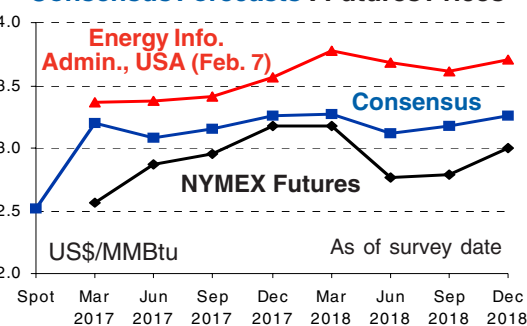
UK Natural Gas Forecasts, UK pence/therm Nominal, Quarterly Averages, Annual Price Forecasts on Page 5

Survey Date Spot (Feb. 20): 53.26 pence	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
GKI Research	54.00	53.00	52.00	52.00	-2.4%	53.00	51.00	52.00	52.00
Lloyds Bank	49.00	45.00	43.00	46.00	-13.6%	45.00	42.00	40.00	45.00
Capital Economics	51.65	47.50	45.00	42.50	-20.2%	39.00	na	na	na
ABN Amro	45.00	42.00	40.00	36.00	-32.4%	39.00	37.00	33.00	31.00
Consensus (Mean)	49.91	46.88	45.00	44.13	-17.2%	44.00	43.33	41.67	42.67
High	54.00	53.00	52.00	52.00		53.00	51.00	52.00	52.00
Low	45.00	42.00	40.00	36.00		39.00	37.00	33.00	31.00
Standard Deviation	3.86	4.66	5.10	6.69		6.63	7.09	9.61	10.69

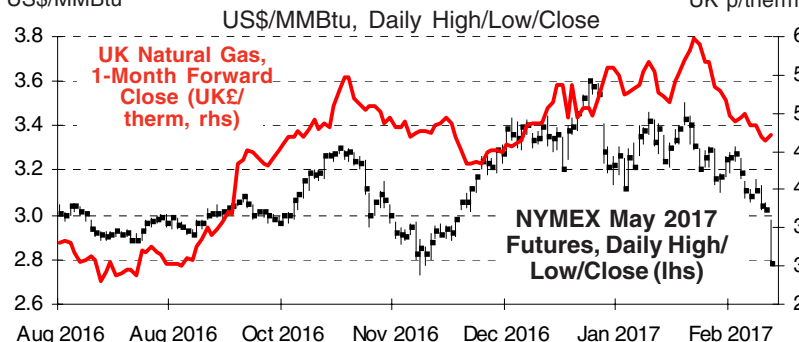
US\$/MMBtu US Natural Gas (Henry Hub); UK Natural Gas UK pence/therm



US Natural Gas Consensus Forecasts v Futures Prices



Natural Gas Futures US\$/MMBtu, Daily High/Low/Close UK p/therm



Revival in US Natural Gas Industry

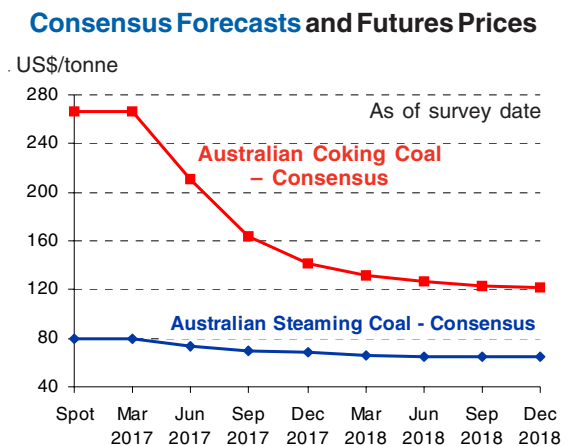
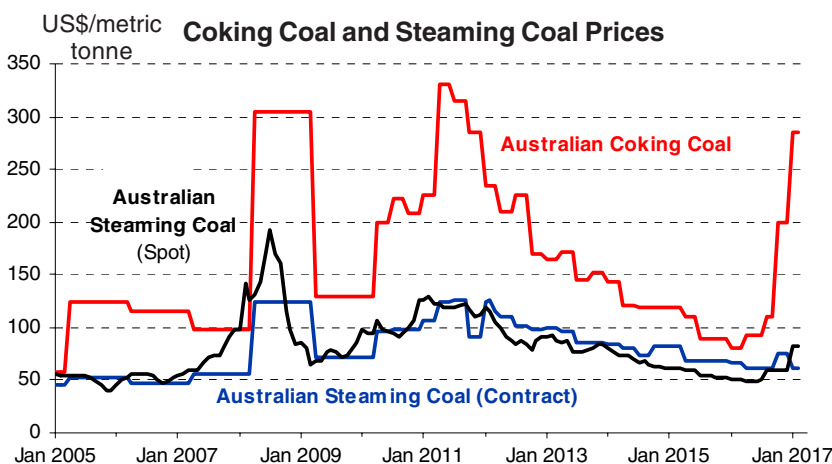
- ◆ Henry Hub slipped back below US\$3.0/MMBtu last week, partly reflecting warmer weather and a seasonal drop in demand. However, natural gas rig counts (based on Baker Hughes) are at their highest level in more than a year. US President Donald Trump has promised a reduction in regulatory restrictions on exploration and production.
- ◆ Increases in US natural gas supply will partly be absorbed by export opportunities, via cross border pipelines to Mexico and through LNG shipments around the world.

Consensus Price for Q1: US\$284.5 e		Australian Coking Coal Forecasts, US\$/metric tonne, Contract Price								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Investec	na	230.0	160.0	160.0	-43.8%	150.0	150.0	145.0	145.0	
RBC Capital Markets	280.0	225.0	190.0	160.0	-43.8%	150.0	150.0	150.0	150.0	
Macquarie	285.0	230.0	175.0	155.0	-45.5%	140.0	140.0	140.0	140.0	
Credit Suisse	285.0	200.0	170.0	150.0	-47.3%	130.0	130.0	130.0	130.0	
Morgan Stanley	na	200.0	160.0	150.0	-47.3%	140.0	125.0	120.0	104.0	
UBS	285.0	230.0	185.0	150.0	-47.3%	120.0	105.0	100.0	98.0	
Wilson HTM	285.0	180.0	160.0	150.0	-47.3%	150.0	150.0	150.0	140.0	
ANZ	285.0	180.0	160.0	140.0	-50.8%	130.0	140.0	140.0	145.0	
BoA Merrill Lynch	280.0	240.0	180.0	140.0	-50.8%	150.0	150.0	na	na	
Deutsche Bank	285.0	220.0	170.0	130.0	-54.3%	na	na	na	na	
Societe Generale	290.0	240.0	180.0	130.0	-54.3%	110.0	110.0	110.0	110.0	
Australia Dept of Industry	285.0	190.0	150.0	120.0	-57.8%	115.0	110.0	105.0	105.0	
Commonwealth Bank	285.0	175.0	140.0	120.0	-57.8%	110.0	100.0	93.6	94.2	
Consensus (Mean)	284.5	210.8	167.7	142.7	-49.9%	132.9	130.0	125.8	123.7	
High	290.0	240.0	190.0	160.0		150.0	150.0	150.0	150.0	
Low	280.0	175.0	140.0	120.0		110.0	100.0	93.6	94.2	
Standard Deviation	2.7	24.1	14.4	13.9		16.0	19.4	20.9	21.5	

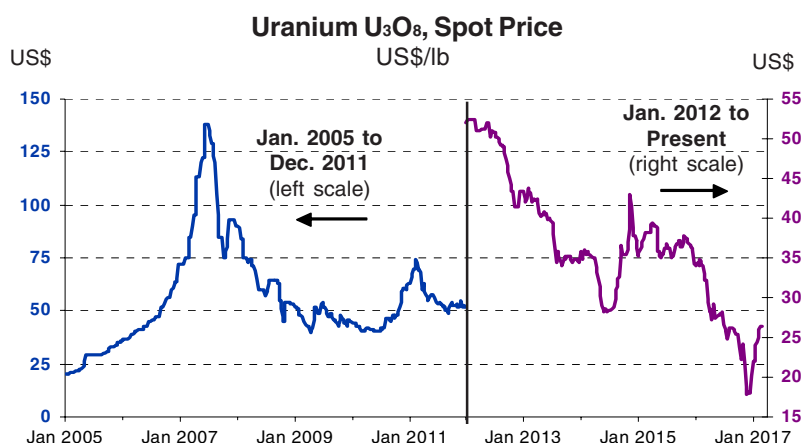
Consensus Price for Q1: US\$ 81.9 e		Australian Steaming Coal Forecasts, US\$/metric tonne, Spot Price								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Investec	86.24	86.24	82.32	82.32	0.6%	77.60	77.60	73.72	73.72	
ANZ	90.00	81.00	78.50	80.00	-2.3%	80.00	77.50	75.00	72.50	
UBS	81.00	70.00	73.00	75.00	-8.4%	71.00	67.00	70.00	72.00	
Capital Economics	87.50	82.50	77.50	72.50	-11.4%	69.00	66.50	64.00	61.50	
Credit Suisse	83.00	68.00	72.00	72.00	-12.0%	70.00	70.00	70.00	70.00	
Macquarie	75.00	72.50	70.00	70.00	-14.5%	65.00	65.00	65.00	65.00	
Euromonitor International	86.59	78.89	73.52	69.57	-15.0%	66.81	64.85	63.22	62.10	
Deutsche Bank	80.50	70.50	64.50	67.25	-17.8%	na	na	na	na	
Wilson HTM	76.00	70.00	70.00	67.00	-18.1%	67.00	67.00	65.00	65.00	
BoA Merrill Lynch	95.00	85.00	75.00	65.00	-20.6%	na	na	na	na	
Commonwealth Bank	77.00	64.00	55.00	65.00	-20.6%	65.00	58.00	52.00	47.00	
Morgan Stanley	85.00	75.00	70.00	65.00	-20.6%	65.00	65.00	65.00	65.00	
RBC Capital Markets	75.00	70.00	70.00	65.00	-20.6%	65.00	65.00	65.00	65.00	
Econ Intelligence Unit	83.00	74.00	66.50	64.50	-21.2%	59.00	59.50	62.00	64.00	
Liberum Capital	67.00	67.00	60.00	60.00	-26.7%	60.00	60.00	60.00	60.00	
Consensus (Mean)	81.86	74.31	70.52	69.34	-15.3%	67.72	66.38	65.38	64.83	
High	95.00	86.24	82.32	82.32		80.00	77.60	75.00	73.72	
Low	67.00	64.00	55.00	60.00		59.00	58.00	52.00	47.00	
Standard Deviation	7.07	6.88	7.04	6.14		6.00	5.98	6.00	6.93	

Consensus Price for Q1: US\$61.51 e		Australian Steaming Coal Forecasts, US\$/metric tonne, Contract Price								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Consensus (Mean)¹	61.51	77.11	76.11	75.56	22.8%	75.75	70.38	69.63	69.50	
High	61.60	88.00	84.00	84.00		83.00	80.00	76.00	76.00	
Low	61.00	65.00	65.00	65.00		65.00	62.00	62.00	61.00	
Standard Deviation	0.23	7.10	6.79	7.52		7.27	5.93	5.48	5.68	

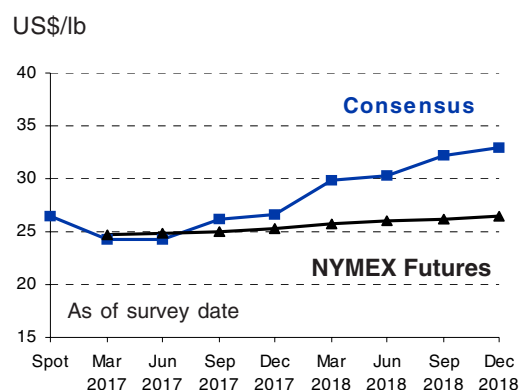
¹ Individual forecasts available in the Excel spreadsheet.



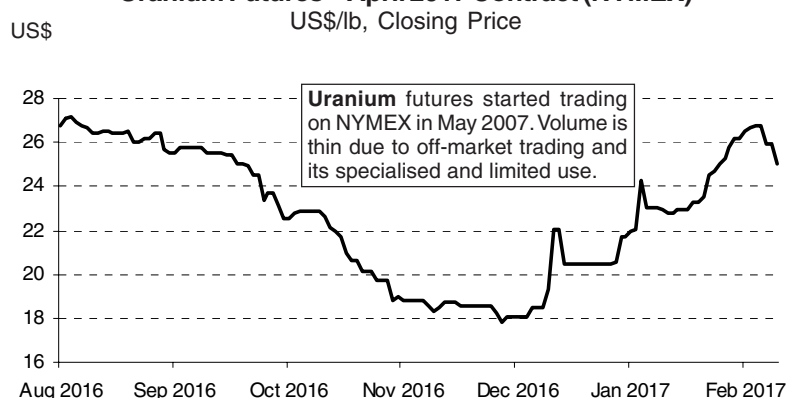
Survey Date Spot (Feb. 20): US\$ 26.50	Uranium U₃O₈ Forecasts, US\$/lb					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Credit Suisse	35.00	35.00	35.00	35.00	32.1%	45.00	45.00	45.00	45.00
Investec	27.00	27.00	30.00	30.00	13.2%	32.00	32.00	36.00	36.00
Liberum Capital	30.00	30.00	30.00	30.00	13.2%	30.00	30.00	30.00	30.00
Commonwealth Bank	22.00	23.00	25.00	27.00	1.9%	29.00	31.00	32.00	32.00
UBS	20.00	20.00	24.00	26.00	-1.9%	28.00	30.00	35.00	40.00
BoA Merrill Lynch	20.00	20.00	25.00	25.00	-5.7%	25.00	25.00	na	na
RBC Capital Markets	25.00	25.00	25.00	25.00	-5.7%	35.00	35.00	35.00	35.00
Macquarie	20.00	20.00	22.00	22.00	-17.0%	24.00	24.00	24.00	24.00
Morgan Stanley	19.00	18.50	19.00	19.00	-28.3%	21.00	21.00	21.00	21.00
Consensus (Mean)	24.22	24.28	26.11	26.56	0.2%	29.89	30.33	32.25	32.88
High	35.00	35.00	35.00	35.00		45.00	45.00	45.00	45.00
Low	19.00	18.50	19.00	19.00		21.00	21.00	21.00	21.00
Standard Deviation	5.52	5.54	4.81	4.72		7.08	7.04	7.48	7.94



Consensus Forecasts v Futures Prices



Uranium Futures – April 2017 Contract (NYMEX)



Nuclear Power Investment at Risk

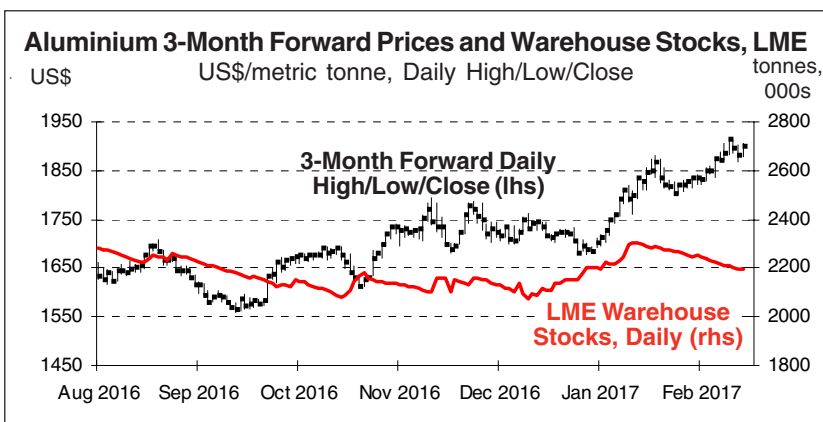
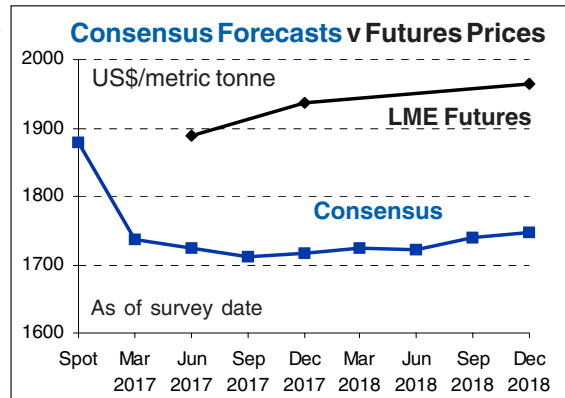
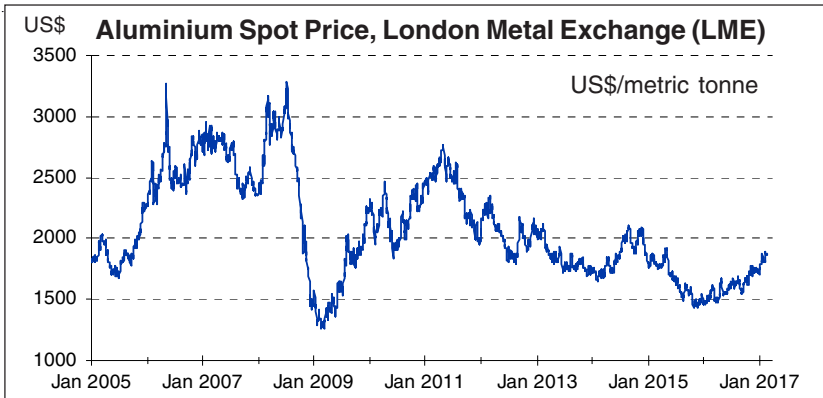
- ◆ Uranium, which slumped to below US\$18.0 in late November 2016, extended its recent price increase into February.
- ◆ US president Donald Trump and his new administration have hinted at more investment into nuclear power. The atomic fuel has also benefited from output cut announcements by Kazakhstan, a major producer.
- ◆ Uranium will struggle to exceed US\$30/lb in 2017 amid uncertainty created by high capital costs and the exit from the construction of nuclear power business by Toshiba, the Japanese multinational conglomerate.

World Nuclear Electricity Production (2010)

Producers (% share of World)	Installed Capacity (Gigawatts)	Nuclear power as a % of total domestic electricity
USA 30.4%	USA 101	France 75.9%
France 15.6%	France 63	Ukraine 47.3%
Japan 10.4%	Japan 49	South Korea 29.9%
Russia 6.2%	Russia 24	Japan 26.0%
S. Korea 5.4%	Germany 20	Germany 22.6%

Uranium futures began trading on NYMEX in May 2007 in an attempt to introduce greater price transparency. Volumes and liquidity are currently very low (see chart above left).
Futures Market: NYMEX Pricing: US\$/lb Contract Size: 250lbs Trading Months: 60 consecutive months. Settlement price: The final settlement price is the spot-month end price published by UxC.

Survey Date Spot Price (Feb. 20): US\$ 1878	Aluminium Forecasts, US\$/metric tonne, fob									
	Nominal, Quarterly Averages					Nominal, Quarterly Averages				
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18	
Moody's Analytics	1778	1832	1868	1906	1.5%	1944	1983	2003	2023	
Macquarie	1800	1700	1650	1850	-1.5%	1900	1750	1650	1620	
Citigroup	1850	1870	1840	1840	-2.0%	1830	1820	1820	1830	
Pezco Economics	1747	1771	1795	1820	-3.1%	1844	1868	1893	1917	
Investec	1764	1764	1808	1808	-3.7%	1830	1830	1874	1874	
Morgan Stanley	1764	1764	1808	1808	-3.7%	1808	1808	1852	1852	
Societe Generale	1725	1750	1725	1800	-4.2%	1750	1750	1750	1750	
ABN Amro	1786	1728	1769	1795	-4.4%	1800	1725	1825	1851	
ICBC Standard Bank	1790	1850	1820	1780	-5.2%	na	na	na	na	
Standard Chartered	1775	1800	1750	1775	-5.5%	1850	1850	1850	1850	
CPM Group	1781	1740	1725	1760	-6.3%	1795	1770	1785	1800	
BIPE	1740	1725	1735	1745	-7.1%	1780	1820	1850	1860	
Euromonitor International	1759	1742	1743	1732	-7.8%	1720	1710	1697	1686	
UBS	1808	1764	1764	1720	-8.4%	1764	1764	1764	1764	
Credit Suisse	1800	1750	1700	1700	-9.5%	1650	1650	1600	1600	
Oxford Economics	1620	1710	1730	1700	-9.5%	1670	1690	1726	1766	
Prometeia	1796	1751	1729	1680	-10.5%	1677	1653	1650	1674	
TD Economics	1653	1653	1676	1676	-10.8%	1720	1720	1720	1720	
Capital Economics	1650	1600	1625	1675	-10.8%	1715	1740	1765	1790	
ANZ	1776	1705	1656	1656	-11.8%	1670	1690	1725	1750	
CIBC	1653	1653	1653	1653	-12.0%	1565	1565	1565	1565	
Scotiabank	1653	1653	1653	1653	-12.0%	1698	1698	1698	1698	
RBC Capital Markets	1653	1653	1653	1653	-12.0%	1764	1764	1764	1764	
Liberum Capital	1763	1763	1653	1653	-12.0%	1543	1543	1543	1543	
BoA Merrill Lynch	1650	1700	1700	1650	-12.1%	1600	1600	na	na	
China Int'l Capital Corp	1749	1710	1667	1650	-12.1%	1660	1680	1723	1763	
Australia Dept of Industry	1640	1643	1646	1650	-12.2%	1669	1689	1710	1730	
Econ Intelligence Unit	1780	1690	1615	1600	-14.8%	1580	1610	1650	1600	
Deutsche Bank	1690	1680	1650	1590	-15.3%	na	na	na	na	
Commonwealth Bank	1676	1631	1543	1543	-17.8%	1499	1499	1543	1543	
Consensus (Mean)	1736	1725	1712	1717	-8.6%	1725	1723	1741	1748	
High	1850	1870	1868	1906		1944	1983	2003	2023	
Low	1620	1600	1543	1543		1499	1499	1543	1543	
Standard Deviation	64	65	76	87		109	106	111	119	



Price Support May Not Last

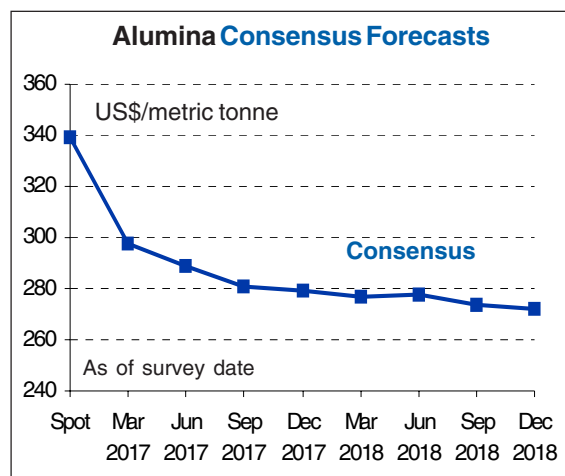
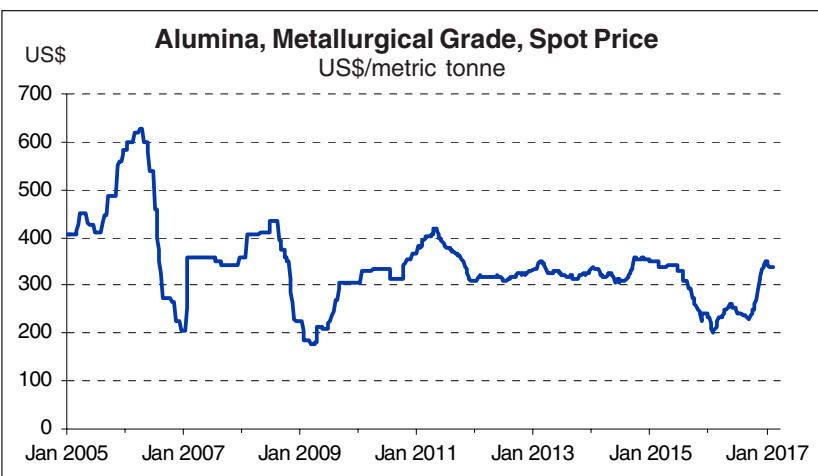
- Recent support has stemmed partly from news that Beijing is considering a tougher stance on tackling smog in highly polluted provinces by enforcing smelter closures between November and March. A decision is likely later this year, but commentators are sceptical as to whether such a plan will materialise. Its impact may be modest, given the expansion of more environmentally-friendly capacity.
- January figures from China suggested that Aluminium output was at record levels and our panel's forecasts suggest that current high prices are unsustainable.

World Aluminium Demand and Supply					Consensus Forecasts	
(in millions of tonnes)						
	2012	2013	2014	2015	2016	2017
World Supply	46.2	48.7	53.2	57.4	58.8	61.6
World Demand	46.0	46.5	54.0	57.1	58.9	60.7
Balance	0.2	2.2	-0.8	0.3	-0.1	0.9

Historical Estimates and Forecasts from Survey of November 2016

Aluminium: Futures Market: LME Pricing: US\$/tonne Contract Size: 25 tonnes Delivery Dates: Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 123 months. **Contracts Traded: 53,073,441 (2016).**

Survey Date Spot Price (Feb. 20): US\$ 339.3	Alumina Forecasts, US\$/metric tonne, fob					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Macquarie	350.0	335.0	325.0	325.0	-4.2%	290.0	290.0	275.0	250.0
China Int'l Capital Corp	336.0	323.3	320.0	310.0	-8.6%	297.0	290.0	285.0	290.0
Morgan Stanley	320.0	320.0	310.0	310.0	-8.6%	300.0	300.0	300.0	300.0
Credit Suisse	310.0	315.0	290.0	290.0	-14.5%	280.0	280.0	260.0	260.0
Investec	282.2	282.2	289.2	289.2	-14.8%	296.4	296.4	307.3	307.3
BoA Merrill Lynch	275.0	275.0	275.0	275.0	-19.0%	310.0	310.0	na	na
UBS	290.0	280.0	275.0	275.0	-19.0%	275.0	290.0	295.0	300.0
ANZ	298.3	283.0	273.1	273.1	-19.5%	275.5	270.3	275.9	270.3
Liberum Capital	282.2	282.2	264.6	264.6	-22.0%	246.9	246.9	246.9	246.9
RBC Capital Markets	260.4	260.4	260.4	260.4	-23.2%	282.2	282.2	282.2	282.2
Capital Economics	305.0	270.0	265.0	260.0	-23.4%	255.0	260.0	260.0	265.0
Commonwealth Bank	320.0	285.0	260.0	250.0	-26.3%	240.0	240.0	240.0	240.0
Australia Dept of Industry	239.6	242.9	246.3	249.8	-26.4%	251.0	252.3	253.6	254.8
Consensus (Mean)	297.6	288.8	281.1	279.4	-17.7%	276.9	277.5	273.4	272.2
High	350.0	335.0	325.0	325.0		310.0	310.0	307.3	307.3
Low	239.6	242.9	246.3	249.8		240.0	240.0	240.0	240.0
Standard Deviation	30.6	26.9	24.4	24.0		22.4	21.9	21.6	23.1

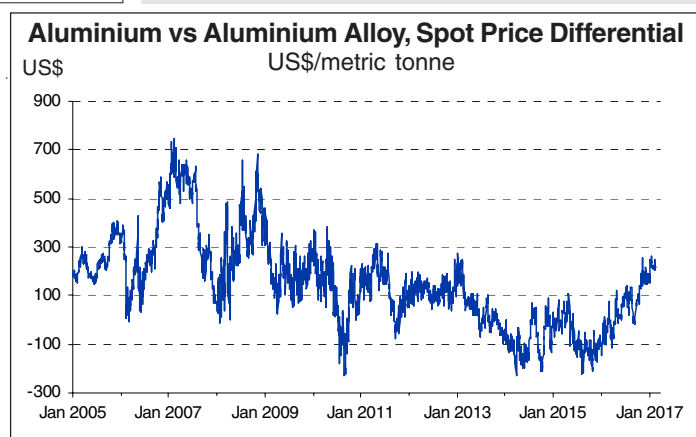
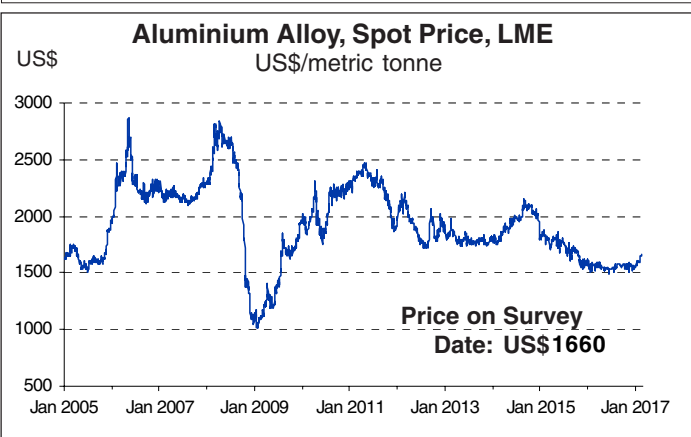


Alumina is derived from bauxite ore and is used to produce primary aluminium at a ratio of two tonnes of alumina per tonne of aluminium. Prices can be linked to the LME primary aluminium price.

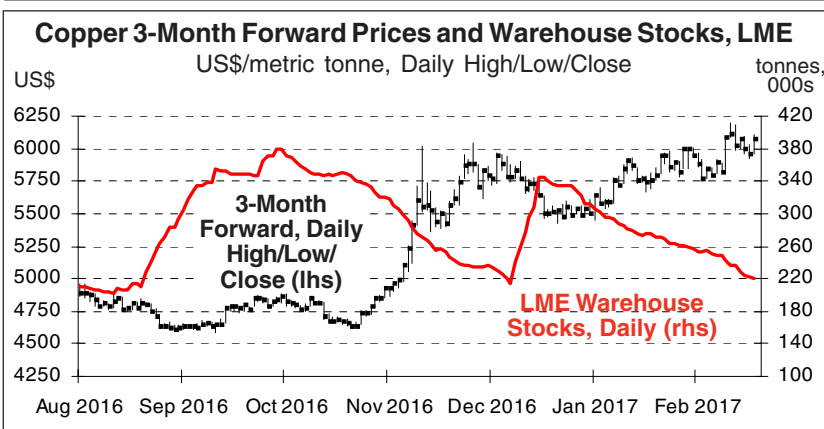
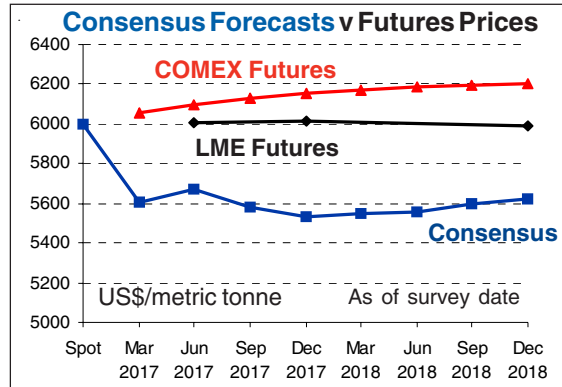
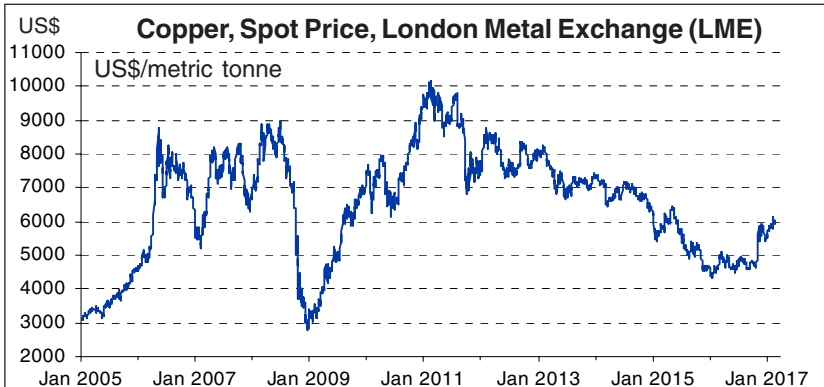
Aluminium Alloy prices provide a reference basis for the secondary aluminium market. **Futures Market:** LME **Pricing:** US\$/tonne **Contract Size:** 20 tonnes **Delivery Dates:** Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 27 months. **Contracts Traded:** 128,006 (2016).

World Production of Alumina
(108.0 million tonnes, 2014)

Producer	% of world total
1. China	44.3%
2. Australia	19.0%
3. Brazil	9.8%
4. India	4.7%



Survey Date Spot Price (Feb. 20): US\$ 6002	Copper, Grade A, Forecasts, US\$/metric tonne, fob					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
UBS	6063	6614	6724	7055	17.5%	7165	7165	7165	7165
ICBC Standard Bank	5875	6150	6025	6250	4.1%	na	na	na	na
Citigroup	5800	5950	6250	6150	2.5%	6200	6400	6500	6600
ANZ	5901	6051	6102	6126	2.1%	6151	6176	6251	6326
China Int'l Capital Corp	6300	6700	6100	6000	0.0%	5600	5750	5800	5800
Standard Chartered	5700	6100	5800	6000	0.0%	6500	6500	6500	6500
ABN Amro	5735	5698	5879	5987	-0.2%	6057	5979	6120	6245
Investec	5842	5842	5952	5952	-0.8%	6063	6063	6173	6173
Australia Dept of Industry	5800	6200	6100	5900	-1.7%	5900	5800	5700	5400
Prometeia	5551	5565	5707	5891	-1.8%	5956	6085	6074	6063
Pezco Economics	5705	5764	5823	5881	-2.0%	5940	5998	6057	6115
Societe Generale	5500	5550	5695	5800	-3.4%	5750	5750	5750	5750
Econ Intelligence Unit	5750	5840	5600	5790	-3.5%	5800	5500	5350	5200
TD Economics	5688	5556	5550	5600	-6.7%	5732	5732	5842	5842
Macquarie	5900	6100	5800	5600	-6.7%	5500	5399	5500	5600
Wilson HTM	5512	5512	5512	5512	-8.2%	5512	5512	5732	5732
Moody's Analytics	5699	5585	5501	5490	-8.5%	5563	5690	5815	5931
CPM Group	5698	5520	5400	5455	-9.1%	5640	5595	5535	5570
Banco de Credito del Peru	5842	5666	5556	5401	-10.0%	5401	5448	5507	5512
CIBC	5357	5357	5357	5357	-10.7%	5115	5115	5115	5115
Morgan Stanley	5512	5291	5291	5291	-11.8%	5291	5401	5291	5512
Scotiabank	5291	5291	5291	5291	-11.8%	5512	5512	5512	5512
RBC Capital Markets	5291	5291	5291	5291	-11.8%	5842	5842	5842	5842
Oxford Economics	4772	5277	5400	5250	-12.5%	5150	5125	5230	5399
Capital Economics	5510	5400	5225	5075	-15.4%	5050	5200	5350	5450
Credit Suisse	5520	5520	5520	5060	-15.7%	4640	4640	4420	4420
Deutsche Bank	5600	5300	5200	5000	-16.7%	na	na	na	na
BoA Merrill Lynch	5150	6000	5500	4750	-20.9%	5000	5000	na	na
Euromonitor International	5532	5110	4817	4584	-23.6%	4422	4309	4211	4143
Liberum Capital	5069	5069	4408	4408	-26.6%	4408	4408	4408	4408
Commonwealth Bank	5291	4960	4519	4299	-28.4%	4079	3968	3968	4079
Consensus (Mean)	5605	5672	5577	5532	-7.8%	5550	5554	5597	5622
High	6300	6700	6724	7055		7165	7165	7165	7165
Low	4772	4960	4408	4299		4079	3968	3968	4079
Standard Deviation	306	425	480	584		656	678	715	722



Solid Start to 2017

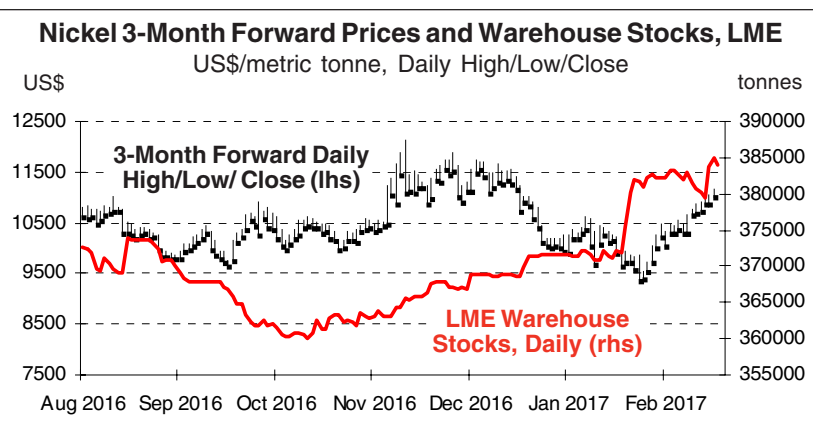
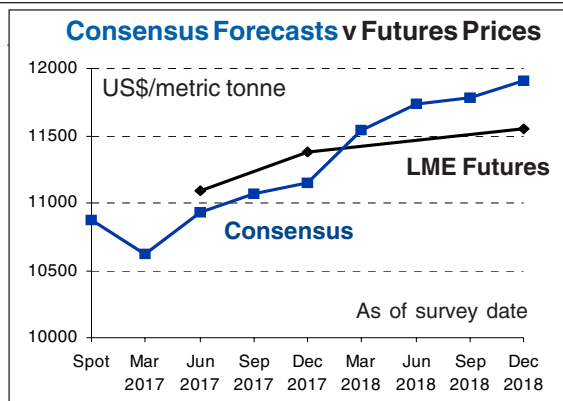
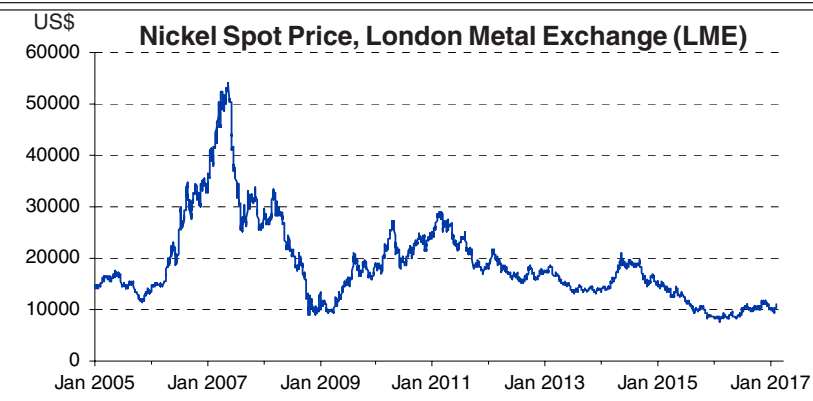
- Prices rose above US\$6000 per tonne in mid-February due to strike action at the world's largest copper mine Escondida, Chile. In addition, output has been scaled back at the large Grasberg mine in Indonesia amid export restrictions and a contractual dispute with the government.
- China's copper imports dropped by around 14% (y-o-y) in January, while recent estimates from the International Copper Study Group show that the market remains oversupplied. Soft demand, along with profit taking, may limit scope for further gains in price.

World Copper Demand and Supply (in millions of tonnes)					Consensus Forecasts	
	2012	2013	2014	2015	2016	2017
World Supply	20.2	21.1	22.5	22.9	23.1	23.5
World Demand	20.5	21.4	22.9	23.0	23.2	23.5
Balance	-0.3	-0.3	-0.4	-0.1	-0.1	0.0

Historical Estimates and Forecasts from Survey of November 2016

Copper: Futures Market: LME Pricing: US\$/tonne
Contract Size: 25 tonnes Delivery Dates: Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 123 months. **Contracts Traded:** 36,947,881 (2016). **US Futures Market: COMEX Pricing:** USc/lb **Lot Size:** 25,000lbs **Deliverability:** 24 consecutive months.

Survey Date Spot Price (Feb. 20): US\$ 10875	Nickel Forecasts, US\$/metric tonne, fob					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
ANZ	11353	11553	12702	13503	24.2%	13753	14253	14503	14253
UBS	11243	12125	12787	13228	21.6%	13228	13779	13779	14330
Pezco Economics	11400	11979	12559	13138	20.8%	13718	14298	14877	15457
BoA Merrill Lynch	11000	12500	12500	13000	19.5%	13500	13500	na	na
Societe Generale	11000	12000	12000	13000	19.5%	13000	13000	13000	13000
Econ Intelligence Unit	10614	11868	12566	12970	19.3%	13007	12493	11355	10289
Credit Suisse	11025	11025	12125	12125	11.5%	13225	13225	13225	13225
Prometeia	10203	11288	12295	12043	10.7%	12321	12180	12100	12208
BIPE	10900	11300	11800	12000	10.3%	12100	12400	12500	12600
Morgan Stanley	11464	11795	11574	11795	8.5%	11464	12346	13228	13889
Scotiabank	11464	11464	11464	11464	5.4%	11023	11023	11023	11023
Capital Economics	10230	10750	11125	11375	4.6%	11750	12175	12375	12450
Australia Dept of Industry	10800	10950	11150	11300	3.9%	11550	11800	12000	12250
ABN Amro	10123	9969	10560	11146	2.5%	11874	11657	12168	12899
RBC Capital Markets	11023	11023	11023	11023	1.4%	13228	13228	13228	13228
Deutsche Bank	12500	12000	11500	11000	1.1%	na	na	na	na
CPM Group	10026	11270	11150	10955	0.7%	12000	12250	11950	11500
Oxford Economics	10264	10787	11250	10724	-1.4%	11029	11409	11823	12282
Citigroup	10520	10550	10500	10530	-3.2%	10800	11000	10700	11300
TD Economics	11250	11018	10472	10472	-3.7%	11023	11023	11574	11574
Investec	10251	10251	10472	10472	-3.7%	10803	10803	11243	11243
China Int'l Capital Corp	10112	10582	10362	10288	-5.4%	9737	10031	9480	10362
ICBC Standard Bank	9750	11000	10300	10150	-6.7%	na	na	na	na
Wilson HTM	9921	9921	9921	10141	-6.7%	10582	12125	12125	12125
CIBC	10031	10031	10031	10031	-7.8%	10229	10229	10229	10229
Liberum Capital	9918	9918	9918	9918	-8.8%	9918	9918	11020	11020
Euromonitor International	9994	9917	9850	9784	-10.0%	9793	9840	9894	9927
Macquarie	10249	9751	9751	9500	-12.6%	11001	11001	11001	11001
Commonwealth Bank	10472	9921	9480	9039	-16.9%	8818	9039	9259	9480
Standard Chartered	9500	9350	8750	8500	-21.8%	8500	8500	8500	8500
Consensus (Mean)	10620	10929	11065	11154	2.6%	11535	11733	11784	11913
High	12500	12500	12787	13503		13753	14298	14877	15457
Low	9500	9350	8750	8500		8500	8500	8500	8500
Standard Deviation	669	840	1083	1315		1466	1507	1543	1611



Philippine Mine Disruption Intensifies

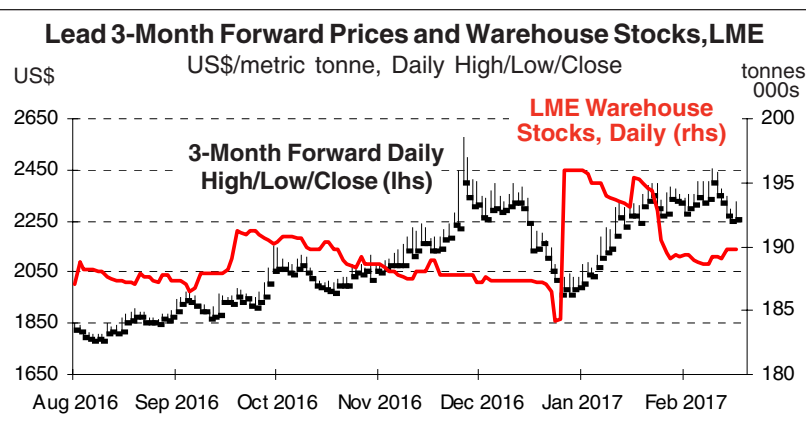
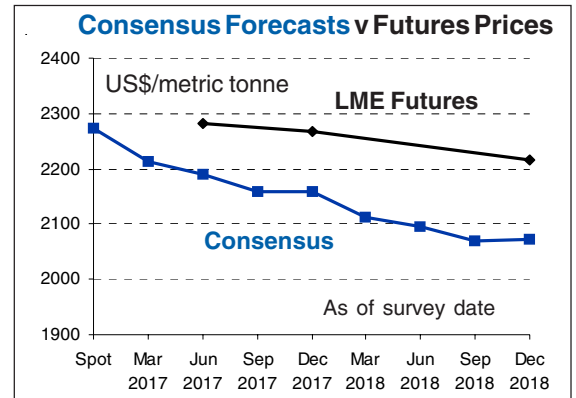
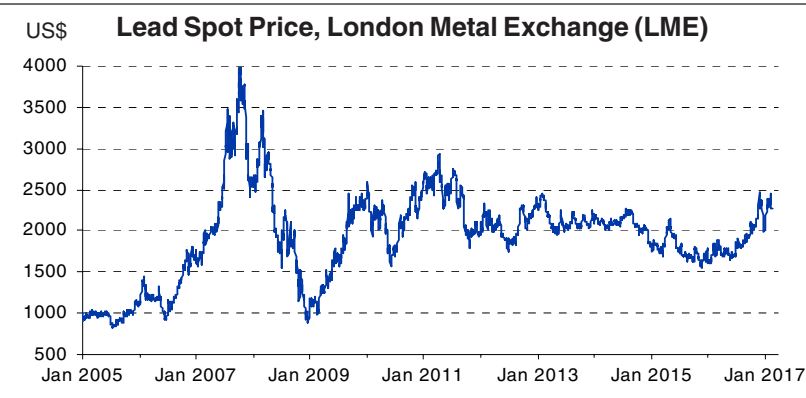
- ◆ The environment secretary in the Philippines has ordered 23 of the country's 41 mines to shut as part of a national crackdown on pollution. In addition, the cancellation of undeveloped mine contracts has added to fears of supply disruptions in the world's largest exporter of nickel ore.
- ◆ Many mines remain active as a result of legal appeals against the ruling. The resumption of some ore exports in Indonesia could limit the near-term impact on supply.
- ◆ The consensus expects Nickel prices to edge higher across much of our forecast horizon.

World Nickel Demand and Supply (in thousands of tonnes)				Consensus Forecasts		
	2012	2013	2014	2015	2016	2017
World Supply	1760	1963	1994	1917 e	1895	1915
World Demand	1668	1785	1869	1940 e	1945	1932
Balance	92.0	178.2	125.1	-23.0	-50.0	-17.0

Historical Estimates and Forecasts from Survey of November 2016

Nickel prices are closely related to demand from stainless steel producers who account for about two-thirds of total demand. **Futures Market:** LME **Pricing:** US\$/tonne **Contract Size:** 6 tonnes **Delivery Dates:** Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 63 months. **Contracts Traded:** 19,947,714 (2016).

Survey Date Spot Price (Feb. 20): US\$ 2275	Lead Forecasts, US\$/metric tonne, fob					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
ICBC Standard Bank	2400	2500	2680	2800	23.1%	na	na	na	na
Citigroup	2350	2550	2650	2600	14.3%	2500	2520	2520	2580
Macquarie	2299	2401	2500	2599	14.3%	2650	2650	2449	2350
Standard Chartered	2175	2350	2400	2475	8.8%	2300	2300	2300	2300
Investec	2315	2315	2315	2315	1.8%	2381	2381	2381	2381
China Int'l Capital Corp	2208	2250	2200	2300	1.1%	2450	2400	2350	2400
Societe Generale	2300	2200	2100	2300	1.1%	2300	2300	2300	2300
Econ Intelligence Unit	2200	2100	2170	2280	0.2%	2250	2200	2000	2000
CPM Group	2203	2190	2200	2250	-1.1%	2280	2265	2275	2305
UBS	2205	2205	2205	2205	-3.1%	2094	2094	2094	2094
RBC Capital Markets	2195	2195	2195	2195	-3.5%	2216	2216	2216	2216
ANZ	2251	2175	2163	2188	-3.8%	2046	1896	1926	1963
Prometeia	2241	2135	2170	2117	-7.0%	2109	2083	2097	2139
Pezco Economics	2207	2172	2137	2102	-7.6%	2067	2032	1997	1962
Deutsche Bank	2400	2300	2300	2100	-7.7%	na	na	na	na
Banco de Credito del Peru	2271	2195	2145	2094	-7.9%	2122	2116	2134	2162
Wilson HTM	2094	2094	1984	2028	-10.8%	2094	2205	2315	2315
BoA Merrill Lynch	2300	2000	2150	2000	-12.1%	2129	2129	na	na
Morgan Stanley	2094	2094	1984	1984	-12.8%	2028	2028	2028	2028
Liberum Capital	2160	2160	1984	1984	-12.8%	1873	1873	1873	1873
Credit Suisse	2320	2200	1980	1980	-13.0%	1900	1900	1900	1900
Oxford Economics	1873	2138	1964	1977	-13.1%	1991	2005	2009	2013
Capital Economics	2000	1950	1850	1750	-23.1%	1675	1625	1575	1525
Euromonitor International	2158	1956	1801	1680	-26.2%	1589	1521	1463	1419
Commonwealth Bank	2094	1918	1764	1653	-27.3%	1543	1433	1345	1345
Consensus (Mean)	2213	2190	2160	2158	-5.1%	2113	2094	2070	2071
High	2400	2550	2680	2800		2650	2650	2520	2580
Low	1873	1918	1764	1653		1543	1433	1345	1345
Standard Deviation	121	156	231	276		276	298	309	320



Downward Pressure on Prices

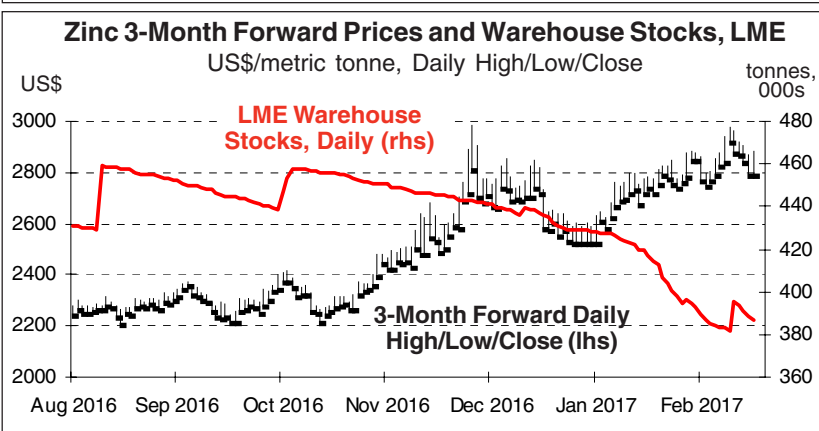
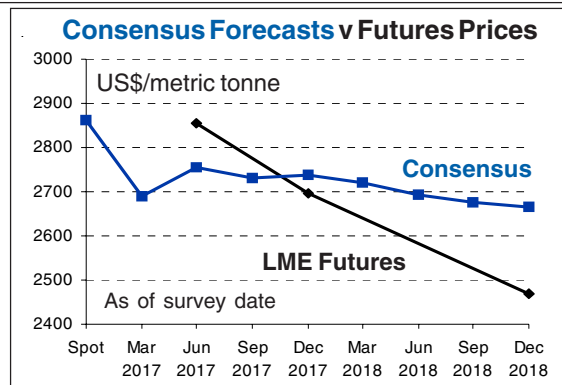
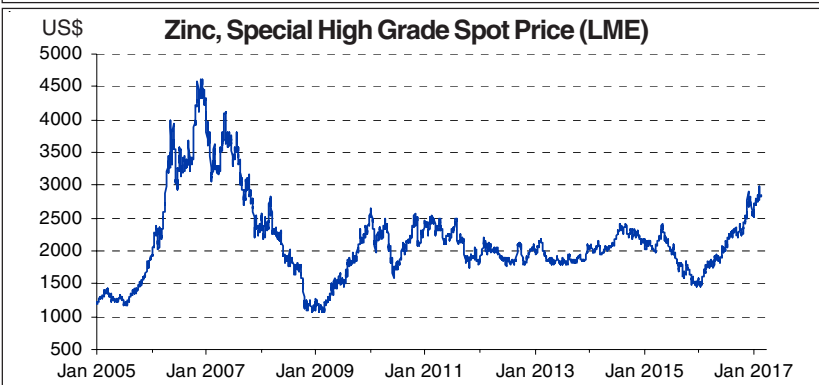
- ◆ The base metal's sharp upturn filtered somewhat in the run up to our survey date, and the consensus expects this reversal to continue during 2017. Lead has risen by 14.6% since end-2016 (in similar fashion to the other base metals), but its recent price fluctuations suggest that it is vulnerable to decline.
- ◆ According to an initial estimate from the International Lead and Zinc Study Group, demand for lead climbed by 2% in 2016. Refined production also increased, keeping the market in mild surplus.

World Lead Demand and Supply (in millions of tonnes)					Consensus Forecasts	
	2012	2013	2014	2015	2016	2017
World Supply	10.6	11.2	11.0	10.6	11.5	11.6
World Demand	10.6	11.2	10.9	10.6	11.4	11.5
Balance	0.0	0.0	0.1	0.0	0.1	0.1

Historical Estimates and Forecasts from Survey of November 2016

The price of **Lead**, which is used mainly for batteries, can be related to that of zinc as the metals are co-produced. **Futures Market:** LME Pricing: US\$/tonne **Contract Size:** 25 tonnes **Delivery Dates:** Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 63 months. **Contracts Traded:** 10,571,590 (2016).

Survey Date Spot Price (Feb. 20): US\$ 2861	Zinc, Special High Grade, Forecasts, US\$/MT, fob					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
China Int'l Capital Corp	2702	3000	3500	3700	29.3%	3850	3900	3900	3850
ICBC Standard Bank	2850	3000	3250	3400	18.9%	na	na	na	na
Citigroup	2850	3050	3200	3150	10.1%	3100	2950	3000	3050
Standard Chartered	2720	2980	3000	3100	8.4%	3000	3000	3000	3000
Macquarie	2740	2851	2950	3100	8.4%	3201	3201	3100	2899
Liberum Capital	2865	2865	3086	3086	7.9%	3086	3086	2865	2865
Moody's Analytics	2743	2853	2938	2997	4.8%	3057	3088	3119	3150
Scotiabank	2976	2976	2976	2976	4.0%	3417	3417	3417	3417
UBS	2756	3307	3307	2976	4.0%	2866	2756	2756	2646
TD Economics	2750	2750	2800	2950	3.1%	3000	3042	3086	3086
ABN Amro	2756	2687	2795	2841	-0.7%	2900	2837	2879	2985
Banco de Credito del Peru	2756	2808	2860	2822	-1.3%	2756	2768	2781	2719
Investec	2756	2756	2811	2811	-1.7%	2866	2866	2921	2921
Societe Generale	2500	2600	2470	2800	-2.1%	2800	2800	2800	2800
RBC Capital Markets	2756	2756	2756	2756	-3.7%	2976	2976	2976	2976
BoA Merrill Lynch	2500	2950	2650	2750	-3.9%	2750	2750	na	na
CPM Group	2678	2640	2650	2675	-6.5%	2705	2685	2700	2725
BIPE	2720	2680	2660	2670	-6.7%	2550	2570	2580	2610
Pezco Economics	2670	2667	2664	2662	-6.9%	2659	2656	2654	2651
Morgan Stanley	2646	2976	2646	2646	-7.5%	2425	2315	2315	2315
Prometeia	2862	2741	2636	2643	-7.6%	2642	2499	2274	2232
CIBC	2624	2624	2624	2624	-8.3%	2513	2513	2513	2513
Deutsche Bank	2800	3200	2700	2600	-9.1%	na	na	na	na
ANZ	2775	2676	2601	2576	-9.9%	2576	2576	2525	2500
Econ Intelligence Unit	2800	2700	2580	2500	-12.6%	2600	2550	2450	2475
Capital Economics	2580	2575	2525	2475	-13.5%	2440	2390	2315	2240
Credit Suisse	2760	2540	2420	2420	-15.4%	2320	2320	2320	2320
Oxford Economics	2252	2514	2400	2350	-17.8%	2260	2276	2287	2299
Wilson HTM	2425	2425	2425	2315	-19.1%	2315	2205	2205	2205
Euromonitor International	2635	2454	2320	2213	-22.6%	2137	2082	2034	1998
Australia Dept of Industry	2300	2200	2050	2000	-30.1%	1930	1960	1995	2030
Commonwealth Bank	2535	2315	2094	1984	-30.6%	1874	1808	1808	1852
Consensus (Mean)	2689	2754	2729	2736	-4.3%	2719	2695	2675	2666
High	2976	3307	3500	3700		3850	3900	3900	3850
Low	2252	2200	2050	1984		1874	1808	1808	1852
Standard Deviation	160	244	328	368		423	439	452	447



Solid Outlook

- ◆ Zinc's revival continues to be supported by broad indications of tightening supply. Big mine closures and mothballed capacity have sent Zinc to its highest price levels since 2007 (see chart above, left).
- ◆ Less availability of mined concentrates is set to curb refined zinc output. Korea Zinc recently announced production cuts this year because of raw material shortage and low treatment charges. Inventories at the LME (left chart) are also sliding.
- ◆ The consensus estimates that Zinc prices will average US\$2727 per tonne in 2017.

World Zinc Demand and Supply (in millions of tonnes)	Consensus Forecasts					
	2012	2013	2014	2015	2016	2017
World Supply	12.6	13.0	13.5	13.9	14.0	14.5
World Demand	12.4	13.2	13.7	13.7	14.1	14.4
Balance	0.2	-0.2	-0.2	0.2	-0.1	0.1

Historical Estimates and Forecasts from Survey of November 2016

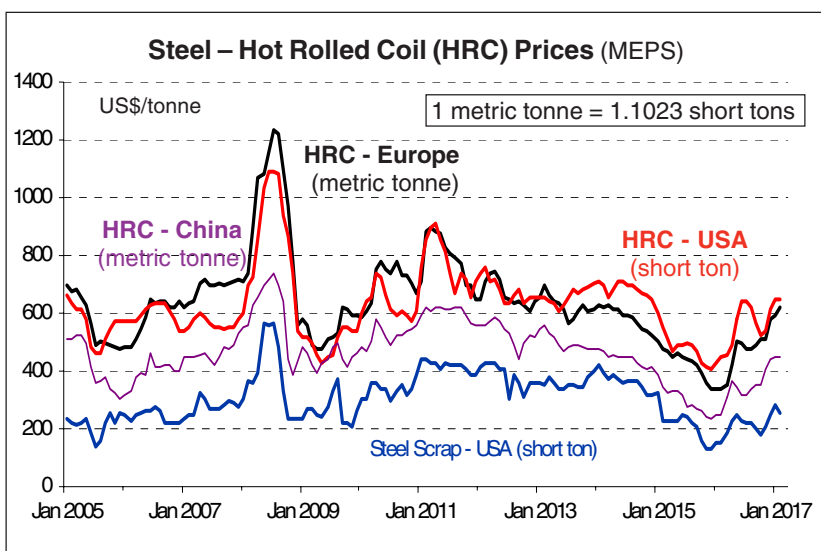
Zinc's primary use is in galvanising steel. **Futures Market:** LME Pricing: US\$/tonne **Contract Size:** 25 tonnes (+/- 2%) **Delivery Dates:** Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 63 months. **Contracts Traded:** 26,942,407 (2016).

Survey Date Spot Price (Feb. 20): US\$ 618.0 e		Hot Rolled Coil (Europe, Domestic) Forecasts, US\$/metric tonne, fob							
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Oxford Economics	475.0	530.7	580.0	535.6	-13.3%	483.1	451.8	435.2	437.8
MEPS	610.0	620.0	560.0	505.0	-18.3%	530.0	550.0	530.0	510.0
Societe Generale	572.0	550.0	528.0	484.0	-21.7%	446.0	446.0	446.0	446.0
Macquarie	575.0	525.0	495.0	475.0	-23.1%	465.0	465.0	435.0	435.0
Morgan Stanley	505.6	471.1	434.6	430.9	-30.3%	443.9	436.5	414.0	409.6
Econ Intelligence Unit	595.0	591.7	490.0	420.0	-32.0%	418.3	436.7	410.0	436.7
Consensus (Mean)	555.4	548.1	514.6	475.1	-23.1%	464.4	464.3	445.0	445.8
High	610.0	620.0	580.0	535.6		530.0	550.0	530.0	510.0
Low	475.0	471.1	434.6	420.0		418.3	436.5	410.0	409.6
Standard Deviation	53.2	52.6	52.8	43.9		38.8	43.3	43.8	33.8

Survey Date Spot Price (Feb. 20): US\$ 648.6 e		Hot Rolled Coil (USA, Domestic) Forecasts, US\$/short ton, fob							
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Consensus (Mean) ¹	614.2	597.7	590.6	574.9	-11.4%	574.2	570.2	559.0	550.5
High	672.6	689.4	703.2	710.2		724.4	735.3	742.6	746.4
Low	540.6	504.6	468.5	450.5		441.5	441.5	432.5	432.5
Standard Deviation	46.6	73.9	76.3	88.2		91.7	97.3	104.1	107.4

Survey Date Spot Price (Feb. 20): US\$ 448.0 e		Hot Rolled Coil (China, Domestic) Forecasts, US\$/metric tonne, fob							
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
Consensus (Mean) ¹	440.2	452.2	437.3	404.4	-9.7%	389.4	393.0	382.3	388.4
High	465.0	488.8	519.2	460.0		450.0	470.0	460.0	490.0
Low	411.0	415.0	380.0	360.0		350.0	337.0	334.0	338.6
Standard Deviation	24.4	30.8	58.7	41.4		47.7	61.6	58.7	71.1

¹ Individual forecasts available in the Excel spreadsheet.



Outlook Tied to Chinese Consumption

- ◆ Sharp increases in the cost of raw material ingredients have kept the global price of HRC Steel at a high level (chart left). Support also comes from growth in China, which at 6.8% (y-o-y) in Q4 2016 has proven to be more resilient than first thought (page 3).
- ◆ The bullish price trend may extend further into 2017, alongside strength across the base metal complex and upturn in the US and European business cycles. The cost of coking coal (page 10) and iron ore (next page 19) has peaked, though, which could exert downward pressure on the price of Steel.
- ◆ Global over capacity will not be resolved soon, but near term Steel demand may improve due to increases in US and Chinese infrastructure investment.

Steel Production and Consumption (2013)

Producers	% of world total	Consumers	% of world total
1. China	48.2	1. China	46.0
2. Japan	6.9	2. United States	6.5
3. United States	5.4	3. India	5.0
4. India	5.0	4. Japan	4.4
EU	10.4	EU	9.6

Steel Prices are generally set in contracts between major producers and their clients. However, the London Metal Exchange offers a number of steel billet contracts for delivery to locations across Europe, Asia and North America. While there are many varieties of steel, Hot Rolled Coil (HRC) is a commonly referenced price, but regional complexities prevent the emergence of a clear benchmark at present.

Consensus Price for Q1: US\$69.55 e		North China Fines Iron Ore Forecasts, US\$/dry metric tonne, cfr								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Pezco Economics	78.54	80.50	82.11	82.93	19.2%	84.59	85.86	86.72	87.15	
ABN Amro	75.00	72.00	72.00	76.00	9.3%	78.00	75.00	81.00	84.00	
CIBC	73.00	73.00	73.00	73.00	5.0%	67.00	67.00	67.00	67.00	
Euromonitor International	78.38	74.16	72.30	70.74	1.7%	69.71	69.09	68.44	68.15	
Investec	75.00	75.00	68.00	68.00	-2.2%	67.00	67.00	66.00	66.00	
ANZ	73.00	71.00	65.00	63.00	-9.4%	63.50	62.50	59.00	59.00	
RBC Capital Markets	75.00	70.00	65.00	60.00	-13.7%	65.00	65.00	65.00	65.00	
BoA Merrill Lynch	65.00	60.00	60.00	55.00	-20.9%	55.00	55.00	na	na	
Morgan Stanley	60.00	60.00	55.00	55.00	-20.9%	60.00	60.00	55.00	55.00	
Citigroup	77.00	70.00	58.00	53.00	-23.8%	51.00	48.00	46.00	45.00	
Capital Economics	74.44	65.00	55.00	50.00	-28.1%	50.00	50.00	51.00	53.50	
Liberum Capital	65.00	65.00	50.00	50.00	-28.1%	45.00	45.00	40.00	40.00	
Macquarie	60.00	55.00	50.00	50.00	-28.1%	50.00	47.00	47.00	45.00	
UBS	60.00	59.00	55.00	50.00	-28.1%	53.00	53.00	52.00	49.00	
Commonwealth Bank	63.00	55.00	50.00	48.00	-31.0%	45.00	45.00	45.00	45.00	
Deutsche Bank	65.00	60.00	52.00	48.00	-31.0%	na	na	na	na	
Credit Suisse	65.00	60.00	50.00	45.00	-35.3%	55.00	60.00	50.00	45.00	
Consensus (Mean)	69.55	66.16	60.73	58.69	-15.6%	59.92	59.65	58.61	58.25	
High	78.54	80.50	82.11	82.93		84.59	85.86	86.72	87.15	
Low	60.00	55.00	50.00	45.00		45.00	45.00	40.00	40.00	
Standard Deviation	6.85	7.65	10.00	11.52		11.51	11.66	13.54	14.47	

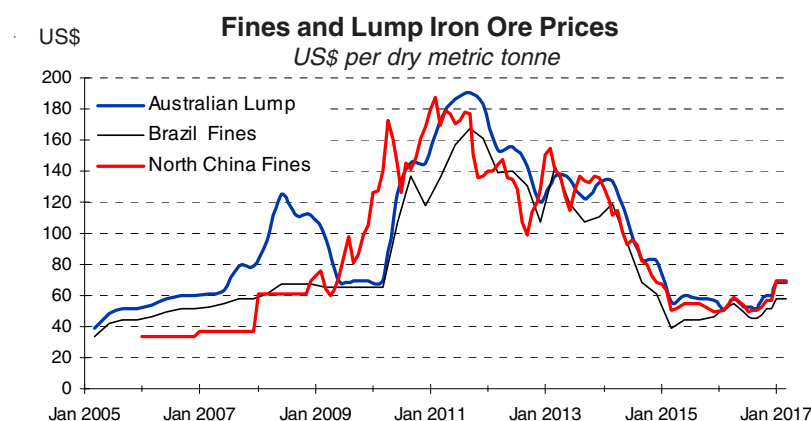
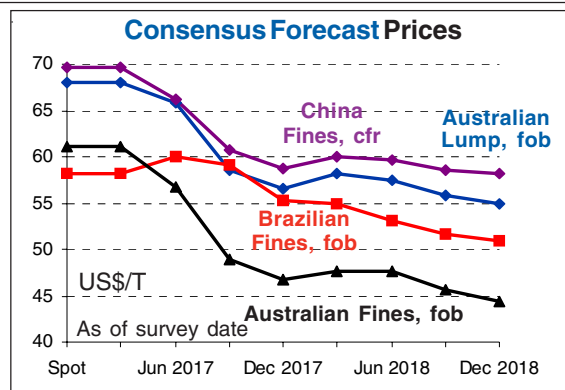
Consensus Price for Q1: US\$ 61.1 e		Australian Fines Iron Ore Forecasts, US\$/dry metric tonne, fob								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Consensus (Mean)¹	61.11	56.67	48.84	46.73	-23.5%	47.64	47.67	45.56	44.33	
High	80.00	69.00	62.00	62.00		60.80	60.80	59.60	59.60	
Low	54.00	48.90	43.00	38.00		34.00	34.00	34.00	34.00	
Standard Deviation	8.66	6.92	6.46	7.09		8.62	9.17	8.47	9.13	

Q1: US\$ 67.9 e		Australian Lump Iron Ore Forecasts, US\$/dry metric tonne, fob								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Consensus (Mean)¹	67.93	65.90	58.61	56.52	-16.8%	58.23	57.45	55.83	54.90	
High	78.00	78.00	70.16	70.16		70.18	70.18	68.84	68.84	
Low	63.30	57.60	49.00	49.00		39.00	39.00	39.00	39.00	
Standard Deviation	6.23	6.86	7.84	7.54		11.37	11.83	10.57	11.00	

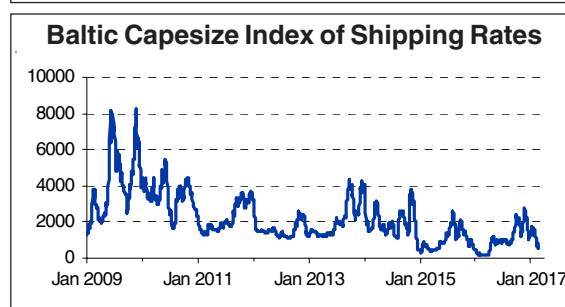
Consensus Price for Q1: US\$58.22 e		Brazilian Fines Iron Ore Forecasts, US\$/dry metric tonne, fob								
	Mar '17	Jun '17	Sep '17	Dec '17	% change from Q1	Mar '18	Jun '18	Sep '18	Dec '18	
Consensus (Mean)¹	58.22	60.05	59.12	55.23	-5.1%	54.87	53.11	51.56	50.89	
High	66.76	70.67	75.36	70.49		71.90	72.98	73.71	74.08	
Low	48.00	48.00	43.00	43.00		47.14	42.67	41.00	39.79	
Standard Deviation	7.72	11.20	15.85	12.57		11.59	13.52	15.11	15.95	

¹ Individual forecasts available in the Excel spreadsheet service.

Until April 2014, Iron ore was traded in world markets under contracts, with prices set by negotiation between iron ore producers and steel manufacturers. Three suppliers, Vale, Rio Tinto and BHP Billiton account for most ocean trade in iron ore, in which China remains by far the largest consumer. Fines are the most heavily traded category, while lump has generally traded at a premium price. The annual benchmark price system has been dropped in favour of quarterly prices based on prior average daily spot prices.



Annual contract prices prior to April 2010



Forecasts for the metals shown on this and the next page were provided by the following leading forecasters:

ANZ	ABN Amro	Bank of America – Merrill Lynch
Barclays Capital	BNP Paribas	Capital Economics
Citigroup	Commonwealth Bank	CPM International
China International Capital Corp.	Credit Suisse	Deutsche Bank
Euromonitor	Economist Intelligence Unit	HWWI
IHS Markit	ING Bank	Investec
JP Morgan	Liberum Capital	Macquarie
Morgan Stanley	Numis Securities	Oxford Economics
Pezco Economics	Prometeia	SG Commodity Research
UBS	Wilson HTM	

Individual panellist forecasts for these minerals are available as part of our Excel spreadsheet service. Please enquire at editors@consensuseconomics.com.

TIN

(Nominal, Quarterly Averages)

US\$/metric tonne	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	19735			
Mar 2017	20650	4.6%	22000	18584
Jun 2017	21067	6.8%	23001	18268
Sep 2017	20555	4.2%	22500	17062
Dec 2017	20294	2.8%	23000	16128
Mar 2018	20367	3.2%	24000	15448
Jun 2018	20326	3.0%	24000	14942
Sep 2018	20200	2.4%	24000	14500
Dec 2018	20208	2.4%	24000	14170



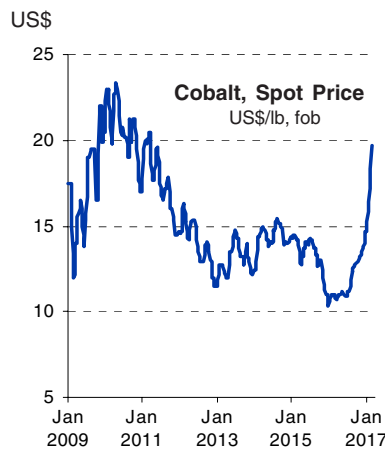
Tin has its physical spot market centred in Kuala Lumpur with the LME recognised as the principal hedging market.

Futures Market: LME Pricing: US\$/tonne **Contract Size:** 5 tonnes (+/- 2%) **Delivery Options:** Daily for cash to 3 month contracts, Wednesdays for 3 month to 6 month contracts; then every third Wednesday for 7 months out to 15 months. **Contracts Traded:** 1,353,350 (2016).

COBALT

(Nominal, Quarterly Averages)

US\$/lb	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	19.73			
Mar 2017	14.07	-28.7%	15.00	13.00
Jun 2017	14.21	-27.9%	15.20	13.00
Sep 2017	14.17	-28.2%	15.54	13.00
Dec 2017	14.24	-27.8%	15.76	13.00
Mar 2018	13.82	-29.9%	15.65	13.00
Jun 2018	13.76	-30.3%	15.20	13.00
Sep 2018	13.57	-31.2%	14.86	13.00
Dec 2018	13.53	-31.4%	14.63	13.00



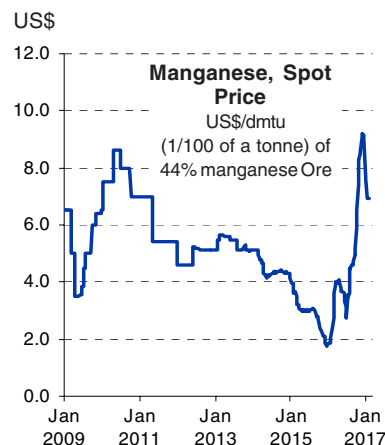
Cobalt is principally used as a super alloying agent because of its anti-corrosive properties. It is commonly a by-product of nickel and used in the production of alloys, catalysts and batteries. Recent high demand has come from electric car makers. The LME launched futures contracts in cobalt in February 2010.

Futures Market: LME Pricing: US\$/tonne **Contract Size:** 1 tonne **Delivery Options:** 1 tonne lots in 100-500kg drums of uniform size and weight.

MANGANESE

(Nominal, Quarterly Averages)

US\$/metric tonne unit	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	6.920			
Mar 2017	7.314	5.7%	9.000	5.682
Jun 2017	6.569	-5.1%	8.000	5.455
Sep 2017	5.459	-21.1%	7.000	4.545
Dec 2017	4.959	-28.3%	6.000	3.750
Mar 2018	4.327	-37.5%	5.300	3.500
Jun 2018	4.287	-38.0%	5.300	3.500
Sep 2018	4.027	-41.8%	5.000	3.500
Dec 2018	4.027	-41.8%	5.000	3.500



Manganese is not exchange-traded so prices are established by negotiation between buyers and sellers. Negotiations occur in line with the beginning of the Japanese fiscal year in April. Following the setting of prices with Japanese manufacturing companies, similar settlement prices are set worldwide.

The price is based upon a benchmark ore of 44% manganese content, Cif, Tianjin, China.

MOLYBDENUM

(Nominal, Quarterly Averages)

US\$/lb	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	7.550			
Mar 2017	6.994	-7.4%	7.500	6.471
Jun 2017	7.032	-6.9%	7.500	6.471
Sep 2017	6.969	-7.7%	7.500	6.400
Dec 2017	6.894	-8.7%	7.500	6.300
Mar 2018	7.027	-6.9%	7.500	6.471
Jun 2018	7.098	-6.0%	7.500	6.471
Sep 2018	7.334	-2.9%	7.800	7.000
Dec 2018	7.251	-4.0%	7.800	7.000



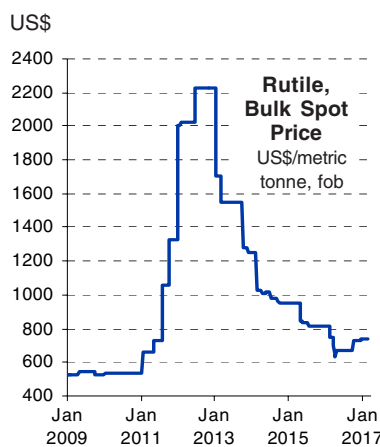
Molybdenum is principally used as an alloying agent in steel because of its anti-corrosive properties. As a by-product of copper, production costs are low and prices can be influenced by the price and demand for nickel and stainless steel, as well as molybdenum roasting capacity.

Futures Market: LME (since February 2010) **Pricing:** US\$/tonne **Contract Size:** 6 tonnes Mo (+/-5% (Mo content 57-63%) **Delivery Options:** 10 tonnes (RMC), deliverable in 200 or 250kg drums.

RUTILE

(Nominal, Quarterly Averages)

US\$/metric tonne	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	740.0 e			
Mar 2017	770.7	4.2%	900.0	700.0
Jun 2017	780.0	5.4%	900.0	675.0
Sep 2017	800.7	8.2%	900.0	650.0
Dec 2017	800.7	8.2%	900.0	650.0
Mar 2018	843.6	14.0%	1000	675.0
Jun 2018	850.0	14.9%	1000	700.0
Sep 2018	853.6	15.3%	1000	725.0
Dec 2018	857.1	15.8%	1000	730.0



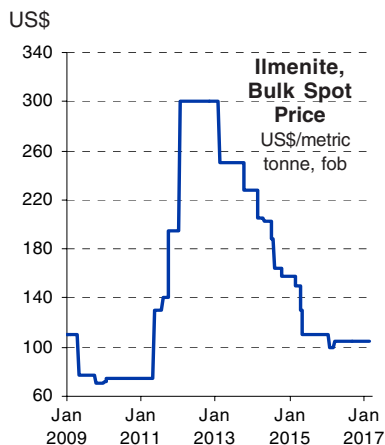
Mineral sand prices are principally determined by derived demand. Rutile is used to make titanium dioxide (it is approximately 95% TiO₂ in its mineral form), which can be used to make titanium or as a white pigment in papers, plastics and paints and cosmetics.

Prices are set under long-term contracts between producers (many of which will produce from mine to end use) and consumers.

ILMENITE

(Nominal, Quarterly Averages)

US\$/metric tonne	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	105.0e			
Mar 2017	107.5	2.4%	140.0	90.0
Jun 2017	107.5	2.4%	140.0	90.0
Sep 2017	111.7	6.3%	140.0	90.0
Dec 2017	110.8	5.6%	140.0	90.0
Mar 2018	120.0	14.3%	150.0	95.0
Jun 2018	120.8	15.1%	150.0	95.0
Sep 2018	120.8	15.1%	150.0	95.0
Dec 2018	121.7	15.9%	150.0	95.0



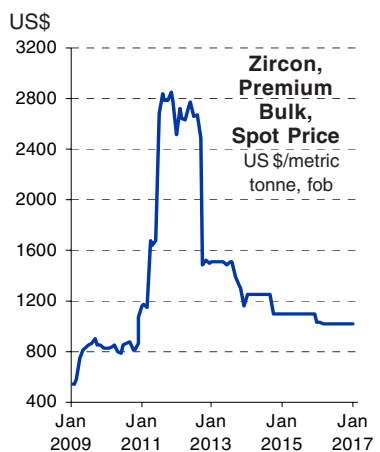
Ilmenite is mined alongside rutile and is also used to make titanium dioxide (it is approximately 54% TiO₂ in its mineral form). Prices are set under long-term contracts. The value of ilmenite is substantially lower than that of rutile and is therefore often used to produce synthetic rutile. 90% of titanium metal is sourced from ilmenite.

Australia is the world's largest producer (55%) of ilmenite and rutile followed by South Africa (24%) and Ukraine (16%).

ZIRCON

(Nominal, Quarterly Averages)

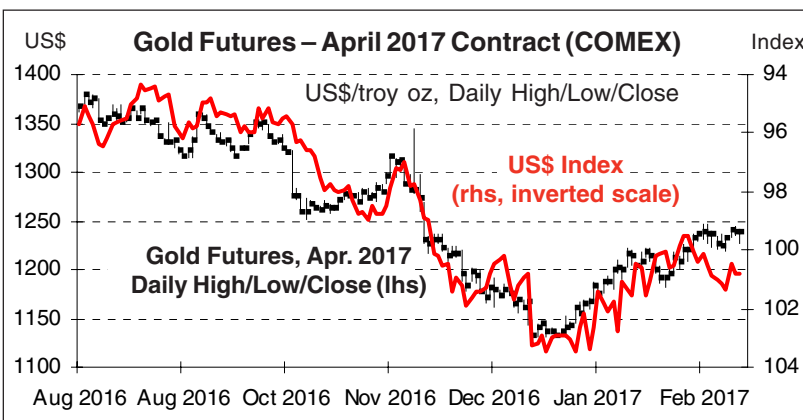
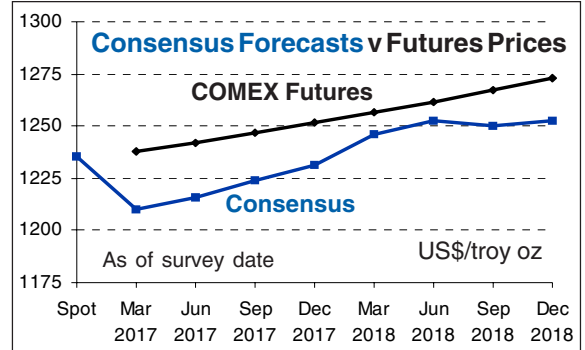
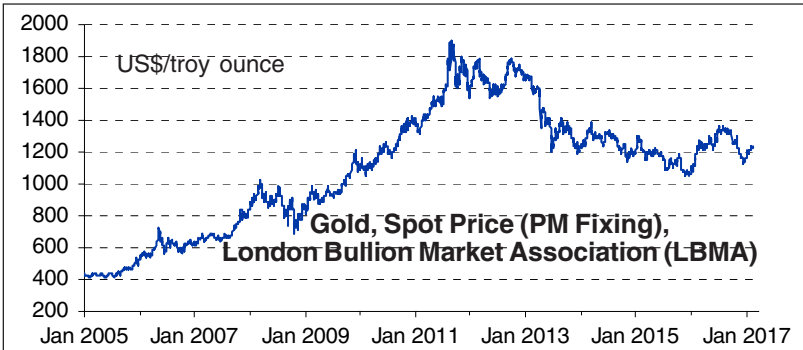
US\$/metric tonne	Consensus (Mean)	% change from spot	Forecast Range	
			High	Low
Spot price	1025 e			
Mar 2017	942.1	-8.1%	1100	850.0
Jun 2017	949.3	-7.4%	1100	850.0
Sep 2017	962.9	-6.1%	1100	825.0
Dec 2017	970.0	-5.4%	1100	800.0
Mar 2018	1032	0.7%	1250	800.0
Jun 2018	1036	1.0%	1250	825.0
Sep 2018	1050	2.4%	1250	850.0
Dec 2018	1057	3.1%	1250	900.0



The price of Zircon (which is mainly used in ceramics and tiles) is set under long-term contracts between producers and consumers. It has risen sharply in recent years following the move from spot-trading to contract-trading.

Iluka is the world's largest zircon miner and as a result the most influential in setting a benchmark price. Its Eucla basin in Australia is mined principally for zircon unlike the majority of other mines, for which zircon is a coproduct of rutile and ilmenite.

Survey Date Spot Price (Feb. 20): US\$ 1236	Gold Forecasts, US\$/Troy Ounce					Nominal, Quarterly Averages			
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
UBS	1300	1300	1375	1425	15.3%	1450	1450	1450	1450
BoA Merrill Lynch	1250	1200	1250	1400	13.3%	1400	1350	na	na
Credit Suisse	1275	1350	1325	1400	13.3%	1375	1375	1375	1375
Macquarie	1115	1125	1275	1350	9.3%	1375	1400	1375	1350
Societe Generale	1275	1295	1300	1325	7.2%	1275	1275	1275	1275
Econ Intelligence Unit	1220	1250	1290	1300	5.2%	1320	1340	1300	1280
RBC Capital Markets	1300	1300	1300	1300	5.2%	1300	1300	1300	1300
TD Economics	1225	1250	1275	1275	3.2%	1300	1300	1325	1325
Investec	1235	1235	1265	1265	2.4%	1280	1280	1300	1300
CPM Group	1216	1229	1241	1263	2.2%	1288	1285	1304	1317
Australia Dept of Industry	1130	1170	1240	1260	2.0%	1220	1190	1170	1140
Morgan Stanley	1210	1225	1260	1250	1.2%	1250	1250	1250	1250
Oxford Economics	1335	1219	1200	1250	1.2%	1255	1260	1265	1265
Wilson HTM	1200	1250	1250	1250	1.2%	1200	1200	1200	1200
ANZ	1173	1230	1235	1233	-0.3%	1253	1300	1350	1388
Deutsche Bank	1200	1150	1220	1230	-0.5%	na	na	na	na
Banco de Credito del Peru	1220	1225	1225	1220	-1.3%	1220	1230	1240	1269
ICBC Standard Bank	1170	1140	1170	1220	-1.3%	1280	1320	na	na
Pezco Economics	1173	1184	1196	1214	-1.7%	1232	1251	1270	1289
CIBC	1200	1200	1200	1200	-2.9%	1250	1250	1250	1250
Commonwealth Bank	1190	1175	1175	1200	-2.9%	1210	1220	1225	1232
Liberum Capital	1200	1200	1200	1200	-2.9%	1200	1200	1200	1200
Scotiabank	1200	1200	1200	1200	-2.9%	1200	1200	1200	1200
BNP Paribas	1210	1255	1215	1160	-6.1%	1175	1120	1105	1005
Citigroup	1215	1190	1150	1160	-6.1%	1200	1220	1250	1300
Standard Chartered	1180	1260	1250	1160	-6.1%	1320	1300	1275	1300
Moody's Analytics	1187	1173	1158	1135	-8.2%	1136	1160	1201	1259
Euromonitor International	1180	1147	1123	1105	-10.6%	1093	1086	1079	1075
ABN Amro	1160	1125	1100	1100	-11.0%	1125	1175	1225	1275
Capital Economics	1170	1180	1130	1070	-13.4%	1070	1105	1145	1180
China Int'l Capital Corp	1200	1250	1150	1050	-15.0%	1130	1190	1100	1020
Consensus (Mean)	1210	1216	1224	1231	-0.4%	1246	1253	1250	1252
High	1335	1350	1375	1425		1450	1450	1450	1450
Low	1115	1125	1100	1050		1070	1086	1079	1005
Standard Deviation	48.4	54.3	62.7	92.0		89.3	85.0	86.2	101.3



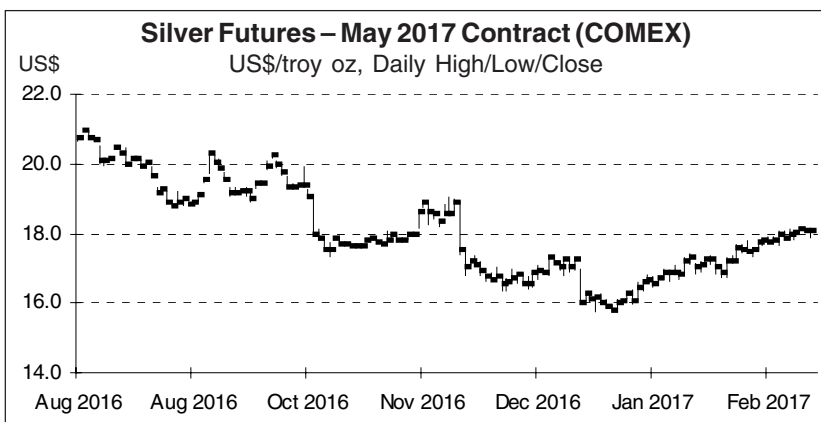
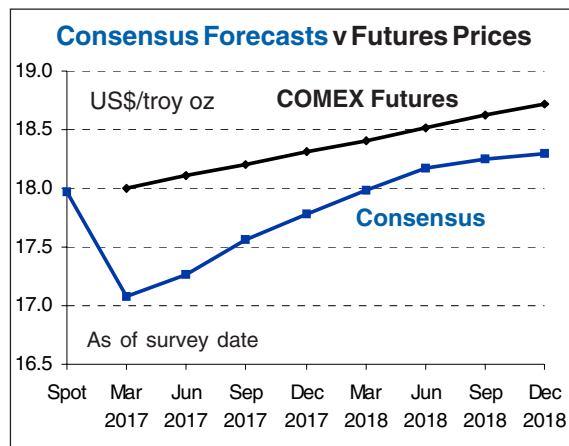
Political Uncertainty Pushes Up Prices

- Prices have benefited from controversy stemming from US president Donald Trump's pursuit of an immigration ban from seven muslim countries and the affirmation by French presidential candidate Marine Le Pen that she will seek to pull the nation out of the EU and NATO if elected in late April/early May.
- Gold may suffer more volatility in 2017 due to a stronger US dollar as a result of monetary tightening by the Federal Reserve and risk aversion amid uncertainty caused by the start of Brexit negotiations.

Gold Supply and Demand (2015)					
Production	tonnes	% of world	Consumption	tonnes	% of world
1 China	490	16.3%	1. China	985	28.7%
2 Australia	300	10.0%	2. India	849	24.8%
3 Russia	242	8.1%	3. USA	193	5.6%
4 USA	200	6.7%	4. Germany	124	3.6%
5 Canada	150	5.0%	5. Thailand	90	2.6%
World	3000		World	3427	

Gold prices are fixed twice daily by the LBMA providing a benchmark price for trades on various exchanges and over-the-counter trades.
US Futures Market: COMEX Pricing: US\$/troy ounce
Contract Size: 100 troy ounces **Deliverability:** Next 3 calendar months; any February, April, August and October within 23 months; and any June and December within 72 months. **Contracts Traded:** 57,564,840 (2016).

Survey Date Spot Price (Feb. 20): US\$ 17.97	Silver Forecasts, US\$/Troy Ounce									
	Nominal, Quarterly Averages					Nominal, Quarterly Averages				
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18	
Macquarie	16.75	17.00	19.00	20.50	14.1%	21.00	21.50	21.50	21.00	
BoA Merrill Lynch	17.86	17.14	17.86	20.00	11.3%	20.71	20.71	na	na	
Societe Generale	18.00	19.00	19.00	20.00	11.3%	19.00	19.00	19.00	19.00	
UBS	17.90	17.90	19.00	19.70	9.6%	20.00	20.00	20.00	20.00	
Wilson HTM	17.50	17.50	19.50	19.50	8.5%	19.50	19.75	19.75	19.75	
Banco de Credito del Peru	17.30	17.90	18.70	19.30	7.4%	18.70	18.70	18.70	18.70	
RBC Capital Markets	19.25	19.25	19.25	19.25	7.1%	19.25	19.25	19.25	19.25	
Credit Suisse	16.90	18.10	17.70	18.60	3.5%	18.50	18.50	18.50	18.50	
ICBC Standard Bank	16.60	16.25	17.25	18.30	1.8%	17.40	18.40	na	na	
CPM Group	17.29	17.75	17.95	18.25	1.6%	18.80	18.60	18.75	18.95	
Investec	17.52	17.52	18.07	18.07	0.6%	18.29	18.29	18.84	18.84	
TD Economics	16.75	17.00	17.75	17.75	-1.2%	18.75	18.75	19.50	19.50	
Morgan Stanley	16.50	17.20	17.80	17.60	-2.1%	17.60	17.60	17.60	17.60	
Deutsche Bank	17.40	16.80	17.10	17.50	-2.6%	na	na	na	na	
Pezco Economics	16.51	16.67	16.84	17.09	-4.9%	17.52	17.96	18.41	18.87	
Commonwealth Bank	17.00	16.90	16.90	17.00	-5.4%	17.20	17.40	17.60	17.80	
Liberum Capital	17.00	17.00	17.00	17.00	-5.4%	17.00	17.00	17.00	17.00	
CIBC	16.90	16.90	16.90	16.90	-6.0%	18.10	18.10	18.10	18.10	
ANZ	16.06	16.85	16.92	16.88	-6.1%	17.16	17.81	18.49	19.01	
BNP Paribas	17.25	18.05	17.45	16.40	-8.7%	16.55	15.70	15.30	13.65	
Citigroup	17.00	16.00	15.50	15.80	-12.1%	16.00	16.50	16.80	17.00	
Standard Chartered	16.10	17.70	17.20	15.40	-14.3%	16.00	16.00	16.00	16.00	
Capital Economics	16.42	16.45	15.75	15.13	-15.8%	15.10	15.80	16.50	17.18	
ABN Amro	16.30	15.50	15.00	15.00	-16.5%	15.50	16.50	17.50	18.50	
Consensus (Mean)	17.09	17.26	17.56	17.79	-1.0%	17.98	18.17	18.24	18.30	
High	19.25	19.25	19.50	20.50		21.00	21.50	21.50	21.00	
Low	16.06	15.50	15.00	15.00		15.10	15.70	15.30	13.65	
Standard Deviation	0.71	0.87	1.17	1.61		1.58	1.52	1.45	1.57	



Prices Surge by 4.6%

- ◆ Prices have climbed steadily over the past few weeks, rising by 4.6% since our January survey to stand at just under US\$18/troy ounce.
- ◆ The ratio between silver and gold prices remains below 1:70, significantly lower than at this time last year. Silver has continued to outperform gold so far in 2017.
- ◆ Surges in the price of lead and zinc (pages 16-17) may raise investment and improve the supply of the precious metal as more than 30% of annual silver output is produced at lead and zinc mines.

World Production and Uses of Silver (2015)			
Producer	Millions of Ounces	Use	% of total demand
1. Mexico	189.5	1. Industrial Fabrication	50.3
2. Peru	135.9	2. Coins & Bars	25.0
3. China	109.1	3. Jewellery	19.4
4. Russia	50.5	4. Silverware	5.4
5. Australia	50.3	5. Photography	4.0

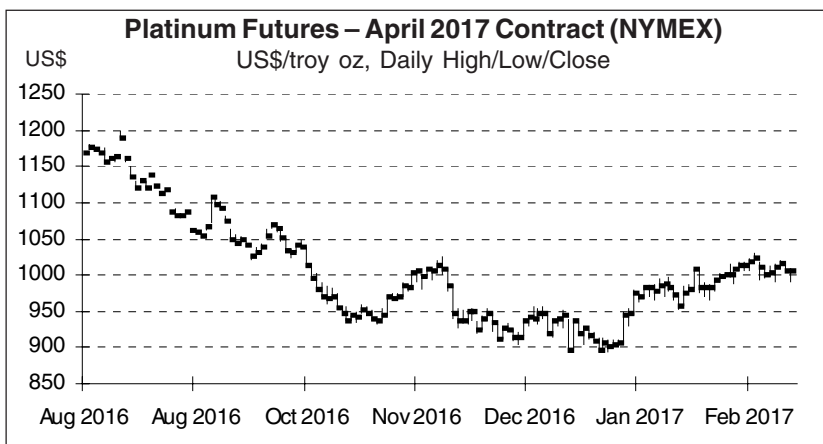
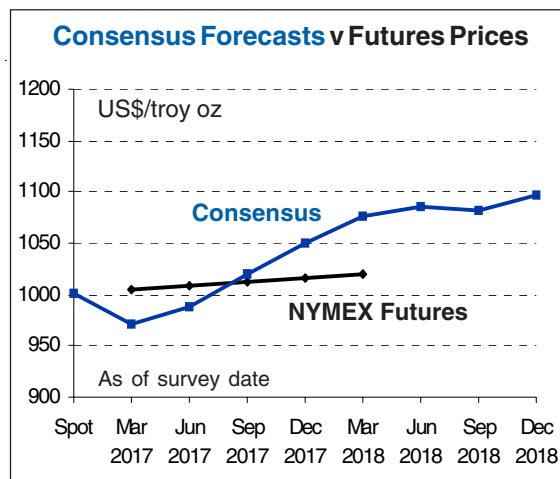
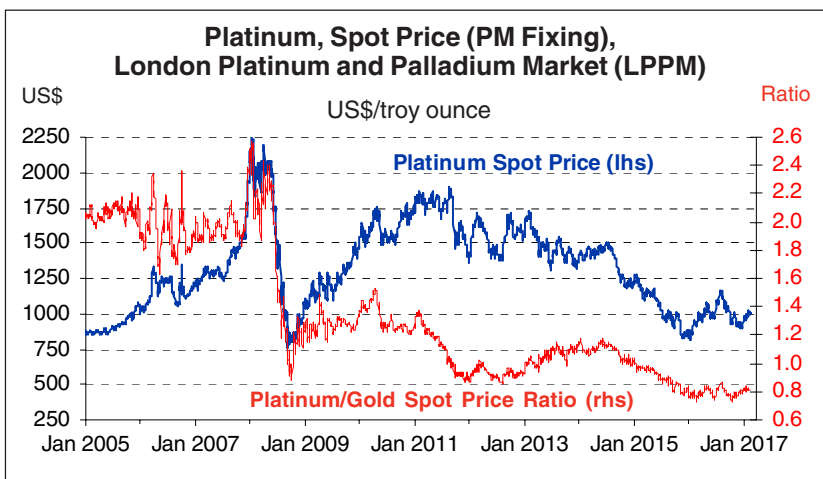
Silver, like gold, has a price set by members of the LBMA which is used as a benchmark for over-the-counter trades.

US Futures Market: COMEX Pricing: US\$/troy ounce
Contract Size: 5,000 troy ounces **Deliverability:** Next 3 calendar months; any January, March, May and September within 23 months; and any July and December within 60 months. **Contracts Traded:** 18,218,740 (2016).

Survey Date Spot Price
(Feb. 20): US\$1000.9

Platinum Forecasts, US\$/Troy Ounce

	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18
BoA Merrill Lynch	950	1000	1050	1200	19.9%	1225	1225	na	na
ICBC Standard Bank	1025	1075	1100	1140	13.9%	1150	1180	na	na
UBS	1000	1000	1100	1140	13.9%	1140	1140	1150	1170
ANZ	940	975	1050	1125	12.4%	1125	1075	1025	1050
Commonwealth Bank	1015	1020	1038	1078	7.7%	1105	1132	1156	1181
Macquarie	950	975	1025	1075	7.4%	1125	1175	1200	1250
RBC Capital Markets	950	1025	1050	1075	7.4%	1150	1150	1150	1150
Societe Generale	1000	1025	1050	1075	7.4%	1050	1050	1050	1050
Liberum Capital	1000	1000	1050	1050	4.9%	1100	1100	1150	1150
Citigroup	950	970	1000	1025	2.4%	1050	1080	1095	1100
Deutsche Bank	1025	1000	980	1020	1.9%	na	na	na	na
Investec	982	982	1012	1012	1.1%	1024	1024	1040	1040
Morgan Stanley	952	969	986	1004	0.3%	1022	1040	1059	1078
Standard Chartered	960	1000	1075	995	-0.6%	1050	1050	1050	1050
CPM Group	983	970	960	990	-1.1%	1005	995	990	1010
Capital Economics	915	940	960	985	-1.6%	1015	1040	1065	1090
ABN Amro	925	863	850	850	-15.1%	875	925	963	988
Consensus (Mean)	972	988	1020	1049	4.8%	1076	1086	1082	1097
High	1025	1075	1100	1200		1225	1225	1200	1250
Low	915	863	850	850		875	925	963	988
Standard Deviation	34.5	44.3	61.2	80.2		81.8	77.6	70.1	74.0



Strikes Cause Sharp Decrease in Supply

- ◆ Platinum has risen by 10.2% since end-2016 to stand at just above US\$1,000/troy ounce.
- ◆ Labour market disputes in South Africa continue to cloud the outlook for platinum supply. A recent report by leading producer Lonmin displayed a 20% decline in company output in Q4 due to regular strike action taken by employees.
- ◆ A downturn in Chinese jewellery purchases due to slower growth in China could negatively impact demand. Jewellery is believed to have accounted for around 30% of total gross demand in 2016.

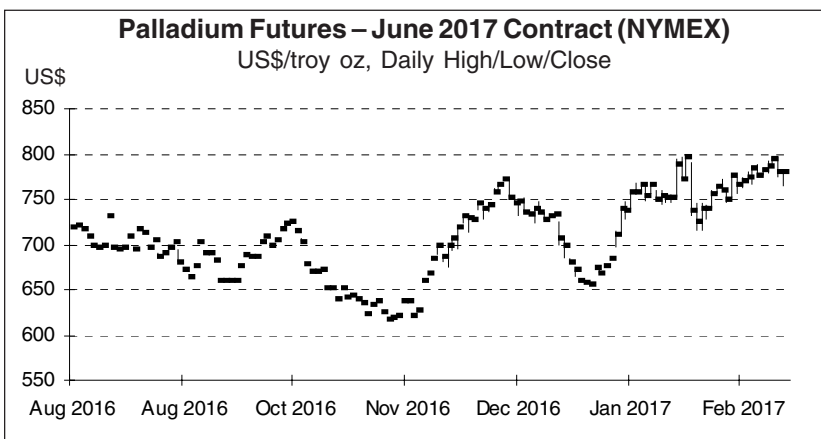
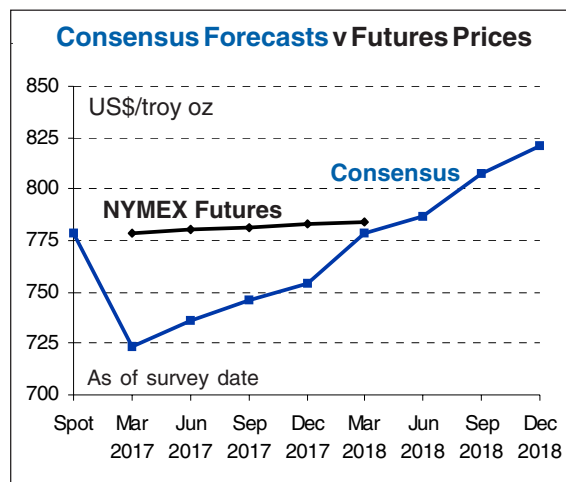
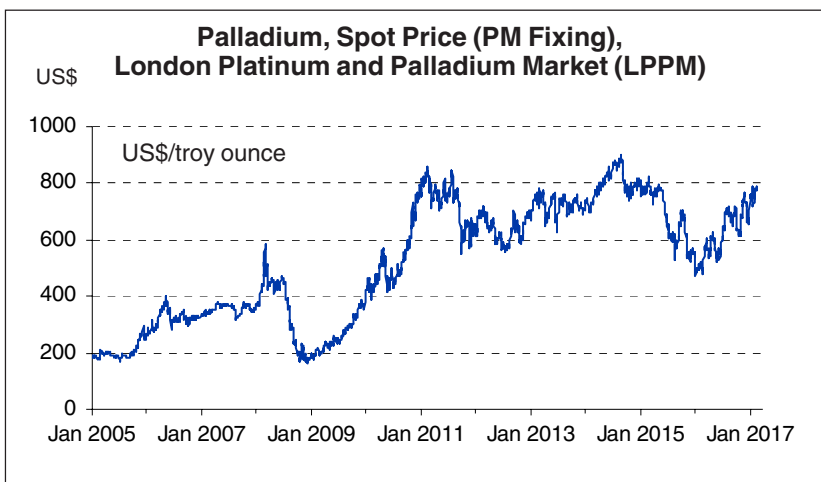
Platinum Production and Consumption (2015)

Production	% of world total	Consumption	% of world total
1. South Africa	70.2	1. China	30.2
2. Russia	12.9	2. Western Europe	27.7
3. North America	7.1	3. Japan	12.5
4. Zimbabwe	7.0	4. North America	11.6
Rest of the World	2.7	Rest of the World	18.0

Platinum prices are fixed twice daily by the LPPM to provide a benchmark price in a practice similar to that used for gold and silver.

US Futures Market: NYMEX Pricing: US\$/troy ounce **Lot Size:** 50 troy ounces **Deliverability:** Over 15 months including the next 3 calendar months; then a January, April, June and October cycle. **Contracts Traded:** 3,994,072 (2016)

Survey Date Spot Price (Feb. 20): US\$ 778.8	Palladium Forecasts, US\$/Troy Ounce									
	Mar '17	Jun '17	Sep '17	Dec '17	% change from spot	Mar '18	Jun '18	Sep '18	Dec '18	
UBS	750.0	775.0	825.0	850.0	9.1%	850.0	850.0	875.0	925.0	
Morgan Stanley	759.8	779.5	799.7	820.6	5.4%	856.2	894.0	934.0	967.8	
ANZ	725.0	775.0	800.0	800.0	2.7%	800.0	800.0	800.0	800.0	
RBC Capital Markets	735.0	750.0	775.0	800.0	2.7%	825.0	825.0	825.0	825.0	
Capital Economics	705.0	750.0	770.0	790.0	1.4%	815.0	840.0	865.0	890.0	
Societe Generale	725.0	750.0	750.0	775.0	-0.5%	775.0	775.0	775.0	775.0	
Investec	744.0	744.0	767.0	767.0	-1.5%	776.0	776.0	782.0	782.0	
ICBC Standard Bank	770.0	785.0	745.0	760.0	-2.4%	730.0	730.0	na	na	
BoA Merrill Lynch	675.0	700.0	750.0	750.0	-3.7%	760.0	760.0	na	na	
Citigroup	750.0	730.0	740.0	750.0	-3.7%	780.0	800.0	820.0	850.0	
CPM Group	744.0	725.0	735.0	750.0	-3.7%	780.0	760.0	775.0	790.0	
Standard Chartered	690.0	720.0	750.0	730.0	-6.3%	750.0	750.0	750.0	750.0	
ABN Amro	725.0	725.0	725.0	725.0	-6.9%	738.0	750.0	750.0	750.0	
Liberum Capital	670.9	670.9	704.5	704.5	-9.5%	738.0	738.0	771.6	771.6	
Deutsche Bank	700.0	750.0	680.0	650.0	-16.5%	na	na	na	na	
Macquarie	700.0	650.0	625.0	650.0	-16.5%	700.0	750.0	775.0	800.0	
Consensus (Mean)	723.0	736.2	746.3	754.5	-3.1%	778.2	786.5	807.5	821.3	
High	770.0	785.0	825.0	850.0		856.2	894.0	934.0	967.8	
Low	670.9	650.0	625.0	650.0		700.0	730.0	750.0	750.0	
Standard Deviation	30.1	38.0	48.5	55.0		44.8	47.4	54.9	68.3	



Outlook Dependent on Auto Demand

- Prices have risen by 4.5% since our last survey to near two-year highs.
- It is hoped that an investment-driven economic recovery in the US and China will underpin car sales in these two countries and auto catalytic converter demand for Palladium. Chinese GDP growth edged up slightly in Q4 whilst the US economy is set to accelerate this year after a lacklustre 2016.
- Growth in Chinese vehicle sales moderated to 0.2% (y-o-y) in January due to the repeal of a tax cut on small-vehicle engines and the effect of the lunar new year holidays.

Palladium Production and Consumption (2015)			
Production	% of world total	Consumption	% of world total
1. South Africa	39.5	1. North America	27.0
2. Russia	38.4	2. China	22.0
3. North America	13.8	3. Europe	21.3
4. Zimbabwe	5.3	4. Japan	9.5
Rest of the World 3.1		Rest of the World 20.2	

Palladium prices are fixed twice daily by the LPPM to provide a benchmark price in a practice used for other precious metals. Most palladium is used in catalytic converters. **US Futures Market: NYMEX Pricing:** US\$/troy ounce **Lot Size:** 100 troy ounces **Deliverability:** Over 15 months including the next 3 calendar months; then a March, June, September and December cycle. **Contracts Traded:** 1,435,863 (2016).

The consensus projections for commodity prices shown throughout this publication represent a mean average of our panellists' central, or most likely, forecasts of where prices will be at specified periods in the future. However, the prices of commodities traded on global markets can fluctuate erratically, even when trending higher or lower, rather than move smoothly from one point to another over time. Furthermore, different commodities exhibit varying degrees of volatility, often due to inherent differences in demand and supply characteristics. As a result, in addition to their central forecasts, this month we also asked our panellists for their predictions of the likely high-low ranges within which they expect certain commodities to trade over the coming year. These ranges can be viewed as one meas-

ure of volatility or risk associated with individual commodities. Another is the standard deviation of individual central forecasts calculated as a % of the consensus (mean). Both of these methods are shown in the table below for Q1 2018. A measure of historical volatility (for the past 12 months) is also featured. These three indicators are not directly comparable but are included to give the reader an insight into past and possible future differences in volatility across a number of selected commodities. Trading range forecasts and volatility measures for several important currencies are also shown below the table for comparison. Readers should note that in relation to the graphs opposite, the consensus lines may not relate directly to the high or low lines since the groups of survey respondents may be different.

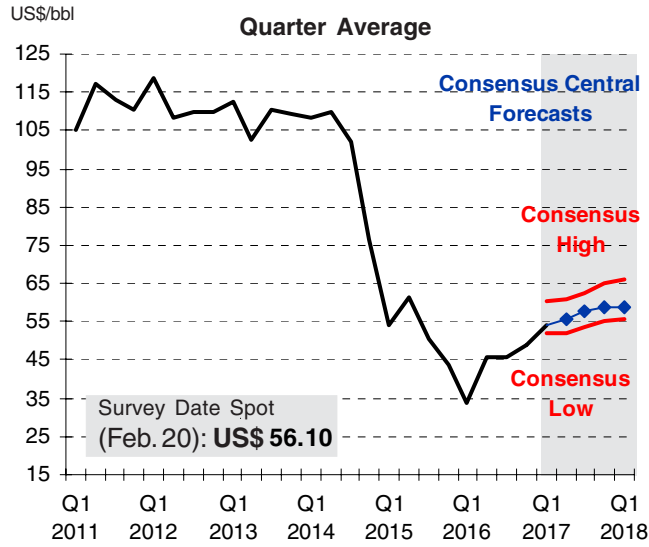
		Actual 2016 Q4	Consensus Forecasts of Ranges				2018 Q1	Q1 2018 Forecast Range (as % of mean forecast)	Stand. Dev. of Q1 2018 central forecasts as % of mean ²	Historical Volatility (%, Jan- Dec 2016) ³
			2017 Q1	Q2	Q3	Q4				
Crude Oil - Brent (US\$/bbl)	High	56.87	60.17	61.00	62.33	65.00	66.33	18.2	8.5	47.3
	Low	41.61	52.26	52.06	53.60	54.94	55.67			
- WTI (US\$/bbl)	High	54.01	57.67	58.00	59.67	61.67	65.00	25.3	8.3	48.6
	Low	43.29	47.63	47.07	48.40	50.00	50.33			
US Natural Gas (US\$/MMBtu)	High	3.800	3.449	3.500	3.573	3.667	3.720	24.3	9.0	61.2
	Low	2.080	2.670	2.750	2.833	2.933	2.924			
Aluminium (US\$/tonne)	High	1777	1975	1933	1918	1983	2010	24.1	6.3	17.0
	Low	1613	1640	1588	1572	1634	1594			
Copper (US\$/tonne)	High	5936	6468	6586	6485	6521	6522	22.5	11.8	21.2
	Low	4621	5248	5397	5334	5287	5271			
Nickel (US\$/tonne)	High	11735	12515	12440	12308	12302	12929	22.0	12.7	29.5
	Low	9970	10038	9950	9851	9831	10396			
Lead (US\$/tonne)	High	2466	2480	2524	2547	2612	2562	26.4	13.1	26.2
	Low	1965	2017	2003	2027	2072	2005			
Zinc (US\$/tonne)	High	2907	2965	3268	3212	3322	3300	26.4	15.6	25.5
	Low	2230	2331	2559	2499	2612	2582			
Gold (US\$/oz)	High	1311	1346	1323	1346	1358	1383	21.9	7.2	16.4
	Low	1126	1105	1096	1102	1090	1111			
Silver (US\$/oz)	High	18.79	19.05	18.63	18.95	19.21	19.71	27.7	8.8	26.6
	Low	15.74	15.00	14.42	14.41	14.36	14.73			
Exchange Rates vs US Dollar¹										
Euro (US\$/€)	High	1.127	1.100	1.070	1.070	1.089	1.099	13.3		8.9
	Low	1.033	0.990	0.950	0.950	0.950	0.960			
Japanese Yen (Yen/US\$)	High	101.1	108.5	109.0	108.0	107.0	107.0	11.2		12.8
	Low	119.2	120.5	122.0	121.0	120.0	120.0			
Australian Dollar (US\$/A\$)	High	0.776	0.770	0.780	0.770	0.770	0.770	15.3		11.6
	Low	0.714	0.670	0.670	0.670	0.660	0.660			
UK Pound (US\$/UK£)	High	1.290	1.265	1.265	1.275	1.285	1.295	9.1		14.7
	Low	1.207	1.180	1.180	1.180	1.175	1.185			
Canadian Dollar (C\$/US\$)	High	1.299	1.300	1.305	1.319	1.319	1.319	7.1		10.7
	Low	1.360	1.375	1.385	1.405	1.414	1.414			

¹ Currency data taken from January 2017 survey of Foreign Exchange Consensus Forecasts.

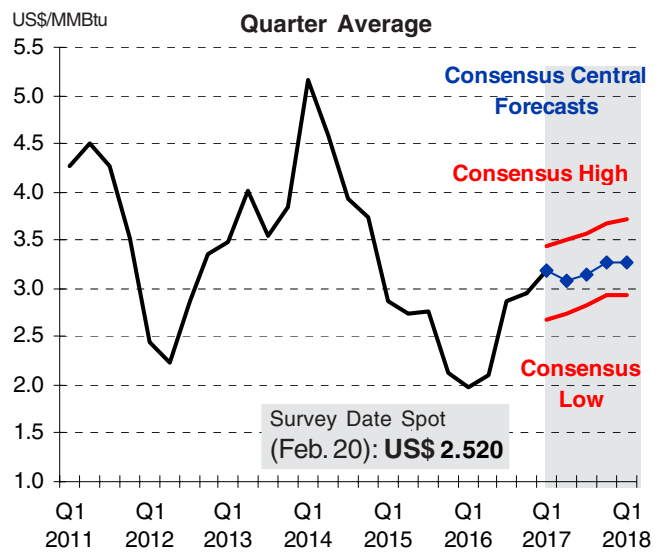
² Commodity standard deviations are for Q1 2018 average forecasts.

³ More technically, historical volatility is calculated as the annualised standard deviation of daily commodity/currency movements over a given historical period, in this case the twelve months ended December 31, 2016.

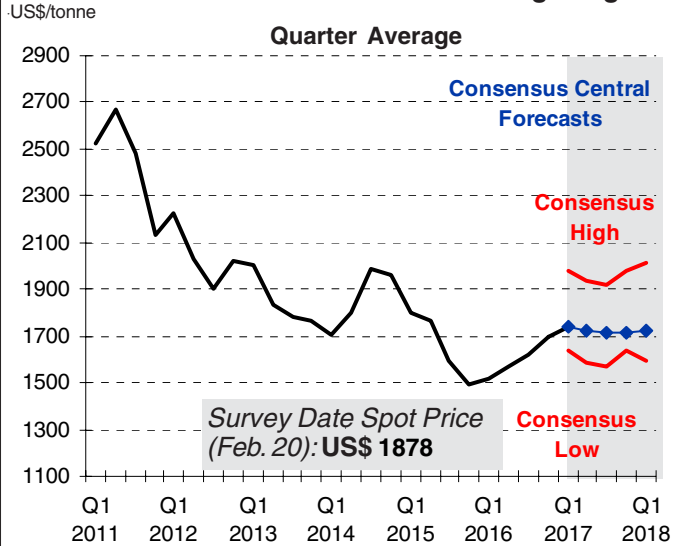
Crude Oil (Brent) Central Forecasts and Trading Ranges



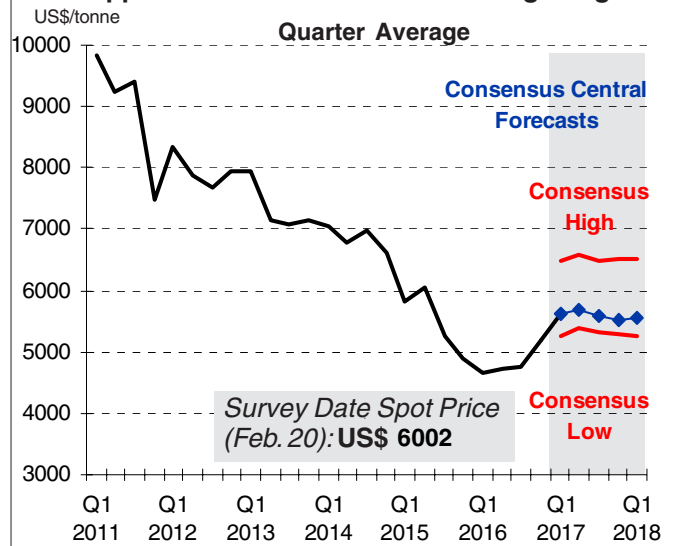
US Natural Gas Central Forecasts and Trading Ranges



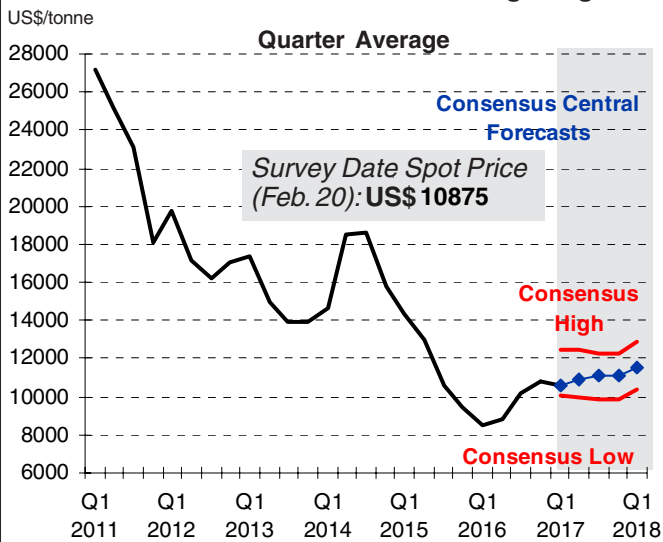
Aluminium Central Forecasts and Trading Ranges



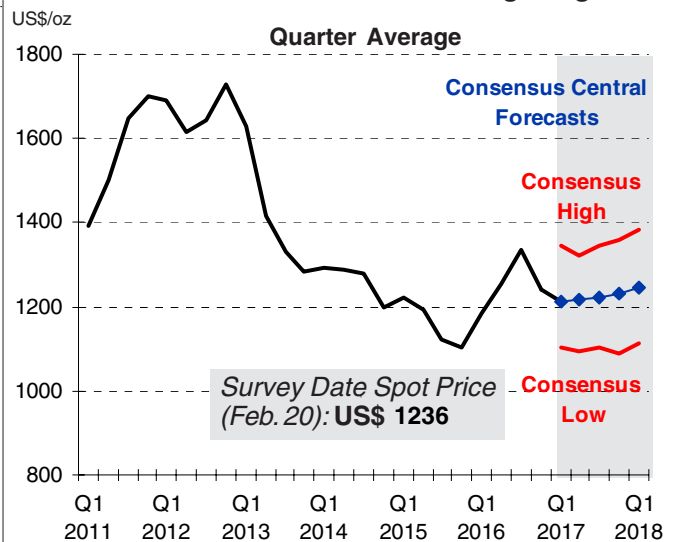
Copper Central Forecasts and Trading Ranges



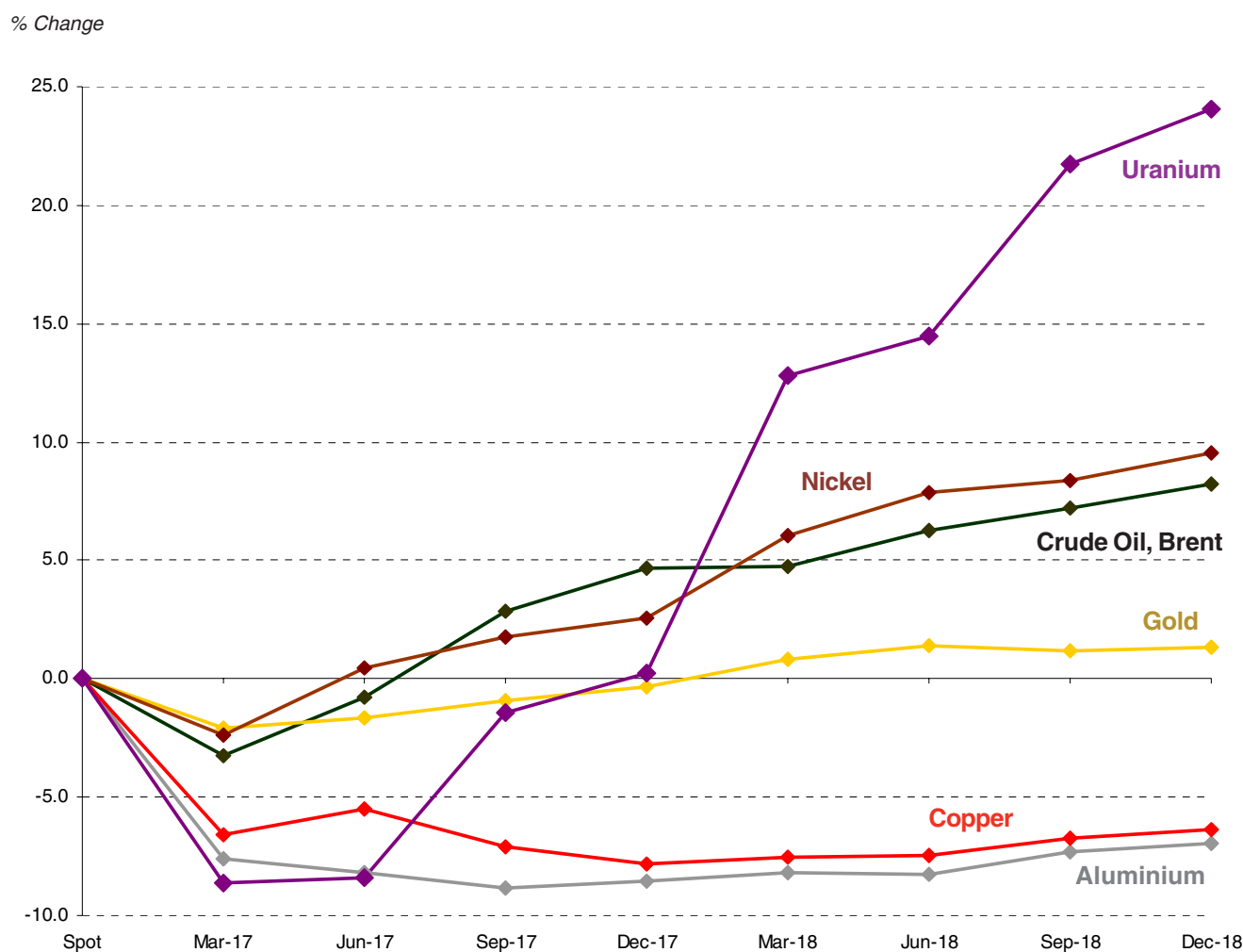
Nickel Central Forecasts and Trading Ranges



Gold Central Forecasts and Trading Ranges



Consensus Forecasts Percentage Changes From Spot Price During the Next Eight Quarters



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