



Commodities

October 2018

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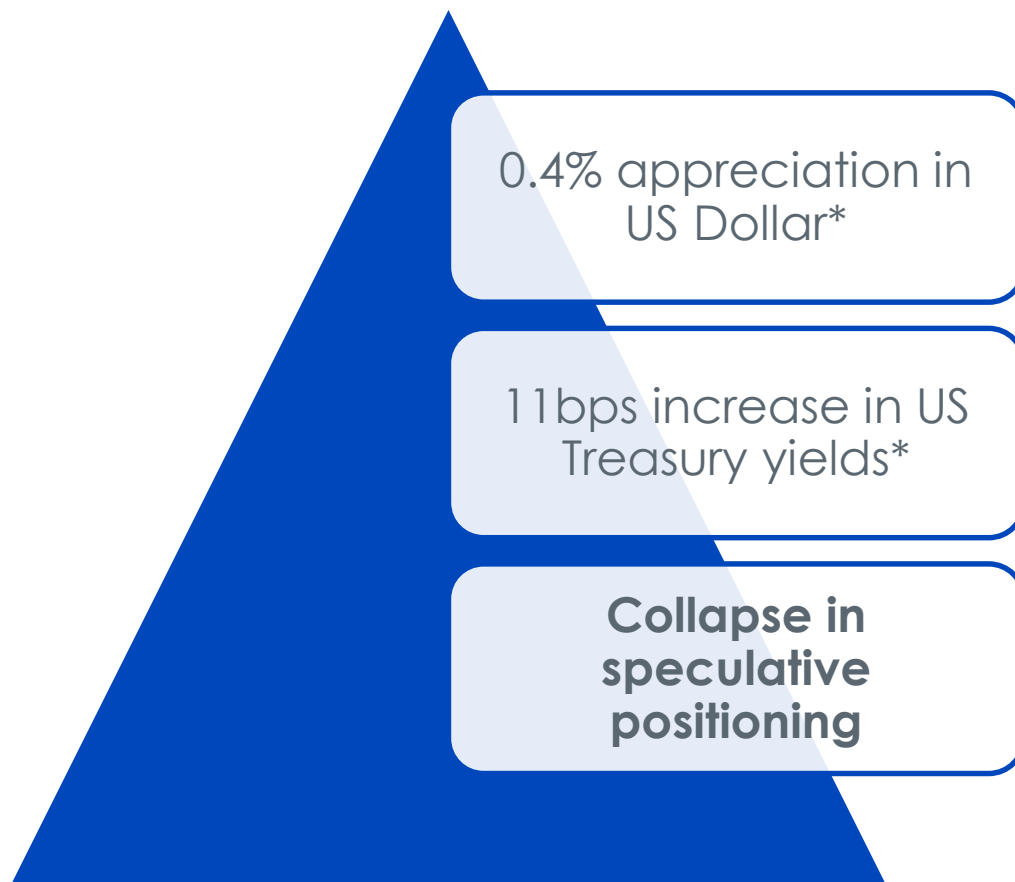
Gold Outlook to Q2 2019

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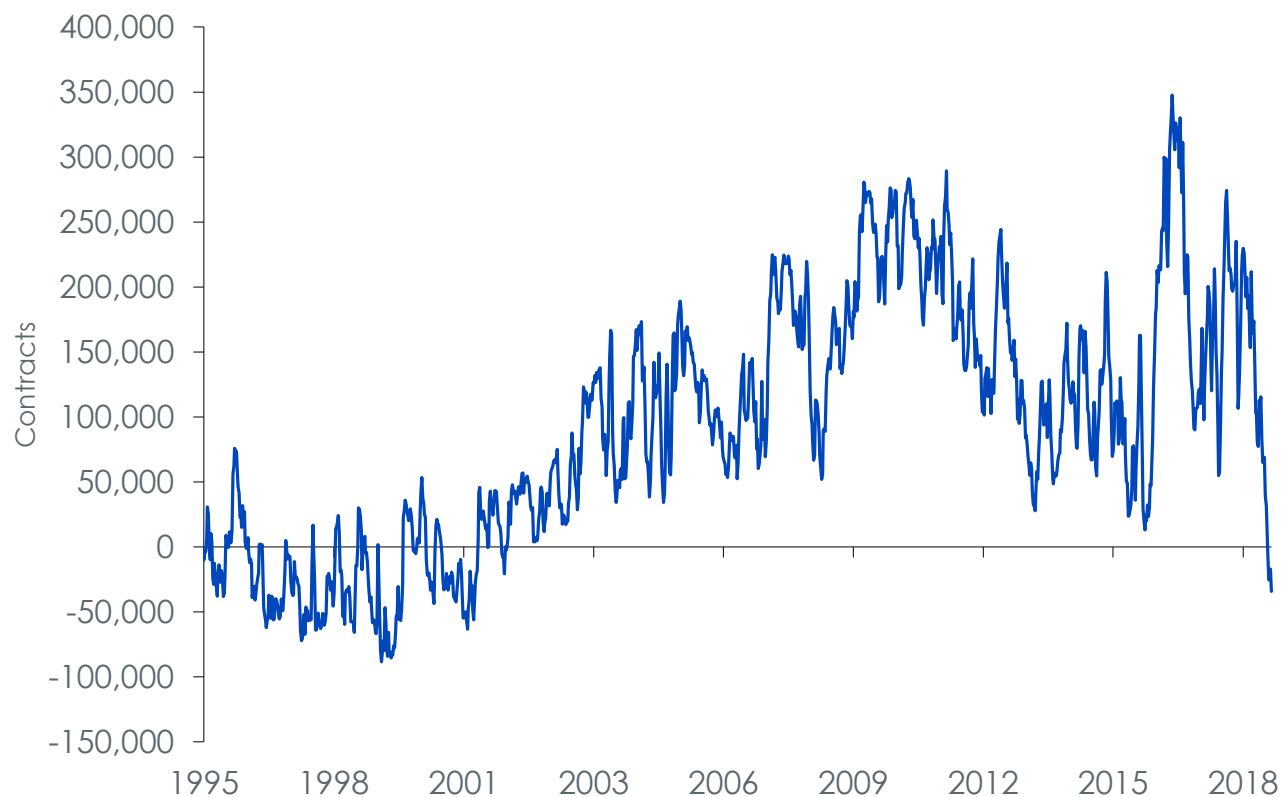
What accounts for gold price declines in past quarter?



* From 30/06/2018 to 13/09/2018. **Historical performance is not an indication of future performance and any investments may go down in value.**

Positioning in gold most negative since 2001

Gold futures speculative positioning



Source: Bloomberg, WisdomTree, data available as close of 13/09/2018. **Historical performance is not an indication of future performance and any investments may go down in value.**



Fall in speculative positioning seems excessive

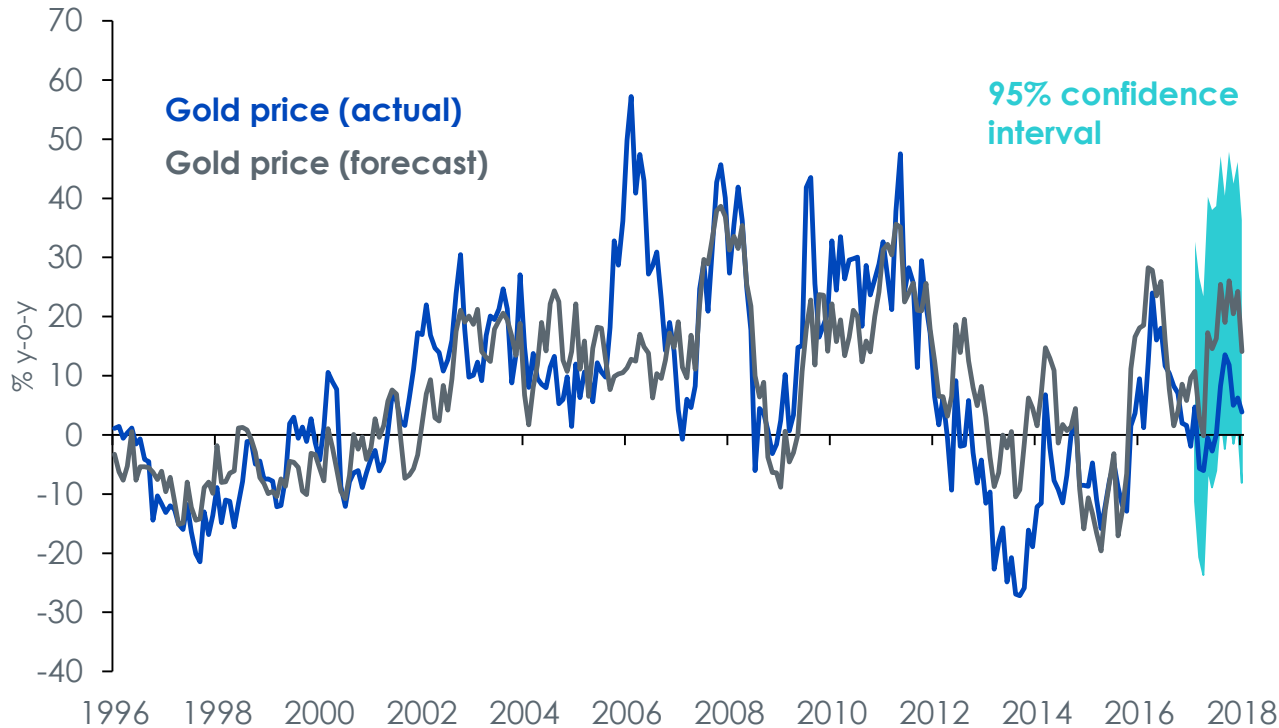
- + Dismay that gold has not reacted more to Emerging market sell-off
 - However, developed market equities have been doing well, posting all-time highs → unsurprising that gold has moved in opposite direction of developed market equities
- + If investors are fearful of contagion from Emerging Markets, recent gold price declines could open up a good entry point
- + If futures market shorts in gold are covered, a turn in prices could be quick

Opinions of WisdomTree: see [Commodity Monthly Monitor: Precious metals ripe for a short-covering rally](#), 7 September 2018



Gold model

Gold price model in out of sample test



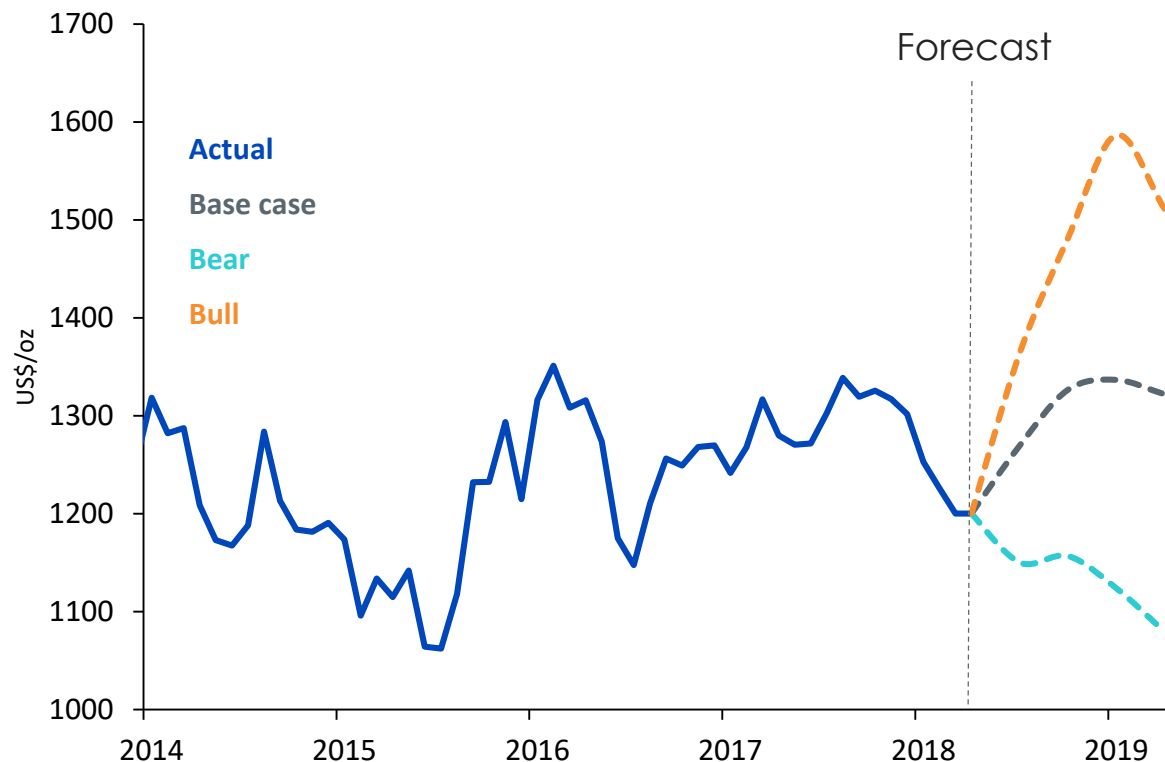
We have built a model that demonstrates that changes in gold price (in US Dollars) are driven by (direction in parenthesis):

- Changes in the trade weighted US Dollar (-)
- CPI inflation (+)
- Changes in nominal yields on 10-year US Treasuries (-)
- Investor sentiment (measured by speculative positioning in the futures market) (+)

Source: Bloomberg, WisdomTree, data available as of close 30 May 2018. Model calibration: April 1996 to April 2017. Out of sample period: May 2017 to April 2018. **Historical performance is not an indication of future performance and any investments may go down in value.**

Gold forecast Q3 2019

Gold price forecast



- Base case: US\$1322/oz
- Bear case: US\$1080/oz
- Bull case: US\$1511/oz

Source: WisdomTree Model Forecasts, Bloomberg Historical Data, data available as of close 12 September 2018. **Historical performance is not an indication of future performance and any investments may go down in value.**

Base, bear and bull compared

Q2 2019	Base	Bear	Bull
Fed policy forecast	1 more rate increase in 2018 Max of 2 rate increases in 2019	1 more rate increase in 2018 3 rate increases in 2019	50pbs total rate increase from now until Q3 2019
Inflation forecast	Inflation likely to have peaked at 2.9% in July 2018. To decline to 2.4% in Q3 2019.	1.6%	2.9%
Nominal 10 year yields forecast	3.3%	4.0%	2.8%
US\$ exchange rate forecast (DXY)	92	99	86
Speculative positioning forecast	120k	20k	200k
Gold price forecast	US\$1322/oz	US\$1080/oz	US\$1511/oz

Hedge for geopolitical events

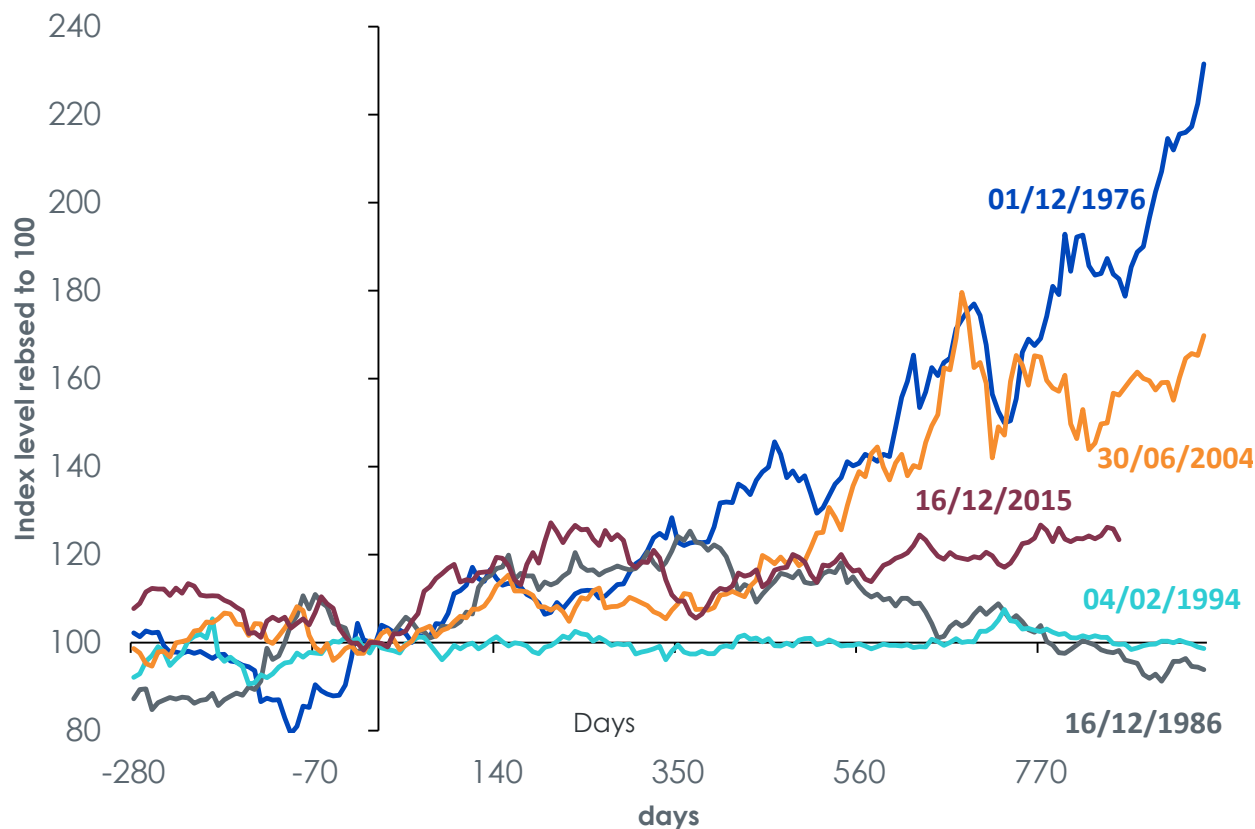
	Event date	Gold Price Change 1 year forward	World Equities Price Change 1 year forward	Relative performance
Greece government deficit announcement	20/10/2009	6.9%	4.5%	2.4%
Global financial crisis	15/09/2008	21.5%	-13.1%	34.6%
9/11 Terrorist Attack	11/09/2001	6.6%	-16.5%	23.2%
Dotcom bubble	11/03/2000	-5.3%	-16.3%	11.1%
Iraq Kuwait War	02/09/1990	-5.4%	5.3%	-10.7%
Desert Storm (First Gulf War)	02/08/1990	1.7%	-4.1%	5.7%
Junk bond crash	13/10/1989	3.1%	-13.4%	16.5%
Black Monday	19/10/1987	-1.9%	-1.9%	0.0%
Nixon's Resignation	09/08/1974	22.4%	5.6%	16.8%
Yom Kippur War	06/10/1973	63.6%	-41.0%	104.6%
	Average	11.3%	-9.1%	20.4%

Source: Bloomberg, WisdomTree, data available as of close 17 September 2018. **Historical performance is not an indication of future performance and any investments may go down in value.**



Rate hikes do not have to be gold-price negative

Gold prices pre and post rate hikes



- Gold returns positive in current rate tightening cycle
- No fears of runaway inflation this time (in contrast to 1976 and 2004)
- But equally no repetition of aggressive Fed hikes as in 1986 and 1994

Source: Bloomberg, WisdomTree, data available as of close 30 May 2018. **Historical performance is not an indication of future performance and any investments may go down in value.** Average price level, rebased 100 = first rate hike date, over a period pre and post rate hike.



+Silver Outlook To Q2 2019

Framework for silver

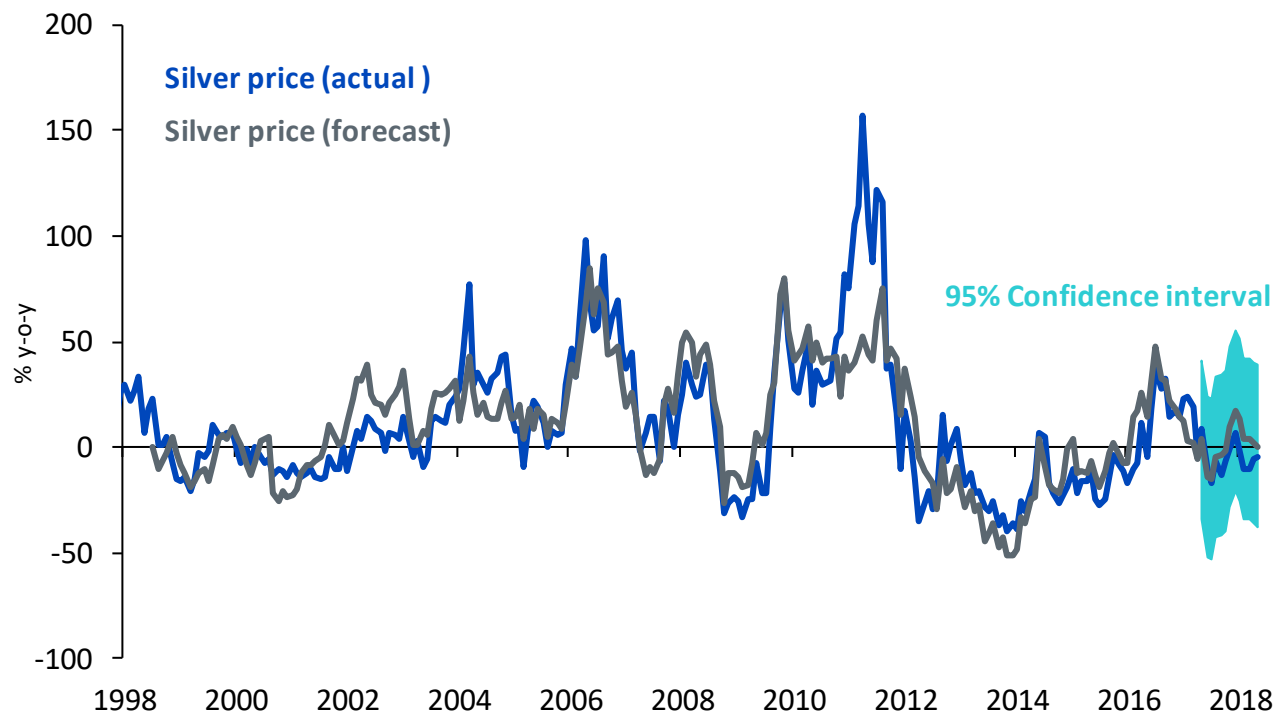
Variable	Direction
%Δ gold price	+ve
%Δ global manufacturing PMI	+ve
%Δ exchange inventory	-ve
18 month lag %Δ mining capex	-ve

Source: WisdomTree

- **Manufacturing purchasing managers index:** a proxy for industrial demand
- **Exchange inventory:** a measure of available supply
- **Mining capex:** factors in delay in investment change and output

Silver model

Silver price model in out of sample test



Source: Bloomberg, WisdomTree, data available as of close 1 June 2018

Model calibration: January 1996 to April 2017. Out of sample period: May 2017 to April 2018

- Silver and gold historically 80% correlated
- Best way to model silver is to look at gold *plus* a number of supply and demand variables
- While physical supply and demand matter for silver, they matter less for gold

Silver price forecast: US\$16.3/oz



Source: WisdomTree Model Forecasts, Bloomberg Historical Data, data available as of close 21 September 2018

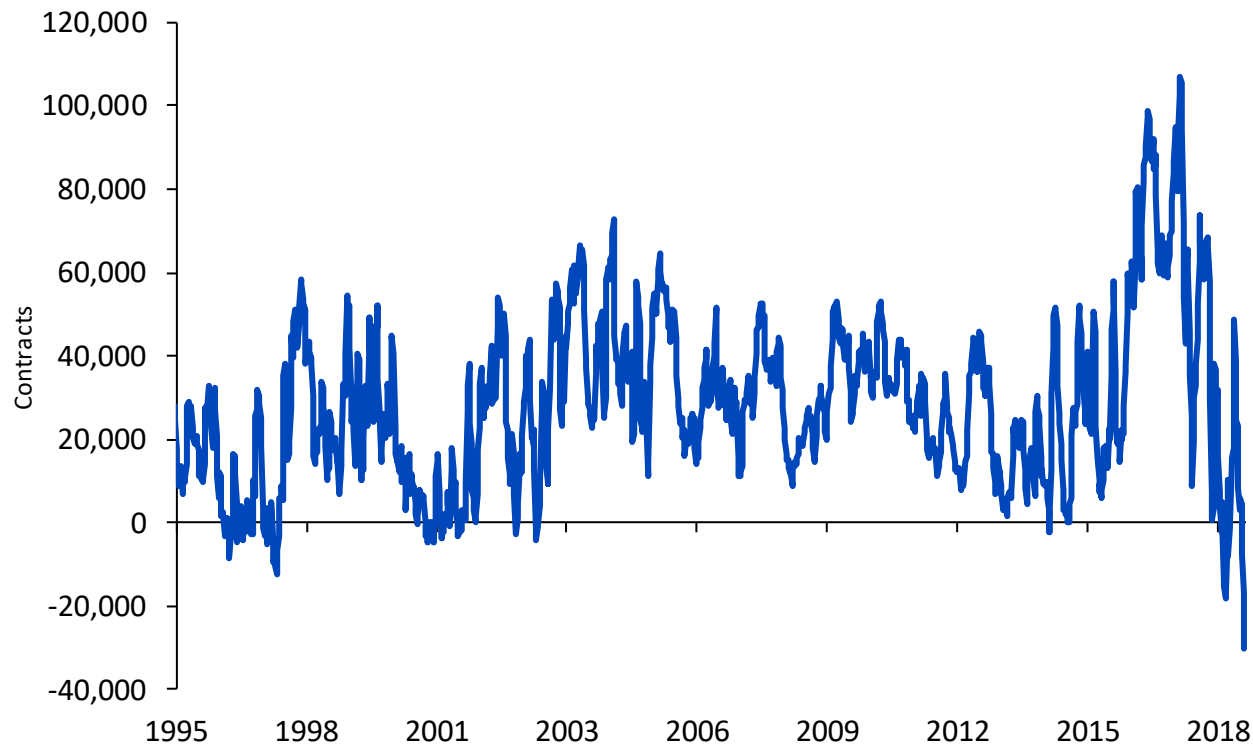
Silver looks relatively cheap as gold to silver ratio rises to highest level since 1993



Source: Bloomberg, WisdomTree, data available as of close 21 September 2018

With speculative positioning at an all-time low, silver ripe for a short-covering rally

Silver Futures Speculative Positioning

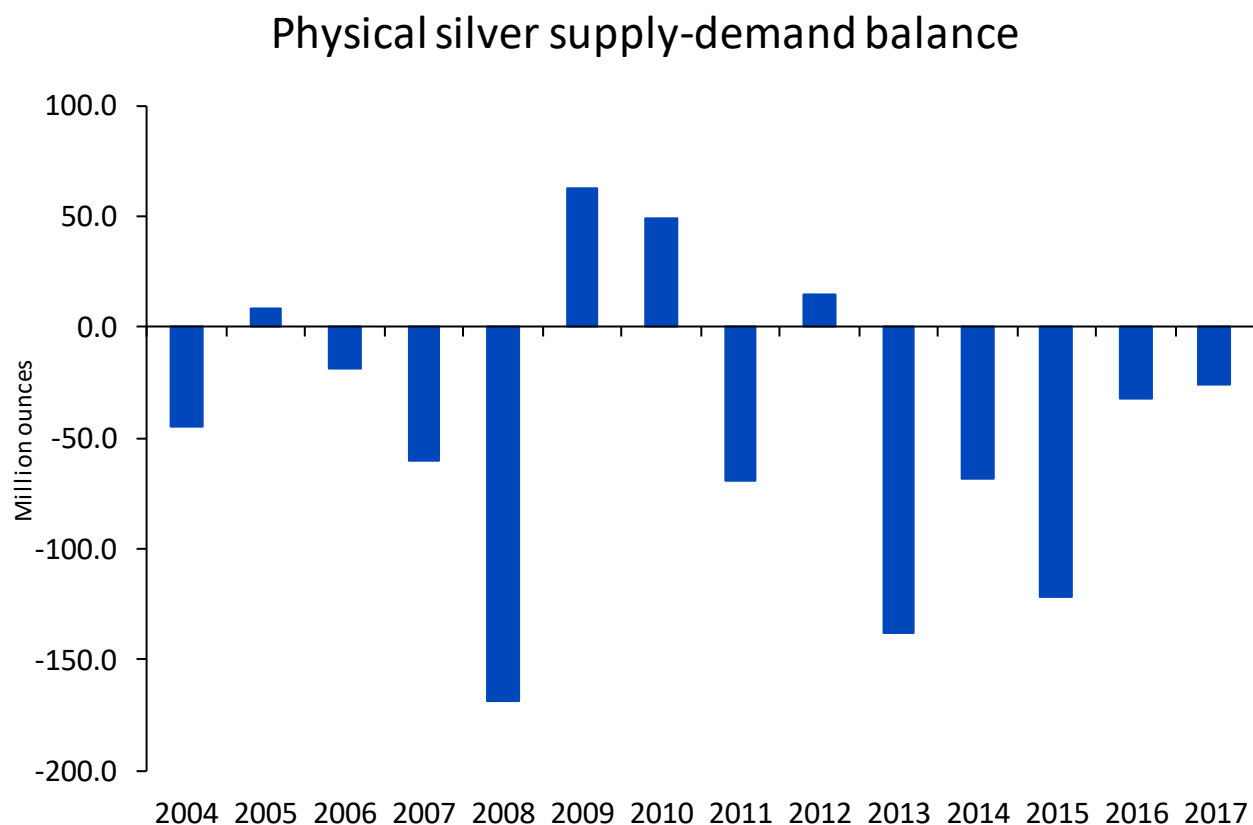


Source: Bloomberg, WisdomTree, data available as of close 21 September 2018



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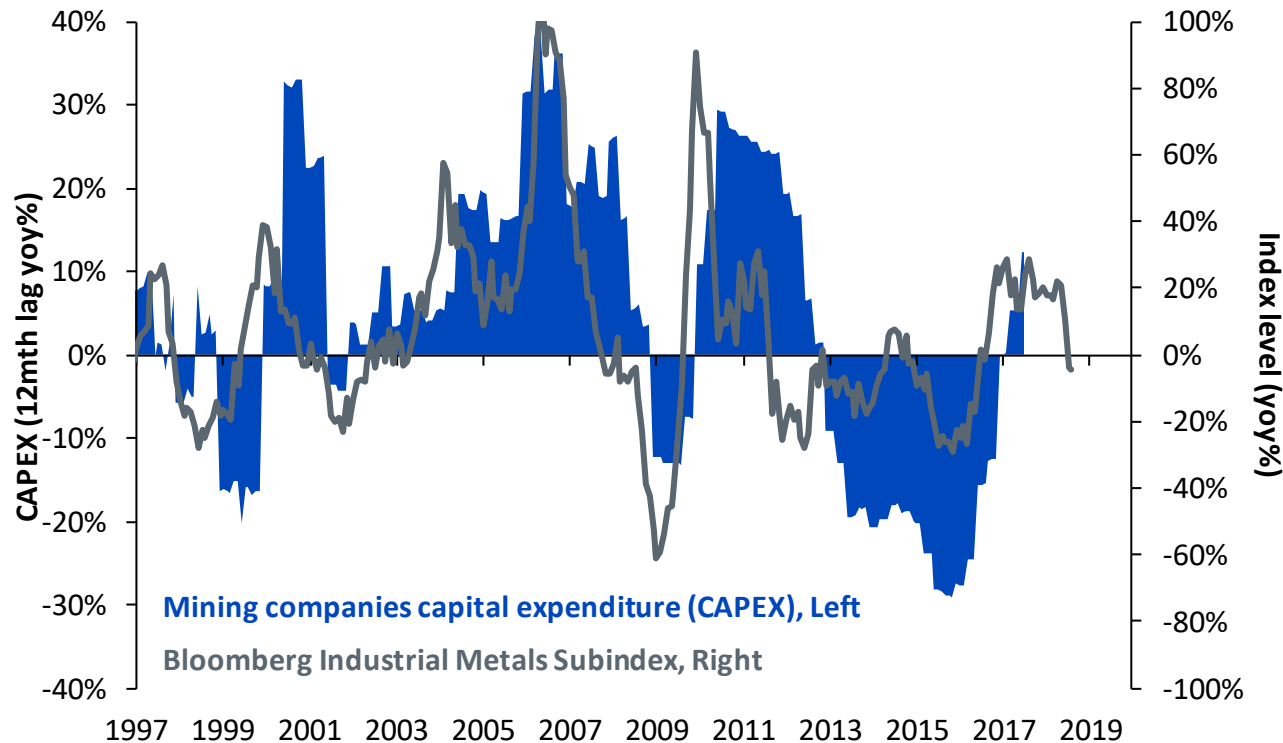
Five consecutive years of silver-supply deficit



Source: GFMS Thomson Reuters, Silver Institute, WisdomTree, data available as of close 12 June 2018

Mining investment recovering, but could stall if industrial metal prices continue to decline

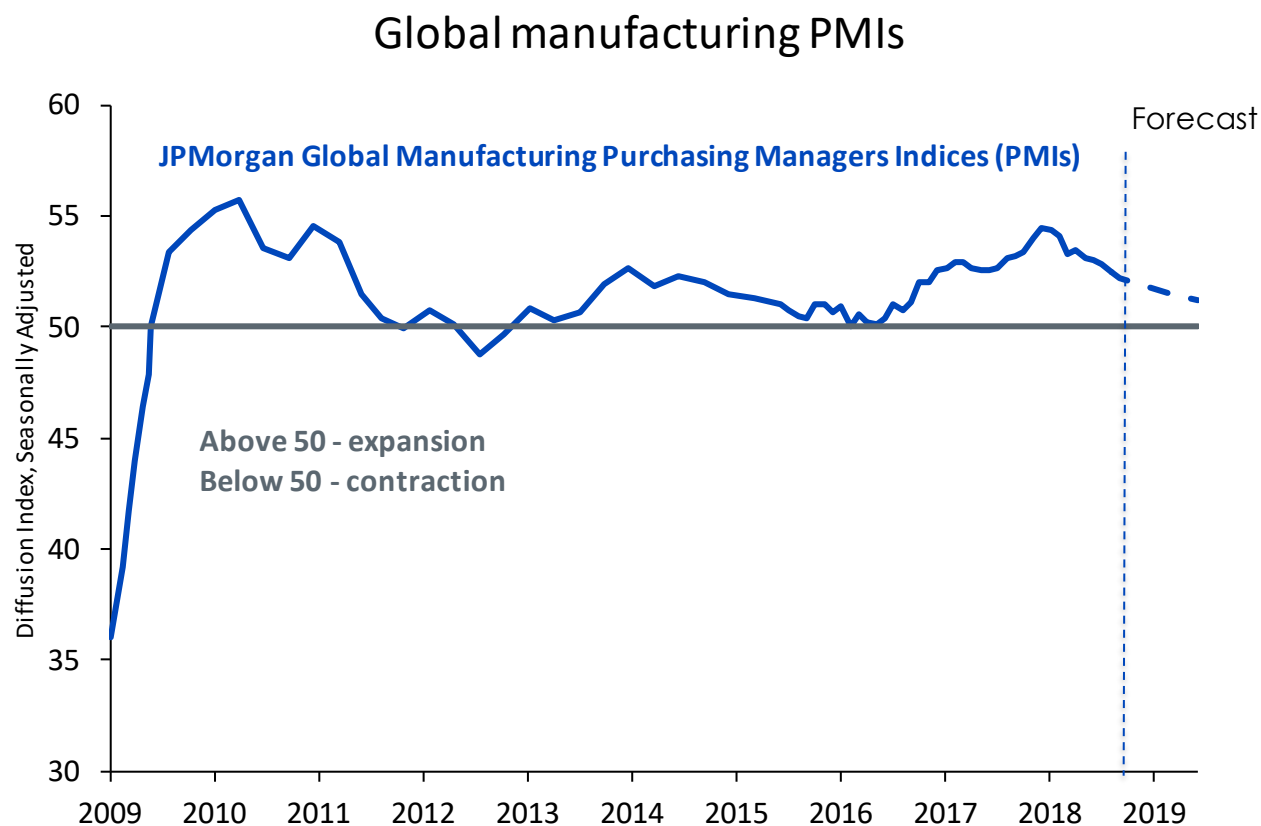
Top 100 miners capital expenditure growth



Source: Bloomberg, World Bureau of Metal Statistics, WisdomTree, data available as of close 19 Sept 2018

- + Silver mine supply to remain constrained as we are still living in the shadow of deep cuts to capital investment in mining sector.
- + 75% of silver comes as a by-product of mining for other metals.

Slowing manufacturing growth could cap gains



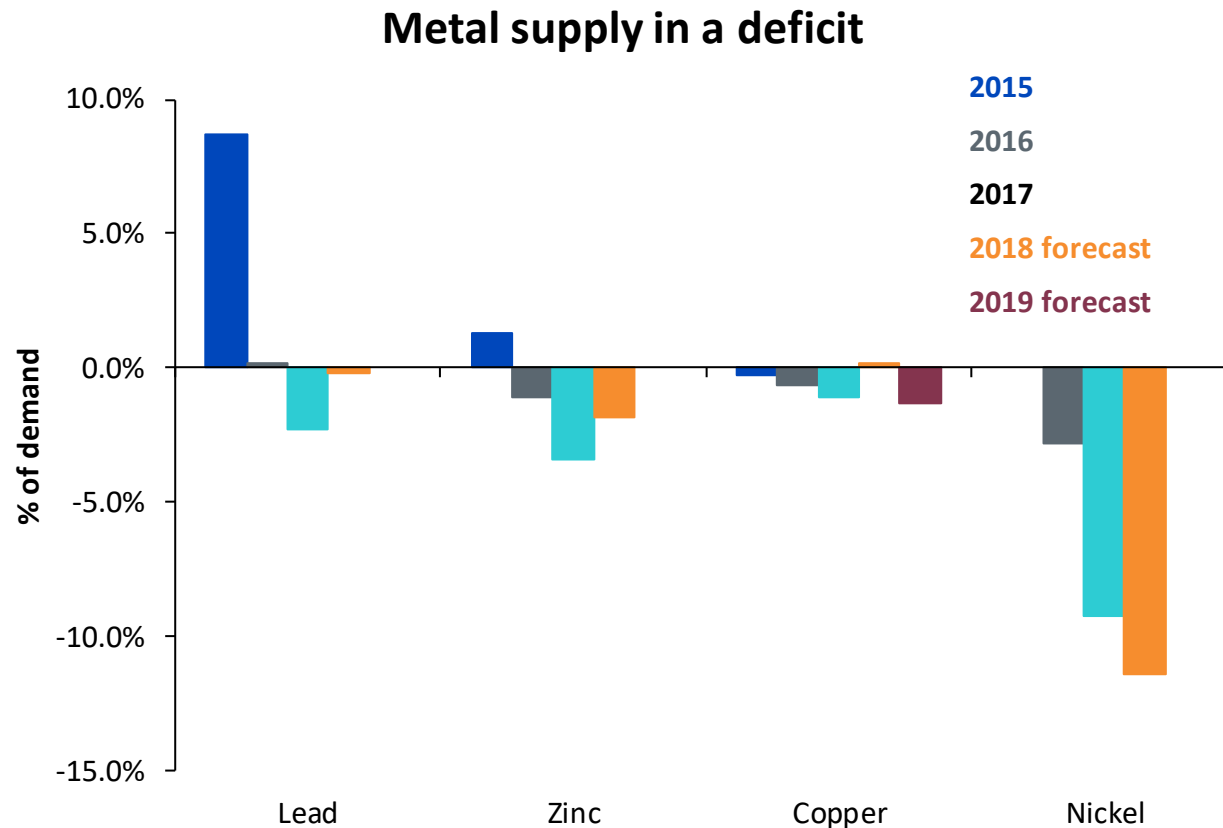
Source: Bloomberg, WisdomTree, data available as of close 21 September 2018



+Industrial metals

+ Published
25 September
2018

Most industrial metals in a supply deficit

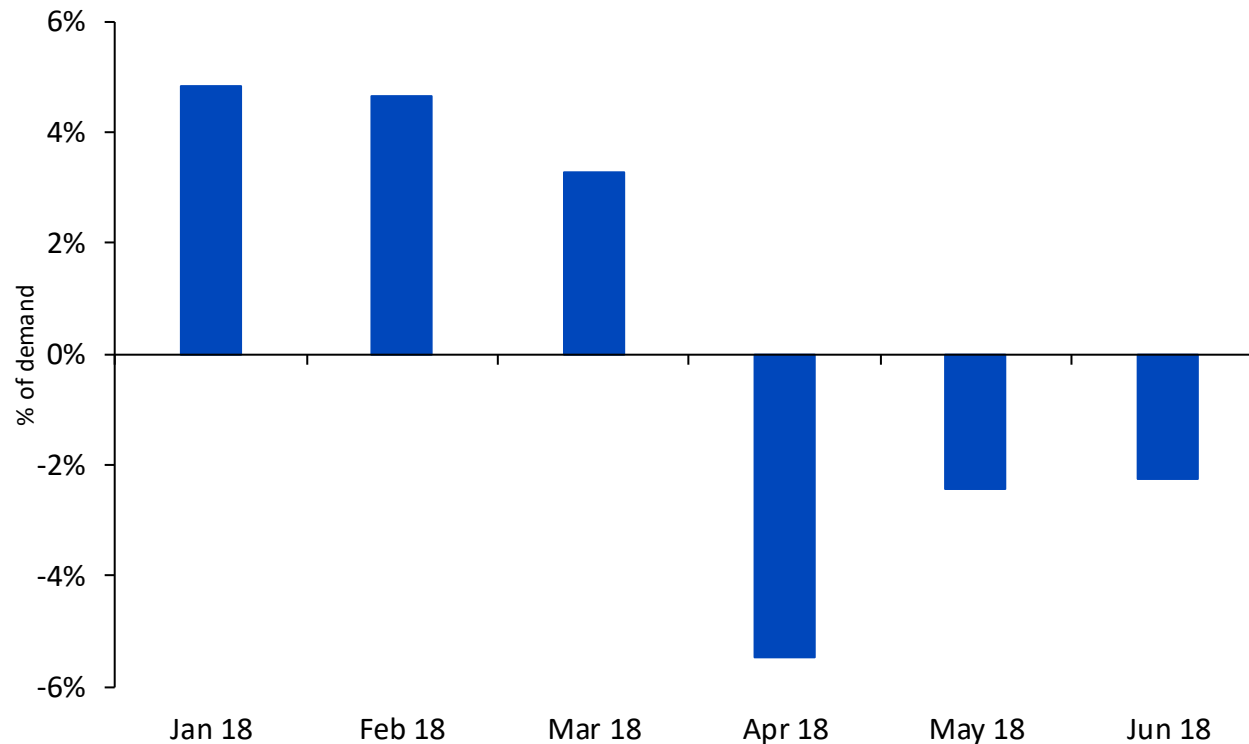


Source: ICSG, INSG, ILZSG, WisdomTree, data available as of close 15 June 2018

ICSG = International Copper Study Group, INSG = International Nickel Study Group, ILZSG = International Lead and Zinc Study Group

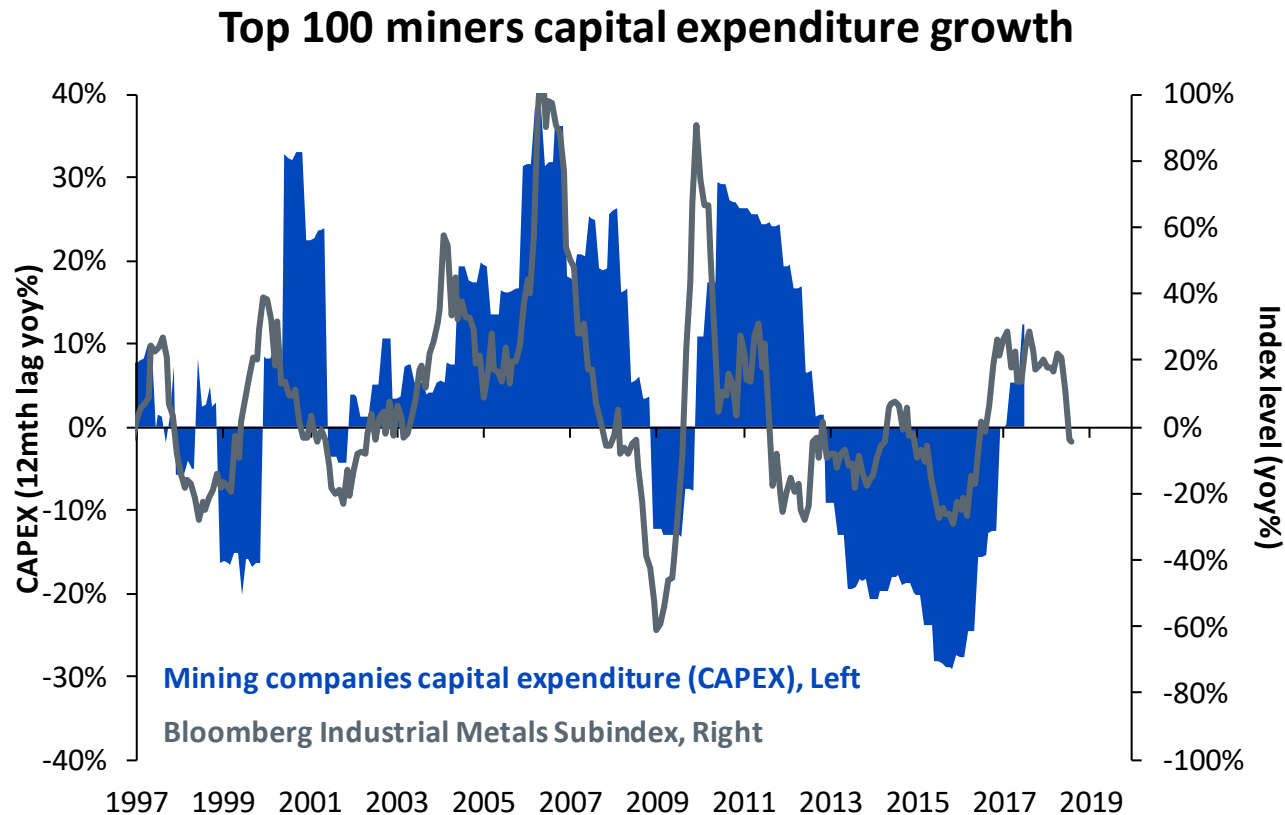
Copper has been in a supply deficit in H1 2018, casting doubt on the 2018 surplus forecast

Copper supply balance monthly history, 2018



Source: International Copper Study Group, WisdomTree, data available as of close 24 September 2018

Lack of miner investment likely to see deficits persist



Source: Bloomberg, World Bureau of Metal Statistics, WisdomTree, data available as of close 19 Sept 2018

Supply disruptions in metals

Vedanta copper smelter (India)

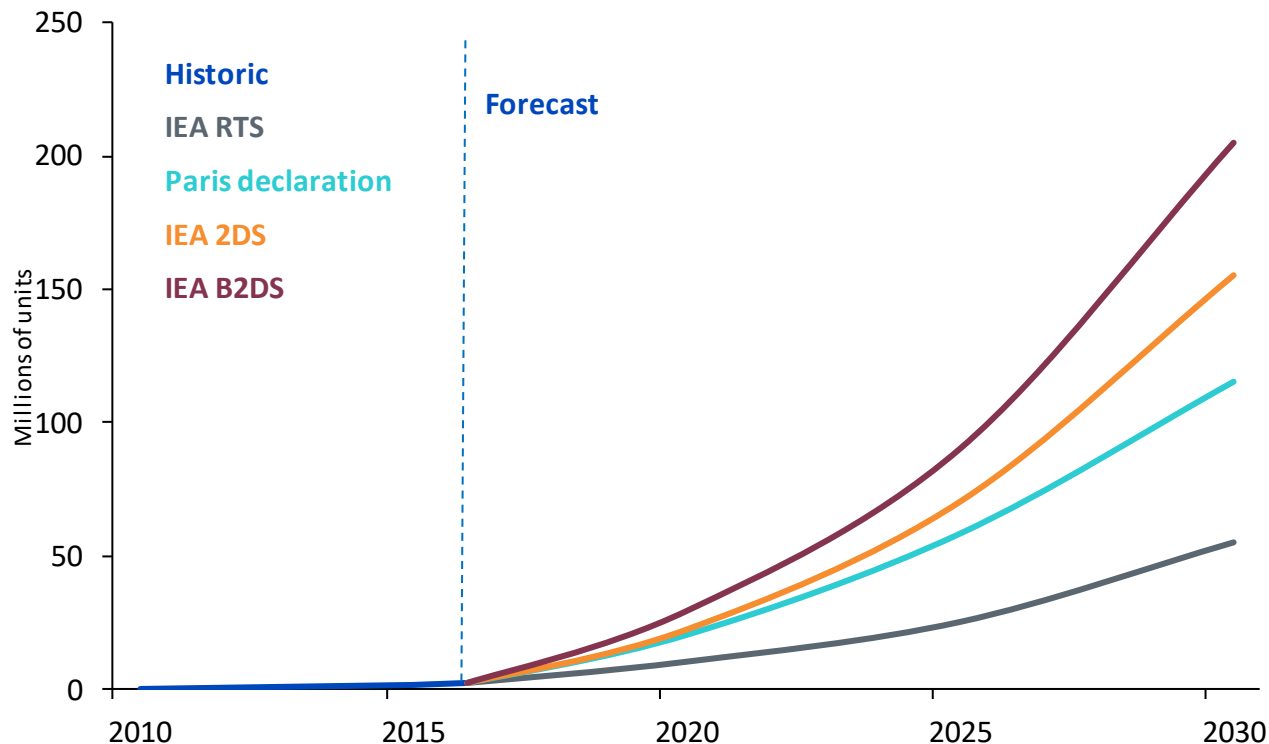
Trade wars

Rusal (Russia)

Winter curtailments (China)

Electric vehicle (EV) use forecast to increase

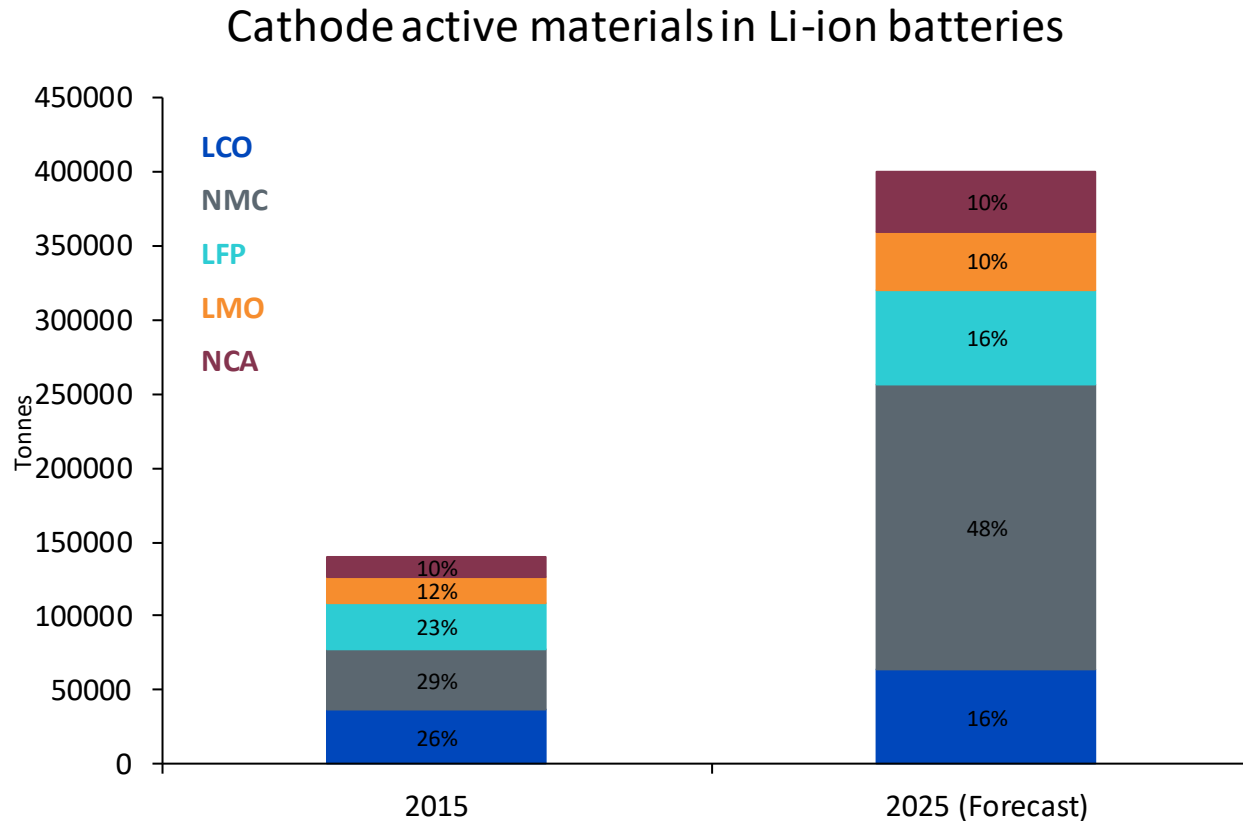
Electric car stock forecasts



Source: International Energy Agency, WisdomTree, data available as of close 12 June 2018

+ Notes: IEA is the International Energy Agency. The RTS incorporates technology improvements in energy efficiency and modal choices that support the achievement of policies that have been announced or are under consideration. The 2DS is consistent with a 50% probability of limiting the expected global average temperature increase to 2°C. The B2DS falls within the Paris Agreement range of ambition, corresponding to an average increase in the global temperature by 1.75°C.

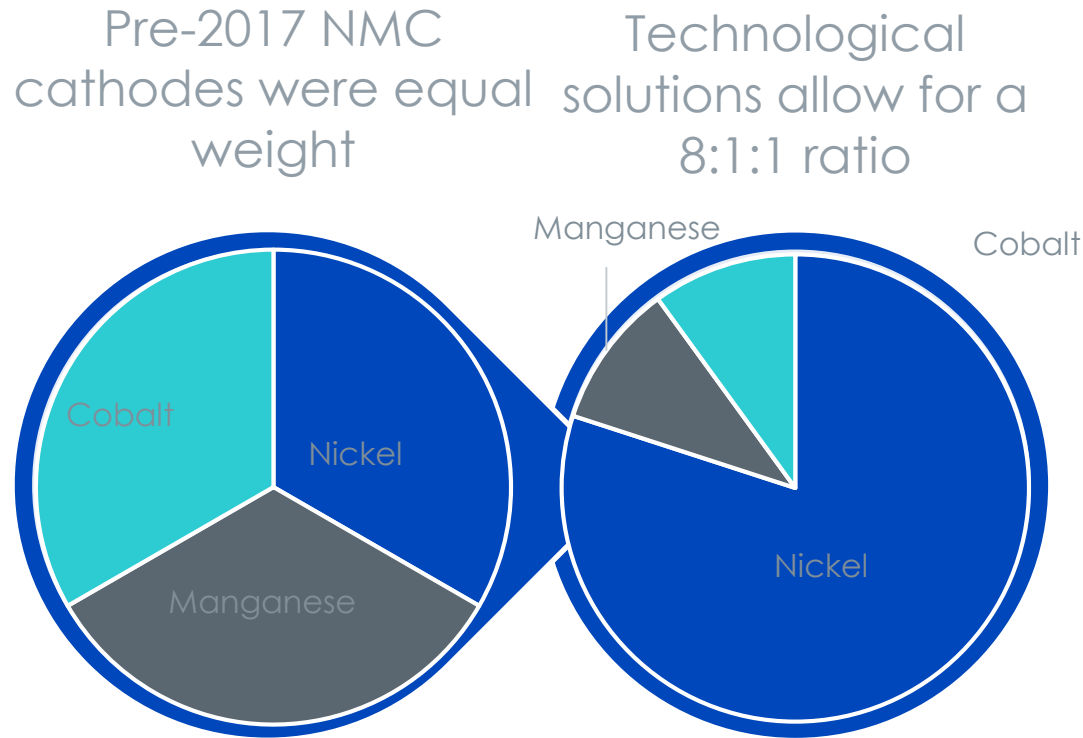
Nickel-based cathodes expected grow



Source: EC's Joint Research Centre, WisdomTree, data available as of close 25 September 2018

+ Notes: Lithium Cobalt Oxide (LCO), Lithium Nickel Manganese Cobalt Oxide (NMC), Lithium Nickel Cobalt Aluminium Oxide (NCA), Lithium Manganese Oxide (LMO) and Lithium Iron Phosphate (LFP). With the exception of LCO, all these materials are currently used in automotive Li-ion battery cells.

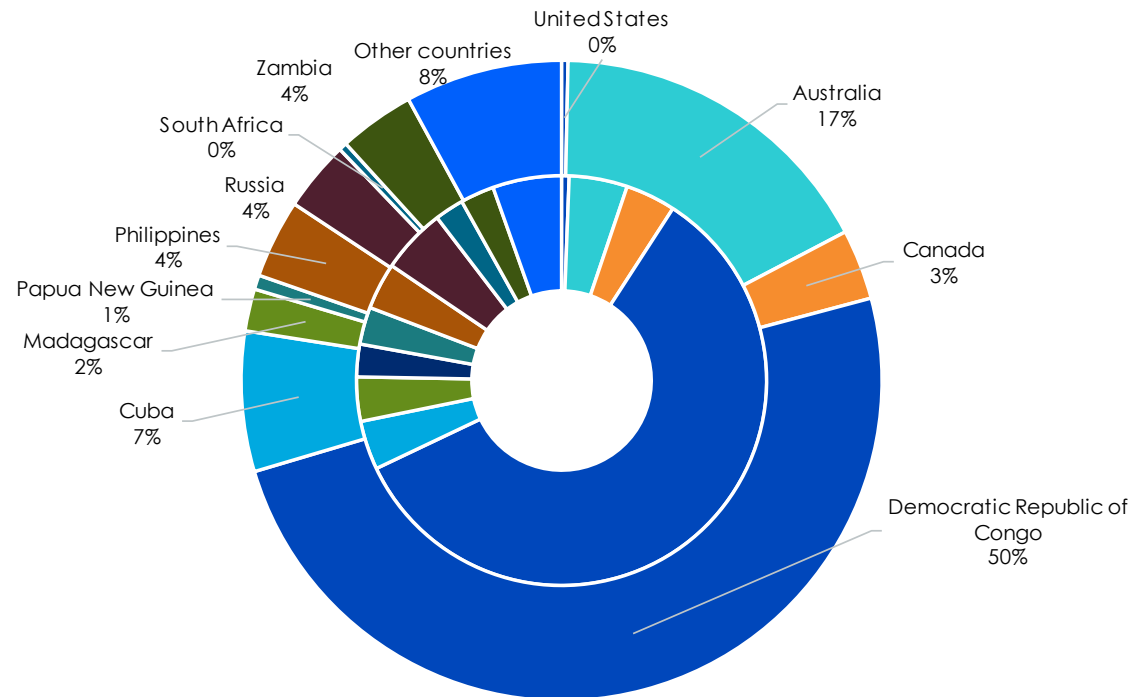
Nickel content of NMC cathodes in transition



NMC = nickel, manganese, cobalt
Source: WisdomTree

Cobalt production highly concentrated

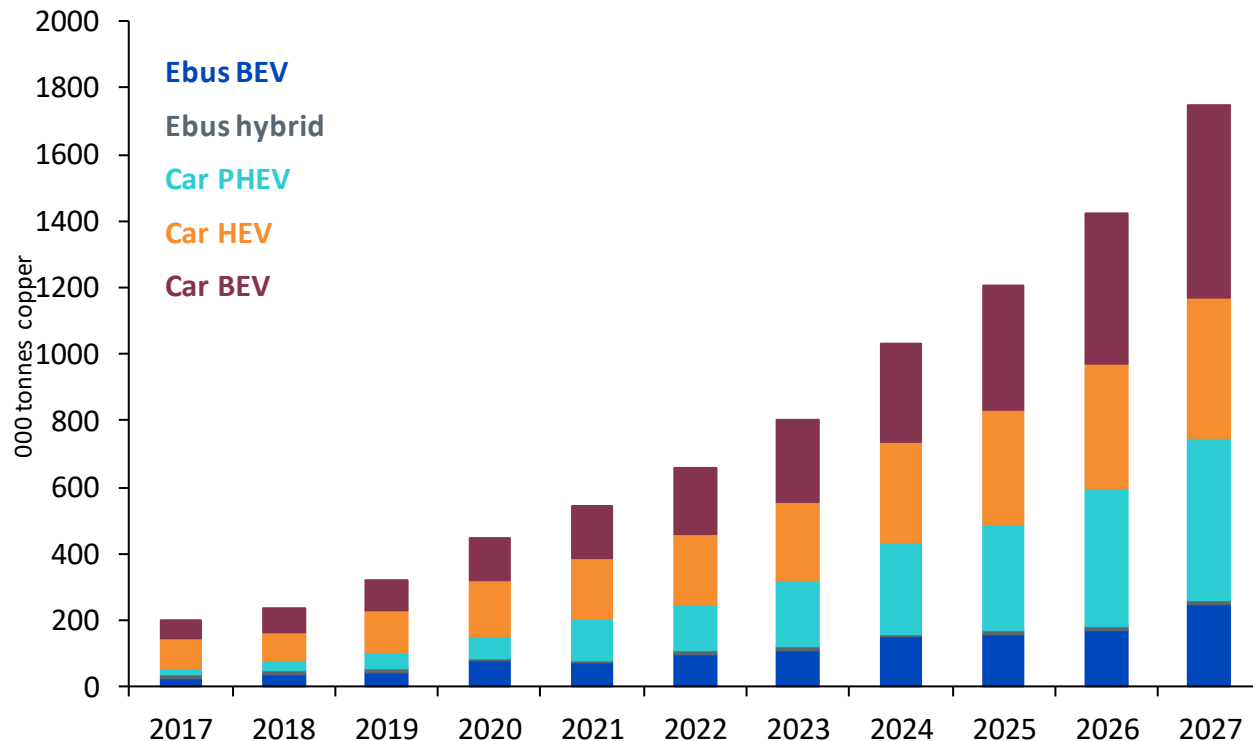
World cobalt mine production and reserves



Source: US Geological Study, WisdomTree, data available as of 24 September 2018
Outer circle: reserves. Inner circle: 2017 production

EVs may also boost copper demand

Electric vehicle copper demand forecasts



Source: International Copper Association, WisdomTree, data available as of close 24 September 2018

Key and assumptions

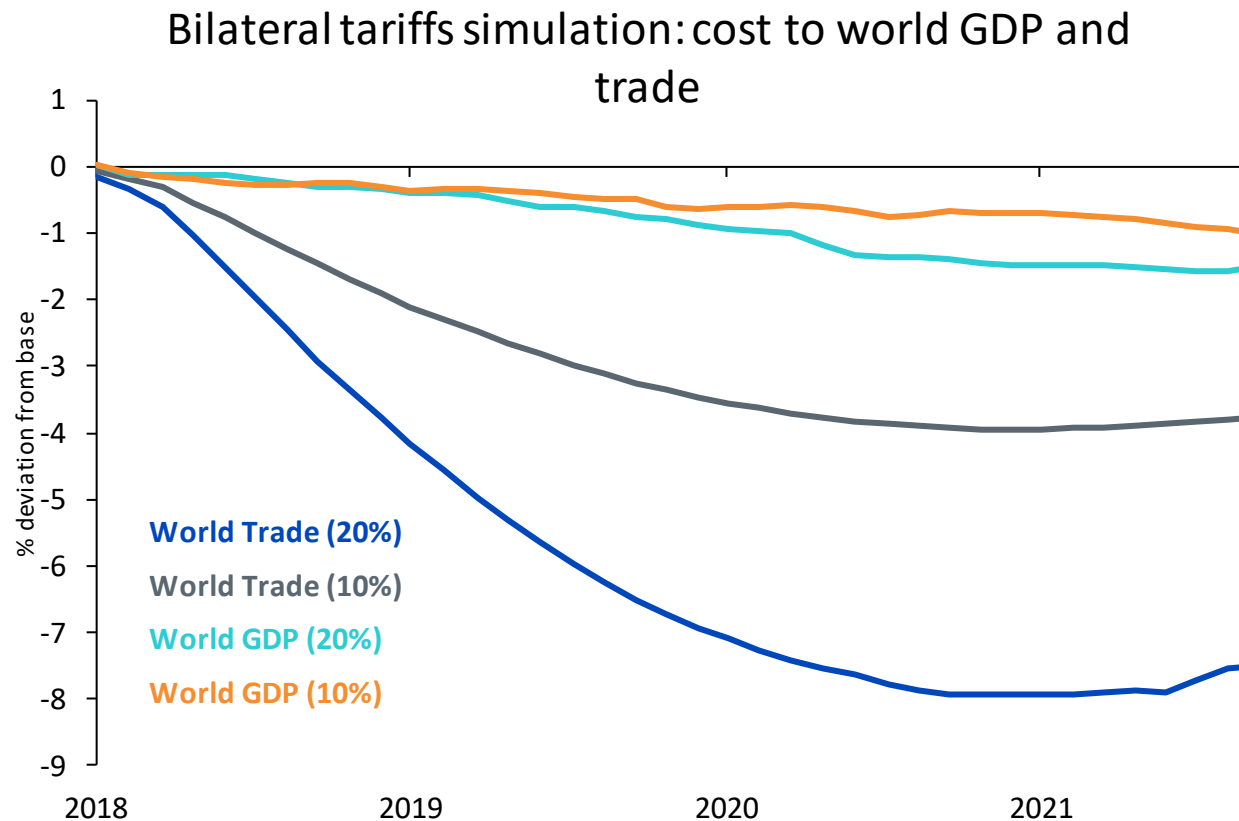
- Internal combustion engine: 23 kg of copper.
- Hybrid electric vehicle (HEV): 40 kg of copper.
- Plug-in hybrid electric vehicle (PHEV): 60 kg of copper.
- Battery electric vehicle (BEV): 83 kg of copper.
- Hybrid electric bus (Ebus HEV): 89 kg of copper.
- Battery-powered electric bus (Ebus BEV): 224–369 kg of copper (depending on the size of the battery).

Source: International Copper Association, data available as of close 24 September 2018



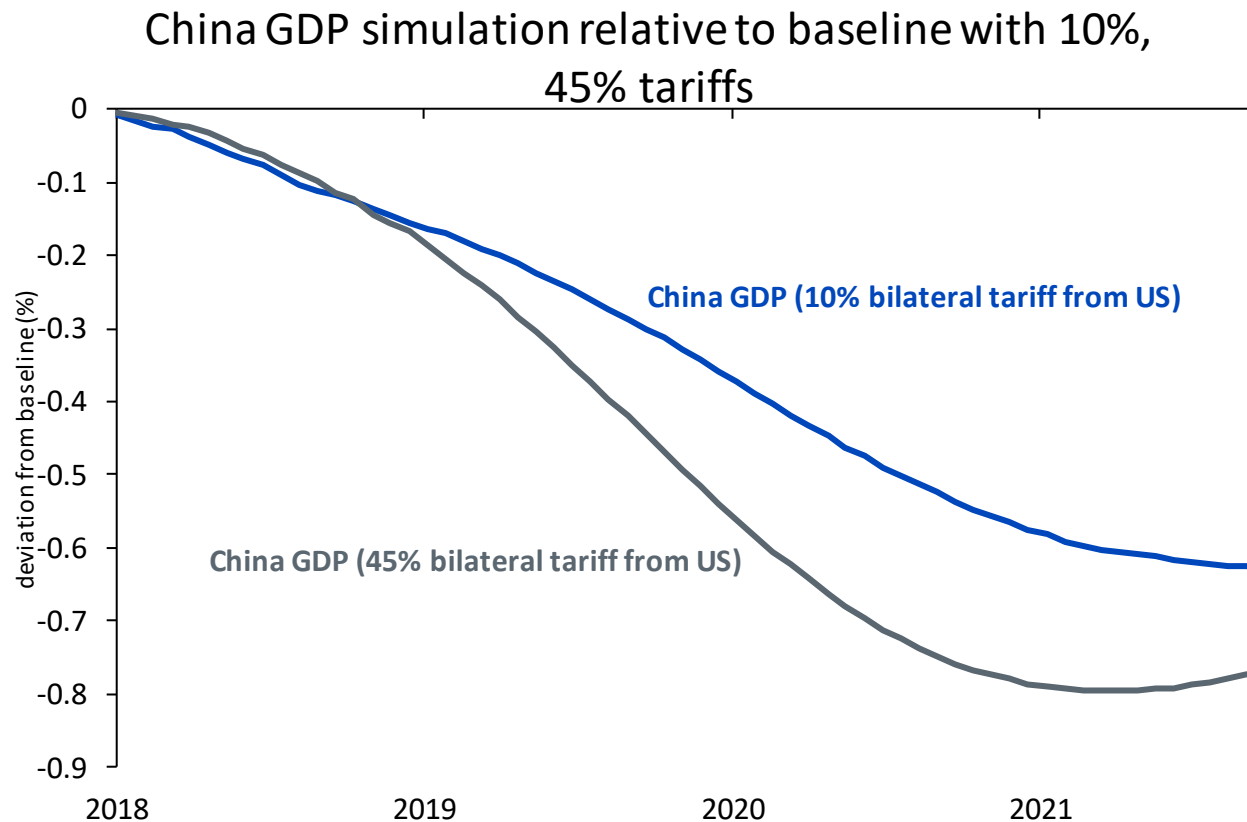
+Risks: trade war

Punitive tariffs likely to knock less than 1% off world GDP over 4 years...



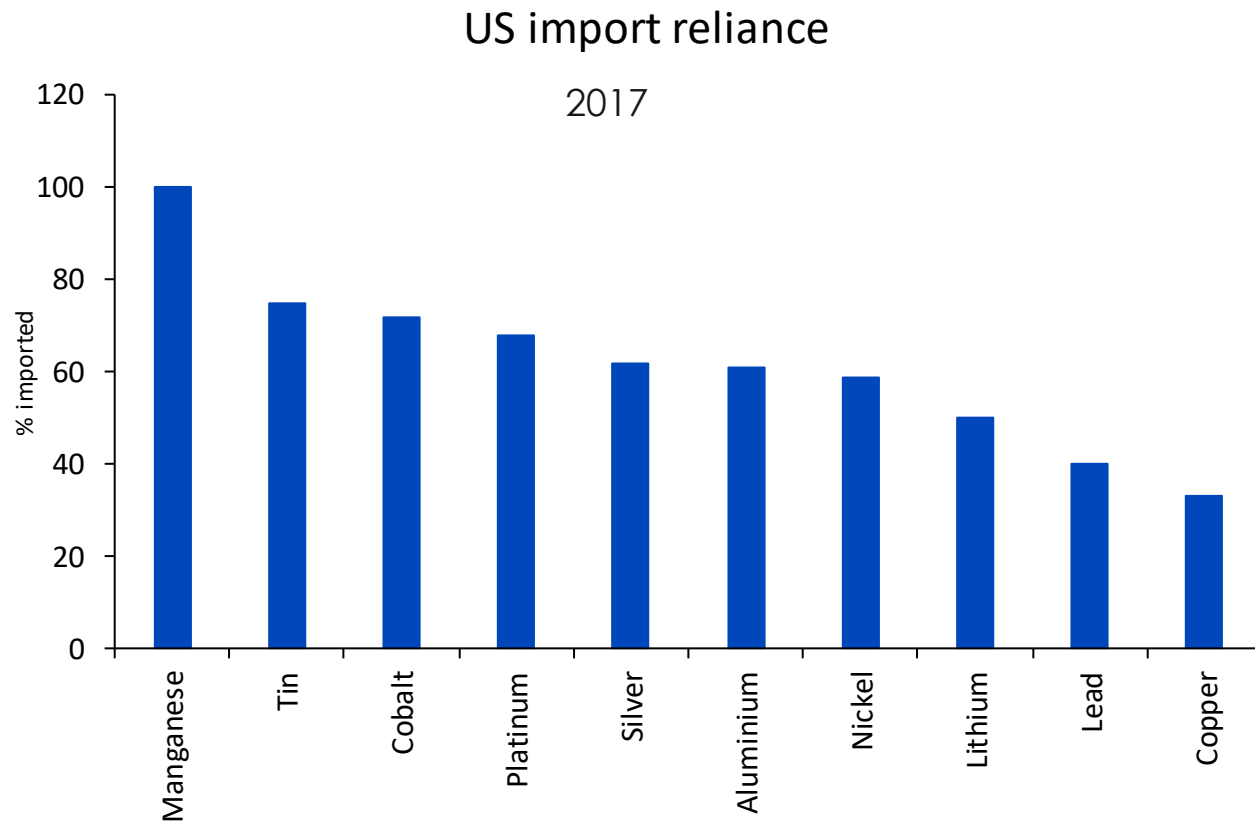
Source: Bloomberg Economics, WisdomTree, data available as of close 20 June 2018

....even for China



Source: Bloomberg Economics, WisdomTree, data available as of close 20 June 2018

But impact on supply chains likely to be large



Source: USGS 2018 Mineral Commodity Summaries, WisdomTree, data available as of close 25 June



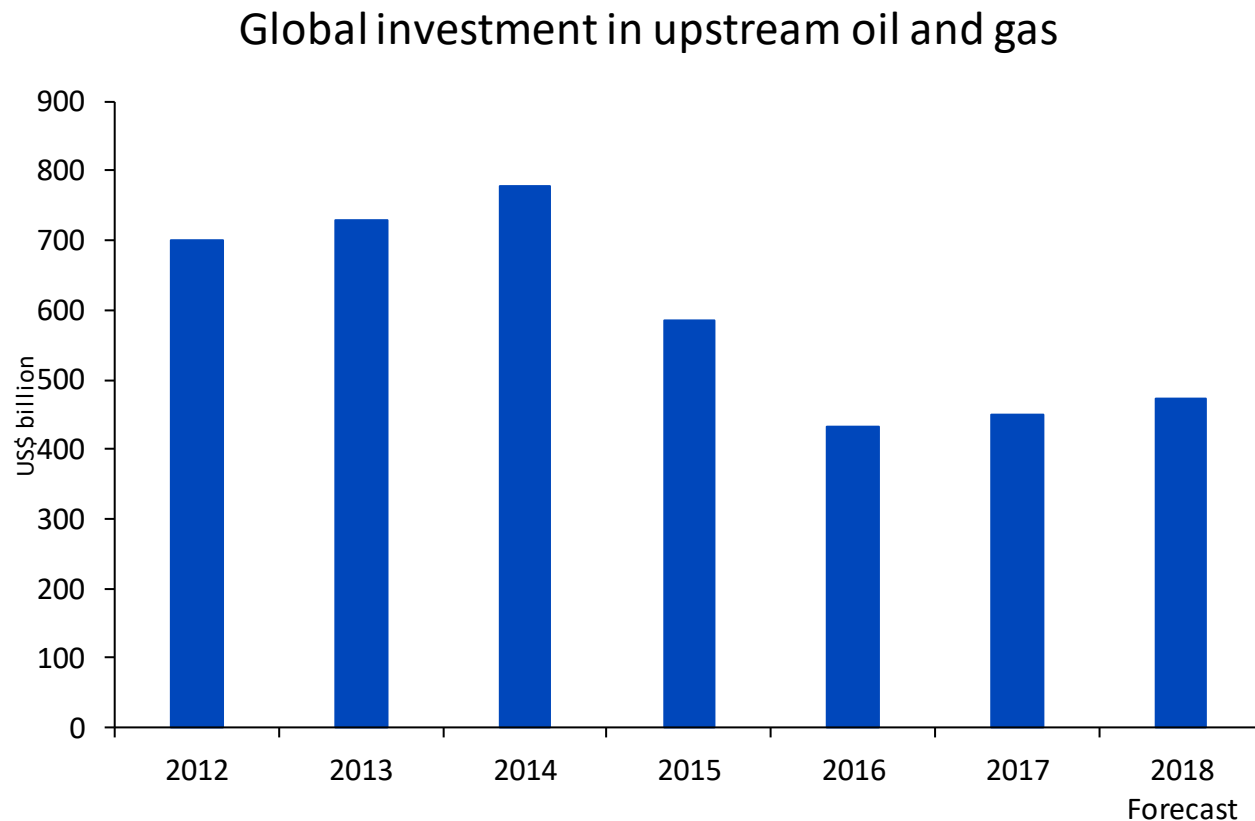
Oil

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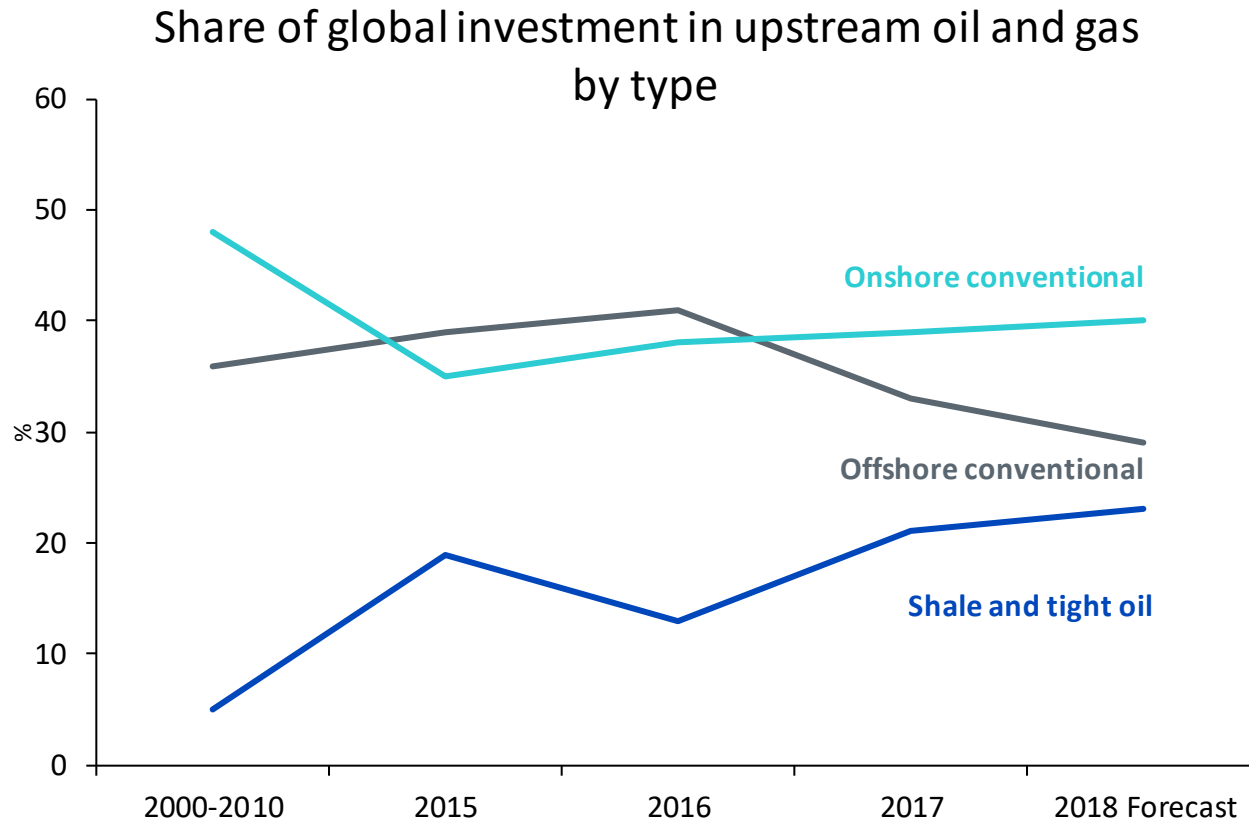
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Oil capital investment (capex) slowly increasing



Source: International Energy Agency, WisdomTree, data available as of close 01 August 2018

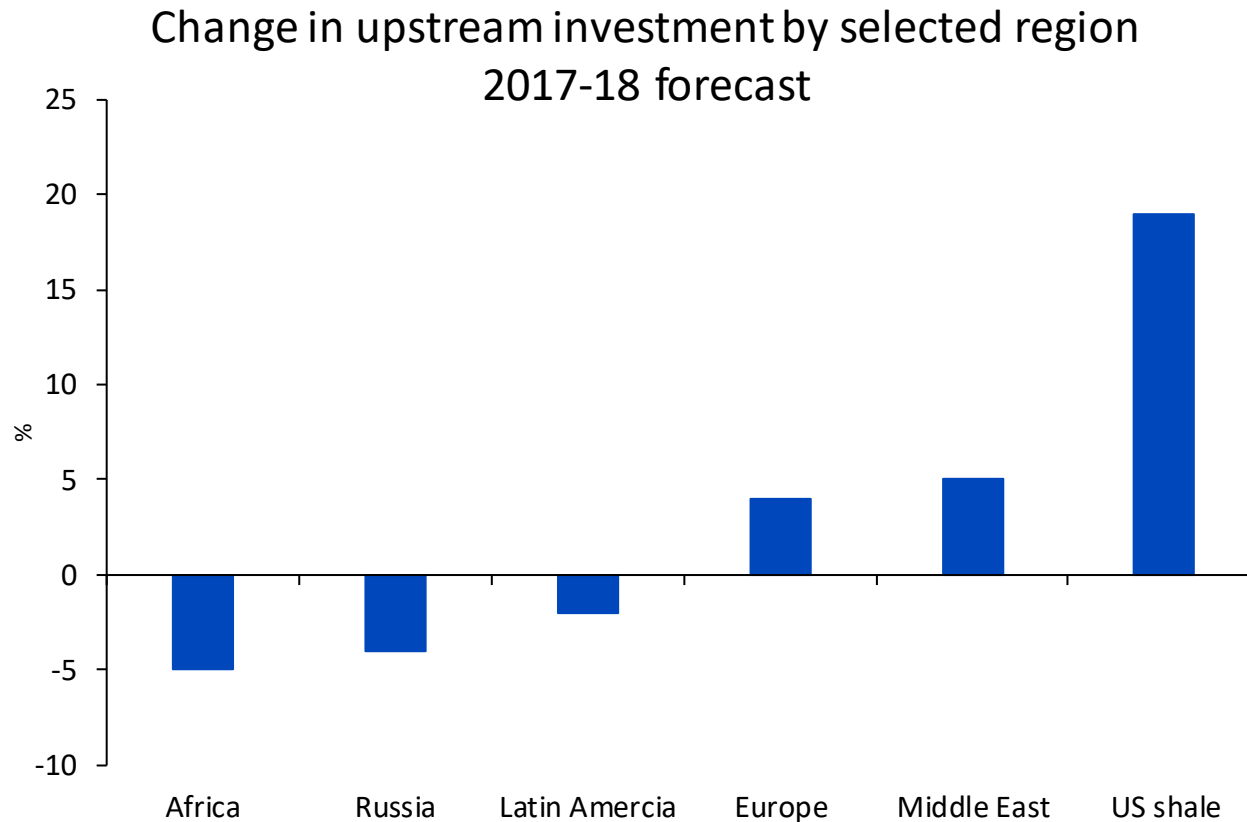
US tight oil investment is growing



Source: International Energy Agency, WisdomTree, data available as of close 09 August 2018

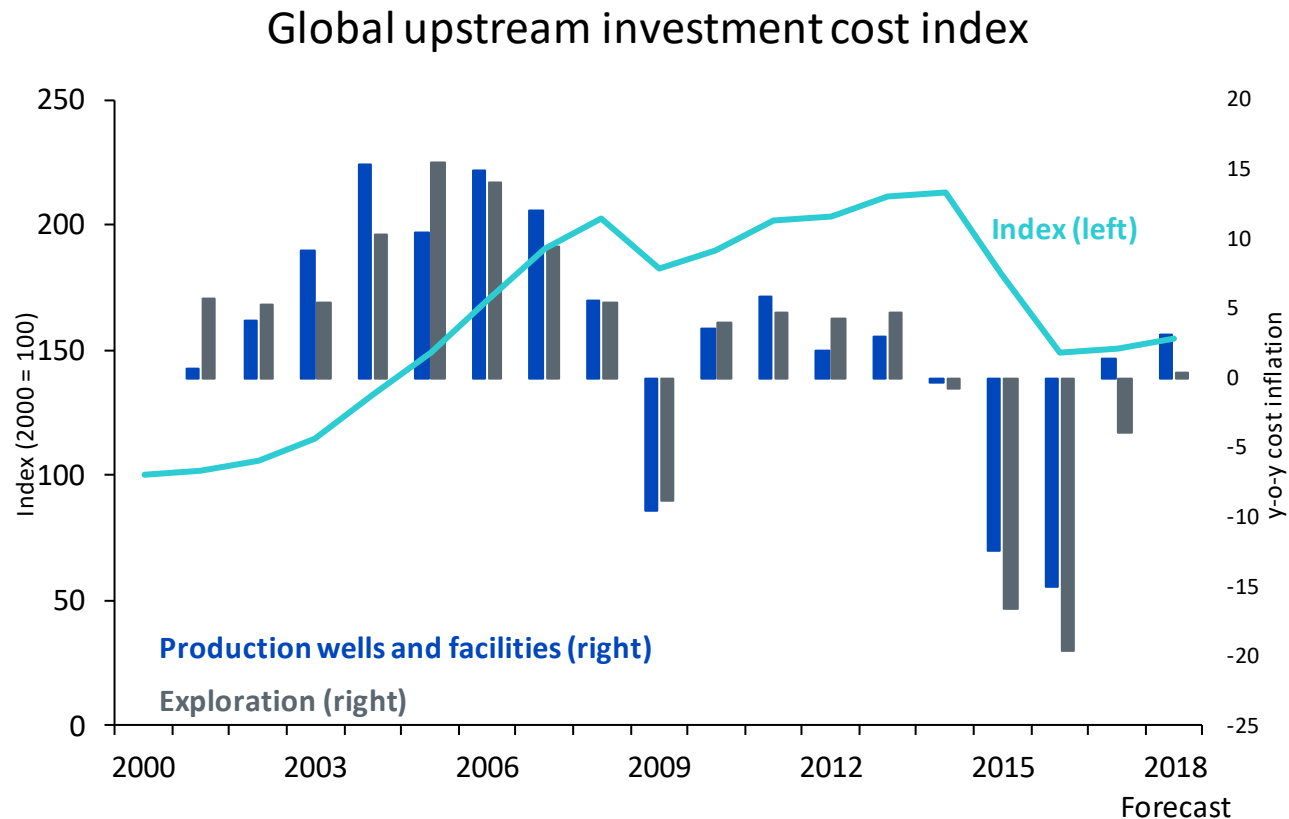
- + Conventional oil is extracted through traditional methods of vertical drilling
- + Shale and tight oil are extracted using a procedure known as 'fracking', using mainly horizontal drilling

But significantly less oil sector investment elsewhere



Source: International Energy Agency, WisdomTree, data available as of close 01 August 2018

Costs are starting to creep up



Source: : International Energy Agency, WisdomTree, data available as of close 01 August 2018

Index refers to costs, including labour and materials, as reported by the International Energy Agency

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