Metals Market Outlook

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Commodity Outlook: Divergent Fundamentals

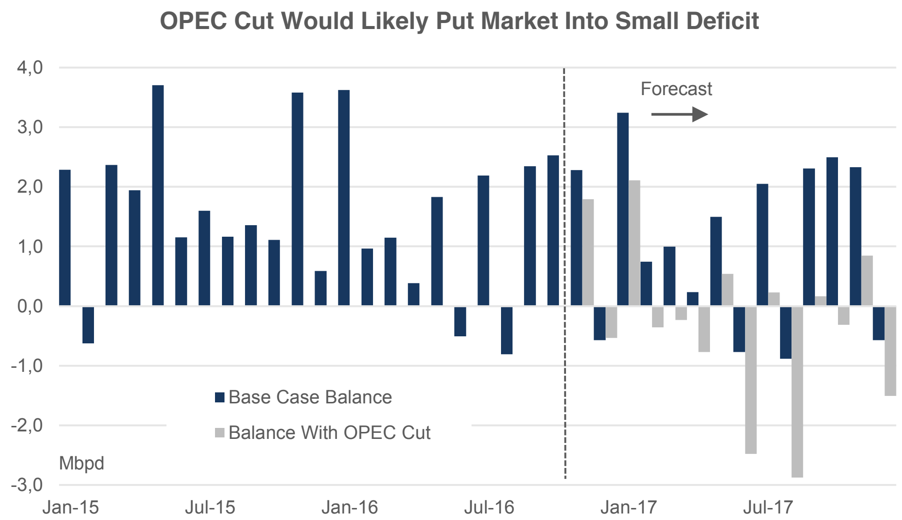
- **We expect that 2016 represented the bottom of the commodity cycle**, though recovery dynamics remain mixed and the bulks are expected to fall from currently inflated levels
- **Outperformers (zinc, nickel, coal) are experiencing near-term output constraints**, though some of these supply disruptions are likely to be short-lived
- **Laggards (copper, iron ore, aluminium) have witnessed significant supply capacity expansion** overwhelm still-reasonable demand growth, a trend that persists through the forecast horizon
- **Rising Dollar, Chinese crackdown on speculation** will pose mild headwinds to all major commodities

Scotiabank Price Outlook

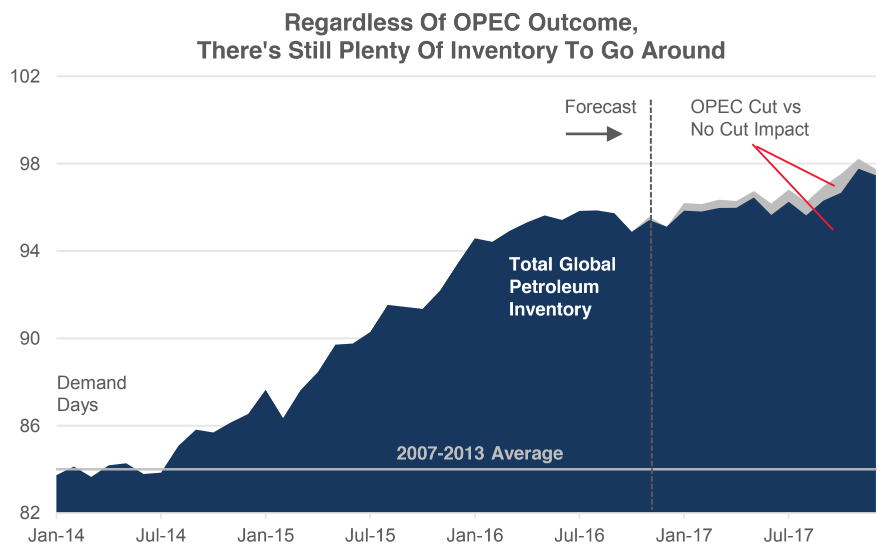
		2015	2016F	2017F	2018F
Oil & Gas					
Crude Oils					
WTI	US$/bbl	49	44	53	58
Brent	US$/bbl	54	45	54	59
Natural Gas					
Henry Hub	US$/MMBtu	2.6	2.4	3.3	3.5
Metals & Minerals					
Base Metals					
Copper	US$/lb	2.50	2.20	2.20	2.20
Nickel	US$/lb	5.37	4.30	4.75	6.00
Zinc	US$/lb	0.88	0.85	1.25	1.55
Aluminium	US$/lb	0.75	0.72	0.73	0.74
Bulk Commodities					
Iron Ore	US$/t	55	50	47	45
Metallurgical Coal	US$/t	90.12	125	140	120
Thermal Coal	US$/t	62	60	65	55
Precious Metals					
Gold	US$/toz	1161	1260	1300	1300
Silver	US$/toz	15.7	17.0	20.0	21.7

Oil: Uncertainty Abounds Ahead Of OPEC Meeting & The Trump Card

- **The oil market is expected to remain oversupplied through the end of 2017** after output overwhelmed demand by roughly 2.5 Mbpd in October.
- **Prices forecast to average US$44/bbl in 2016, $53 in 2017, and $57 in 2018.**
- **OPEC expected to reach a weak but much-lauded agreement** at the end of November; ministerial communication has been increasingly optimistic but significant hurdles to consensus remain
- **The Trump Effect?**
    - Prospect of Iranian re-sanctioning complicates OPEC negotiations
    - A more federally permissive upstream regulatory environment is anticipated from the Trump administration, bolstering the ability of U.S. tight producers to respond at lower price levels



Source: Oil Market Intelligence, Scotiabank Economics.



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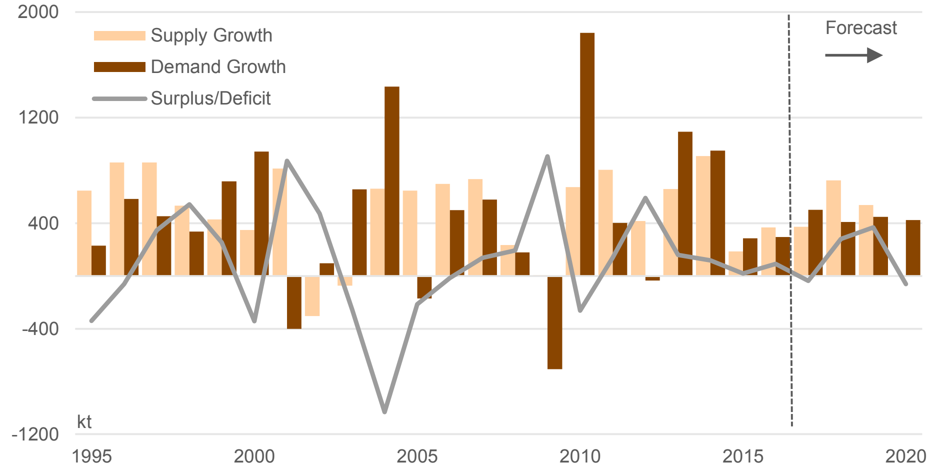
Copper: Fundamentals Present NT Headwinds But Hope In Sight

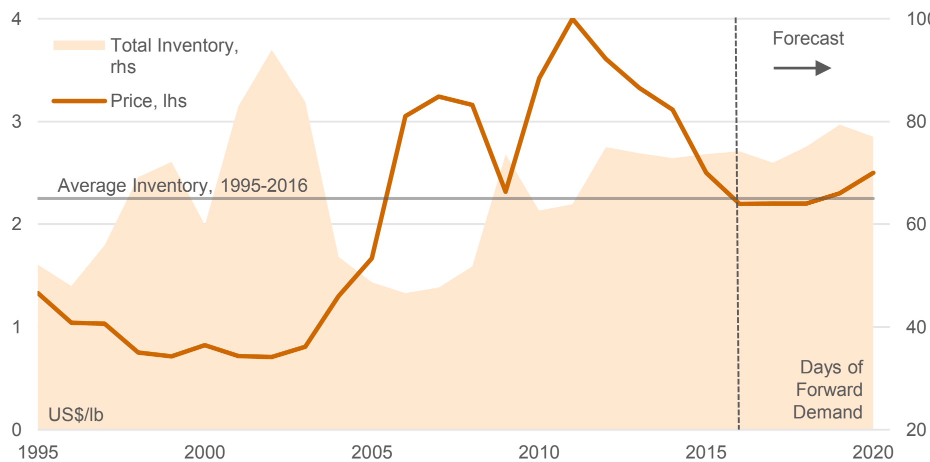
- **Copper's near-term prospects are muted** as significant new mine supply ramps up and global demand growth remains weak
- **Prices are forecast to remain flat at $2.20/lb through 2018** before rising to incentivize new mines needed in the early 2020s
- **Current demand is being supported by Chinese stimulus**, which is bringing forward future demand; however, long-term growth prospects remain optimistic on copper's strong link to electrification
- **Large near-term supply gains will dwindle to contractions** by end-decade as the project pipeline is depleted; long lead times for new mines will likely result in acute supply deficits by the early 2020s

Copper Supply & Demand: Surpluses Yield To A Lack Of Mine Investment



Source: Wood Mackenzie, Scotiabank Economics.

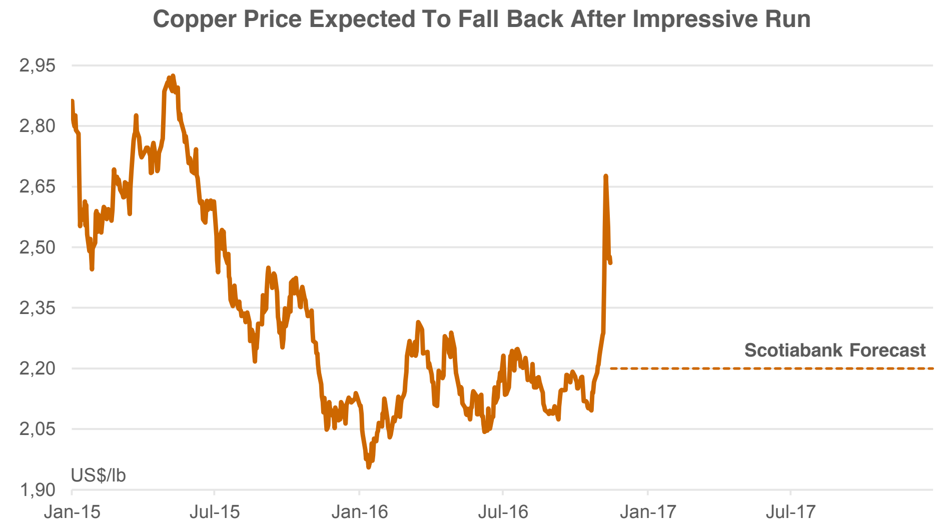
Copper Prices & Inventory: Deficits Draw Inventory Near Decade's End, Pulling Prices Higher



Source: Wood Mackenzie, Scotiabank Economics.

Copper: What's Behind Coppers Recent Rally & Does It Have Legs?

- **Copper had been range-bound** between \$2.00-2.30/lb for the majority of the year and speculators had generally shunned the metal
- **Lower than expected mine disruptions** in 1H16 had helped suppress copper prices, but production losses in Q3 coupled with marginally stronger Chinese demand injected some much-needed fundamental optimism into copper
- **Prices broke above \$2.30/lb and speculators took notice**, particularly in China; prices continued to rise to US\$2.68/lb before retracing some gains
- **We expect fundamentals to reassert themselves** and bring prices back to the 2.20-2.30 range, where they're expected to remain through 2018



Source: Bloomberg, Scotiabank Economics.

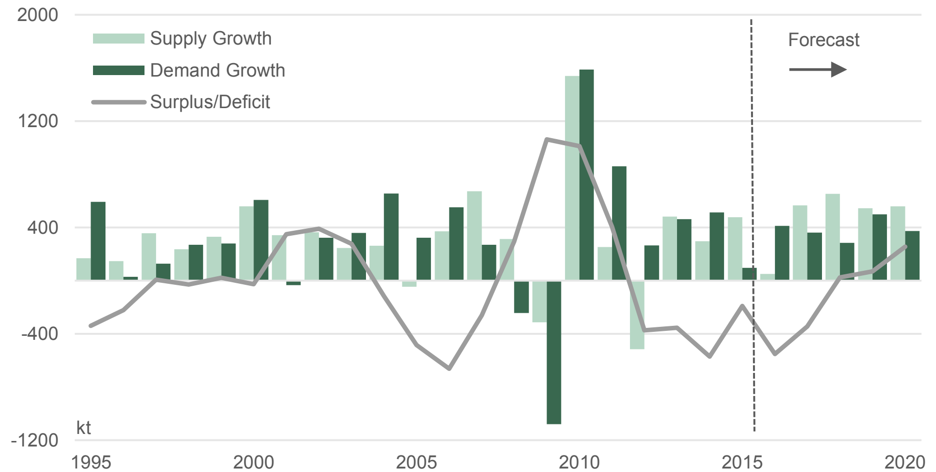
Zinc: Deficits, Dwindling Inventory Will Stoke Prices Higher Still

- **Zinc continues to benefit from the most favourable fundamental outlook** among the key base metals

- **Weak supply growth** due to depletion-related mine closures (e.g. Century, Lisheen) and Glencore's decision to idle significant mine capacity until prices recover

- **Multi-year deficits** have eroded sizable inventories, which are expected to fall well below long-run average levels (38 vs 78 days) and prompt an acute price response needed to incentivize new mine supply

Zinc Supply & Demand:
Little Mine Investment And Large Closures Tighten Supply



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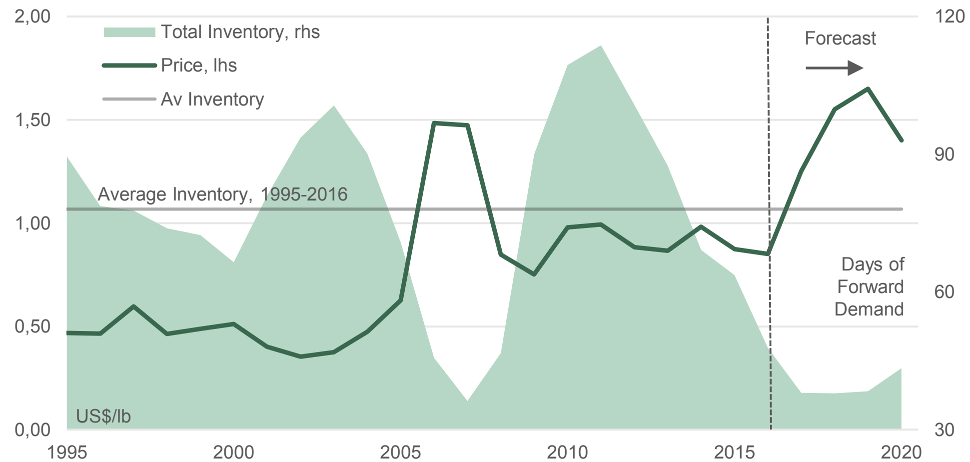
Zinc Prices & Inventory:
Deficits Expected To Bring Inventory To Well Below Av. Levels



Source: Wood Mackenzie, Scotiabank Economics.

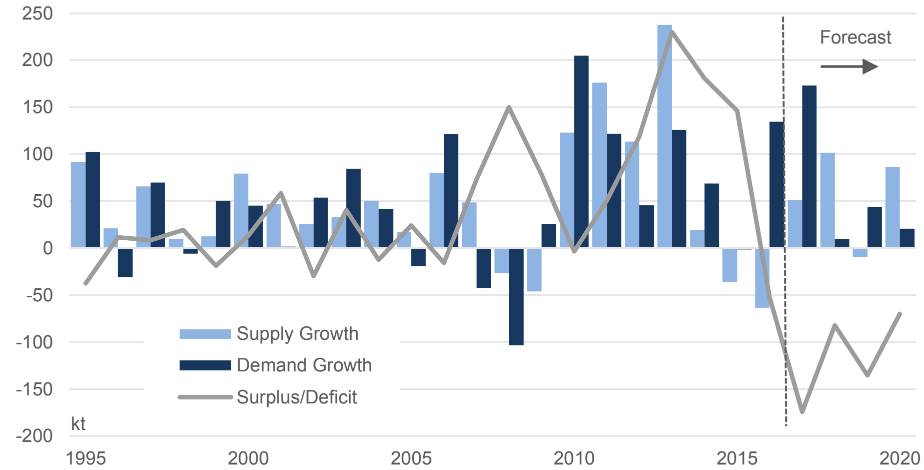
Nickel: Favourable Market Balance Overwhelmed By Inventory Levels

- **Global inventory is expected to gradually draw on the back of significant supply deficits** but prices are unlikely to sustainably rise until high levels return to a more normal level, expected near end-decade

- **Current supply is artificially low** due to political developments in Indonesia and, more recently, the Philippines; while these developments have helped tighten near-term balances, this tonnage is expected to return to the market in due course

- **Nickel supply has been stubbornly resistant to price-driven cuts** despite the fact that large portions of the industry are currently in the red; producers are ever-optimistic that a return to previously-high prices is imminent

Nickel Supply & Demand:
Surpluses Yield To A Lack Of Mine Investment



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Nickel Prices & Inventory:
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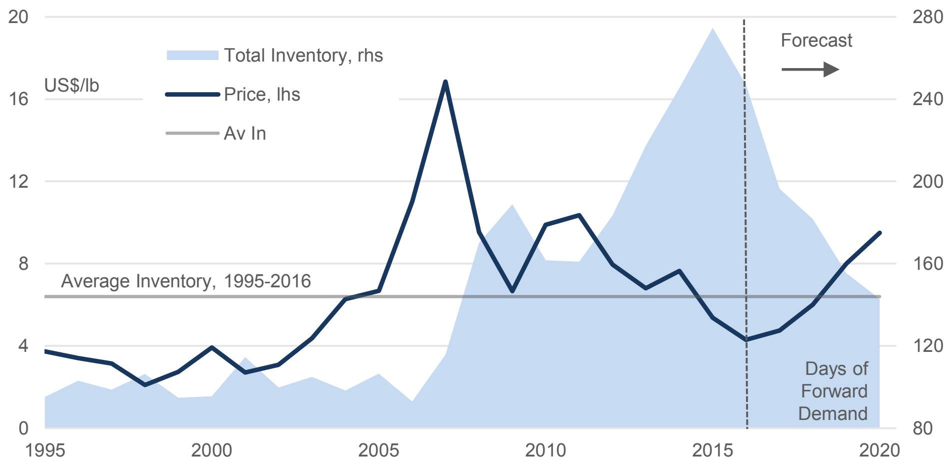


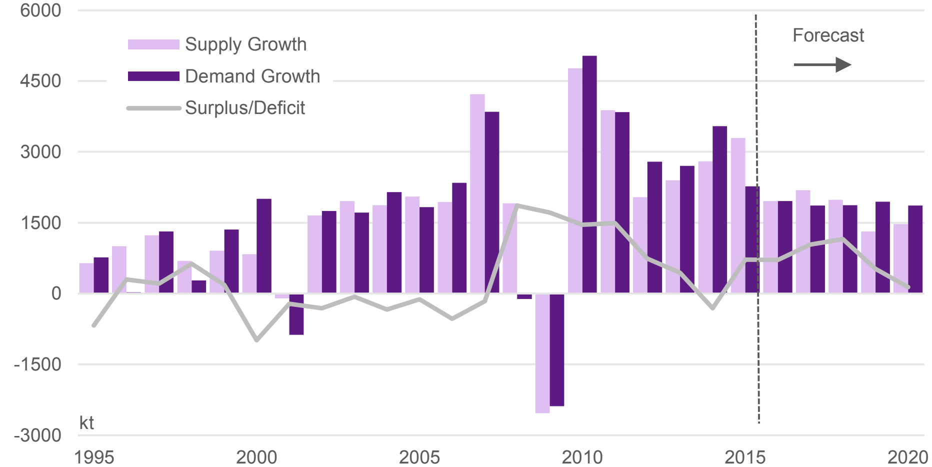
Source: Wood Mackenzie, Scotiabank Economics.

Aluminium: Chronic Overcapacity Blunts Price Outlook

- **Aluminum's prospects are uninspiring** despite strong demand growth, given seemingly endless subsidized Chinese capacity that needs to be either forced out through policy or the slow, eventual attrition of low prices

- **Coal price spike will stress global producers** (particularly in China) due to coal-power connection and high power intensity of aluminium production

Aluminium Supply & Demand: Surpluses Yield To A Lack Of Mine Investment



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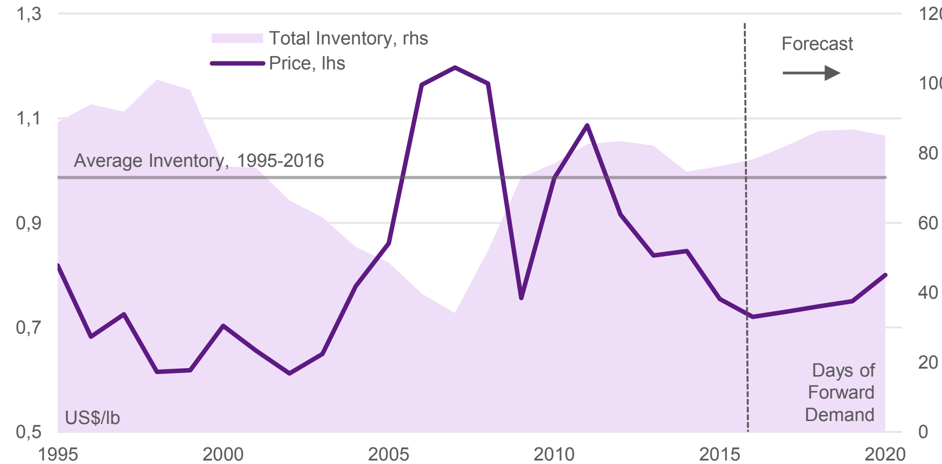
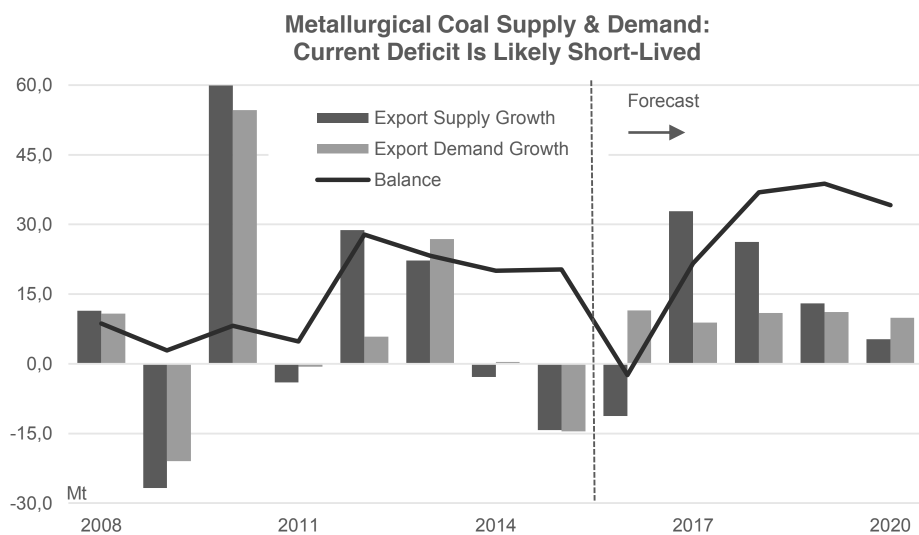
Aluminium Prices & Inventory: Deficits Draw Inventory Near Decade's End, Pulling Prices Higher



Source: Wood Mackenzie, Scotiabank Economics.

Coal: The Big Surprise of 2016 Expected To Retrace In 2017

- **Coal's performance in the latter-half of 2016 has been one of the year's biggest surprises**
- **"Perfect storm" of unrelated events have pushed up coking coal spot prices by nearly 300% to US$308/t**
  - Chinese government policy change reduced allowable working mine days to 276 from 330
  - Blasting ban in Shaanxi province
  - Flooding in Chinese interior
  - Rising steel output to meet Chinese stimulus demand
  - Australian mine disruptions
- **Prices are expected to fall back** as idled/shuttered supply is restarted to capture high prices and steel production falls back due to lower demand and weaker margins



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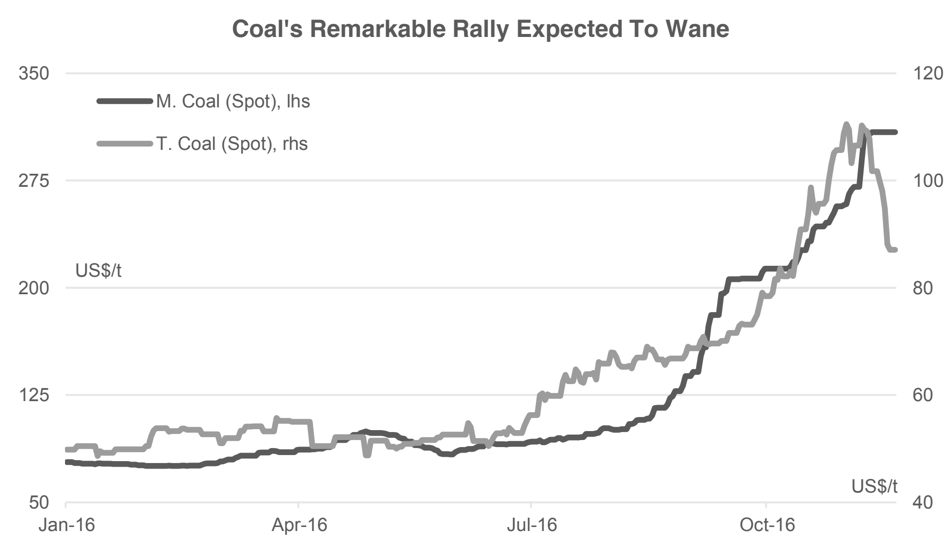
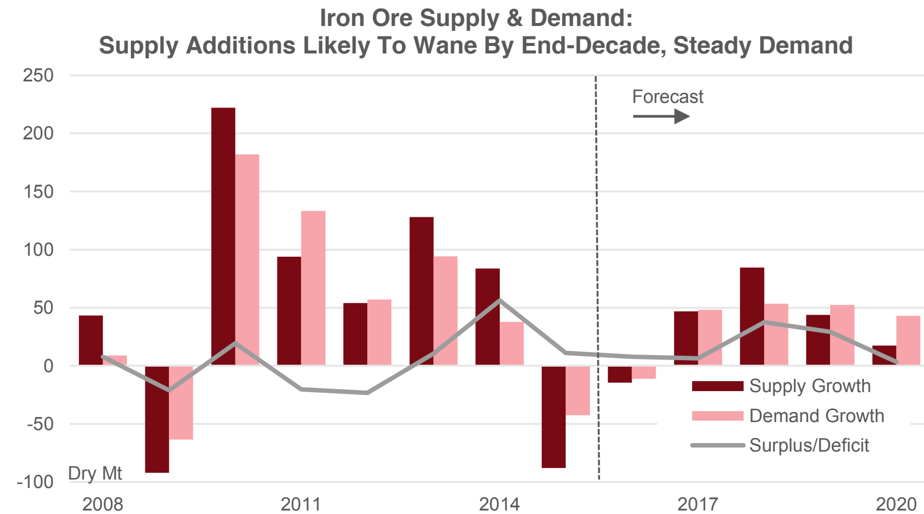


Source: Bloomberg, Scotiabank Economics.

Iron Ore: Large Supply Gains Will Cap Future Price Path

- **Large new mines,** primarily in Brazil and Australia, are expected commence operations in the near future
- **Recent spot price performance is likely overdone,** primed by frothy bulk markets and Chinese stimulus demand
- **Rising Chinese port inventory** provides one of the more concrete signs of this accumulation, and China's move to quell commodity speculation is likely to affect iron ore more than other metals
- **Steel most exposed to Chinese property market**, which has seen future expectations downgraded slightly after recent stimulus "borrowed" demand from the future



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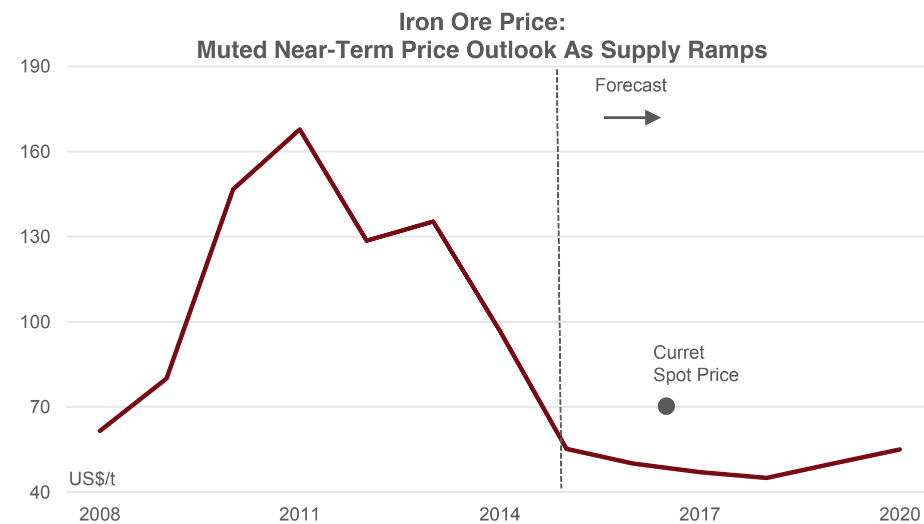

Source: Bloomberg, World Bank, Scotiabank Economics.

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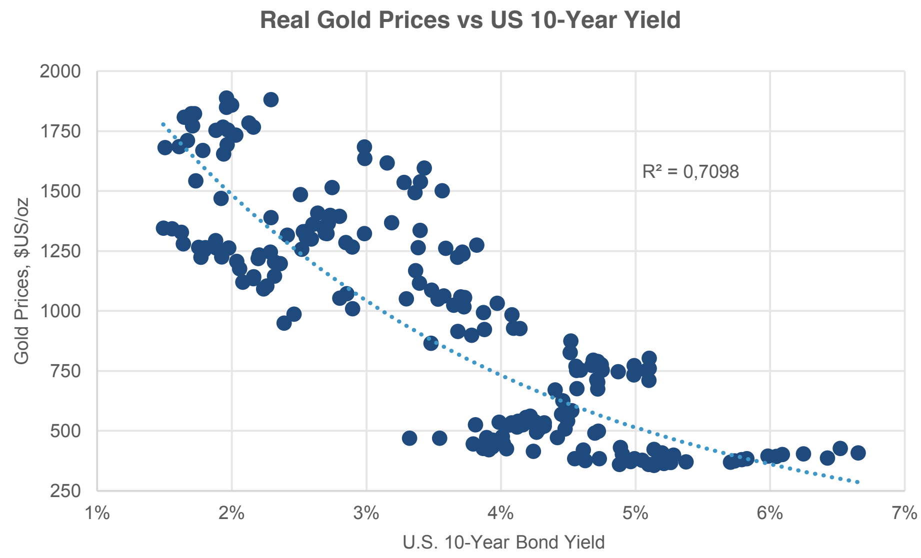
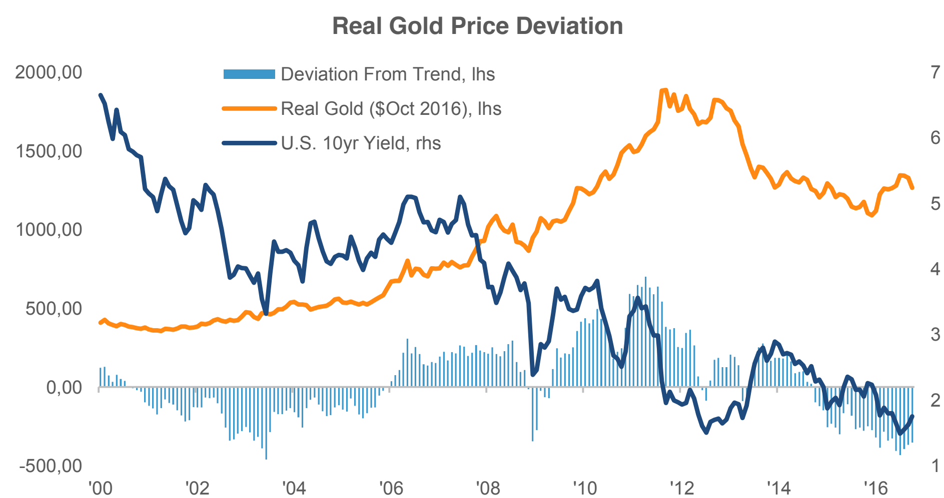
Gold: Balanced Risks Given Rising Yields (-) & Political Uncertainty (+)

- **Gold's outlook is balanced** between the headwinds of rising interest rates and the tailwinds of a tumultuous and uncertain global political outlook
- **U.S. 10-year bond yields are forecast to rise to 2.5% by end-2017 and 2.6% by end-2018**, with the U.S. Federal Reserve to hike interest rates in December 2016 followed by three hikes in 2017 and two in 2018.
- **However, yields are rising at a time of significant political uncertainty** and Europe's roughly two-dozen elections/referenda taking place next year will continue to support gold as an instability hedge





Source: Bloomberg, Scotiabank Economics.

Commodity Snapshot & Questions

	Position In Cycle; Years To Recovery	NT	LT	Bullish Factors	Bearish Factors
Cross-Commodity	Middle; 2-3 years	Neutral	Strong	Declining ore/resource quality, green technology (metals), India/ASEAN growth, long project lead times	Falling costs, flattening cost curves, emissions policies (energy), China deceleration, no "new China" to return us to prior pace of industry
Energy					
Crude Oil	Beginning-Middle; 18-24 months	Weak	Neutral	Low Investment, low Profitability, potential OPEC deal, falling non-OPEC production	Slowing demand growth, faster and more robust shale response than expected (hightened by Trump victory), record high inventories, OPEC deal exemptions
N. American Natural Gas	Middle; 6-18 months	Neutral	Strong	Falling N American producition, colder winter anticipated, rising use in electricity generation, cleaner 'bridge fuel' will benefit from coal-switching amidst carbon-reduction	Looking like it could be a warmer-than-expected winter, plenty of potential shale gas reserves globally, increasing familiarity with tight geologicla formations, surplus liquifaction capacity, slow asian demand growth
Base Metals					
Copper	Beginning; 3-4 years	Weak	Strong	Little investment today, continued growth expected due to intensity of electronics and green technology sectors	Wave of new supply following years of high prices, prices aren't likely to drop below cash costs so economic idling is unlikely
Nickel	Middle; 2 years	Neutral	Strong	Philippine environmental audit, Indonesian ore export ban, majority of industry cashflow negative	Very high inventories, sluggish organic/sustainable supply response, uncertain ramp-up profile of Indonesian nickel pig iron (NPI) supply
Zinc	Middle-End; 6-12 months	Strong	Neutral	Large concentrate supply deficit (mine depletion & economic idling), falling inventories	Glencore's idled mines can ramp up relatively quickly and timing is uncertain, anticipated period of high prices may precipitate substitution/demand destruction
Aluminium	Beginning; 3-5 years	Weak	Weak	Robust global demand growth due to its variety of industrial and consumer uses	Material and chronic overcapacity, subsidized Chinese smelters/tax-incentivized refined exports
Bulk Commodities					
Iron Ore	Beginning; 3-5 years	Weak	Weak	Next wave of industrial construction and urbanization in India, Brazil, and ASEAN.	200 Mt of new supply expected by 2020, peak China steel production, deceleration of Chinese construction sector, high met coal prices reduce steel profitability
Metallurgical Coal	Middle; 2-3 years	Neutral	Neutral	Chinese government policy move to reduce allowable working mine days to 276 from 330 (unlikely to be reversed in near-term), various other near-term supply losses	Expectations for non-China supply response (Australia/North America), slower steel demand growth, potential that Chinese capacity restarts if prices remain near current highs (already witnessed policy wavering)
Thermal Coal	Beginning-Middle; 3 years	Neutral	Weak	Remains least expensive source of electricity generation in most circumstances, Indian demand expected to rise	Most emissions-intensive power generation feedstock, economics most vulnerable to carbon price, opposition near cities due to localized air pollution/smog
Precious Metals					
Gold	N/A	Neutral	Neutral	Negative-yielding global assets, heightened political risk (Brexit execution risk, EU referenda/elections, Trump uncertainty)	Rising interest rate environment, prices remain well above current average global costs

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