CRU View of the Global Copper Market

ICSG Meeting
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Base Metals Team
2019: Prices slide but market not heavily oversupplied

2019 Key Characteristics:

- Global GDP & IP slow, exacerbated by trade war
- Market sentiment negative; Speculators net short
- US$ strengthens further
- World refined copper demand weakens sharply
- Large number of disruptions to supply (mine and refined)
- Concentrates market tight; Low spot TC/RCs
- Visible stocks close to multi-year lows
- Refined market in small surplus in 2019
- 90th percentile for 2019 = $5,260/t

Copper price wedded to e/r moves

LME 3-month price for copper
2019 Forecast = $5,980/t

DATA: CRU
Global copper demand downgraded as IP slows sharply

Global trade and IP
y/y % change

Change in global refined Cu demand,

DATA: CPB
2020 base case: Positive but below trend demand growth

Global growth in refined copper consumption by region, 2020, y/y % ch.

- World: +1.4% 2020
- Europe: +0.4%
- China: +1.8%
- India: +6.0%
- M. East & Turkey: +0.9%
- S&C America: +0.7%
- NE Asia: +0.3%
- ASEAN: +2.3%
- N. America: +0.6%
- S&C America: +0.7%

Legend:
- < -0.25%
- 0% - 0.25%
- 0.25% - 0.50%
- 0.50% - 0.75%
- 0.75% - 1.0%
- 1.0% - 1.5%
- 1.5% - 2.0%
- 2.0% - 3.0%
- > 3.0%

DATA: CRU
Recovery in global demand delayed until 2021

Kg/capita refined copper demand

Global refined copper consumption, y-o-y %

DATA: CRU   NOTE: Per capital demand based on working age population.
Disruptions to mine output in 2019: Recovery in 2020/21

Mine disruption rate, %

Copper mine production, %

DATA: CRU

* Jan-Sept only
Global SXEW production, Mt copper

Peak SXEW supply

DATA: CRU
Strong pipeline of firm projects but others likely delayed

Firm mine projects (capacity >= 50,000 t/y), ‘000 t

Global copper mine output, after disruptions, ‘000t

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DATA: CRU
5% import duty on concentrates into Zambia has been the most disruptive of recent policy changes.

Heavy downgrades to mine and refined output in 2019
Smelter disruptions reduce growth in 2019

Main disruptions to smelter production in 2019

- Ilo: maintenance brought forward due to technical issues
- Paipote: production issues
- Dias d'Avila: energy & gas supply disrupted
- Tsumeb: shutdown
- Chuquicamata & Potrerillos restart delayed
- Hayden: Running below capacity
- Huelva: force majeure
- Technical issues at Nanguo & Chifeng Jinfeng
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- Hamburg: boiler issues
- Naoshima: boiler issues
- Toyo: fire
- LS Nikko: Accident during maintenance
- PASAR: Reduced UR
- Tuticorin: Supreme Court revokes order to reopen smelter
- Nchanga: suspended due to government tariffs
- Mufulira: extended maintenance
- Muzo: extended maintenance
- Hayden: Running below capacity
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Refined production y-o-y growth; %

- 2018: 2.6%
- 2019: 0.0%
- 2020: 2.4%
- 2021: 1.4%
- 2022: 1.1%
- 2023: 1.4%
- 2024: 1.6%

DATA: CRU
Firm project pipeline but low TCs will reduce profitability

Smelter projects (capacity >= 100,000 t/y); '000 tpy

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<th>Project</th>
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Annual benchmark TC/RC, $/t & c/lb

DATA: CRU
Prices have breached 90\textsuperscript{th} percentile on CRU AISC basis

2019 Cash cost curve and all-in sustaining cost (AISC) curve, $/t copper

90th percentile AISC costs - $6,350 /t
90th percentile cash costs - $5,260 /t

Average LME 3M price: 1-11 Oct = $5,686 /t

DATA: CRU
Sub-$6,000/t price in 2020; $7,000/t attainable by 2024

Market balance in refined copper, '000 t, LHS, and LME 3M copper price, $/t, RHS

Stocks close to multi-year lows
End of month visible stocks, ‘000t
Conclusions: Deficit story still intact

Copper demand has weakened this year and supply has suffered disruptions…

…leaving market in small surplus overall. Stocks lowest for several years

Strong pipeline of firm projects but others will be subject to delays…

…and other risks to mine supply exist - technology and African Copperbelt

SXEW production has peaked and is set to decline

Price unlikely to recover in ST - $5,900/t for 2020 – but $7,000/t attainable in MT

DATA: CRU
Thank you for your attention!

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