

Valuations: Indian companies

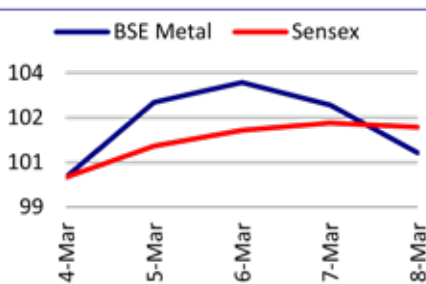
Company	Price (INR)	EV/EBITDA (x)		P/B (x) FY19E
		FY19E	FY20E	
Steel				
Tata Steel	521	6.0	6.9	1.0
JSW Steel	290	6.8	8.2	2.2
JSPL	167	6.8	6.4	0.5
SAIL	55	6.8	6.3	0.6
Non-Ferrous				
Hindalco	201	5.4	5.1	1.1
Nalco	57	2.9	5.5	1.1
Vedanta	176	6.2	4.7	1.1
Rain Ind.*	107	5.1	6.2	0.8
Mining				
Coal India	235	3.9	4.0	7.1
HZL	270	8.7	7.0	3.4
NMDC	109	4.5	6.2	1.3

Note: Detailed table on pg 25 Source: MOSL

Valuations: Global companies

	Price	EV/EBITDA (x) P/B (x)		
		CY18	CY19	CY18
Mining				
BHP-Billitc	AUD 36.88	5.9	6.0	na
FMG	AUD 6.5	4.1	4.3	na
Rio Tinto	AUD 90.6	5.2	5.5	na
Vale	USD 48.85	4.9	4.5	1.6
Teck Resol	USD 21.58	4.2	4.5	0.7
Anglo Ame	GBp 1987	4.5	4.8	na
STEEL				
Arcelor Mit	EUR 18.71	3.8	3.9	0.5
Posco	KRW 249.5	4.2	4.0	0.5
US Steel	USD 19.25	3.6	3.7	0.8
Nucor	USD 57.79	6.1	6.5	1.7
JFE	JPY 1848.5	6.7	6.6	na
Gerdau	BRL 14.71	5.3	5.1	1.1
Angang	CNY 5.65	4.1	5.1	0.8
Ali - Smelting				
Alcoa	USD 26.82	3.3	3.2	0.9
Hydro	NOK 33.63	5.4	4.2	0.8
Rusal	HKD 3.55	7.6	6.7	1.2

BSE Metals Index v/s Sensex



Source: Bloomberg

Note: Indexed to 100 on 4 Mar 2019

Investors are advised to refer through important disclosures made at the last page of the Research Report.

Metal Prices

	CMP	change since						
		8-Mar	%	1-Mar	%	31-Mar	%	1-Jan
STEEL								
TMT- Mumbai (INR/ton)	38,000	-2	38,600	-1	38,500	-3	39,200	
HRC- Mumbai (INR/ton)	42,800	2	42,000	-6	45,500	1	42,500	
HRC (USD/ton) fob CIS	525	0	525	-15	618	-4	548	
METALLICS								
Sponge iron - Raipur (INR/ton)	20,300	-5	21,300	-6	21,600	-9	22,400	
Pig iron - Raipur (INR/ton)	28,100	-1	28,250	-10	31,050	-1	28,375	
Iron ore spot (USD/ton) cfr China	83	0	83	24	67	14	73	
Coking coal (USD/ton) fob Aus.	216	1	215	0	217	-17	262	
Shred. scrap (USD/ton) Rotterdam	301	4	289	-15	355	-11	337	
ALUM.								
LME Spot (USD/ton)	1,848	-2	1,891	-11	2,069	-16	2,206	
Indian prices (INR '000/ton)	147	-3	152	10	134	5	140	
LME inventories ('000 ton)	1,221	-1	1,233	-6	1,306	11	1,099	
ZINC								
LME Spot (USD/ton)	2,706	-5	2,840	-18	3,285	-20	3,396	
Indian prices (INR '000/ton)	190	-6	202	-11	213	-12	215	
LME inventories ('000 ton)	60	-7	65	-71	206	-67	180	
COPPER								
LME Spot (USD/ton)	6,399	-3	6,572	-8	6,923	-10	7,097	
Indian prices (INR '000/ton)	449	-3	463	0	448	-1	456	
LME inventories ('000 ton)	117	-7	126	-64	321	-43	204	
OTHERS								
Gold (INR/10gms)	33,043	-1	33,226	10	30,112	12	29,443	
Sliver (INR/1kg)	39,880	-1	40,158	6	37,762	3	38,643	
Lead Spot LME (USD/ton)	2,072	-4	2,153	-14	2,416	-20	2,590	
Brent crude (USD/bbl)	65.7	1	65.1	-1	66.2	-3	67.6	
MISC.								
INR/USD	70.0	-1	71.0	8	65.1	11	63.3	
BDI	601	-5	634	-47	1,143	-56	1,371	

Indian steel prices largely stable; base metal prices decline

- Ø **Indian steel:** Long product (TMT Mumbai) prices were lower by ~2% WoW. Sponge iron prices declined ~5% WoW, while scrap prices decreased ~2% WoW. Iron ore prices remained unchanged. Pellet prices were down ~2% WoW. Domestic HRC prices were up ~2% WoW. Export price offers were higher, while import offers were unchanged.
- Ø **Raw materials:** Iron ore prices (China CFR) were down ~1% WoW. Thermal coal prices were unchanged. Coking coal prices increased ~1% WoW. China's pellet import prices decreased ~2% WoW. Chinese graphite electrode prices were ~7% lower.
- Ø **Europe:** HRC prices were slightly lower. CIS HRC export prices were unchanged WoW. Rotterdam scrap prices were up ~4% WoW.
- Ø **China steel prices:** Chinese HRC prices were down ~1% WoW, while Rebar prices were lower by ~2%. Export prices for rebar and HRC were higher by ~1% WoW.
- Ø **Base metals:** Aluminum (cash LME) prices were down by ~1% WoW. Alumina prices were up ~1% WoW. Copper (cash LME) prices were down ~3% WoW. Zinc (cash LME) prices were down ~5% WoW. Lead (cash LME) prices declined ~4% WoW. Brent crude prices were up ~1% WoW.

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Ferrous

HRC prices were up
INR800/t WoW to
INR42,800/t

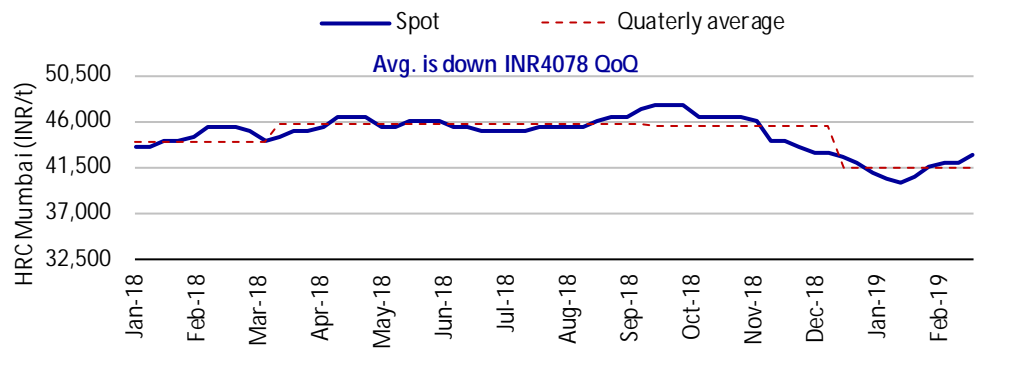
Long products (TMT
Mumbai) prices were
down 1.6% WoW to
INR38,000/t.

Sponge iron prices were
down 4.7% to INR20,300/t.

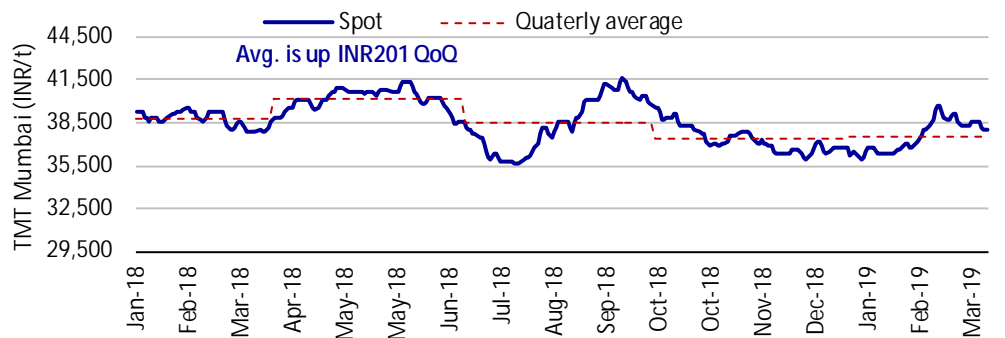
Ferrous

INDIAN DOMESTIC MARKET

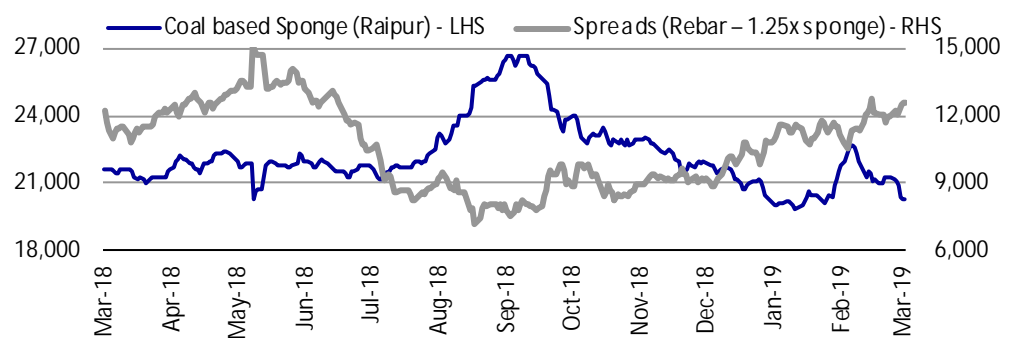
HRC prices (INR/T, excl. GST)



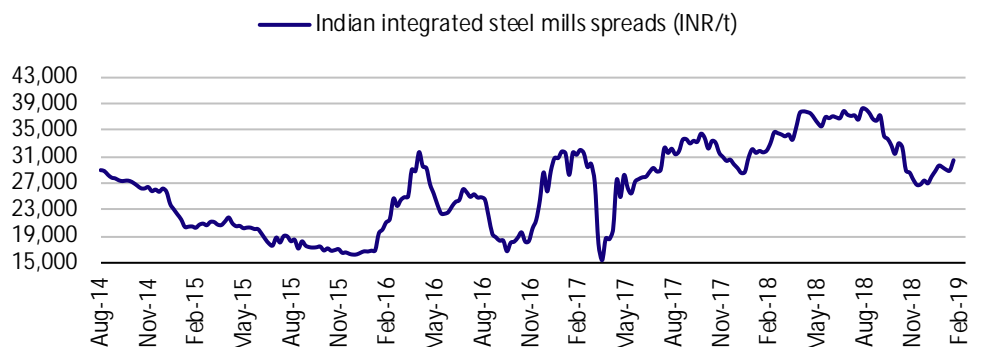
Rebar prices (INR/T, excl. GST)



Sponge iron (made from lumps) prices & spreads to Rebar (INR/T, excl. GST)



India: Integrated steel mills spreads (Import parity HRC – 1xcoking coal)



Source: SteelMint, WSA, MOSL

Ferrous

Scrap prices were down 2.3% WoW to INR25,400/t.

Iron ore lump prices were unchanged.

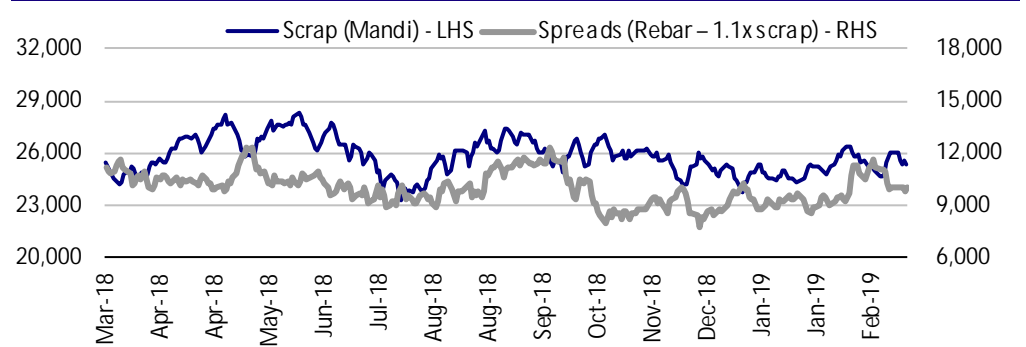
Iron ore fines prices were unchanged.

Pellet prices were down 1.7% to INR5,900/t.

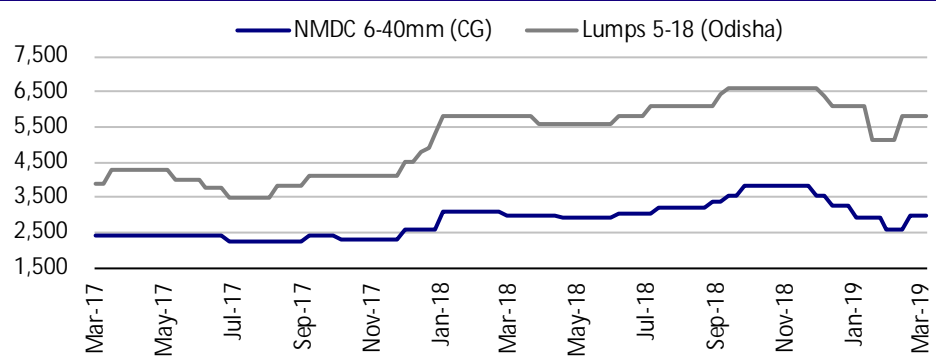
Ferrous

INDIA

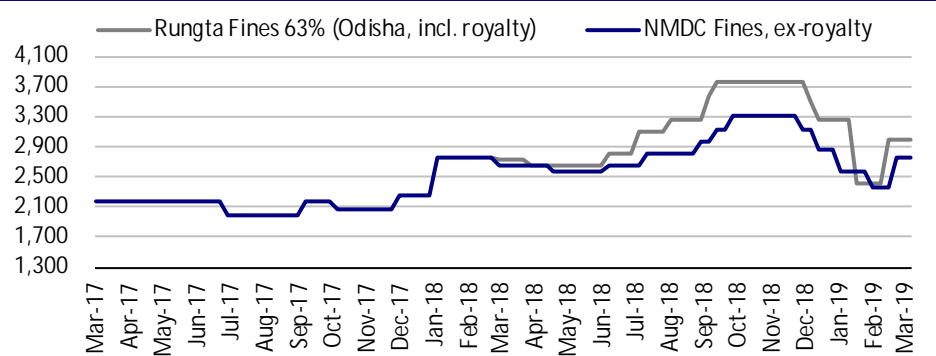
Scrap Mandi & spreads to Rebar (INR/t)



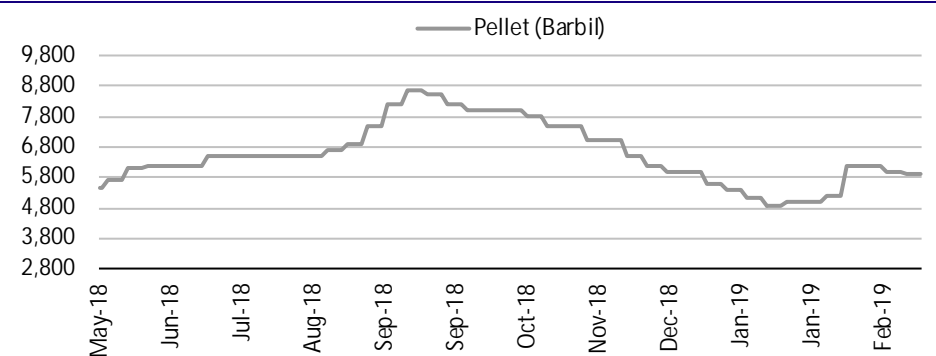
Iron ore lumps (INR/t)



Iron ore fines (INR/t) ex mine



Pellet (Barbil) INR/t

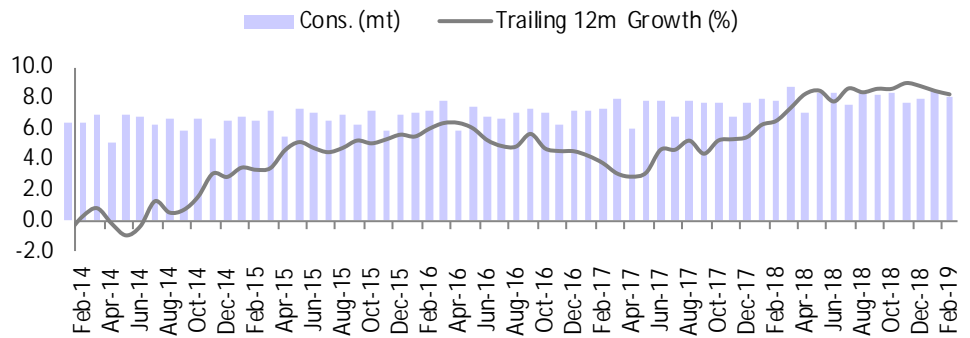


Source: SteelMint, WSA, MOSL

India steel demand grew 3.9% YoY in February 2019.

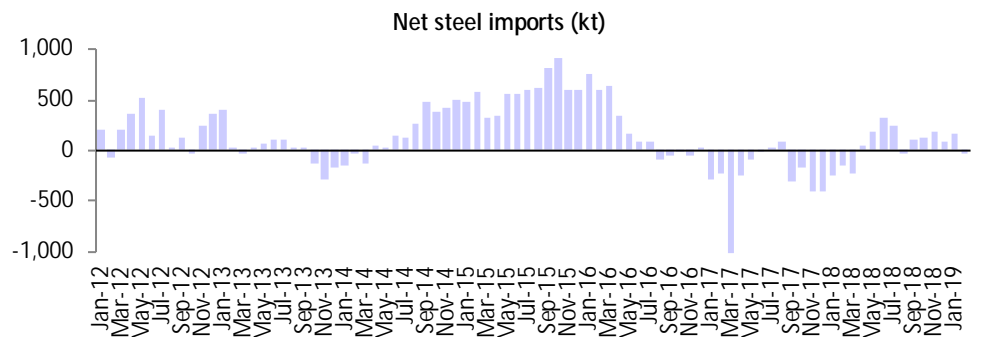
India Monthly steel trends

Steel consumption (mt) and growth (trailing 12-month) YoY %



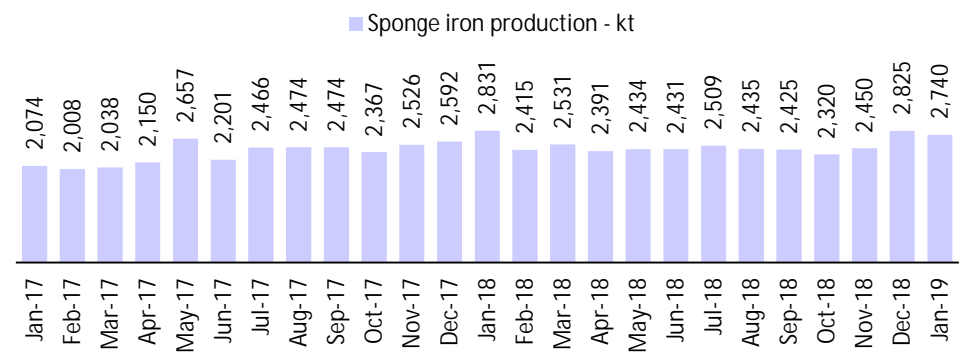
India was a marginal net exporter of steel in February 2019.

Steel imports and exports - kt



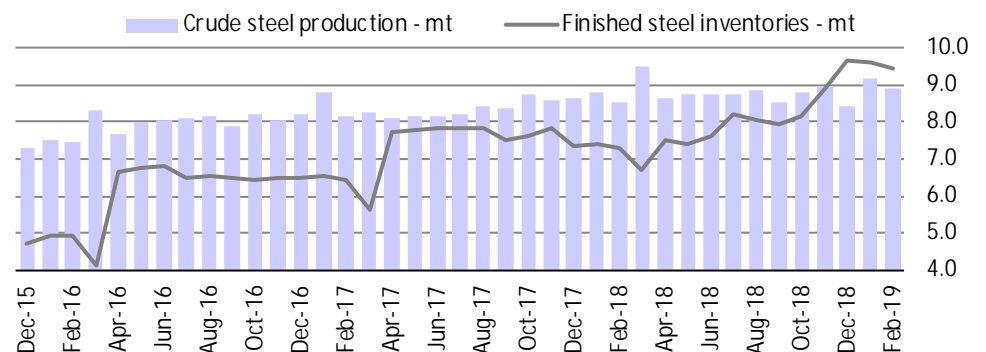
Sponge iron production was down ~ 3% YoY to 2.74mt in January 2019.

Sponge iron production - kt



Crude steel production was up 4.8% YoY in February 2019. Inventories lowered 0.2mt MoM to 9.4mt

Crude steel production & finished steel inventories - mt

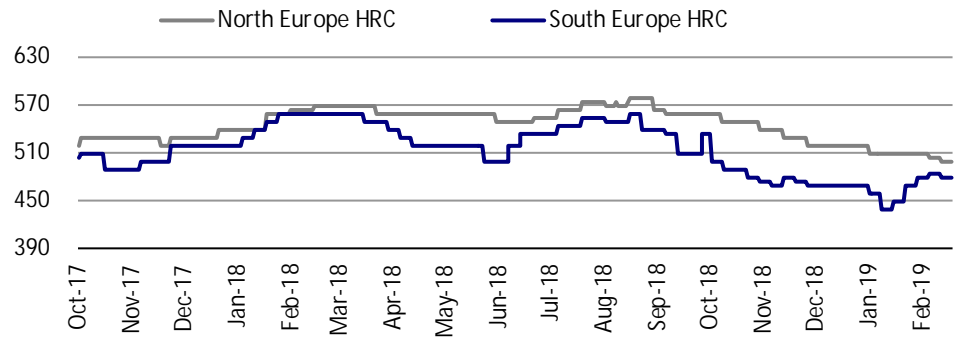


Source: JPC

European Union

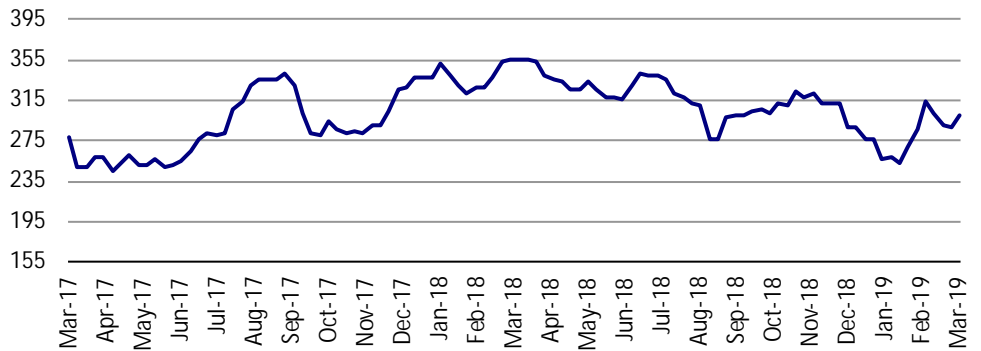
South Europe HRC steel prices were slightly lower at EUR480/t.

European HRC prices (EUR/ton)



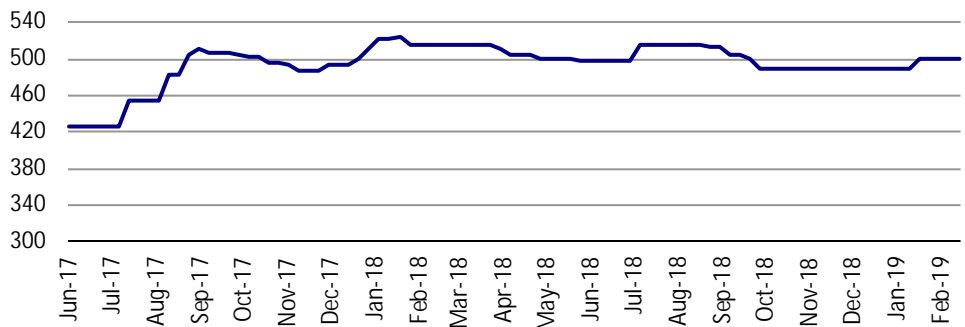
Shredded scrap prices (USD/t) fob Rotterdam

Rotterdam scrap prices were up 4.2% WoW to USD301/t.



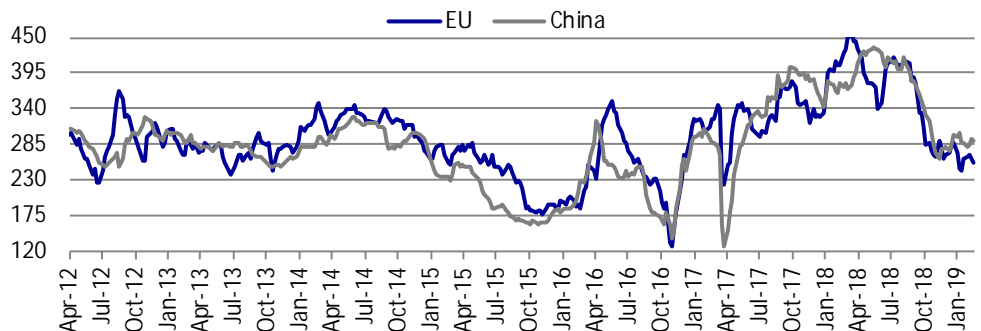
European wire rods southern region (Euro/t)

South Europe wire rod prices were unchanged WoW.



Spreads (HRC-1.6xiron ore-0.7xcoking coal) – (USD/t)

EU steel product spreads lowered.

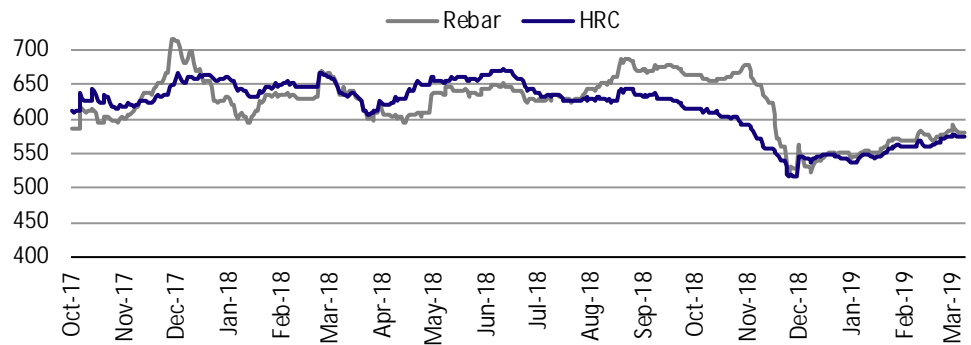


Source: Bloomberg, WSA, MOSL

China

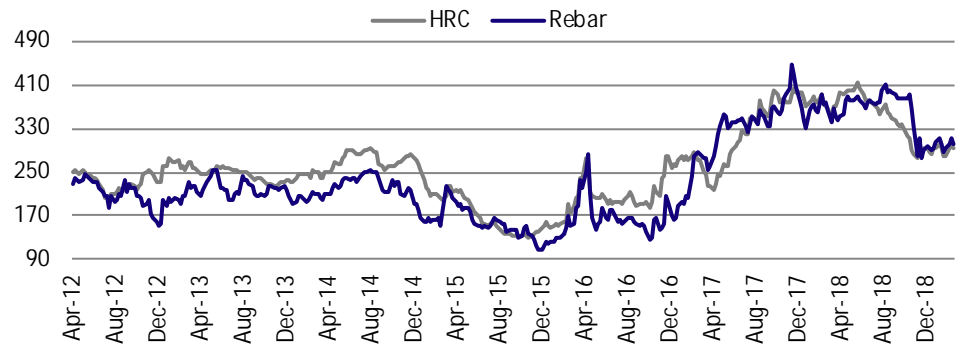
Chinese local rebar and HRC prices were slightly lower.

China domestic prices (USD/ton)



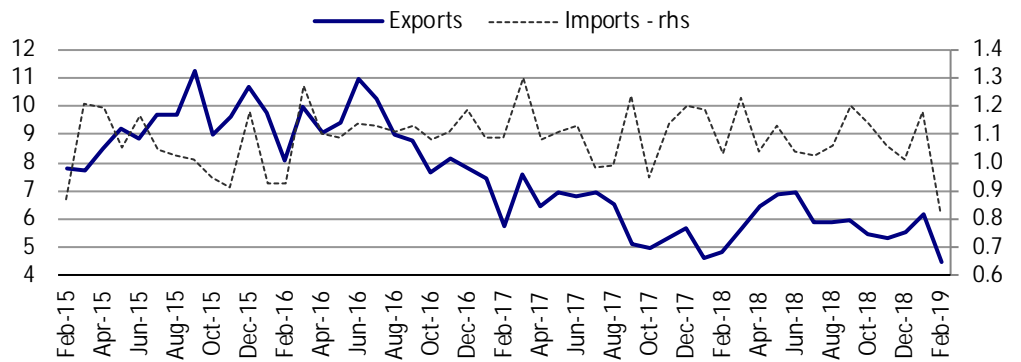
Chinese steel product Rebar spreads were lower.

Steel spreads (Steel price - 1.6x iron ore - 0.55x coke) for Chinese producers



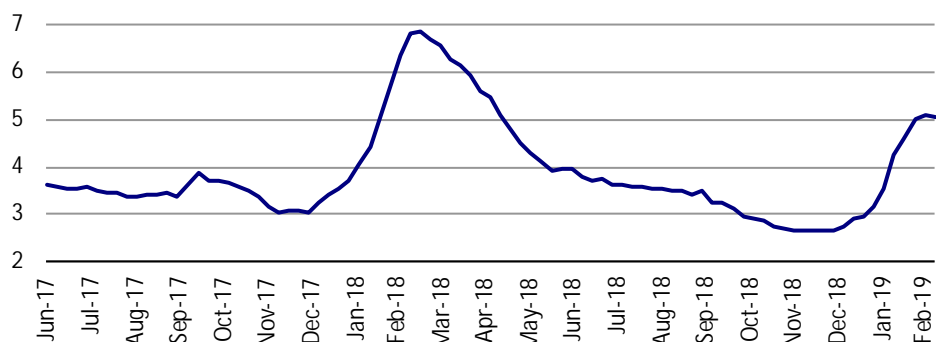
Chinese steel exports were down ~7% YoY to 4.5mt in February 2019.

Steel trade (m ton)



Steel inventories in China were at 5.06mt.

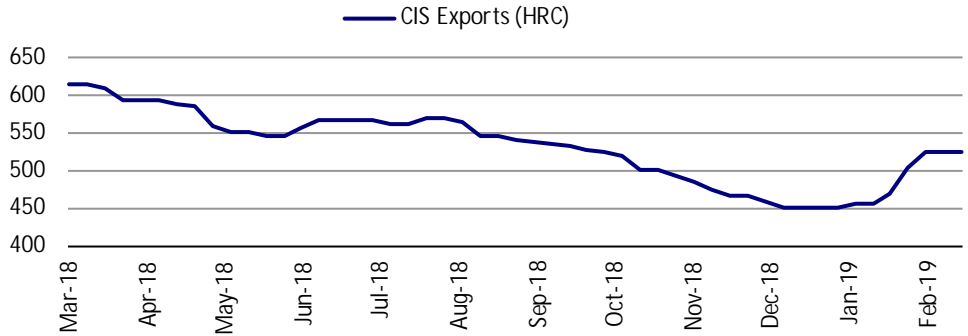
Steel inventories in main China cities (m tons)



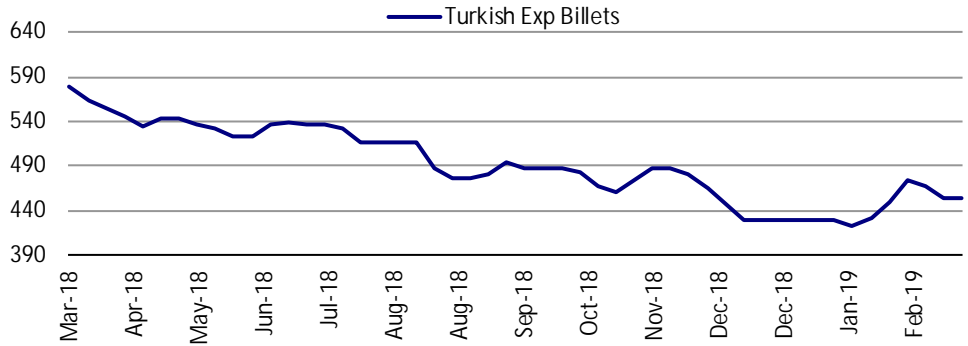
Other regions

CIS export HRC prices unchanged at USD525/t.

CIS HRC export prices (USD/ton) fob basis

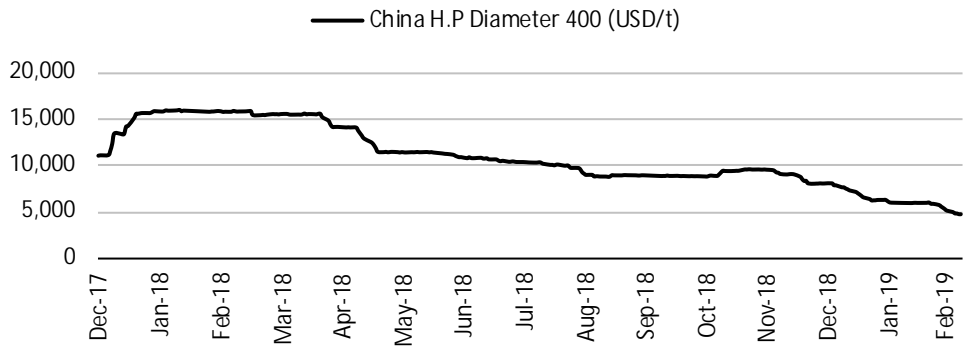


Turkish export billets (USD/ton)

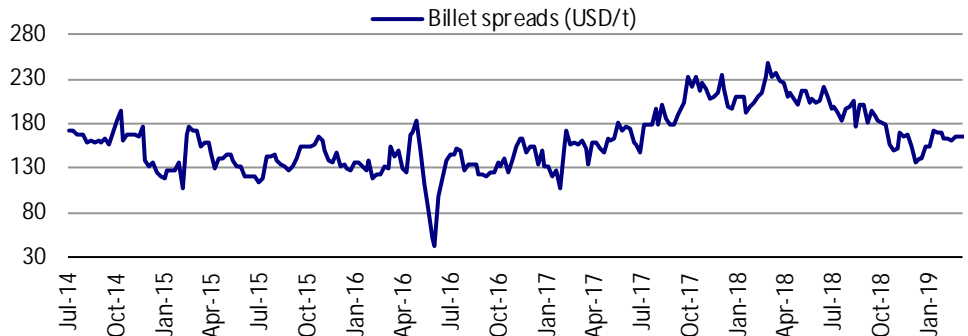


Electrode prices in China for High Power Diameter 400 (USD/ton)

Prices were down 7.5% WoW.



EAF spreads (Turkish steel billet price – Rotterdam scrap prices) in USD/t

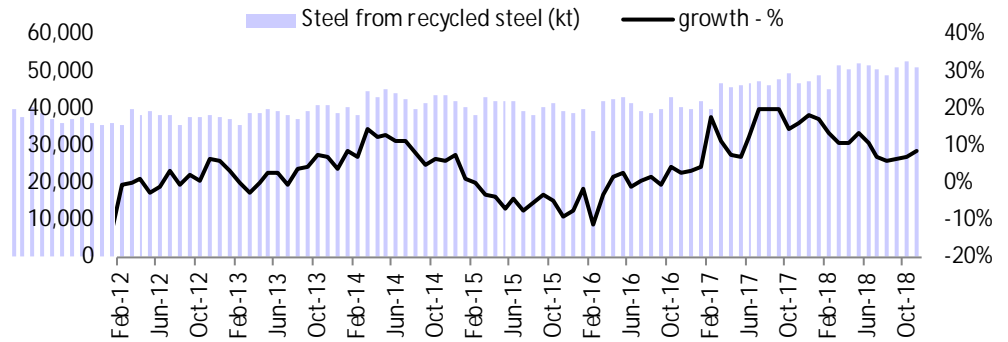


Source: WSA, Bloomberg, MOSL

Other regions

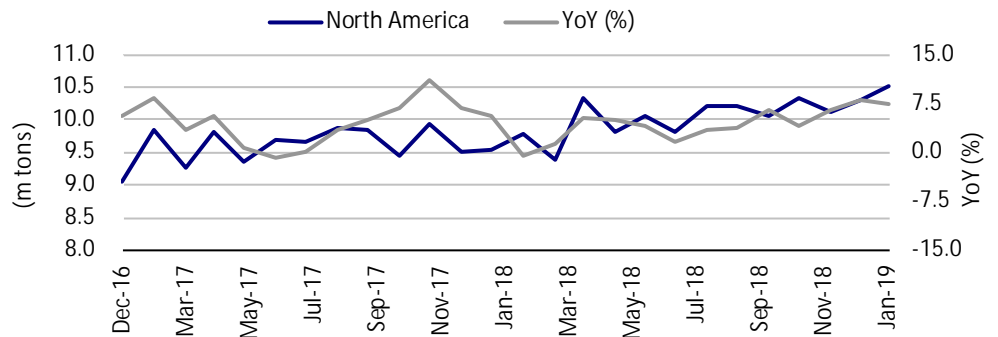
Global steel production from recycled steel increased 9% YoY in November 2018.

Global steel production from recycled steel - kt (Crude steel prod – BF production*0.96)



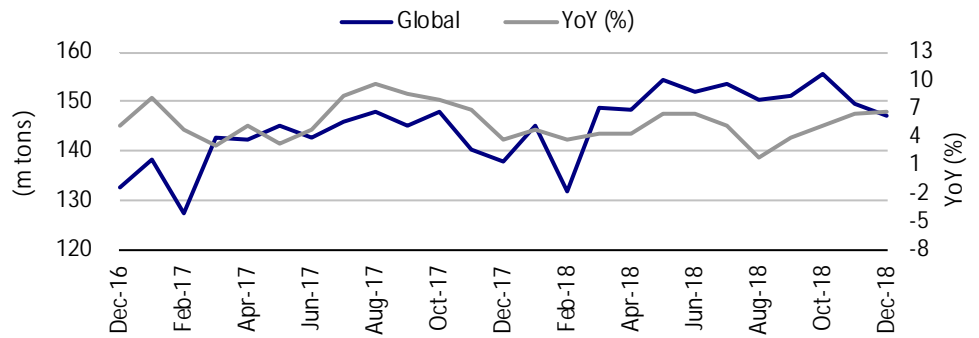
US steel production increased 7.3% YoY to 10.5mt in January 2019.

North America: Monthly crude steel production



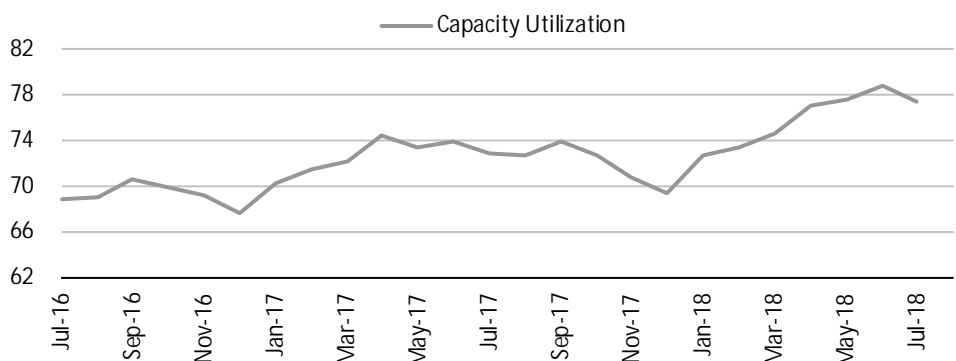
Global crude steel production increased 1% YoY to 146.7mt in January 2019.

Global: Monthly crude steel production



Capacity utilization improved 460bps YoY to 77.5% in July 2018.

Global: Monthly crude steel capacity utilization

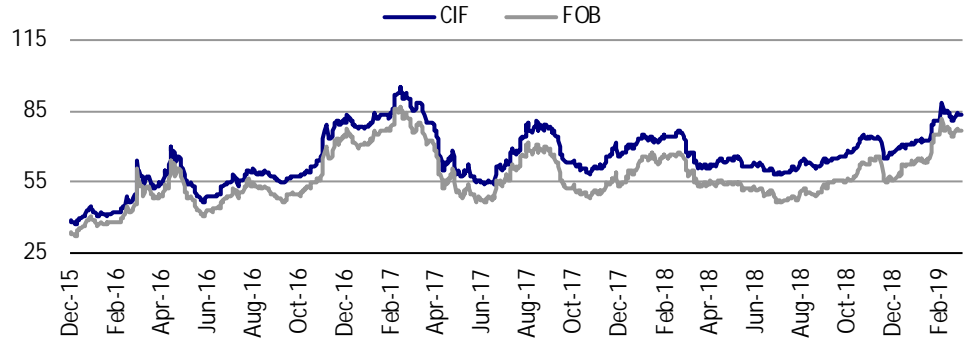


Source: Bloomberg, WSA, MOSL

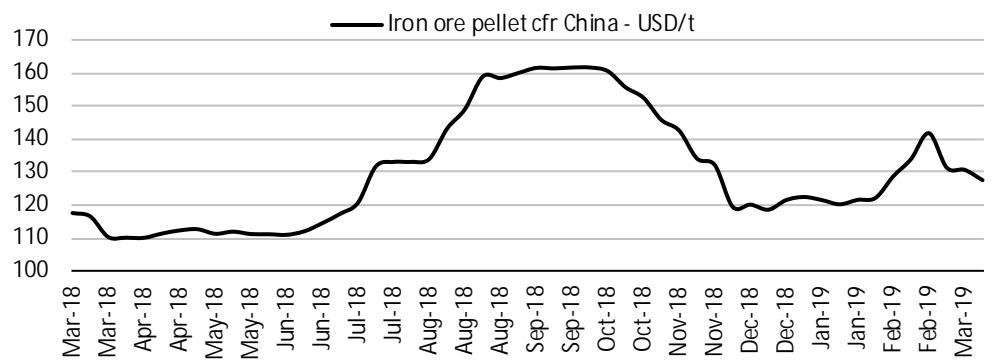
Iron ore (China cfr) prices were down 1% WoW.

Steel raw materials

Import price of 62% grade iron-ore fines in China (USD/ton)

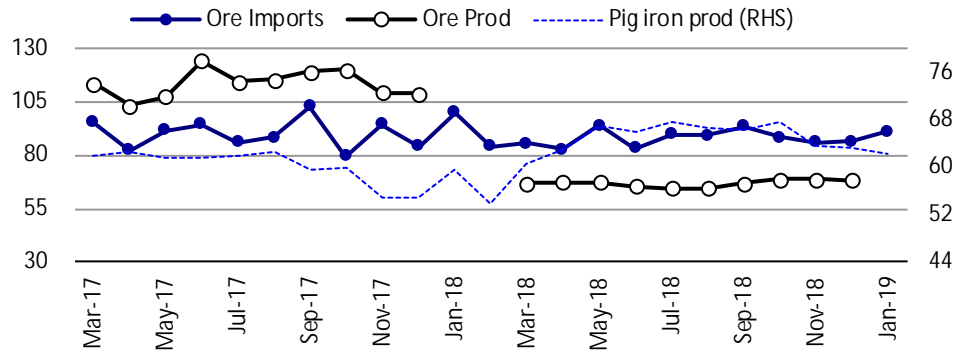


Pellet China cfr (USD/ton)



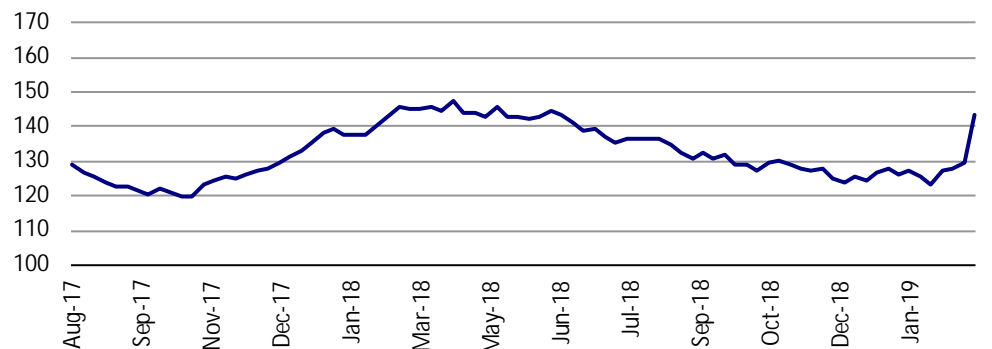
China iron ore imports decreased 9% YoY to 91.3mt in January 2019.

China iron-ore production and imports (m tons)



China iron ore inventories increased WoW to 143.5mt.

China's iron-ore inventories (mt)

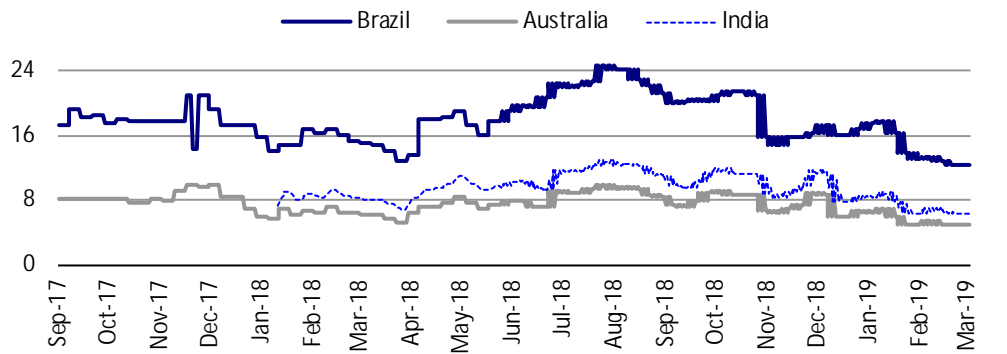


Source: Bloomberg, MOSL

Steel raw materials

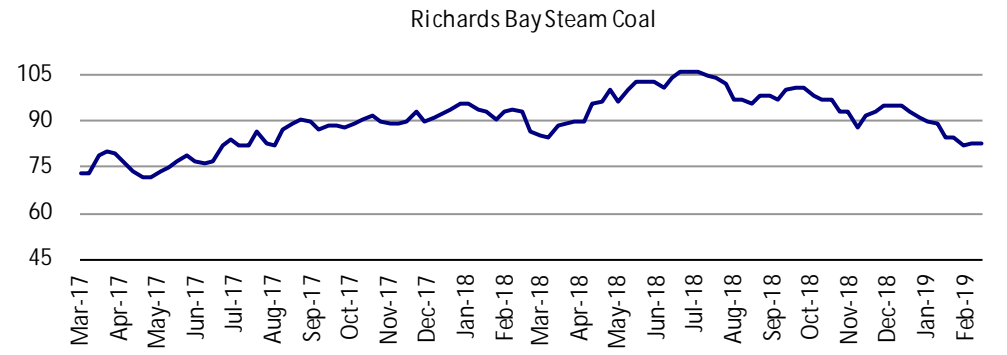
Freight rates to China (USD/ton)

Freight rates were unchanged WoW.



Coal price index

Richards Bay thermal coal prices were at USD83/t

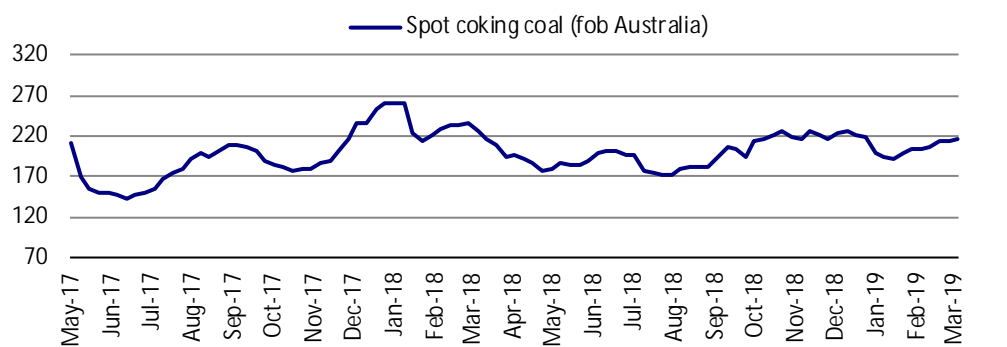


Coke price index (fob China)



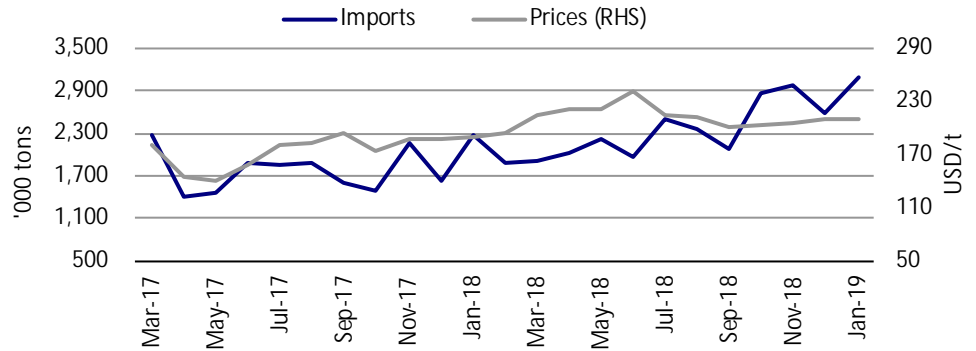
Coking coal (USD/t)

Coking coal prices were up 0.7% WoW.

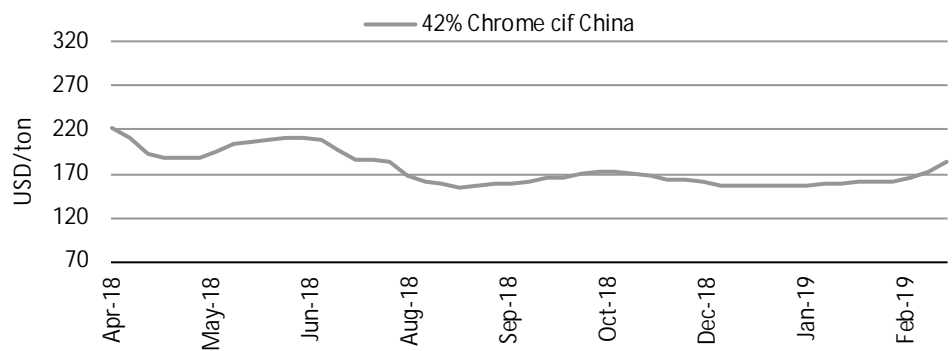


Ferro alloys

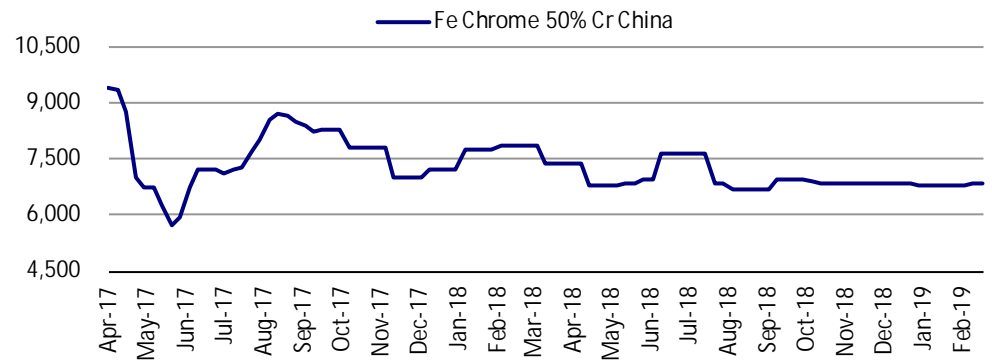
China's imports of manganese ore and concentrate



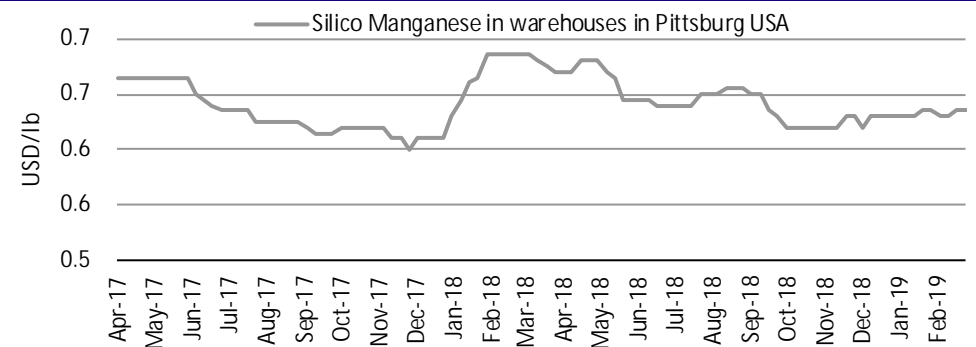
Chrome ore FOB spot prices



Ferro chrome CIF prices (CNY/t)



Silico Manganese prices



Source: Bloomberg, MOSL

Non-ferrous

Aluminum (cash LME) was down ~1% WoW to USD1,848/t.

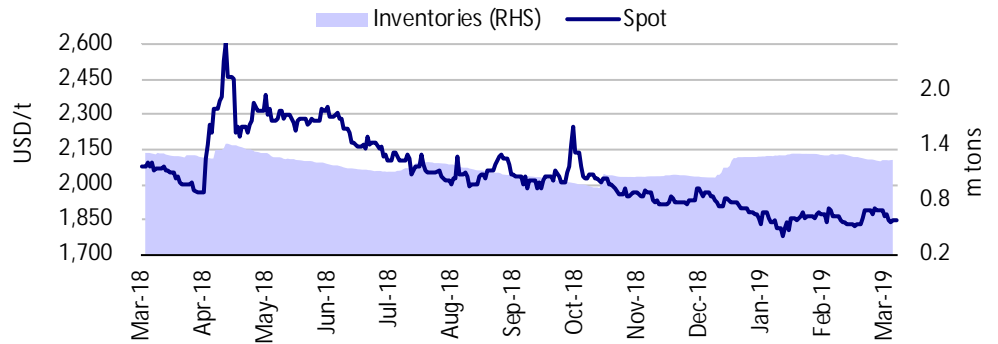
Global aluminum production was up 5.9% YoY to 5.13mt in Aug 2018.

LME and SHFE arbitrage is unfavorable.

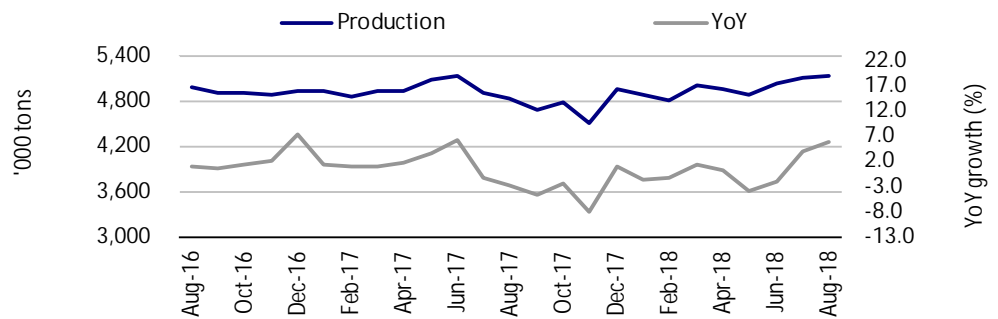
Non-ferrous

Aluminum

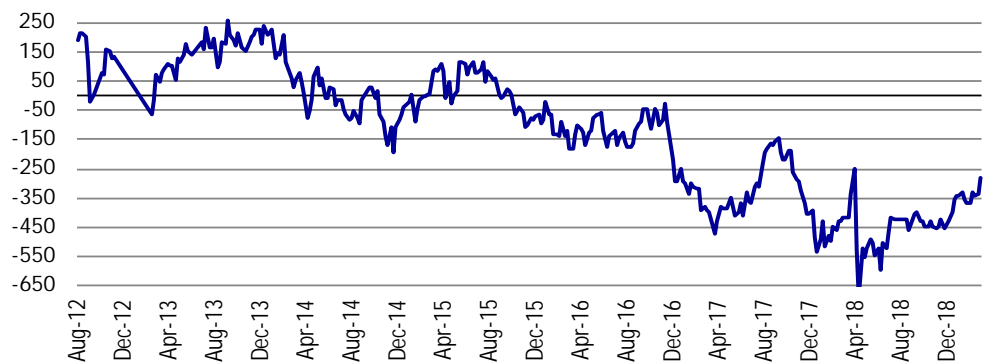
LME inventories and spot prices



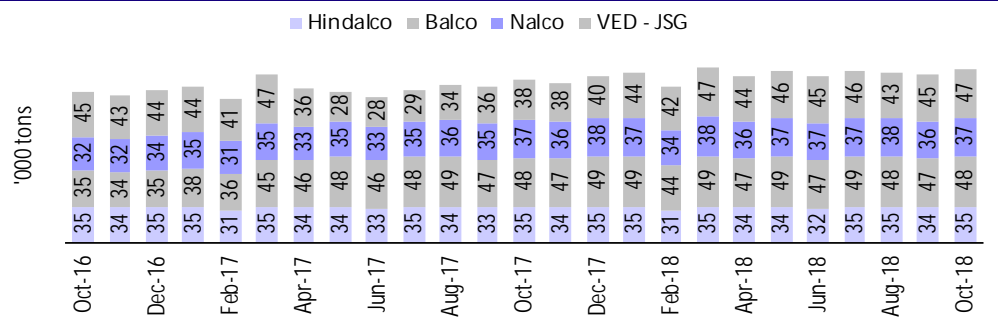
Global primary aluminum monthly production and YoY growth



Aluminum: SHFE Vs LME arbitrage (USD/T)



India: Company-wise primary aluminum monthly production

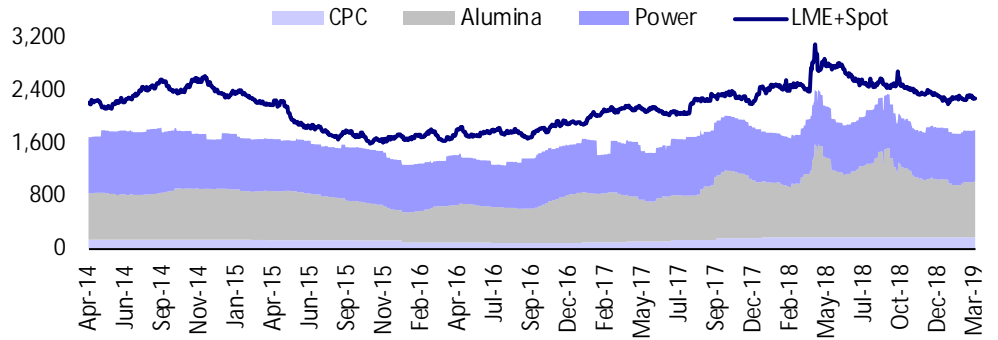


Non-ferrous

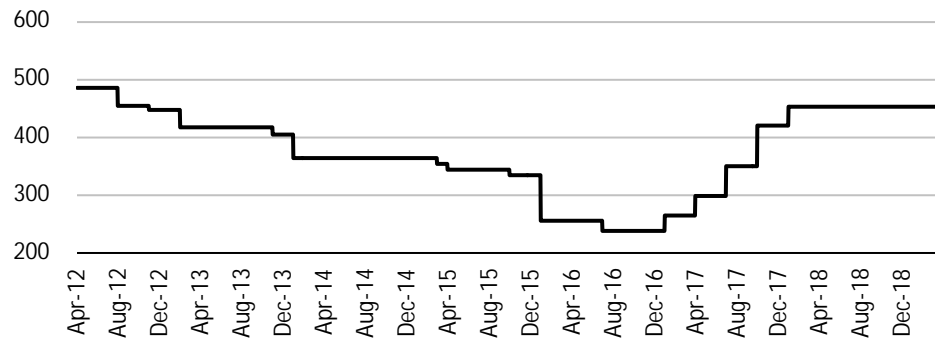
Aluminum

Aluminum raw material and power cost for marginal producer in USA (USD/t)

All-in-aluminum was at USD2,275/t.

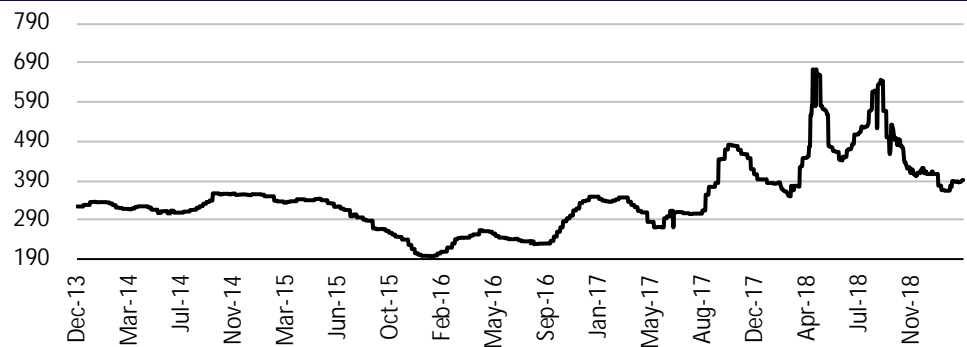


CPC US (USD/t)

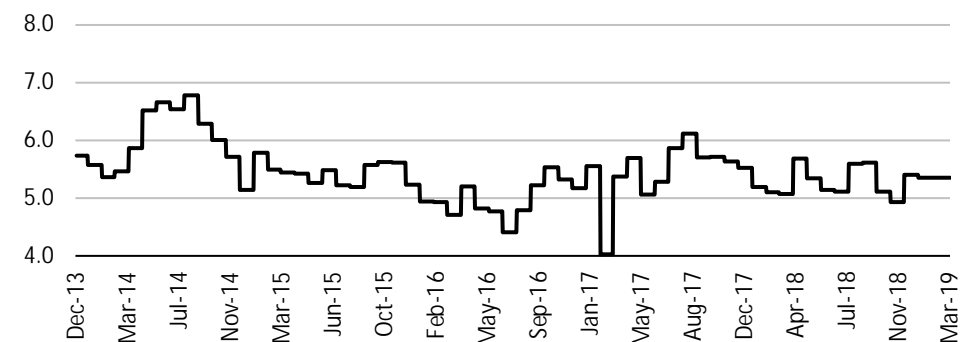


Alumina (USD/t)

Alumina was at USD391.4/t.



Industrial Power US (Louisiana) per mwh

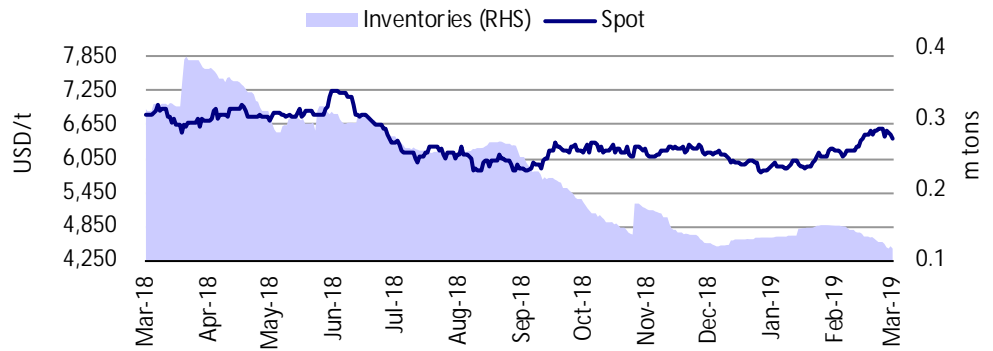


Source: Bloomberg, Industry, MOSL

Non-ferrous

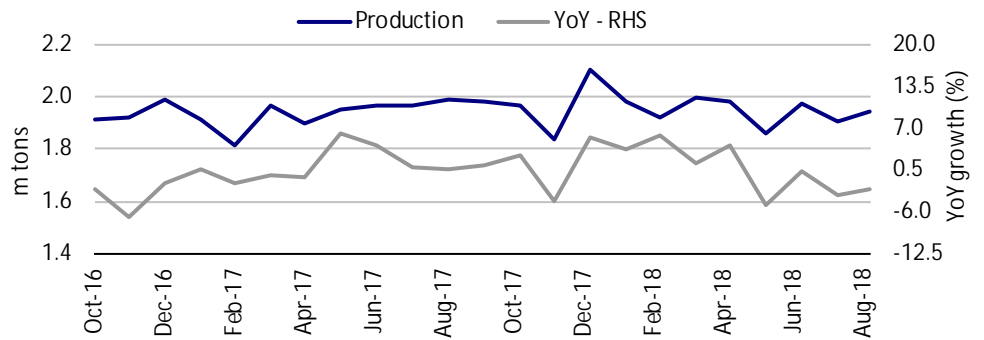
Copper LME inventories and prices

Copper (cash LME) prices were down 2.6% WoW to USD6,398/t.

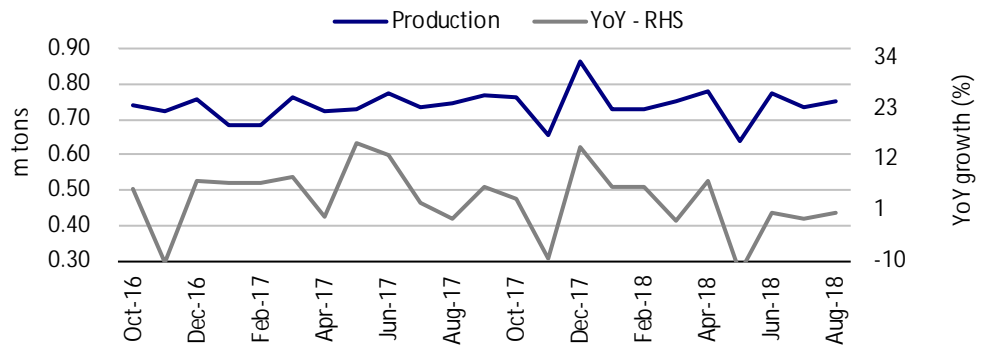


Global refined copper monthly production and YoY growth

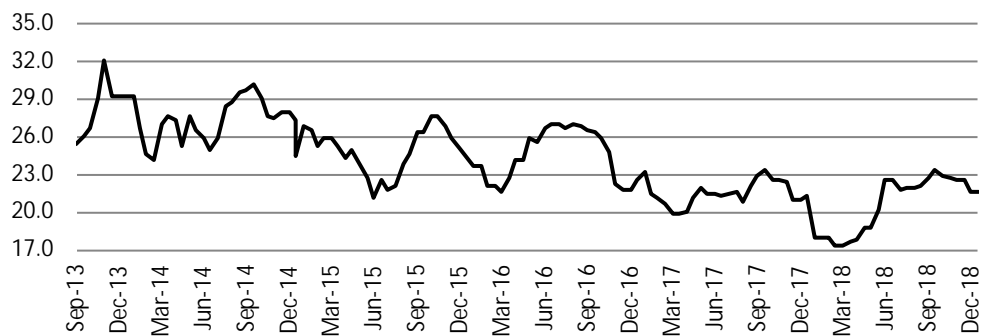
Global copper production declined 2.5% YoY to 1.943mt in Aug 2018.



China: Refined copper monthly production and YoY growth



Copper: Spot TCRC (USc/lb)

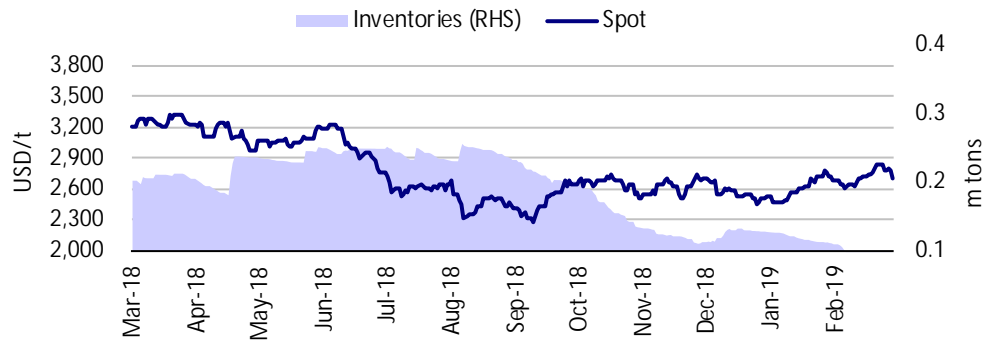


Non-ferrous

Zinc

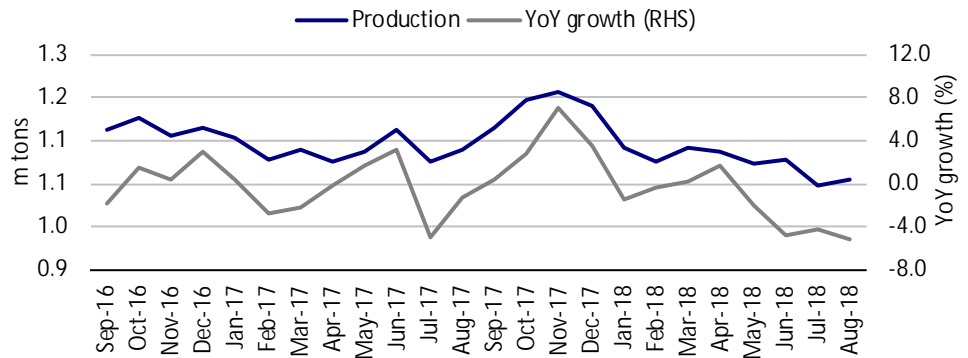
LME inventories and prices

Zinc (cash LME) was down ~4.7% WoW to USD2,706/t

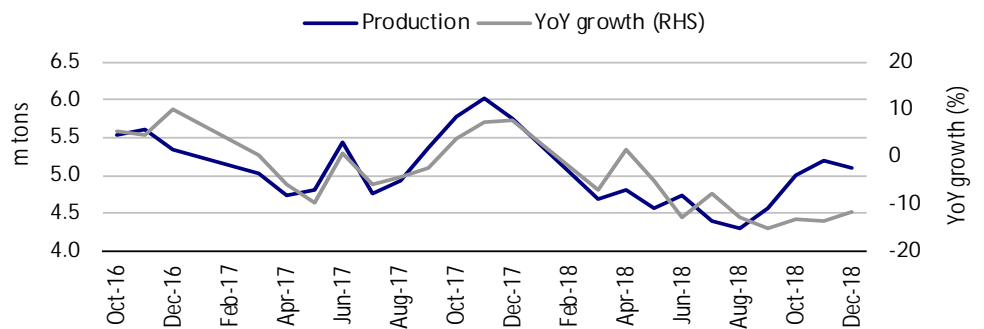


Global refined zinc monthly production and YoY growth

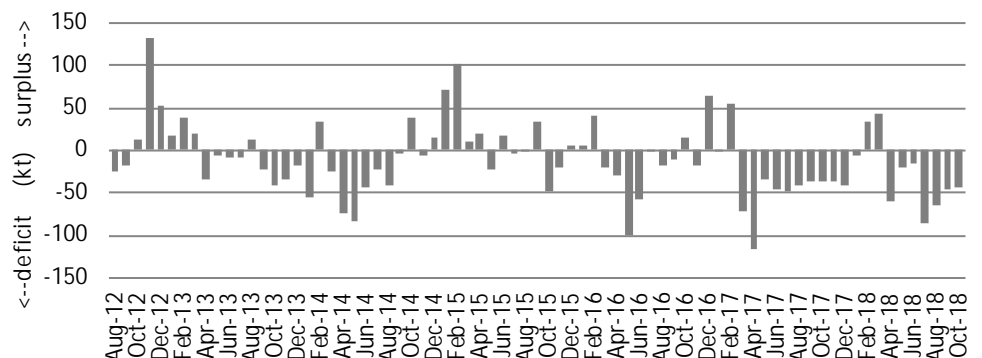
Global zinc production declined 5% YoY to 1.067mt in Aug 2018.



China: Refined zinc monthly production and YoY growth



Zinc: Global metal surplus (deficit) – kt

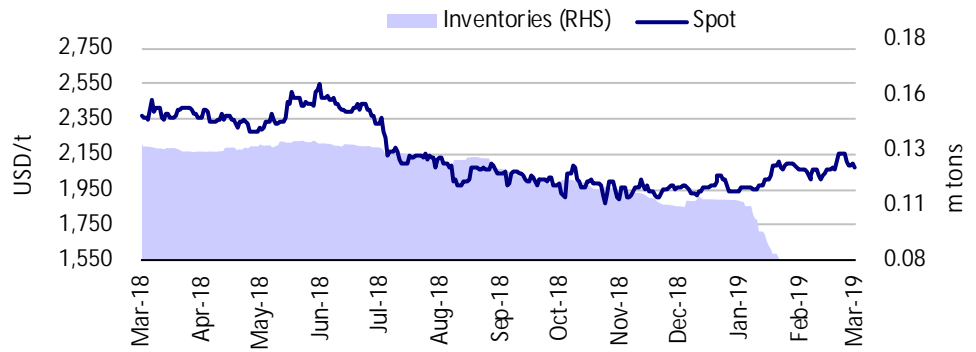


Non-ferrous

Lead

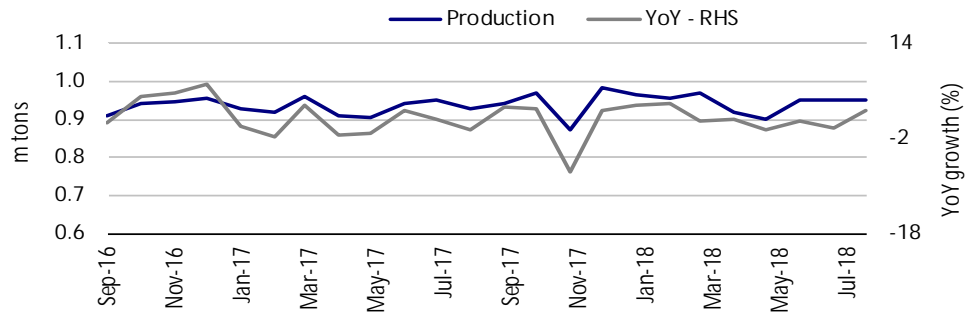
LME inventories and prices

Lead (cash LME) was down 3.7% WoW to USD2,072/t.

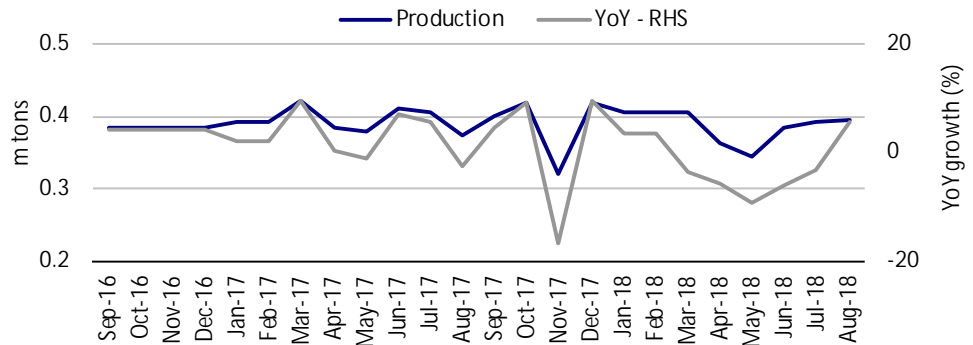


Global refined lead monthly production and YoY growth

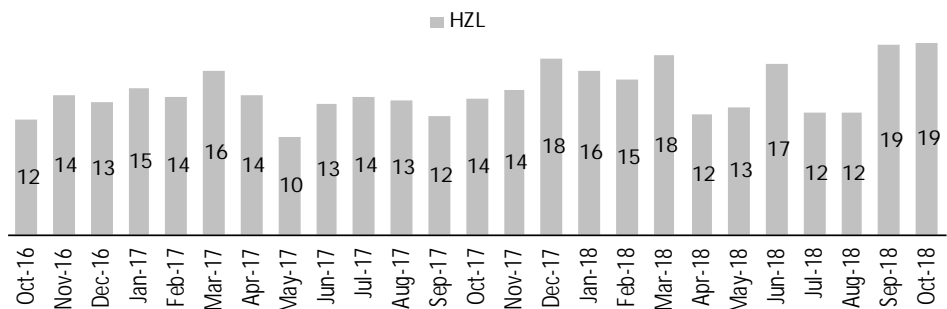
Refined lead production increased 2.7% YoY to 951kt in Aug 2018.



China: Refined lead monthly production and YoY growth



India: Company-wise refined lead monthly production

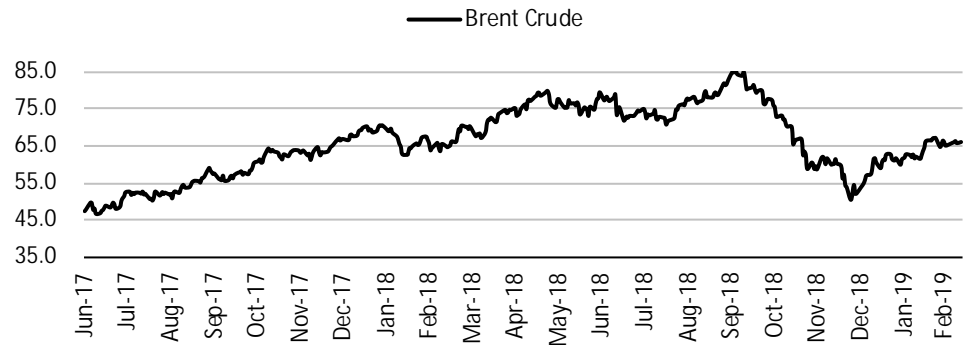


Source: Bloomberg, MOSL

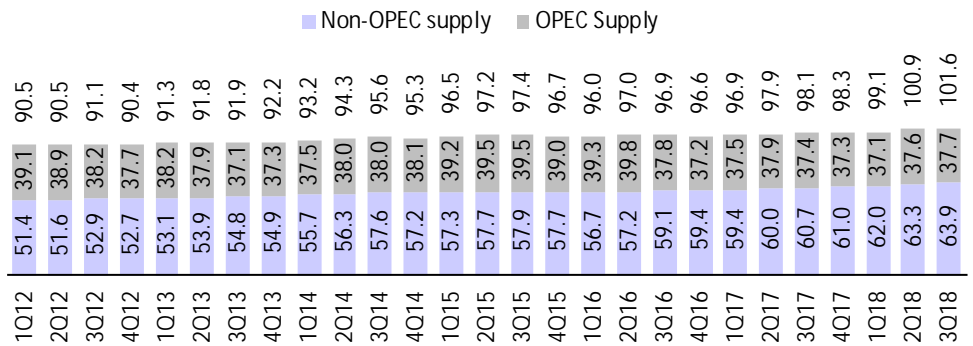
Crude Oil

Brent (crude oil) was up ~1% WoW to USD65.7/bbl.

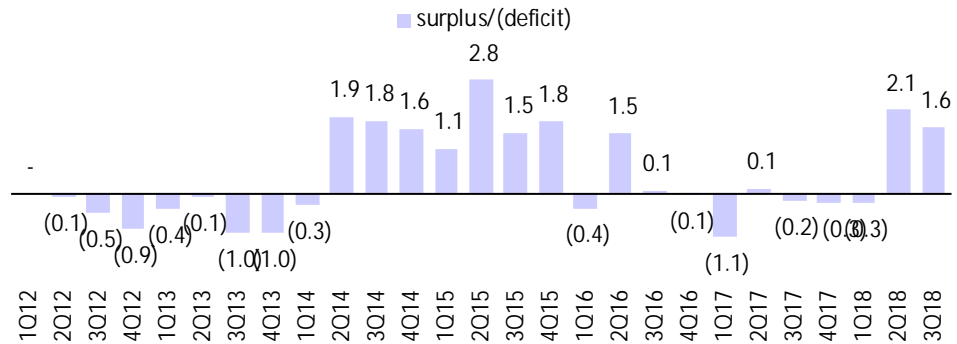
Brent crude oil price (USD/bbl)



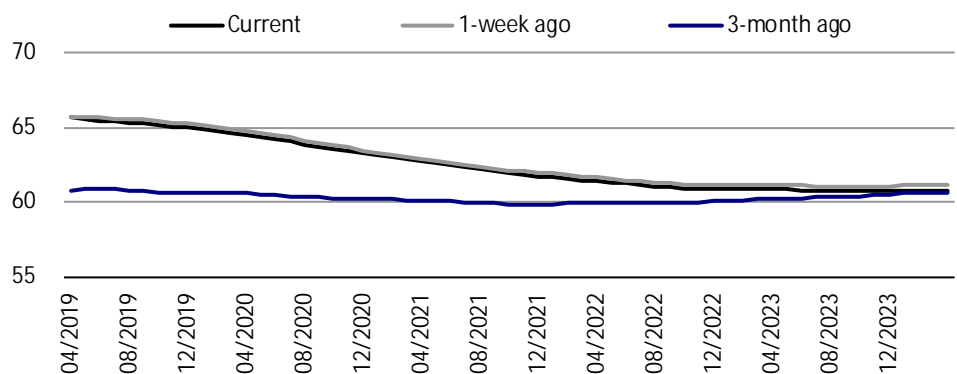
Global crude oil quarterly supply (mbpd)



Global crude oil surplus/(deficit) - mbpd



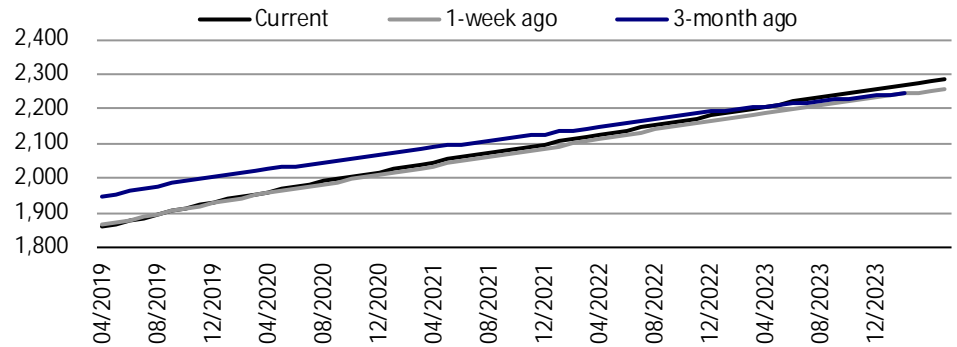
Crude oil futures (USD/bbl)



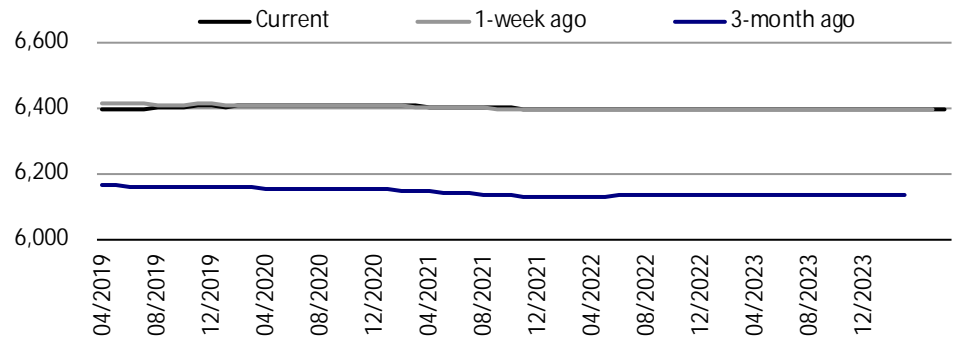
Source: Bloomberg, MOSL

Commodity forward curves

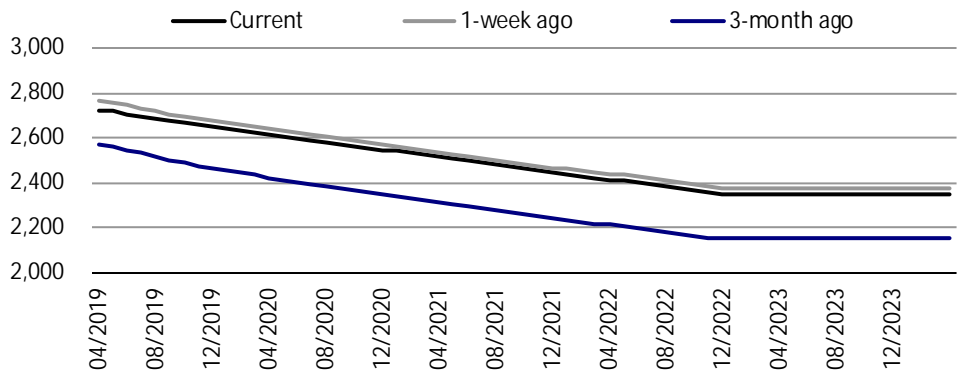
LME aluminum (USD/ton)



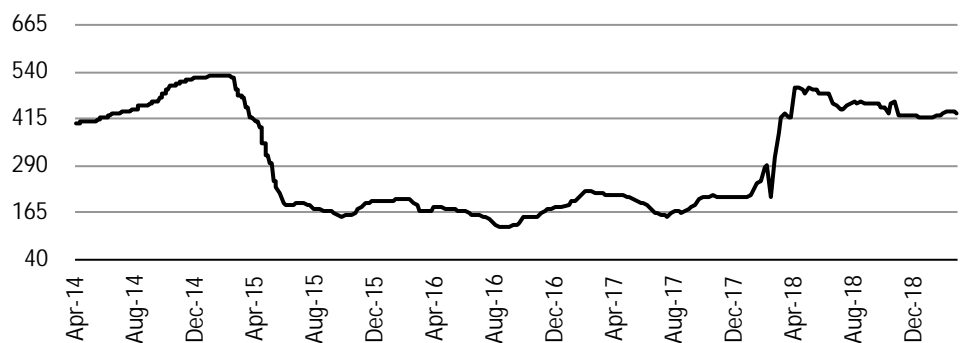
LME copper (USD/ton)



LME zinc futures (USD/ton)



Aluminum metal US spot premium (USD/ton)

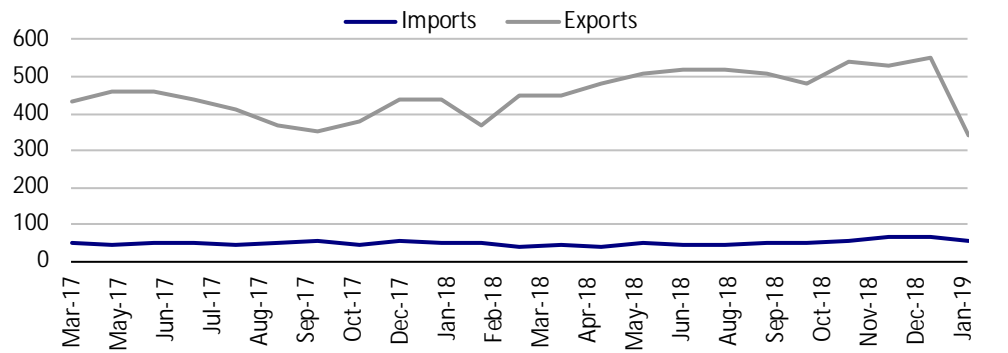


Source: Bloomberg, MOSL

China non-ferrous trade data

Aluminum exports were down 7% YoY to 343kt in January 2019.

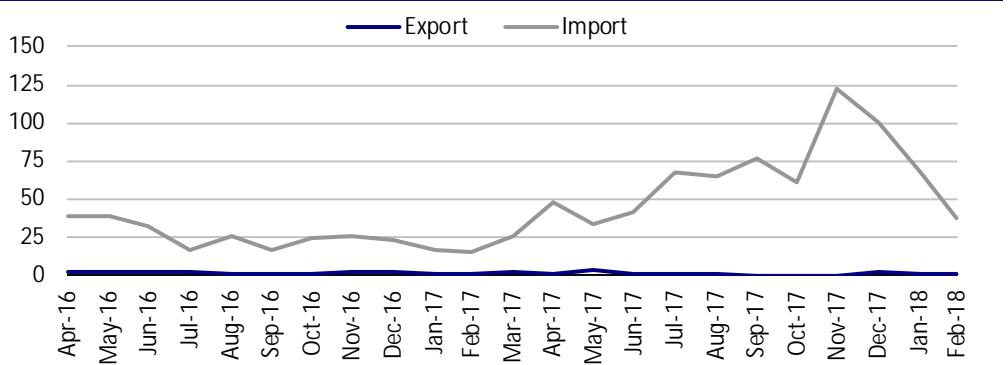
China's aluminum trade ('000 tons)



China's refined copper trade ('000 tons)

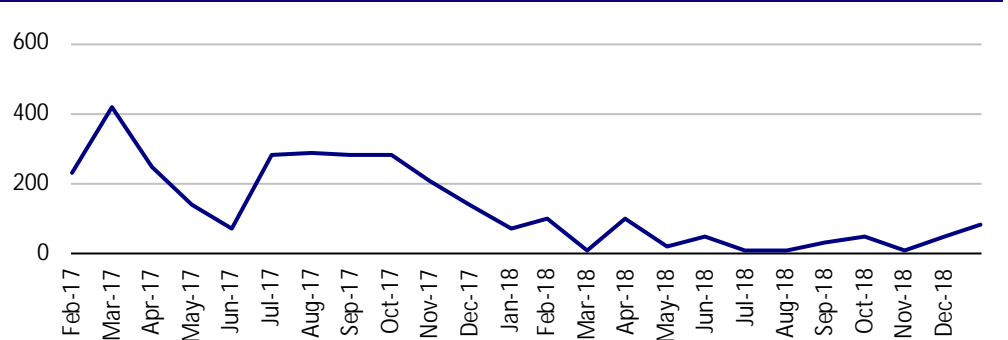


China's refined zinc trade ('000 tons)



China's alumina imports ('000 tons)

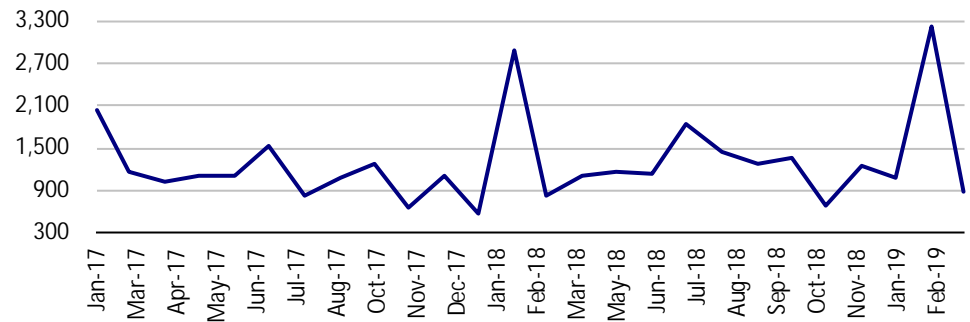
Chinese alumina imports increased 14% YoY to 80kt in January 2019.



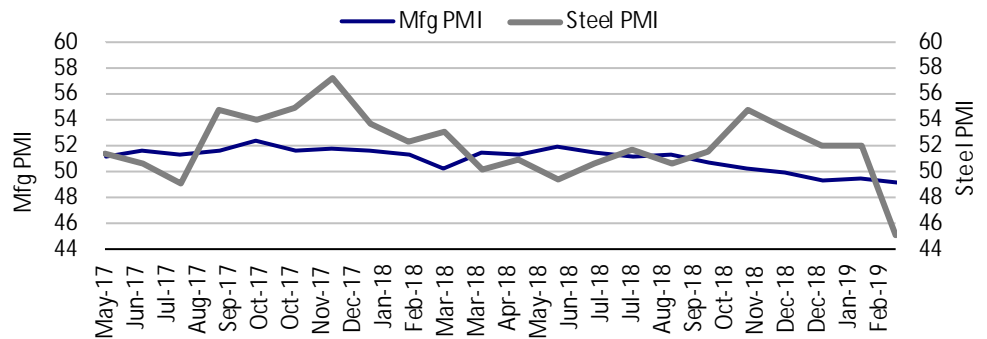
Source: Bloomberg, MOSL

Key indicators

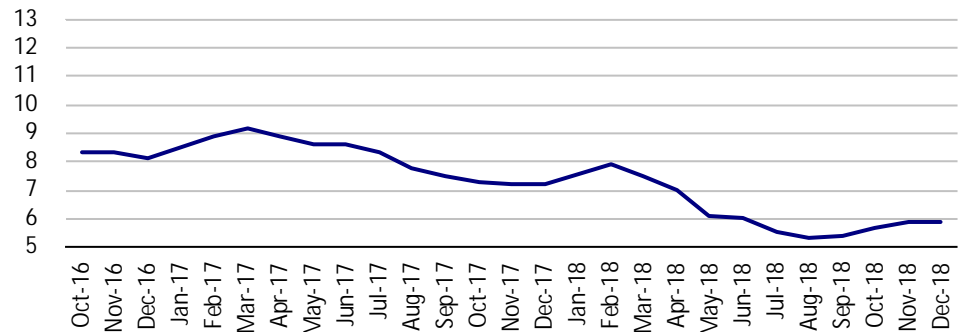
China new loan growth (Yuan b)



China: PMI

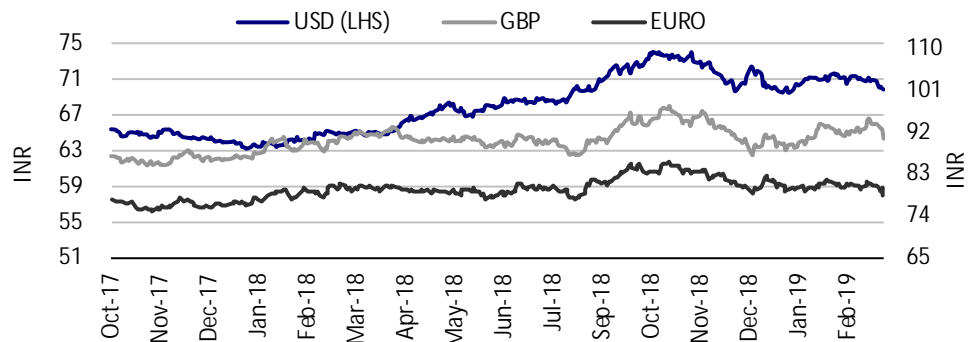


China: Fixed asset investment growth (%)



Fixed asset investment growth was at 5.9% YoY in December.

Currency movement with respect to the rupee

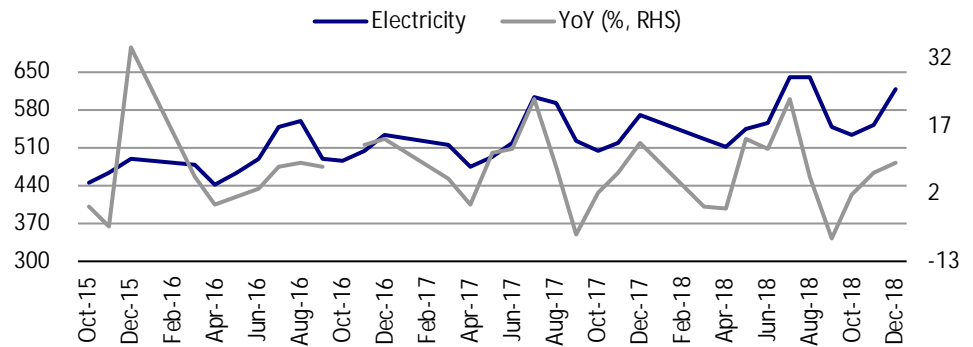


Source: Bloomberg, MOSL

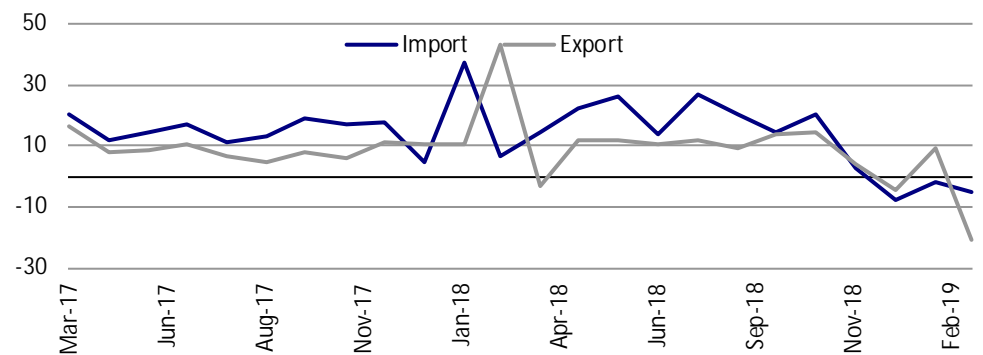
Key indicators (Contd...)

China electricity generation increased 8.8% YoY in Dec 2018.

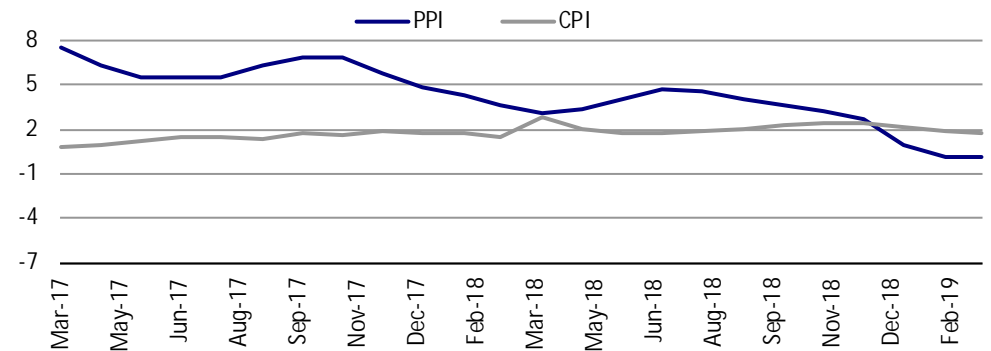
China Energy Production: Electricity (b kwh)



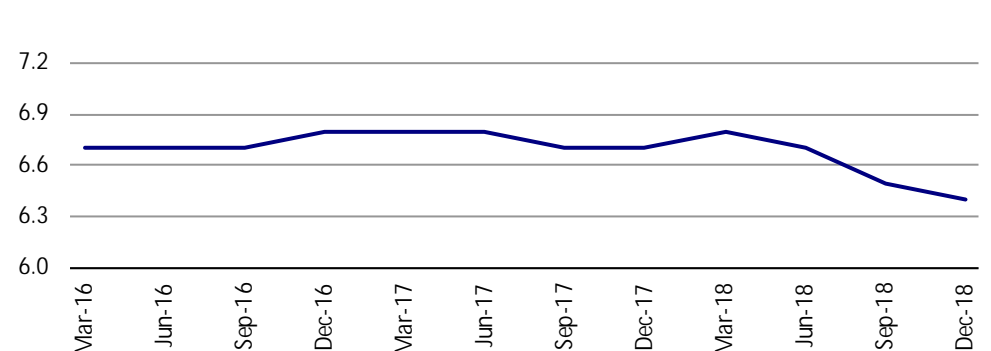
China Monthly Trade YoY (%)



China Price Index YoY (%)



China GDP YoY (%)

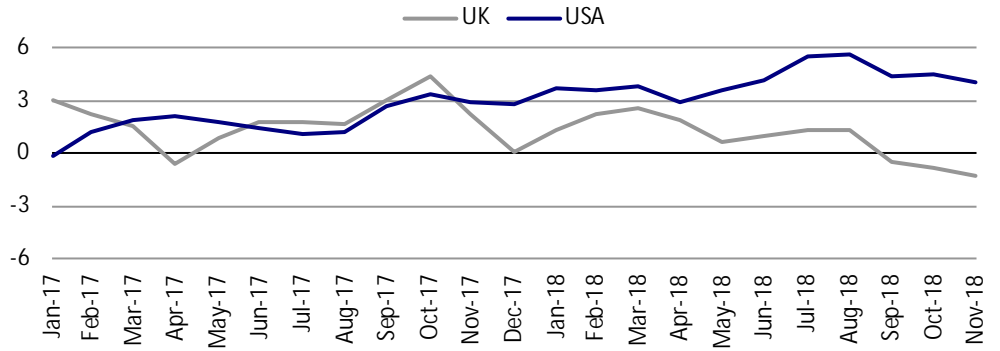


China's GDP growth was 6.4% in 3QCY18.

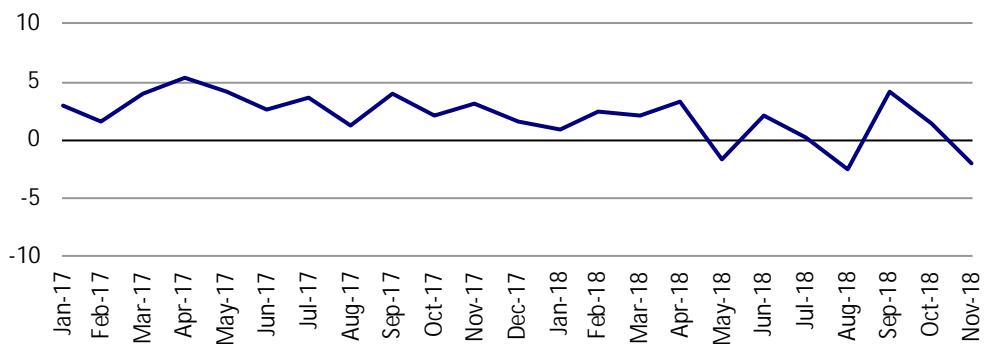
Source: Bloomberg, MOSL

Industrial production growth

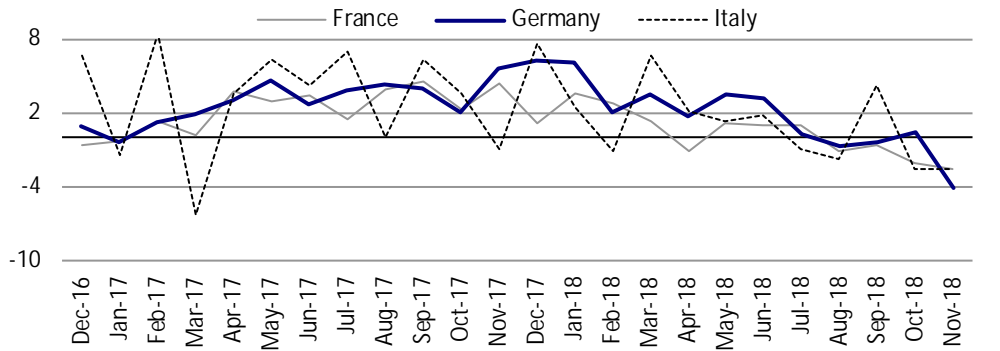
The UK and the USA (%)



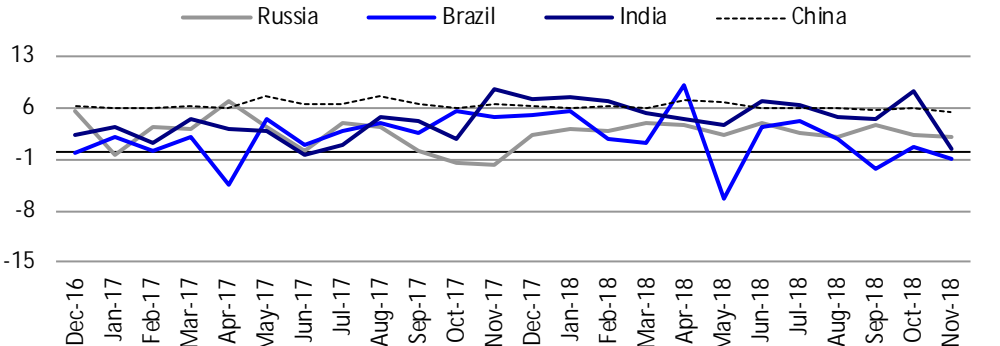
Japan (%)



European Union (%)



BRIC (%)



Source: Bloomberg, MOSL

Stock exchange announcements

NMDC: NMDC's iron ore production for the month of February 2019 decreased 3.2% YoY to 3.34mt. Sales volume increased 17.2% YoY to 3.55mt.

Metals Valuation Matrix

Valuations: Indian Companies

	Rating	Price (INR)	MCAP (USD M)	EPS			P/E (x)		EV/EBITDA (x)		P/B(x)	
				FY18	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E	FY19E	FY20E
Steel												
Tata Steel	Sell	521	7,119	69.5	88.7	72.0	5.9	7.2	6.0	6.9	1.0	1.1
JSW Steel	Buy	290	9,865	23.4	30.6	20.7	9.5	14.0	6.8	8.2	2.2	2.0
JSPL	Buy	167	2,152	-8.5	2.3	3.8	72.6	44.5	6.8	6.4	0.5	0.5
SAIL	Neutral	55	3,171	0.3	6.3	6.1	8.7	9.0	6.8	6.3	0.6	0.5
Non-Ferrous												
Hindalco	Buy	201	5,829	18.9	26.6	29.0	7.5	6.9	5.4	5.1	1.1	0.9
Nalco	Buy	57	2,073	5.1	8.9	5.1	6.4	11.1	2.9	5.5	1.1	1.1
Vedanta	Sell	176	7,341	20.4	13.8	21.5	12.7	8.2	6.2	4.7	1.1	1.0
Rain Ind.*	Buy	107	506	23.7	20.4	13.7	5.2	7.8	5.1	6.2	0.8	0.8
Mining												
Coal India	Buy	235	20,905	19.2	27.4	29.0	8.6	8.1	3.9	4.0	7.1	6.5
Hindustan Zinc	Neutral	270	16,051	21.1	19.5	23.1	13.9	11.7	8.7	7.0	3.4	2.9
NMDC	Buy	109	6,069	13.1	13.6	10.1	8.0	10.8	4.5	6.2	1.3	1.3

*CY reporting

Source: MOSL

Valuations: Global Companies

Company	BBG CODE	Currency	PRICE	MCAP (US\$ M)	PE (x)		EV/EBITDA(x)		P/BV (x)
					CUR YR	NXT YR	CUR YR	NXT YR	CY18
Mining									
BHP-Billiton	BHP AU	AUD	37	123,011	13.7	13.8	5.9	6.0	na
FMG	FMG AU	AUD	7	13,862	7.5	8.1	4.1	4.3	na
Rio Tinto	RIO AU	AUD	91	91,199	11.5	13.2	5.2	5.5	na
Vale	Vale US	USD	49	66,744	9.5	7.0	4.9	4.5	1.6
Teck Resources	TCK US	USD	22	12,301	8.1	9.1	4.2	4.5	0.7
Anglo American	AAL LN	GBP	1,987	33,320	9.6	10.6	4.5	4.8	na
STEEL									
Arcelor Mittal	MT NA	EUR	19	21,302	5.3	5.4	3.8	3.9	0.5
Posco	005490 KS	k KRW	250	19,030	7.1	6.7	4.2	4.0	0.5
US Steel	X US	USD	19	3,335	6.7	7.4	3.6	3.7	0.8
Nucor	NUE US	USD	58	17,648	9.5	10.2	6.1	6.5	1.7
JFE	5411 JT	JPY	1,849	10,285	6.8	7.4	6.7	6.6	na
Gerdau	GGBR4 BZ	BRL	15	6,153	8.9	8.4	5.3	5.1	1.1
Angang	000898 CH	CNY	6	6,087	5.4	7.3	4.1	5.1	0.8
Ali - Smelting									
Alcoa	AA US	USD	27	4,975	14.1	8.7	3.3	3.2	0.9
Hydro	NHY NO	NOK	34	7,959	13.4	9.0	5.4	4.2	0.8
Rusal	486 HK	HKD	4	6,832	3.6	3.1	7.6	6.7	1.2
Ali - Rolled									
Arconics	ARNC US	USD	18	8,967	11.4	9.7	6.2	5.7	na
Constellium	CSTM US	USD	8	1,118	7.4	5.6	5.5	4.9	97.3

Metals Stock Performance

Among large-cap companies, JSPL was the best relative performer.

Among mid-cap companies, Godawari was the best relative performer over one month.

Among global mining companies, FMG was the best relative performer over one week.

Among global steel majors, Voest Alpine was the best relative performer.

Among the global aluminum, Rusal was the best relative performer

Metals stock performance on absolute and relative basis (%)

Months	Absolute Perf (%)				Relative Perf to Sensex (%)			
	1	3	6	12	1	3	6	12
Steel								
Tata Steel	9.3	-0.6	-14.5	-20.0	9.2	-4.4	-10.9	-30.0
SAIL	17.8	0.8	-30.1	-28.0	17.6	-3.1	-26.6	-38.0
JSW Steel	4.8	-6.0	-28.0	-0.9	4.7	-9.8	-24.4	-10.8
JSPL	25.9	8.8	-23.3	-30.5	25.8	4.9	-19.8	-40.5
NMDC	17.1	19.2	-1.5	-11.5	16.9	15.4	2.1	-21.5
Non-ferrous								
Vedanta	6.1	-11.8	-24.9	-44.1	5.9	-15.6	-21.4	-54.1
Hindustan Zinc	4.9	-0.7	-11.6	-14.8	4.7	-4.5	-8.1	-24.8
Nalco	-1.6	-9.9	-25.5	-11.0	-1.8	-13.8	-21.9	-21.0
Hindalco	-4.6	-10.3	-18.7	-12.2	-4.8	-14.2	-15.1	-22.2
Mid Caps								
Monnet Ispat	-8.0	-15.9	-29.7	-57.7	-8.1	-19.7	-26.2	-67.7
Godawari	31.8	-4.7	-45.8	-37.0	31.6	-8.6	-42.3	-46.9
Sarda Energy	21.0	21.4	-22.4	-29.3	20.9	17.5	-18.8	-39.3
Tata Sponge	-3.7	-2.7	-20.5	-26.9	-3.8	-6.5	-16.9	-36.9
Adhunik Metaliks	16.1	-26.0	-37.8	-53.0	15.9	-29.9	-34.3	-63.0
Bhushan Steel	7.7	13.4	4.3	-36.2	7.5	9.5	7.9	-46.1
Jai Balaji	7.9	16.2	105.9	43.6	7.8	12.3	109.5	33.6
Rain Industries	3.0	-16.3	-44.9	-72.2	2.8	-20.1	-41.3	-82.1
Prakash Industries	11.0	14.4	-35.7	-48.4	10.9	10.5	-32.2	-58.3
SENSEX	0.1	3.8	-3.5	10.0	-	-	-	-

Global Metals stock performance on absolute basis (%)

	Absolute Perf (%)					
	1week	1month	3 months	6 months	7 months	12 months
Mining						
Rio Tinto	-5.4	-4.3	17.3	15.6	11.6	11.6
BHP Billiton	-0.8	4.2	17.5	14.5	28.0	28.0
Vale	1.6	4.0	-6.9	-0.2	-0.7	-0.7
FMG	8.7	8.3	60.5	80.6	34.9	34.9
Anglo American	-0.6	0.9	27.7	29.9	16.4	16.4
Steel						
US Steel	-13.7	-16.6	-12.5	-34.5	-56.6	-56.6
Nucor	-4.3	-5.8	-2.3	-9.2	-14.5	-14.5
Arcelor Mittal	-7.9	-9.3	-1.3	-24.7	-29.6	-29.6
Angang	-3.0	4.4	7.3	-2.3	-21.3	-21.3
Posco	-5.1	-7.8	0.6	-19.4	-30.3	-30.3
JFE Holdings	-2.8	-3.5	-4.8	-22.2	-18.9	-18.9
Nippon	-2.7	-4.3	-3.6	-10.8	-18.3	-18.3
Thyssen Krupp	-7.3	-20.6	-23.6	-37.2	-42.8	-42.8
Voest Alpine	-2.7	0.7	-3.8	-27.9	-40.5	-40.5
Gerdau	-3.8	-12.0	-5.9	2.7	-21.9	-21.9
Aluminium						
Alcoa	-9.6	-7.7	-9.5	-37.4	-43.5	-43.5
Rusal	-5.6	7.3	57.8	77.5	-27.7	-27.7
Chalco	-6.7	4.4	10.0	-3.5	-33.3	-33.3

NOTES

Explanation of Investment Rating

Investment Rating

BUY	Expected return (over 12-month) >=15%
SELL	< - 10%
NEUTRAL	> - 10% to 15%
UNDER REVIEW	Rating may undergo a change
NOT RATED	We have forward looking estimates for the stock but we refrain from assigning recommendation

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