

Iron ore: The longer way down

Higher peak, shallower slope and elevated volatility. Iron ore's bull market has now entered its third year, with benchmark prices at record levels in both nominal and real terms. Whilst our previous analysis assumed that the market would by this point have reached an inflection point towards sustainably softer conditions and lower prices, a substantially tighter reality has transpired. This has largely been a function of China steel conditions, where a significantly stronger demand growth rate and more limited policy intervention (so far) have generated materially higher iron ore requirements year-to-date than initially expected. This means the iron ore market arrives in mid-2021 after a sizeable H1 deficit (62Mt), nearly triple our initial projection for the period and as result, with tight inventories, particularly of mid-high grade ore. The knock-on effect from this is that the market's anticipated sustained step back to clear surplus state has been deferred from 2022 to 2023, and even then the low inventory starting point leaves that new softening path critically exposed to fundamental setbacks and as such, continued elevated price volatility. Whilst a pocket of surplus still approaches into year-end - and could be exacerbated by policy led cuts to China's steel output - the tightening in aggregate forward balances suggests a more gradual fade in price rather than the more abrupt profile we previously anticipated. We now project the 62% iron ore benchmark to average \$195/t in H2-21 (\$117/t previously), \$160/t in 2022 (\$95/t previously) and then \$120/t in 2023 (\$80/t previously). Our new 3/6/12 month targets of \$195/180/160/t suggest the forward curve is pricing in too bearish a price trajectory, particularly through H1 next year.

Revenge of the green economy has inverted iron ore's supply function. Whilst China's demand strength has been critical to the enlarged H1-21 iron ore deficit, the key defining fundamental feature of the current bull market is the lack of material supply response to high prices. Despite three years of progressively higher and now record price levels, there is a conspicuous absence of growth response in the forward supply projections. Global supply growth is set to peak this year, largely on Vale's continued recovery path, but then sharply decelerate over the following three years. This contrasts with the accelerating supply profile in the equivalent bull market years in 2011-12, which were key to the velocity of iron ore correction at that juncture. The discipline from the majors is clearly core to this supply restraint, as the majors are keenly aware of both the weak returns post during the last decade, and the coming need to meet stronger environmental commitments by world governments. In our view, this structural break in producers' supply function will elongate the downward path of iron ore prices as our forward balances indicate

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more moderate surpluses over the next 2-3 years than following the previous bull market. Prices will still likely taper on the balance path but the velocity of that downward move will be more restrained versus the accelerating supply function as was the case at the same point in the previous bull market.

Prices are steel driven, for now. Many market participants – ourselves included – misjudged the recent strength of iron ore prices because they under-weighted the importance of the steel price as the dominant driver of price over ore inventories in recent months. Conducting a dynamic quantitative analysis of the entire ferrous value chain over the last decade, we find that the dominant driver of iron ore prices shifts materially over time, from iron ore inventories to steel prices and back again, depending on where the fundamental tightness lies. Crucially, this leaves a simple, static price model generating large forecast errors whenever the dominant driver of iron ore shifts. To correct for this, we build a dynamically specified model that highlights how today, it is strong end user demand, represented through steel prices, that is driving iron ore. Accordingly, we see near term upside risk (relative to the curve) despite softening balances. Yet it is important to note that we expect this demand-driven price dynamic to fade as China begins its decarbonisation of the steel sector. By mandating broad cuts in steel production, policy will dislocate the steel and iron ore prices for any given level of end user demand, raising steel prices and lowering iron ore. As a result, we expect the dynamic specification of our model to change by 2H22, leaving iron ore driven by the slowly softening balance, starting the longer way down.

The metal research team would like to thank Aditi Rai and Annalisa Schiavon for their contribution to this report. Annalisa is an intern with the commodities research team.

The longer way down

1. China steel demand has surprised significantly to the upside, fiscal easing is set to sustain levels into next year.

The most significant positive surprise so far this year in the ferrous sector has been the immense strength in China steel demand. China's apparent steel demand is set to have risen 9% y/y in H1, supported by what has been until late Q2 a strong trend in construction related demand, as well as recovering trends in auto manufacturing, home appliances and machinery. Compared to our forecast earlier in the year for just under 4% demand growth during the period, this represents an additional 35Mt in onshore iron ore usage which has been a key amplifier of deficit conditions and price support. We expect China's steel demand growth rate to decelerate into H2 (GSe +2%) and 2022 (GSe flat y/y). That trend of deceleration already started to play out in Q2 (+4% y/y) versus Q1 (+15% y/y), though we see reasons for expecting a stable low growth trend ahead rather than outright contraction. There is no doubt that property related construction demand has slowed and lower land sales/new starts suggest that trend is entrenched for now. However, we believe this will be offset by stronger trends in infrastructure activity, as Beijing shifts to a more expansionary gearing towards financing such activity. Whilst it is likely that the very strong growth rates seen over the past 3 years will taper over the next 12-18 months, we see onshore steel demand well-supported at the current high levels. With a modestly dilutive impact from scrap flows, this should sustain onshore iron ore demand at high levels.

Exhibit 1: Despite decelerating in Q2 China steel demand remains robust

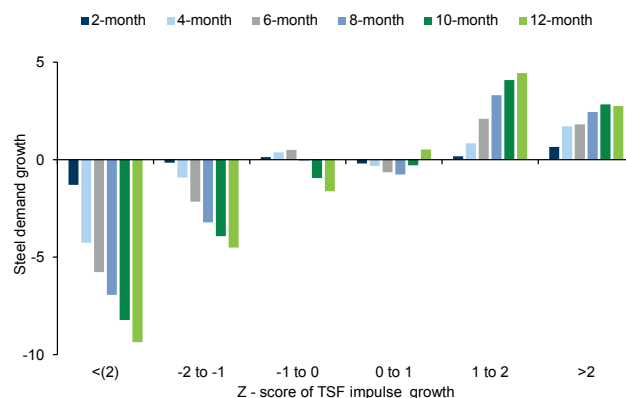
China steel apparent demand and growth



Source: Wind, Goldman Sachs Global Investment Research

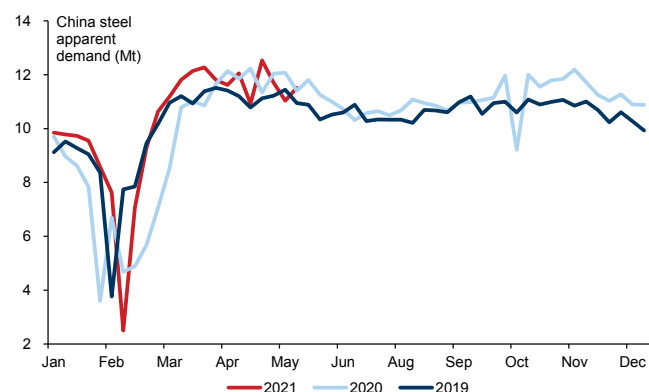
Exhibit 2: Historically moderate TSF impulse positively affects steel demand

China steel demand growth (detrended) vs Z-score of TSF impulse growth



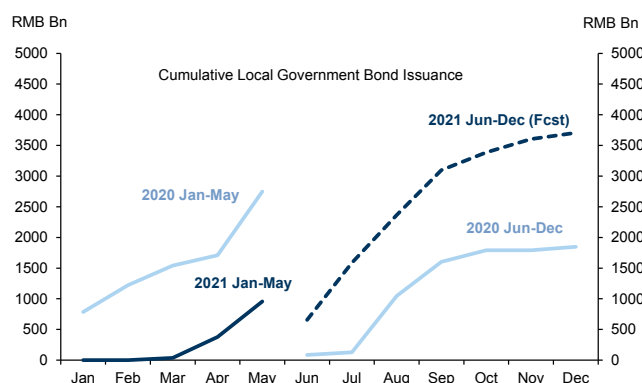
Source: Wind, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 3: China's weekly steel product apparent consumption has dipped in Q2 but y/y trend should recover post seasonal lull



Source: Mysteel, Goldman Sachs Global Investment Research

Exhibit 4: Significant pick-up in infrastructure focussed LG special bond issuance should be a positive for steel demand

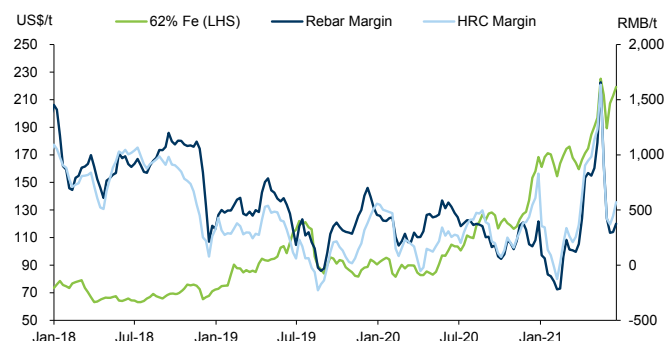


Source: Goldman Sachs Global Investment Research

2. Mill demand bias for mid-high iron ore set to sustain strong grade spread environment.

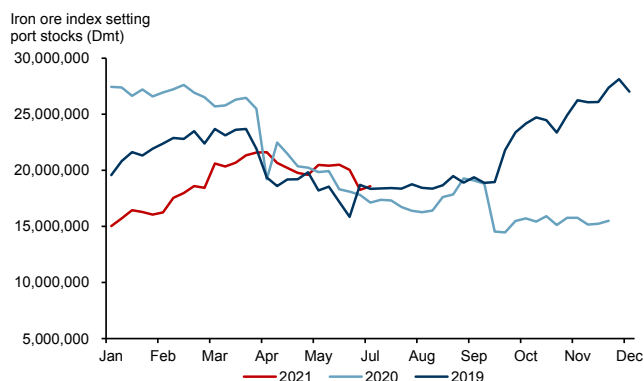
From an iron ore perspective, the overall strength of China's crude steel production so far in 2021 (+14% y/y year-to-May) has been a key positive demand driver. China's iron ore imports have risen 6% y/y ytd, on track to rise 70Mt y/y for the full year. Despite that import strength, onshore stocks have tightened into mid-year. Total port stocks have fallen 8Mt through the course of Q2 and now stand at the lowest level since early Q4-20. The tightening trend has been even more acute in terms of mid-high grade stocks, with index-setting brands flat lining at low levels after 9 months of y/y decline and suffering a sharp fall as a proportion of total port fines inventory (from 50% in Q2-20 to currently just 27%). This has been reflected in pricing, with both the benchmark 62% and 65% iron ore indices trading at significant spreads relative to the lower 58% grade. Mill preference for mid-high grades has been a key driver of this trend, in turn a function of elevated utilization rates (reinforced by output controls in some provinces), high coking coal prices and until mid-June, a healthy mill margin setting. If mill margins were to remain at current levels, this would generate some lower grade adjustment in ore preference. However, we expect mill margins to rebound over H2 from the current ebb, in part due to seasonally stronger trends likely from late summer as well as moderation in onshore coking coal prices (as domestic supply rebounds). More broadly, an environment of sustained capacity constraints in China from policy cuts will likely generate higher average utilization rate setting and in turn, higher grade preference.

Exhibit 5: China steel mills margins strengthened through most of H1 before an abrupt steel sell-off and seasonal headwinds weighed mid-year



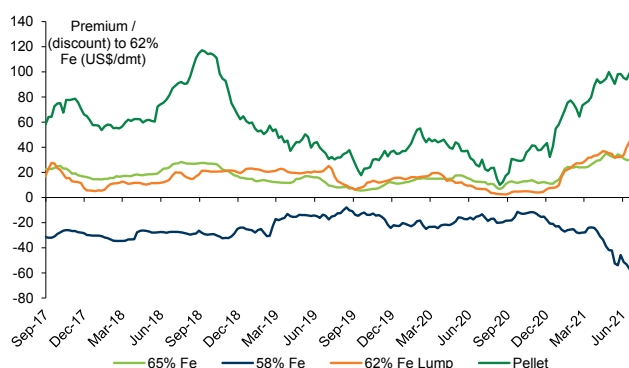
Source: Bloomberg, Platts, Goldman Sachs Global Investment Research

Exhibit 6: Iron ore index-setting port stocks remain at low levels supported by mill preference for mid-high grades ore



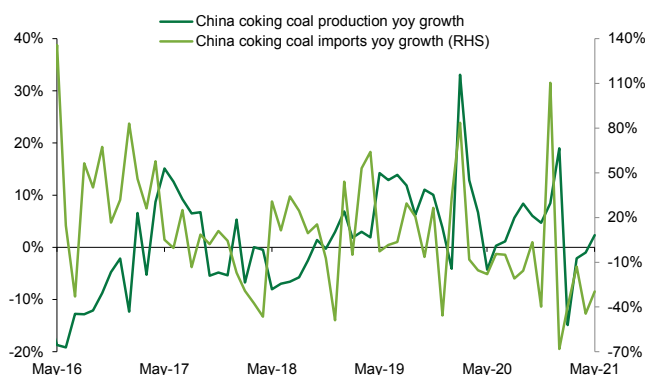
Source: Mysteel, Goldman Sachs Global Investment Research

Exhibit 7: Iron ore grade spreads have reflected those relative conditions with progressive flight to quality year-to-date



Source: Bloomberg, Platts, Goldman Sachs Global Investment Research

Exhibit 8: Spike in China coking coal prices due to supply constraints has reinforced margin compression, this should moderate in H2



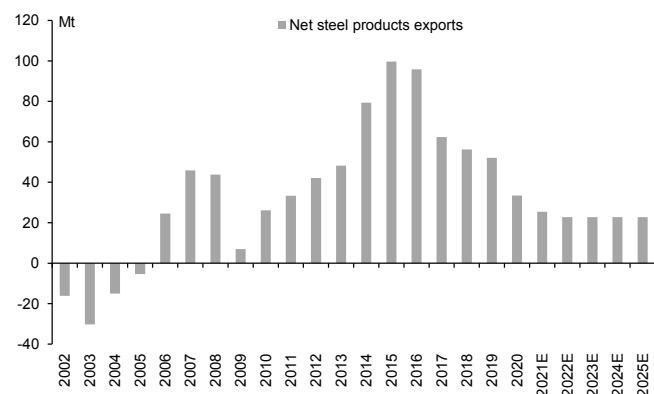
Source: Wind, Goldman Sachs Global Investment Research

3. Beijing mandated steel output cuts could exacerbate Q4 softness, but will prove transitory for iron ore unless demand aligned. As we highlighted previously, Beijing's emphasis on decarbonisation targets mean a focus on streamlining China's steel sector with a view to stabilizing emissions from the sector by mid-decade. Whilst there are a number of measures which will be deployed to achieve that in the medium term - including growth in scrap/EAF capacity, closure of smaller blast furnaces and a more import orientated ferrous trade balance - in the near term, there is mounting expectation that the Ministry of Industry and Information Technology (MIIT) will require steel producers to cut a significant portion of output over the rest of the year. This relates to a government target signaled earlier in the year to limit steel output growth in 2021 versus 2020. In this context, steel mills in several provinces have indicated that they expected to have to cut production over the rest of the year and potentially substantially if the full year production target remains in place. In the short run, such steel production cuts would be a negative for iron ore demand and potentially exacerbate the softer iron ore balance trend projected for H2. However, we think that such negative effects on iron ore demand and price would likely prove transitory if the cuts are misaligned from

demand. If China's steel supply is cut more than demand then (1) in the short run that will place greater pressure on the import channel, with iron ore consumption simply diverted to ex-China mills, and (2) drive up China's steel price and margins, which in turn would stimulate a rise in onshore steel output (as soon as allowed) and support a rebound in underlying raw material consumption.

Exhibit 9: Decarbonisation will limit China's steel exports, diverting production offshore for those units

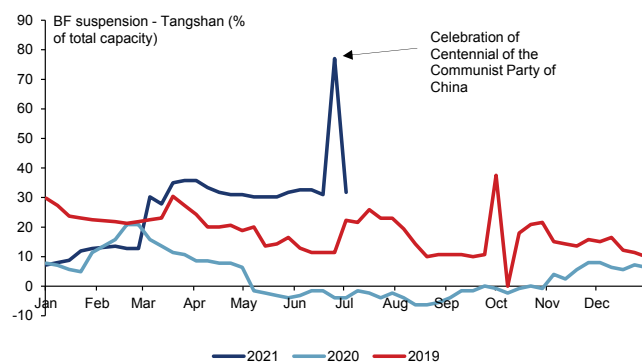
China net steel product exports



Source: Goldman Sachs Global Investment Research

Exhibit 10: BF capacity suspensions in Tangshan have already been elevated in 2021, risk of further broader cuts ahead

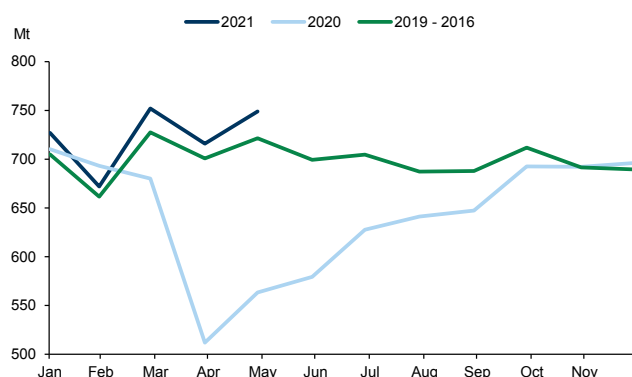
Blast furnace suspension as % of total capacity - Tangshan



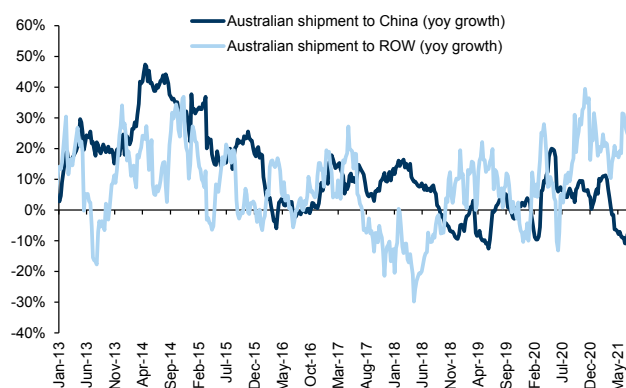
Source: Wind, Goldman Sachs Global Investment Research

4. Ex-China steel production surge continues, driving strong iron ore demand

growth. The other critical feature of the steel market in 2021 has been the strength in ex-China production, rising 14% y/y for the year-to-May. This strong growth has been led by India, reaching a cumulative production of 46.6Mt, 28% above the same period in 2020. This trend is expected to continue into the second half of the year as Indian steel utilisation rates rise further and total steel capacity is expected to expand. In Europe steel production is healthy with most mills operating at above 90% of their utilisation rates and a full recovery is also seen in the US with capacity utilisation rate now above 80% (in May) and a cumulative production of 34.4Mt, +9% y/y. Despite steel production now having recovered to pre-COVID levels, strong demand conditions continue to underpin tightness in Western markets and that is likely to continue at least through the rest of the year. Indeed we expect support for even higher production as the auto sector increases output levels as the semiconductor shortage eases. From an iron ore perspective this has translated in a very strong ex-China iron ore import demand environment. Australian iron ore shipments to ex-China markets have risen 15% y/y ytd with respect to 2020 (and also with respect to pre-COVID levels). Overall we expect this positive trend to continue, with the ex-China iron ore demand set to rise by 5% y/y in H2-21 after 9% y/y growth in H1-21. We also project 7% growth in ex-China iron ore demand in 2022. This amounts to an additional 35Mt of iron ore usage next year, which equates to all of the global seaborne supply growth expected for the period.

Exhibit 11: Ex-China steel production continues to grow versus both 2020 and pre-covid trend

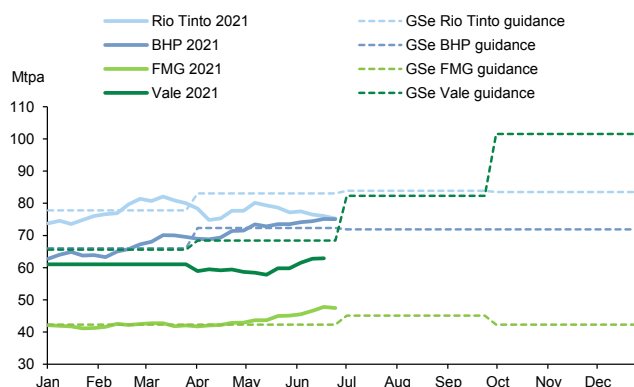
Source: Wind, Goldman Sachs Global Investment Research

Exhibit 12: This is supporting strong growth in demand for iron ore from ex-China steel producers

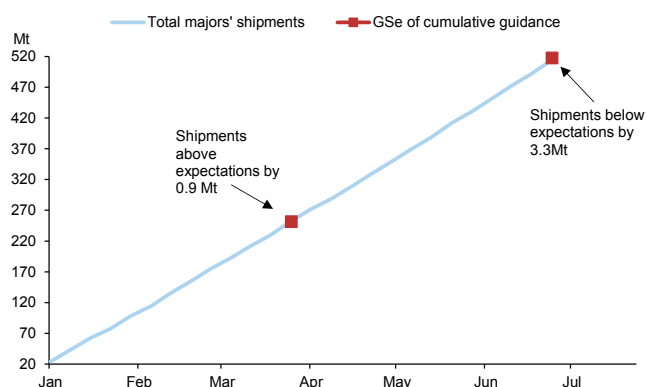
Source: Wind, Goldman Sachs Global Investment Research

5. Iron ore supply has been largely as expected in H1, sizable Brazil uplift still expected into H2.

After two years of weaker than expected performance in respective H1 periods, so far in 2021 the majors have avoided significant disruptions and shipments have in aggregate largely performed in line with expectations. For H1 as a whole we find that the majors fell just 3Mt short of guidance for the period. That reflects a balance between marginal out performance in Q1 of 1Mt - on the back of strong performance of Rio Tinto and BHP, shipping 2.2Mt and 3.5Mt above expectations, respectively - and lower shipments in Q2 driven by underperformance from Rio Tinto and Vale. Rio Tinto shipped ~ 8Mt less than our expectations of 83Mt for Q2 as one of their key port facilities, EII terminal, has been under maintenance since the end of May though it resumed operations on June 28th. Vale has underperformed our expectations of H1 total shipments of 134Mt by 8.9Mt, which reflects the impact from production halts at two mine operations as well as the maintenance at a ship loader in its Ponta da Madeira terminal. We expect iron ore supply across the majors to recover over the remainder of the year with H2 shipments of 679Mt, up by 11% with respect to H1-21. The main driver is expected to be Brazilian exports, with Vale total shipments expected to grow up to 20% q/q in the third quarter, which contrasts with more restraint in Australian shipments, with total shipments for H2 expected to increase just by 3% compared to the first half of the year.

Exhibit 13: Overall majors' shipments have performed in line with guidance, though Vale and Rio Tinto have underperformed

Source: Wind, Goldman Sachs Global Investment Research

Exhibit 14: Cumulative majors' shipments versus GSe cumulative guidance

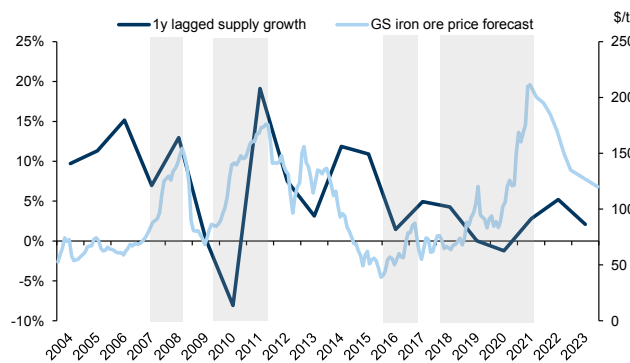
Source: Wind, Goldman Sachs Global Investment Research

6. Lack of investment in new supply defies the market economics and limits price collapse prospects.

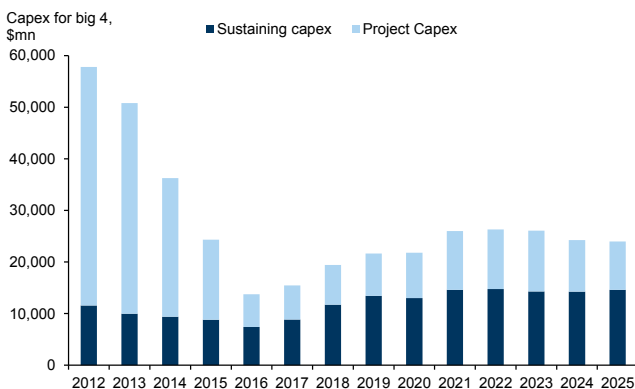
In the midterm we expect supply to grow just below 2% over the 2022-24 period, which represents a deceleration versus the expected 5% supply growth projected for 2021. The main growth sources during the period will come from (1) BHP's Pilbara fines (~50Mt) albeit as an offset to the terminal decline in Yandi fines, and (2) Vale production from their Southeastern and Northern Systems, expected to increase by 75Mt in aggregate over the next three years. The reality is that despite record iron ore prices there is no indication of an appetite from the majors for any accelerated incremental investment in iron ore projects at the current juncture. During previous bull markets, high iron ore prices stimulated a strong supply response with a supply growth that averaged 9% in the 2006 – 2007 iron ore rally, 6% in the 2009 – 2011 period and 4% in the bull market of 2016 – 2017. During the current bull market, which started in 2018, supply responses have been limited beyond Vale's volume recovery, with an annual average growth of just 1%. With no evidence this trend will change, we expect this trend to continue in the midterm which means the softening in balance and price pressures is going to be a function of slowing demand.

Exhibit 15: Current bull market is not being met by a strong supply response

Iron ore supply and historical and forecasted iron ore price



Source: Woodmac, Wind, Goldman Sachs Global Investment Research

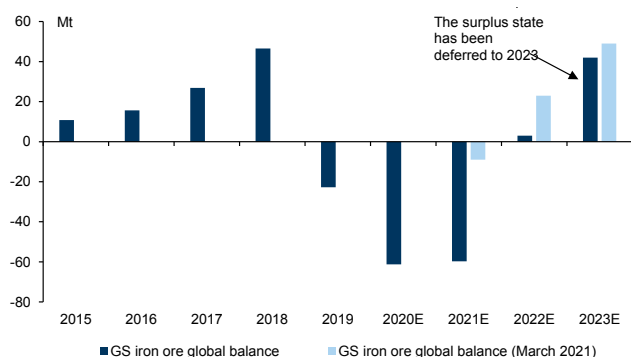
Exhibit 16: Capex across the majors currently lies at a third of the levels seen in the early 2010s

Source: Goldman Sachs Global Investment Research

7. More modest softening trend in iron ore balance in '22 implies shallower

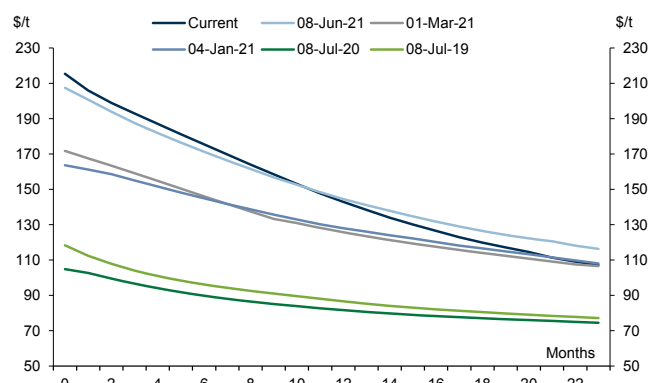
correction lower. The latest iteration of our iron ore supply demand balance points to a significantly larger deficit for 2021 than previous expected (GSe 60Mt versus 9Mt previously) and importantly, a balanced market in 2022 rather than clear step back into surplus previously anticipated (GSe 3Mt surplus versus 23Mt surplus previously). We continue though to expect a clearer surplus market environment in 2023 (GSe 42Mt surplus versus 49Mt surplus previously). Given the low inventory starting point, the elevation in front-end 62% pricing above \$200/t has had clear fundamental support up to this point. Over the rest of this year, we do expect a pocket of surplus in Q4 (12Mt) which underpins our projection for a modest taper in price into year-end (GSe Q4-21 \$190/t). To the extent that Beijing-mandated steel supply cuts over the same period could exacerbate that surplus effect, this may well reinforce downward iron ore price pressures. However, given that the market is set to return to deficit conditions in H1-22 and steel margin strength will incentivize a recovery in steel output (once policy constraints are lifted), the Q4 pullback may well offer a buying opportunity. Given our projection now for a tightly balanced year in 2022, our price forecasts for H1-22 (\$178/t) suggest the SGX iron ore 62% forward curve is too bearish on the equivalent period price strip (average H1-21 strip \$155/t). This suggests investors should view further weakness in this H1-22 portion of the curve as a buying opportunity.

Exhibit 17: GS global iron ore balance has tightened materially for both 2021 and 2022, deferring the clear step back into surplus into 2023



Source: Woodmac, Goldman Sachs Global Investment Research

Exhibit 18: SGX iron ore current and historical forward curves



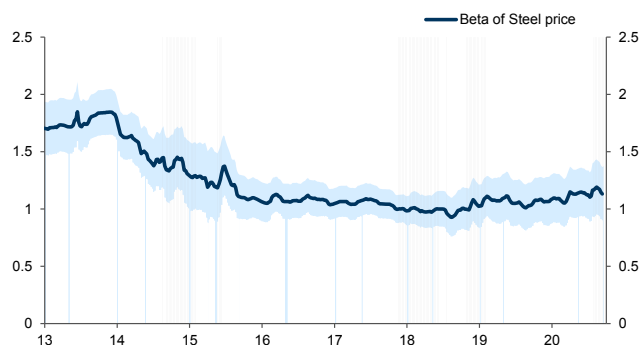
Source: Wind, Goldman Sachs Global Investment Research

8. Watch for coming dislocation between iron and steel. As with all commodities, modeling iron ore prices consists of finding those series that best capture the fundamental state of the iron ore market at any given point in time. To do so, we look at each element of the value chain, from cost inputs (and the dollar) through to demand drivers and inventories. Depending on the shock the causal relationships between these series can shift over time. When tightness in the ferrous market comes from an upstream shock - like the collapse of Vale's tailings dam in 2019 - iron ore drives steel via input cost inflation. Similarly, when tightness comes from strong end user demand - like we see in China and DM steel markets today - steel drives iron ore by raising mill margins and hence iron ore demand. However, the coming imposition of Chinese steel capacity curbs will dislocate any casual relationship between iron ore and steel prices, in our view. By generating a bottleneck in iron ore demand and steel supply that is exogenous to any price movement, Chinese environmental policy will likely generate,

and then sustain, steel market tightness and iron market softness from 2H22 onward.

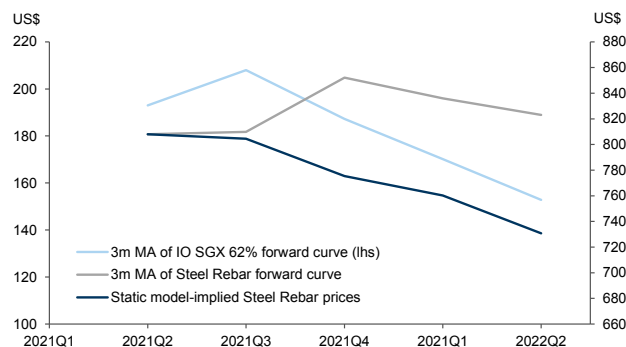
Exhibit 19: Steel prices are driving iron ore prices today, but the strength of the relationship has weakened over the past decade.

Beta of steel prices from rolling regression, where grey bands represent the periods when iron ore prices are driven by steel prices.



The rolling regressions and causality tests use a window size of 120 weeks.

Exhibit 20: The market is already pricing a structural break between steel and iron ore prices



Static model-implied (see below) steel price path is created using our proposed iron ore forecast

Source: Bloomberg, Goldman Sachs Global Investment Research, Wind

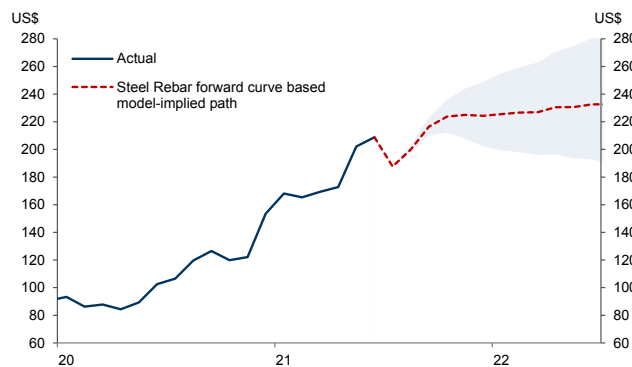
9. Capturing ferrous market fundamentals requires a dynamically specified model.

Understanding the statistical implications of such a fundamental dislocation is crucial when evaluating the usefulness of any price model. Because shifting fundamentals change the optimal specification for an iron ore price model, a simple static model that overlooks these shifts will likely generate large and persistent forecast errors when misspecified. Moreover, a model that always uses steel prices as a driving input into iron ore (or vice versa) will have substantial simultaneity biases. That is, in a given period, the dependent variable (iron ore) is both causing, and being caused by the independent variable (steel prices). To avoid such biases, and to generate a pricing framework consistent with our expected dislocation between iron ore and steel, we construct a dynamically specified model that accounts for these shifting relationships over time. Specifically, we determine the source of price drivers across the ferrous value chain by running two rolling Granger Casualty tests - one of iron ore on steel, and one of steel on iron ore (see [Exhibit 19](#)). Comparing the results of these with a similar rolling model of iron ore prices, we are able to map both the drivers of iron ore and their relative strength. To understand the magnitude and direction of likely biases in standard models, we construct a static model and compare the likely model-implied forecast paths over time, where the model-implied paths are based on the Steel Rebar forward curve (see [Exhibit 21](#) and [Exhibit 22](#)).

In the near term we believe the current form of the dynamic specification best reflects fundamentals in this market - tight steel balances and strong end user demand can sustain high iron ore prices despite a softening of iron ore inventories into year-end. However, as end user steel demand moderates in 1H22 and economies return to their long run growth paths, we expect steel to become an increasingly weaker driver of iron ore prices, particularly once the capacity caps begin to bite, allowing IO inventories to soften while steel inventories tighten over time. We see the evidence of this in the current market pricing of steel and iron ore: while steel forward curve continue to moving higher until end-year, iron ore forward curve starts a downward trend in 2021Q3

(see Exhibit 20). This leads us to expect a specification driven by iron ore inventories and the dollar, starting the (now longer) way down for iron ore prices.

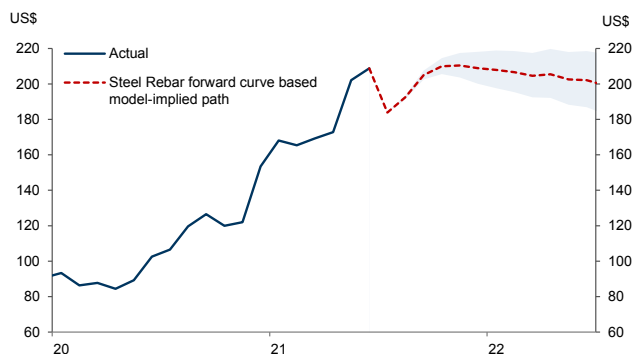
Exhibit 21: Dynamic model-implied iron ore price path if tight steel balances and strong end user demand continue driving the iron ore prices



Source: Bloomberg, Goldman Sachs Global Investment Research, Wind

Exhibit 22: Static model-implied price path

The static model produces a lower cross-price elasticity of iron ore and steel than we are observing in the market today



Source: Bloomberg, Goldman Sachs Global Investment Research, Wind

GS Iron Ore Supply and Demand Model

Exhibit 23: Iron Ore Supply and Demand Model

GS Iron Ore Supply and Demand Summary																			
(Million tonnes)	2015	2016	2017	2018	2019	1Q20	2Q20	3Q20	4Q20	2020	1Q21	2Q21E	3Q21E	4Q21E	2021E	2022E	2023E	2024E	2025E
Crude steel production																			
US	79	78	82	87	88	22	14	17	19	72	20	19	23	22	84	87	90	91	92
Japan	105	105	105	104	99	24	18	19	22	83	24	22	22	23	90	93	95	96	95
Western Europe	166	162	169	167	157	38	31	32	38	139	40	37	35	41	152	157	160	162	163
Other DM	30	30	30	36	35	9	7	8	8	32	10	8	8	8	35	36	37	37	37
Total DM	380	375	385	394	379	93	70	76	87	327	94	86	88	94	361	373	381	385	387
China	230	233	901	930	993	236	272	283	274	1065	271	282	288	278	1119	1119	1117	1113	1110
% growth (yoy)	-0.9%	12.6%	9.8%	5.8%	6.8%	2.6%	3.8%	11.1%	11.2%	7.2%	14.7%	4.0%	1.5%	1.5%	5.1%	0.0%	-0.2%	-0.3%	-0.3%
South Korea	70	69	71	72	71	17	16	17	18	67	18	17	18	18	71	73	74	75	76
India	89	95	101	109	111	27	17	27	29	100	30	22	28	30	110	119	128	137	146
Russia	71	70	71	72	69	18	17	18	18	72	19	19	20	19	77	78	78	78	78
Other EM	166	174	178	211	217	51	42	50	55	198	53	46	52	56	208	216	223	230	237
Total EM	1210	1232	1323	1395	1462	349	363	395	394	1502	391	387	406	401	1585	1604	1620	1634	1646
Global	1590	1607	1708	1789	1841	442	434	471	481	1829	484	473	494	495	1946	1977	2001	2019	2033
% growth (yoy)					2.9%	-72.2%	-73.0%	-72.4%	-73.1%	-0.7%	9.5%	9.0%	4.8%	2.8%	6.4%	1.6%	1.2%	0.9%	0.7%
Iron ore demand																			
Global iron ore demand 62% Fe	2063	2055	2084	2091	2172	538	533	578	584	2235	589	573	596	595	2353	2327	2329	2327	2321
% growth (yoy)	-1.3%	-0.4%	1.4%	0.3%	3.9%	-73.9%	-74.0%	-72.2%	-72.1%	2.9%	9.4%	7.4%	3.1%	1.8%	5.3%	-1.1%	0.1%	-0.1%	-0.2%
China	1242	1228	1242	1246	1338	320	361	378	361	1420	364	374	381	366	1485	1424	1398	1371	1345
ex-China	821	827	842	844	834	218	172	201	222	815	225	199	216	228	867	903	931	956	977
Iron ore seaborne demand																			
Global iron ore seaborne demand 62% Fe	1388	1452	1504	1484	1535	386	396	418	415	1615	426	417	428	424	1695	1667	1660	1652	1641
% growth (yoy)	-2.9%	-1.4%	0.7%	283.7%	3.4%	2.8%	-2.7%	8.3%	13.5%	5.3%	10.4%	5.2%	2.3%	2.2%	4.9%	-1.7%	-0.4%	-0.5%	-0.7%
China	940	1011	1059	1056	1113	270	301	315	299	1185	309	309	317	306	1241	1179	1158	1141	1125
ex-China	448	441	445	428	422	116	95	103	116	430	117	108	111	118	454	488	502	511	516
Iron ore seaborne supply																			
Australia	799	846	870	887	887	209	240	229	235	912	215	233	231	231	910	928	940	961	980
Brazil	361	359	379	391	363	67	74	87	105	332	79	83	98	118	379	424	455	465	465
South Africa	15	15	64	64	60	18	13	15	15	61	16	15	15	15	62	62	62	62	62
Canada	12	14	47	47	53	15	14	15	14	57	14	14	15	15	59	65	70	70	70
Guinea																			9
Other (India, Mexico, Bosnia, Kazak, Ukraine etc)	212	235	171	142	149	39	48	53	51	191	53	58	57	56	225	192	176	163	151
Total seaborne supply	1399	1468	1531	1531	1512	347	389	398	420	1554	378	403	417	436	1635	1670	1702	1721	1737
% growth (yoy)		4.9%	4.3%	0.0%	-1.2%	2.6%	2.4%	2.5%	4.4%	2.8%	8.6%	3.8%	4.8%	3.9%	5.2%	2.1%	2.0%	1.1%	0.9%
Seaborne balance and inventory																			
Balance	11	16	27	47	-23	-38	-8	-20	5	-61	-48	-14	-10	12	-60	3	42	69	97
Port Inventory (China)	134	108	109	117	127	117	107	116	124	124	130	122							
Seaborne price																			
Iron ore 62% Fe Price (\$/t)	83	100	102	95	95	89	93	117	124	106	165	199	200	190	189	160	120	75	75

Source: Woodmac, Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Nicholas Snowdon, Daniel Sharp and Jeffrey Currie, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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