PGIM FIXED INCOME

INFLATION

SUPPLY CHAIN STRAIN IN COMMODITIES

Don't Extrapolate the Upswing

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EXECUTIVE SUMMARY

- Cyclical commodity prices have surged amidst pressure from multiple fronts. While COVID has certainly exacerbated the typical mismatch between the timing of supply and the growth in demand, the deviation has been further strained by environmental considerations that have limited supply development.
- Higher-than-expected commodity costs have been a key contributor to the surge in inflation: they directly affect consumer prices, such as those for energy and food, and they indirectly affect prices via higher input costs on manufactured products.
- The third paper in our supply chain series assesses whether investors should expect persistent price pressures from commodity markets. It is an outlook that not only differs depending on the specific commodity, but it also varies along time horizons.
- While we don't see acute commodity shortages, we observe short-term supply constraints relative to demand. Furthermore, certain markets, e.g., European natural gas, are rife with geopolitical uncertainties that complicate short-term views. However, we already observed a softening in some prices, especially for iron ore, and we expect many prices, including those for crude oil and copper, to decline in 2022. This view contrasts the sell-side consensus, which is extrapolating 2021's tightness for an average increase of more than 3.5% in most cyclical commodities in 2022.[1]
- The commodity assessments support our view that inflationary pressures should moderate toward pre-pandemic levels as the year progresses.
- Longer term, the global transition to a green economy will keep some commodities in high demand (e.g., copper) at the expense of others (e.g., coal, iron ore, and crude oil). Such "green" considerations have limited supply development, or at least raised the incentive price for new extractive industry projects. However, the trend is clear that ESG related pressures will likely result in slower development and higher "floor" prices for many commodities in the coming decade. This restraint in capital spending also suggests that producers may not see enough incentives to justify additional investment, even at historically high prices.
- The following links navigate to our specific assessments for crude oil, natural gas, copper, steel, iron ore, and coal.

[1] Estimates indicate a sizable decline in iron ore prices, which is excluded from the average given the idiosyncratic decline estimates.

COMMODITY PRICES DURING THE PANDEMIC

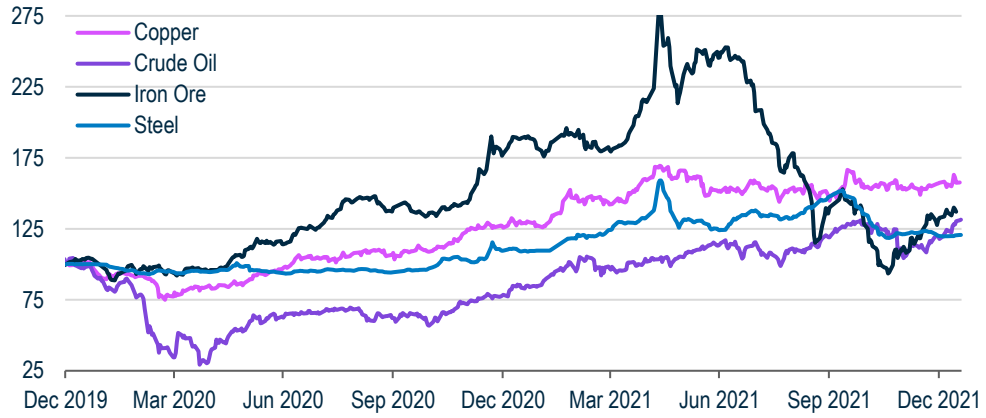
As 2021 concluded, most commodity prices stood above their pre-pandemic levels (Figure 1).

However, the rallies mask that fact that some cyclical commodity prices are now below their 2021 highs. Weaker iron ore and steel prices, for instance, suggests softening demand (mostly linked to China) and easing supply as output appears to be responding to higher prices. The two high-profile cyclical commodities—crude oil and copper—have been more resilient and not far from their 2021 highs.

Therein lies the paradox of the transition to green energy sources—coal usage likely experienced a multi-year high in 2021 as its relatively lower prices incentivized natural gas users to switch to the carbon-intensive fuel.

Figure 1: Cyclical commodities stabilized above their pre-pandemic levels in H2 2021

Normalized as of December 31, 2019



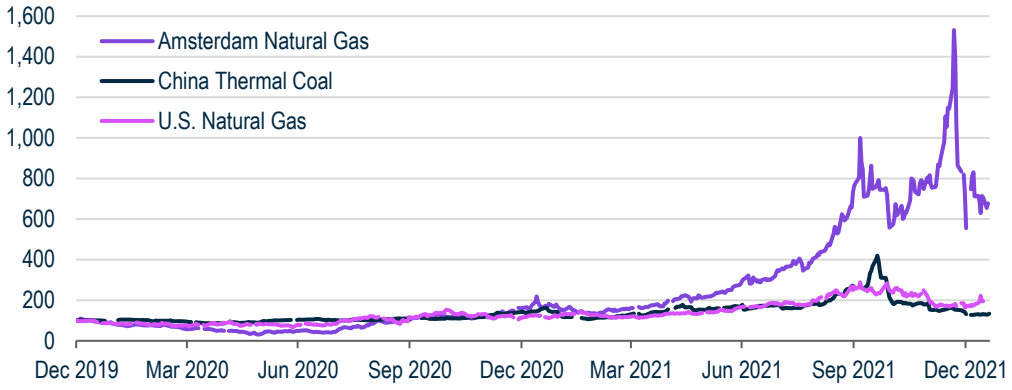
Source: PGIM Fixed Income and Bloomberg as of January 2022

Other commodity markets remain disrupted by supply chains, including natural gas and coal, both of which are used for manufacturing, heating, and cooling. Some commodity markets have faced significant dislocations: European natural gas prices rose between 10 and 15 times in December 2021, while U.S. natural gas and thermal coal prices rose by several multiples in Q4 2021. (Figure 2).

Therein lies the paradox of the transition to green energy sources—despite the ESG pressure, coal usage likely experienced a multi-year high in 2021 as its relatively lower prices incentivized natural gas users to switch to the carbon-intensive fuel.

Figure 2: European natural gas prices reflected acute shortages in H2 2021, with more limited rallies in U.S. natural gas and China thermal coal

Normalized as of December 31, 2019



Source: PGIM Fixed Income and Bloomberg as of January 2022

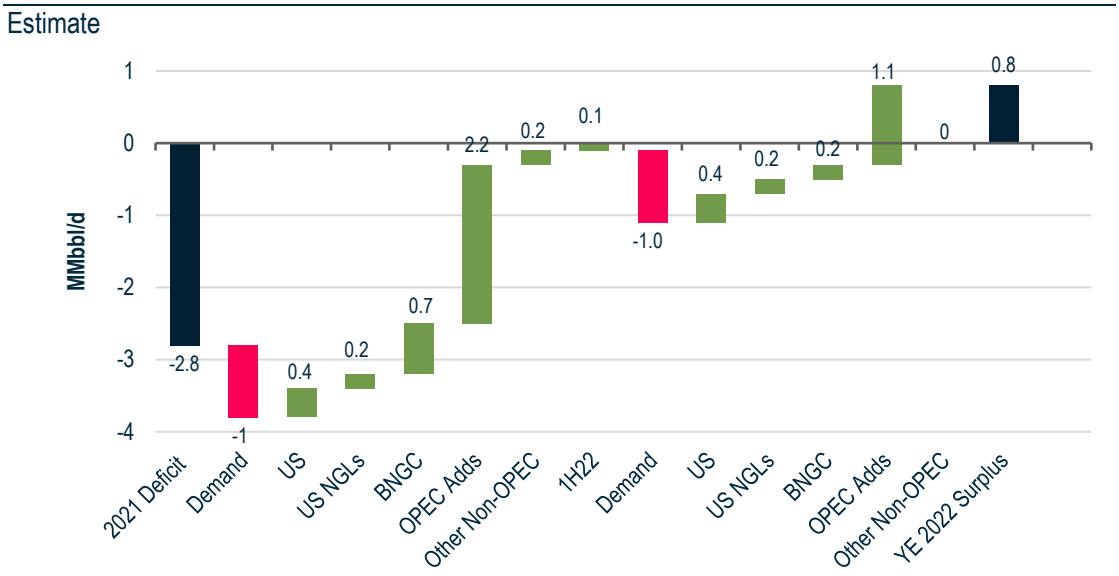
Breaking with historic trends, major U.S. independent producers did not respond to the oil price rally with higher investment spending. Their focus has shifted from growth to shareholder returns.

CRUDE OIL

- Although persistent net supply deficits of crude oil in 2021 drained global inventories and supported prices, we expect the market to gradually re-balance in 2022 amid unwinding OPEC+ cuts, slowing demand, and a limited—but still meaningful—U.S. production response.
- At this point, we estimate that global oil markets are currently undersupplied by approximately 2.8 million barrels/day given 2021's strong inventory draws and the 55% rally in WTI prices in 2021.
- In 2022, demand may exceed the pre-COVID high. Historically, outside of global recessions, global oil demand has reliably expanded 1-2 million bbl/d year over year. Our economics team forecasts strong global GDP growth of 4.2% in 2022, and with lagging elements of demand (i.e. jet fuel) potentially poised to return, we estimate demand growth of 2 million bbl/d is reasonable. The EIA, IEA, and OPEC all expect 2022 oil demand to grow by 3-4% in 2022 due to rising global diesel and gasoline demand.
- Within the global oil demand and supply picture, Asia Pacific is the largest net consuming region, accounting for 35 mbpd (or 35%) of global oil demand versus a relatively small 7-8m in oil supply. The region saw a shallower dip and sharper demand recovery out of 2020, driven particularly by non-OECD Asia against a backdrop of generally declining oil supply, which is expected to drop by a further 0.8 mbpd over the next five years.
- On the supply side, breaking with historic trends, major U.S. independent producers did not respond to the oil price rally with higher investment spending. Their focus has shifted from growth to shareholder returns. The major U.S. independent producers that led the supply expansion over the last 10 years are now guiding production growth to only 0-5% in 2022, hardly the supply response necessary to offset demand growth. Somewhat surprisingly, the oil majors (ExxonMobil and Chevron) are planning meaningful production increases, and we expect the pace of growth from the two big majors to outpace the independents in 2022. U.S. private producers also added rigs aggressively in 2021. Privately-held acreage tends to be less productive, but the expected supply additions are material. We estimate private producers could add 200-300 mbbl/d of crude in 2022. However, the largest source of incremental crude supply in 2022 will be from OPEC+. The current OPEC cuts end in May 2022, and OPEC+ production is already increasing. However, some member states (Angola and Nigeria) are having trouble meeting their quotas, leading to market concerns about OPEC+'s ability to produce enough to meet global demand over the medium term.
- We expect that the crude oil supply deficits will gradually dissipate, leading to a more balanced market by the end of 2022 (Figure 3). We believe this is the intention of OPEC+, and our estimate of net supply is similar to its assumptions. In 2022, we are modelling an oil price of $75/bbl in the first half of the year and $62.50/bbl in the second half.

We view $50/bbl as a soft floor for oil post 2022…given the need to properly incentivize additional supply, most of which in the near term will have to come from the U.S.

Figure 3: 2022 global oil supply and demand outlook



Source: PGIM Fixed Income as of November 22, 2021.

- Beyond 2022, there are reasons to expect higher crude prices. Oil supply outside the U.S. remains constrained relative to expected demand growth in 2023. In order for the U.S. to return to its status as the swing producer, there will have to be a "call" on shale oil, and it remains to be seen if U.S. producers will answer it given the demand for shareholder rewards and intensified ESG pressures, which are redirecting capital away from traditional oil and gas projects. Inflationary pressures are also likely to cause a hike in breakeven prices for U.S. shale from the pre-COVID $35-50 range to a $40-55 range.

- Demand for oil over the medium term is less certain, with the growing adoption of electric vehicles and renewable power. The timing of changes in structural oil demand is unclear but it is expected to have a meaningful effect on aggregate demand over time.

- We view $50/bbl as a soft floor for oil post 2022 and a $60-80 range as realistic in 2023 given the need to properly incentivize additional supply, most of which in the near term will have to come from the U.S.

NATURAL GAS

U.S. NATURAL GAS

- U.S. prices rebounded sharply in 2021, jumping past $6.00/mmbtu in September amid a supply response due to producer discipline as well as strong demand stemming from robust exports and firm baseload power consumption. The EIA expects prices to average $3.79/mmbtu in 2022.[2]

- We are bullish on the long-term demand trends for natural gas and view it as a transition fuel bridging energy supplies to renewables. As a result, the era of inexpensive natural gas is likely behind us, and we expect prices to remain above $3.00/mmbtu for the next several years.

- We point to two main reasons why natural gas production has remained flat since 2019, despite a doubling in price. First, U.S. natural gas producers have been much more disciplined in capital spending. The oil and gas industry has gone through a decade of

[2] Mmbtu refers to million British thermal units.

We view natural gas as a transition fuel bridging energy supplies to renewables.

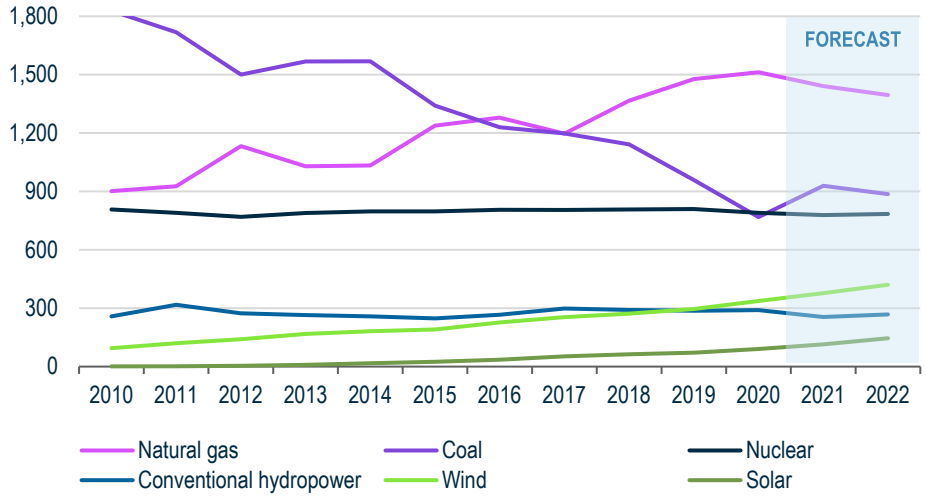
lagging returns compared with the broader equity market and shareholders have demanded that free cash flow be used to repay debt and/or return cash to shareholders. The reinvestment rate for producers went from more than 100% of cash flow prior to the COVID-related collapse in gas prices to 50-70% today. Second, the collapse in oil prices also lead to a slowdown in oil-directed drilling, which reduced natural gas flows coming from oil wells (referred to as "associated gas"). We also note that gas supply from the prolific Northeast Marcellus Shale is capped given pipeline constraints.

- The drivers of robust demand include strong exports of liquefied natural gas (LNG), as well as increased power demand as coal plants continue to be retired. U.S. LNG exports averaged 9.8 billion cubic feet/day in 2021, up from 6.5 bcf/d in 2020 and under 1.0 bcf/d in 2016, and the EIA expects an average 11.5 bcf/d, as the sixth train at Sabine Pass LNG and the first trains at the new LNG export facility, Calcasieu Pass LNG, enter service. The spread between U.S. natural gas and international prices remains wide, leaving the arbitrage export window wide open.

- Given the developed markets' transition away from coal-fired generation, natural gas helped generate ~1,500 billion kilowatt hours in 2020, up more than 50% from 2010, while coal has seen its share of power generation fall by roughly 50% over the same timeframe.

Figure 4: U.S. annual electric power sector generation by source

2010-2022



Source: U.S. Energy Information Administration as of October 2021

ASIAN NATURAL GAS

- This market represented 22.5% of world consumption and 16.9% of world production as of 2020. It is structurally imbalanced as its deficit has increased from 87 billion cubic meters in 2010 (18% of production at that time) to 209 bcm (32% of production) in 2020. Breaking this into two constituent groups of net importers and net exporters, the net importers generate a 415 bcm deficit, of which one-third is generated by China and over 40% by the industrialized Asian economies of South Korea, Singapore, Hong Kong and Japan. Meanwhile, the net exporters generate a much smaller surplus of only 205 bcm, of which half (49%) is contributed by Australia and the balance split between the Southeast Asian countries of Malaysia, Indonesia, Myanmar and Brunei.

- In terms of global dynamics on the supply side, North America's natural gas exports are likely to remain steady with its important role in the global liquid natural gas trade, while

the Commonwealth of Independent States' region will continue to see steady growth from Russia, and the Middle East will also see stability underpinned by LNG giant Qatar. Asia on the other hand is likely to see a meaningful increase in net imports.

There is genuine concern in Russia that the strong increase in gas prices will make other countries' gas fields economically viable while stimulating the development and exploitation of alternative energy sources.

EUROPEAN NATURAL GAS

- European natural gas prices also spiked during 2021 as supplies dwindled in the face of rising demand. Reasons for the supply limitations are varied, with higher seasonal demand and Russia's refusal to provide additional supplies above baseline contracts explaining much of the supply shortfall. The outlook for the supply of gas is more complicated because it mostly depends on geopolitics and on the resolution of the NordStream2 approval.
- Russia is the second largest producer of natural gas (18% of world production in 2020) after the U.S. (23.6% of world production). It is the largest global gas exporter, with an estimated market share of 23% (total exports amounting to 230bcm). Europe and China are its main export markets, with China gaining importance in recent years. Estimates of gas reserves fluctuate widely, from 37.4tcm in 2020 to 47.8tcm (EIA). Recent disputes over the NordStream2 pipeline approval has led to Russia's decision to provide only baseline levels of supply as per its contract and not the usual additional supply provided during peak periods of demand.
- EU storage facilities that depend on Russian gas are currently at lower levels than their historical average, and Russia's Gazprom is apparently hesitant to increase production in order to fill the facilities. Gazprom has influence over almost one-third of all gas storage in Germany, Austria and the Netherlands. From a strictly contractual point of view, Gazprom is delivering the specified amount of gas but nothing more. Countries with less dependence on Gazprom's supply, such as France and Italy, have normal levels of gas in storage.
- To complicate matters, there is genuine concern in Russia that the strong increase in gas prices will make other countries' gas fields economically viable while stimulating the development and exploitation of alternative energy sources. However, the real game changer for the gas market in Europe is a resolution of the NordStream2 pipeline approval. Until this issue is solved, the market will remain tight.

COPPER

- The surge in copper prices largely stems from the wide fundamental imbalance triggered by the COVID-induced shocks to both supply and demand. On the supply side, for instance, mining operations were temporarily suspended to curb the spread of COVID in countries, such as Mexico and Peru. On the demand side, stimulus measures undertaken by several governments across the globe prompted a swift and large rebound in the consumption of consumer and capital goods. The ensuing drawdown of inventories—including in China, the world's largest consumer of copper—reduced the buffers in the copper market to multi-year lows, thereby exacerbating the impact of the fundamental imbalance on prices.
- As per the consensus (median) projections from various sell-side shops and Australia's Dept. of Industry, Science, Energy and Resources (DISER), a gradual restoration of the copper market's supply-demand balance will likely occur over the course of 2022 as the pace of the post-pandemic global recovery moderates and supply responds to the continued normalization of operations and new production comes online (Figure 5). Mine

supply is expected from key producers like Congo, Peru, Indonesia and Russia. Downside risks to this outlook are non-trivial, nonetheless. In Peru, a less-friendly approach of the new administration of President Castillo towards the mining industry poses downside risks to the country's production, particularly for new projects. Likewise, the incoming left-leaning government in Chile will likely seek to raise the tax burden on mining companies, which could constrain the expansion of the industry in the world's largest copper producer.

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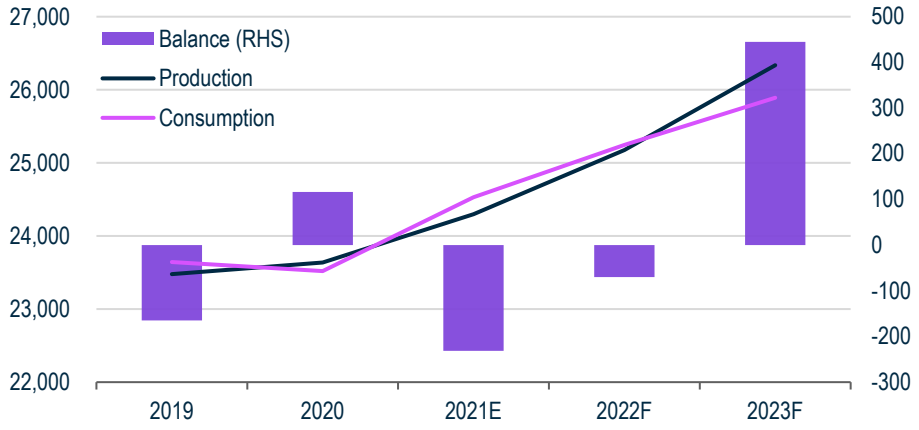
Figure 5: Global outlook for global copper supply and demand

('000 tonnes)

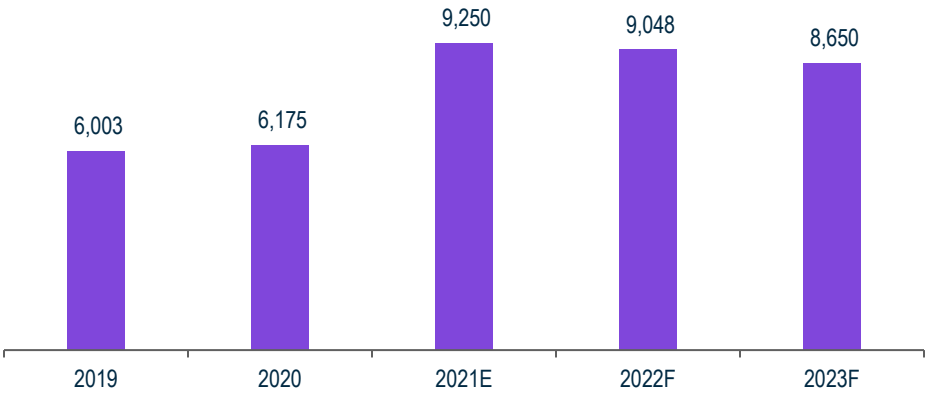


Source: Australia's DISER, BofA, Citi, Goldman Sachs, Morgan Stanley, UBS and PGIM Fixed Income as of December 2021

- The gradual restoration of the supply-demand balance, which would in part support the recovery of inventories, underpins the consensus view of relatively high copper prices through 2023 (Figure 6). In our view, risks to this outlook appear fairly balanced. The impulse provided by the stimulus measures in China and the potential re-introduction of mobility restrictions in different parts of the world are key uncertainties to the outlook.

Figure 6: Copper prices

(Annual Average, $/t)



Source: Australia's DISER, BofA, Citi, Goldman Sachs, Morgan Stanley, UBS and PGIM Fixed Income as of December 2021

- In the long run, supply faces the challenge of satisfying the growing demand bolstered by the global decarbonization drive (e.g., expansion of electricity grids to connect renewable sources, production of electric vehicles). In principle, the viability of continued supply growth should be supported by high copper prices and the availability of untapped reserves, though ESG pressures (e.g., environmental concerns over extractive activities) have constrained reserve development.

STEEL

- The steel sector continues to face global overcapacity, despite the recent increase in prices for many steel products. While steel prices have hit record highs in many places, such as the U.S., much of the increase can be explained by trade restrictions, such as Section 232 tariffs, and by the closure of existing capacity in 2020 that is being reopened at a slower pace than the rebound in demand. Capacity utilization rates have also risen in recent months, but such capacity utilization measures often ignore idled capacity and, therefore, paint a rosier picture than the true state of global capacity utilization.

The Chinese property sector accounts for 15% of global steel demand, posing a significant risk for both steel and iron ore demand in the coming years as China seeks to move away from a property-led growth model.

- China has attempted to curtail steel production for many years but has usually been unsuccessful. Only recently was China able to cut steel production through the implementation of broad power cuts. This has had a direct impact on the demand for iron ore. The Chinese property sector accounts for 15% of global steel demand, and this concentration poses a significant risk for both steel and iron ore demand in the coming years as China seeks to move away from a property-led growth model.

- The world continues to be dominated by blast oxygen furnace (BOF) steel production, but it is shifting toward electric arc furnace (EAF) production, which is preferred from an environmental perspective. EAF development is currently limited due to scrap availability, particularly in countries that are still industrializing like China. Over time, however, the expectation is that the world will collectively move toward greater EAF production and less BOF production, which will result in different raw material input needs. Demand for ferrous scrap and pig iron will continue to grow, while demand for iron ore and coking will likely wane.

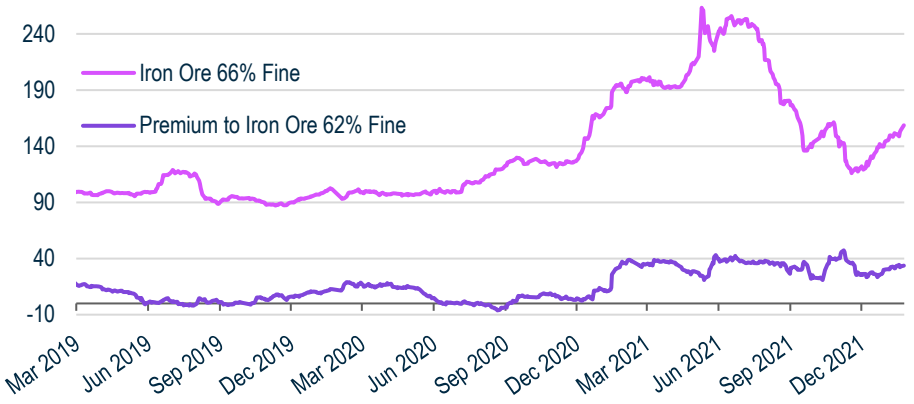
IRON ORE

- Iron ore makes up approximately 5% of the earth's crust, hence the supply is abundant. However, cash cost hurdles and ESG pressures (such as the closure of capacity after the Brumadinho tailings dam disaster in Brazil) have limited some development and production in recent years. Higher freight expenses to China in recent quarters is also contributing to higher costs and raising incentive prices for new projects. As a result, constrained supply since 2019 led to an unexpected price surge for iron ore.

- However, iron ore prices have started to retreat due to falling Chinese demand as the country re-directs its economic growth away from the property sector toward new economy sectors that are more likely to use copper or aluminum. Additionally, Vale and other producers have completed projects in recent years, pushing up iron ore supply forecasts in the next few years.

- Over the medium and long term, iron ore pricing should decline due to our expectation of lower steel demand from China, higher iron ore production and competition from scrap as China shifts steel production toward EAF.

Figure 7: Iron ore spot price index



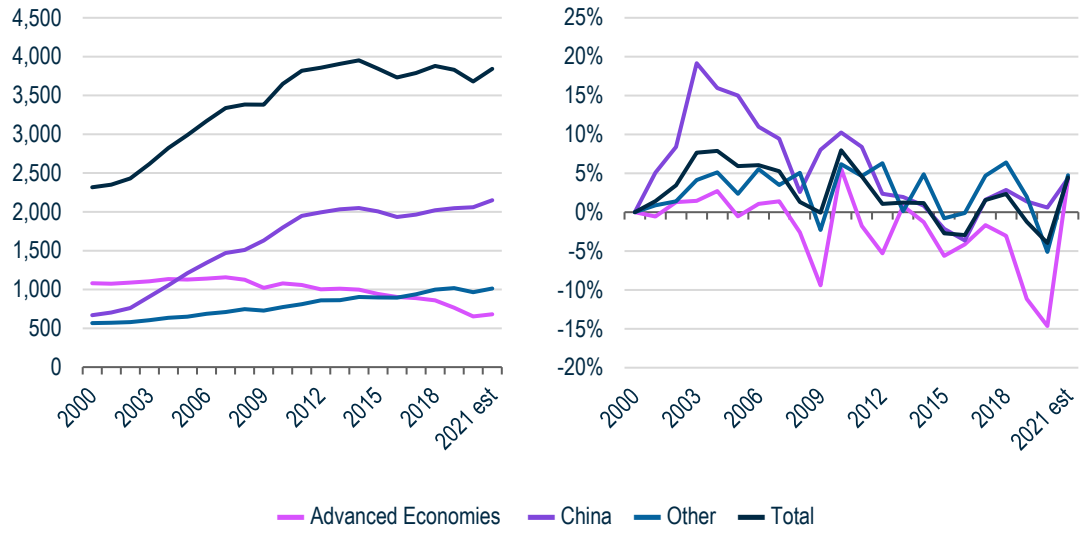
Source: Bloomberg as of January 24, 2022.

When natural gas prices spike in the short-term, end users will still look to coal as a viable alternative for natural gas until there is a critical mass of renewable energy capacity.

COAL

- Long shunned in Europe and the U.S. for environmental concerns, coal remains a dominant source of electric power in many other parts of the world. Coal represented 36.7% of the global electricity power mix in 2019, as per the IEA. Power generation represents about 85% of coal's end use, and the steel industry is the second largest consumer of coal with about 15% of total consumption. Increased supply of renewables and competition from natural gas is expected to impact future demand for coal globally over the next few decades. However, when natural gas prices spike in the short-term, end users will still look to coal as a viable alternative for natural gas until there is a critical mass of renewable energy capacity.

Figure 8: Coal consumption and consumption growth rates



Source: IEA as of December 2021

- China's coal production has increased since 2016 as investment in the sector has increased along with mine approvals. Additionally, the Chinese government tightened import restrictions in the second half of 2020 to protect domestic producers. China's 13th Five-Year Plan (2016-2020) set goals to increase the industry's competitiveness, profits and safety standards. Mines and companies have since started to consolidate to reduce

overcapacity and obtain new private capital investment. China continues to approve new coal projects, despite verbal commitments to reduce CO2 emissions.

- India is the second largest coal producer in the world with production dominated by the government-owned Coal India Ltd. In addition to protecting local producers, the government is also approving new mining projects with a goal to boost production to meet supply needs and reduce import dependency. Like China, India is also trying to open the sector up to new private producers with the goal of increasing overall domestic production.
- While coal remains under tremendous ESG pressures in developed markets, it will continue to be used in emerging economies until renewable power is large enough and more cost-effective. When natural gas prices spike as they have in recent months, we should continue to expect coal price volatility also.

CONCLUSIONS

The frequency of headlines pertaining to rising prices of cyclical commodities gives the impression of prolonged increases across the complex, which is still the consensus view (see Figure 9 in the Appendix). However, the nuanced moves during the pandemic require perspective on the causes as well as the sustainability.

Our base case expectation is that the peak disruption in commodities is behind us, and we expect most prices to ease in 2022, which consequently supports our view that inflationary pressures should ease toward pre-pandemic levels as the year progresses.

In the short term, the recent price declines from 2021's highs suggest softening demand (mostly China-linked) and easing supply as output responds to higher prices. Indeed, we see lower crude oil prices—$75 per barrel in the first half of the year and $62.50 in the second half—as the pace of demand growth slows and OPEC+ ramps up production. On the metals front, we expect copper prices to ease in 2022 as supply responses and softening global economic growth gradually restore the market's surplus position by 2023. For the bulk commodities (steel, iron ore and coal), we expect weaker Chinese demand (via the real estate sector) and China-led supply responses to push prices lower in 2022.

Over the longer term, the price outlook goes well beyond the COVID implications as ESG considerations become a key determinant. The era of cheap natural gas is likely over given its growing role as a transition fuel. Limited supply and firm export demand—not to mention the geopolitical uncertainties—should accelerate the increase from $2.00/mmbtu in 2020 to ~$4.00/mmbtu in 2022 with prices set to remain above $3.00/mmbtu in the coming years. The green transition should also support copper prices over the long term at the expense of coal, iron ore, and crude oil prices.

APPENDIX

Figure 9: Commodities price forecasts

(averages as of January 17, 2022)

		2021 (actual)	2022	2022 vs. 2021
NATURAL GAS Henry Hub US$/MMBtu 	Citi		$4.50	17.4%
	J.P. Morgan		$4.81	25.5%
	Morgan Stanley		$4.21	9.9%
	HSBC Bank USA		$3.75	-2.1%
	Goldman Sachs		$3.52	-8.1%
	Average	**$3.83**	**$4.16**	**8.5%**
OIL WTI US$/barrel 	Citi		$69.00	1.4%
	J.P. Morgan		$84.00	23.5%
	Morgan Stanley		$69.70	2.5%
	HSBC Bank USA		$72.00	5.9%
	Goldman Sachs		$93.30	37.2%
	Average	**$68.02**	**$77.60**	**14.1%**
THERMAL COAL Newcastle US$/MT 	Citi		$110.00	-20.1%
	Deutsche Bank		$115.00	-16.5%
	Morgan Stanley		$130.00	-5.6%
	Bank of America		$120.00	-12.9%
	Goldman Sachs		$120.00	-12.9%
	Average	**$137.74**	**$119.00**	**-13.6%**
COPPER LME US$/MT 	Citi		$9,250	-0.7%
	J.P. Morgan		$9,250	-0.7%
	Morgan Stanley		$8,956	-3.8%
	Bank of America		$9,813	5.4%
	Goldman Sachs		$11,875	27.5%
	Average	**$9,314**	**$9,829**	**5.5%**
IRON ORE 62% TSI US$/MT 	Citi		$96.00	-38.5%
	J.P. Morgan		$92.00	-41.0%
	Morgan Stanley		$100.00	-35.9%
	Bank of America		$91.00	-41.7%
	Goldman Sachs		$125.00	-19.9%
	Average	**$156.00**	**$100.80**	**-35.4%**

Sources: Citi, J.P. Morgan, Morgan Stanley, Bank of America as of January 17, 2022.

Figure 10: Global oil demand by region

(mb/d)

	2019	2020	2021	2022	2023	2024	2025	2026	2019-26 Growth	2019-26 Growth
North America	25.3	22.2	23.8	24.5	24.7	24.7	24.6	24.6	-0.4%	-0.7%
Central & South America	6.6	5.9	6.3	6.6	6.7	6.7	6.8	6.9	0.7%	0.3%
Europe	15.7	13.8	14.6	14.8	15	15	14.9	14.9	-0.8%	-0.8%
Africa	4.2	3.8	4	4.2	4.4	4.5	4.7	4.8	1.7%	0.5%
Middle East	8.3	7.6	7.9	8.2	8.4	8.5	8.7	8.9	0.9%	0.6%
Eurasia	4.4	4.2	4.3	4.4	4.5	4.6	4.6	4.7	1.1%	0.4%
Asia Pacific	35.2	33.4	35.6	36.9	37.7	38.2	38.9	39.3	1.6%	4.1%
World	**99.7**	**91**	**96.5**	**99.4**	**101.2**	**102.3**	**103.2**	**104.1**	**0.6%**	**4.4%**

Source: International Energy Agency (IEA), Oil 2021.

Figure 11: Global production of crude steel

(millions of tons)

	2015	2016	2017	2018	2019	2020	Δ 2020 vs. 2015	9 mo 2021	9 mo '21 Δ YoY	Sept '21 Δ YoY
Brazil	33,258	31,642	34,778	35,407	32,569	31,000	-6.8%	27,200	20.2%	15.3%
Canada	12,473	12,646	13,208	13,443	12,897	11,000	-11.8%	N/A	N/A	N/A
China	**803,825**	**807,609**	**870,855**	**928,260**	**996,342**	**1,064,800**	**32.5%**	**805,900**	**2.0%**	**-21.2%**
France	14,984	14,413	15,505	15,387	14,450	11,600	-22.6%	N/A	N/A	N/A
Germany	42,676	42,080	43,297	42,435	39,627	35,777	-16.2%	29,900	16.1%	10.7%
India	**89,026**	**95,477**	**101,455**	**109,272**	**111,351**	**100,300**	**12.7%**	**87,300**	**23.3%**	**7.2%**
Iran	16,146	17,895	21,236	24,520	25,609	29,000	79.6%	19,300	-8.6%	-51.4%
Italy	21,958	23,312	24,007	24,496	23,190	20,400	-7.1%	N/A	N/A	N/A
Japan	**105,134**	**104,775**	**104,661**	**104,319**	**99,284**	**83,200**	**-20.9%**	**72,100**	**17.9%**	**25.6%**
Mexico	18,218	18,824	19,924	20,204	18,387	16,800	-7.8%	N/A	N/A	N/A
Russia	70,898	70,453	71,491	72,122	71,897	71,600	1.0%	56,400	6.2%	-2.2%
South Korea	69,670	68,576	71,030	72,464	71,412	67,100	-3.7%	52,900	6.7%	-5.0%
Spain	14,845	13,616	14,441	14,320	13,588	11,000	-25.9%	N/A	N/A	N/A
Taiwan, China	21,392	21,751	22,438	23,240	21,954	21,000	-1.8%	N/A	N/A	N/A
Turkey	31,517	33,163	37,524	37,312	33,743	35,800	13.6%	29,900	15.0%	2.4%
Ukraine	22,968	24,218	21,417	21,100	20,848	20,600	-10.3%	N/A	N/A	N/A
United Kingdom	10,907	7,635	7,491	7,268	7,218	7,100	-34.9%	N/A	N/A	N/A
United States	**78,845**	**78,475**	**81,612**	**86,607**	**87,761**	**72,700**	**-7.8%**	**64,400**	**19.8%**	**22.0%**
World	**1,625,141**	**1,632,780**	**1,735,875**	**1,825,486**	**1,875,155**	**1,877,500**	**15.5%**	**1,461,200**	**7.8%**	**-8.9%**
World YoY Growth Rate	N/A	0.5%	6.3%	5.2%	2.7%	0.1%				
Excess Prod. (Prod. less Cons.)	116,191	110,290	99,960	114,391	108,416	105,700				
Excess Prod. / Total	7.1%	6.8%	5.8%	6.3%	5.8%	5.6%				

Source: World Steel Association as of September 2021

NOTICE: IMPORTANT INFORMATION

Source(s) of data (unless otherwise noted): PGIM Fixed Income as of February 2022.

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