

Magnetic attraction

Investors and physical hedgers flock to iron ore

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- **Growing derivatives volumes, volatility and China ties attract financial investors**
- **Supply chain evolution and commoditization still underway**
- **Investors increasingly eyeing iron ore in systematic investment strategies**

A familiar cast of actors consistently graces the commodities page of financial broadsheets: a handful of influential energy benchmarks, Chicago-traded grains, ICE-traded softs, LME base metals and a few other precious metals. Grains in particular are likely to have been there for well over 100 years now. One may be forgiven for thinking that these tables of prices simply never change. But they do.

Once in a while, perhaps once every couple of decades, a new graduate joins that elite circle of globally-traded, globally-recognized commodities. After a decade of sharp market evolution, iron ore seems close to doing so.

The emergence of iron ore into broader recognition has been a rapid one by commodity market standards. Just 10 years ago, the magnetic red dirt was an opaque market with contract negotiations taking place annually in smoke-filled rooms in Japan and later China. The market now has not one but two liquid futures markets, on the Singapore Exchange (SGX) and Dalian Commodity Exchange (DCE), trading 1.2 times and 20 times seaborne market volumes, respectively.

But there appears to be a second wave of evolution on the horizon, as the commodity is increasingly talked about on the trading floors of global financial

centers. So besides increased liquidity, what is driving this interest? What characteristics make iron ore appealing to investors who already have a broad suite of commodities in their portfolio? What is the iron ore physical market like, and what could its rapid financialization mean for existing players?

Investor lens: China proxy

Increasingly, there are opportunities for investors to utilize commodities in their portfolios as building blocks to express specific views of a particular market, event or risk factor. Single commodities, whether iron ore, gold or soybeans, can be useful to investors looking to express investment themes that are dependent on unique geopolitical, demographic, structural, climate and even health and disease factors.

The iron ore market has several characteristics that make it distinctive as an investable asset; supply is concentrated in a handful of geographic regions and held by a small number of players, and demand is dictated by one major end-user: China. Both supply and demand are subject to shocks caused by geopolitical events, unforeseen natural disasters and policy decisions, as well as the actions of individual asset owners. With unique characteristics can come unique tactical investment opportunities for investors.

The concept of tactical investing is related to the idea of using individual commodities as building blocks. A tactical asset allocation could be based on commodity fundamentals, macroeconomic data and price trends, and executed in a fundamental or systematic manner. In the case of iron ore, few assets are as dependent on

China. This heady relationship can present opportunities to use iron ore as a liquid and easily accessible proxy for Chinese economic growth or, more specifically, the performance of the Chinese manufacturing and infrastructure sectors.

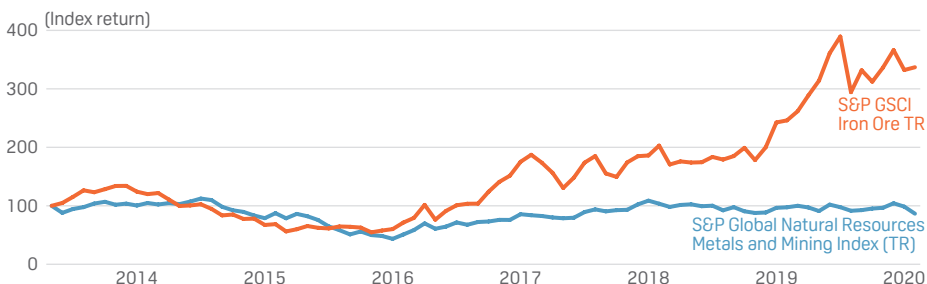
As with all commodities, it is often the supply side of the ledger that influences spot iron ore prices and the shape of the forward curve most notably over the short term. However, over the long run, the supply and demand curves tend to be much smoother as market participants adjust their expectations and production levels.

Another important characteristic of iron ore returns is that they exhibit positive asymmetry, which can prove a highly prized feature of investment instruments. Commodity prices have a tendency to rise quickly and in such magnitude that investors do not have sufficient time to “chase the rally.”

Historically, most market participants gained exposure to iron ore through buying the stock of metals and mining companies. There are some difficulties that arise by taking this path. Only a few companies are focused on iron ore due to the high costs associated with producing it. These companies are not pure-play iron ore equities, with the percentage dedicated to iron ranging from 30% to 60% of their businesses.

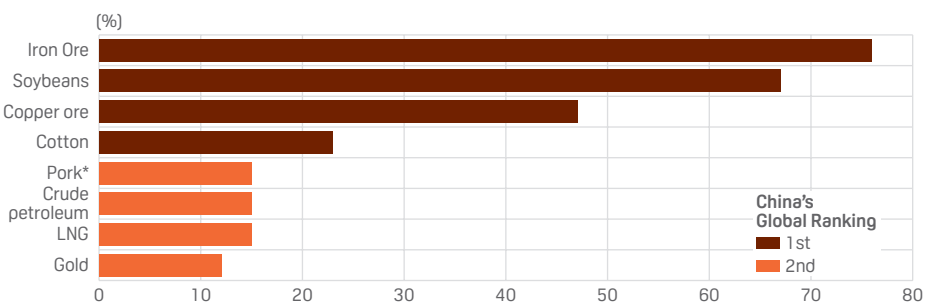
On top of that, there is equity market beta to consider, the geographic concentration and, increasingly, the fact that mining companies hedge their iron ore price exposure. These realities add levels of uncertainty to an investment thesis that may be based exclusively on any investor’s view of the underlying ferrous component.

IRON ORE FUTURES DRASTICALLY OUTPERFORM METALS AND MINING EQUITIES SINCE THE LOWS OF 2015



Data from May 2013 to February 2020. Past performance is no guarantee of future results. Chart is provided for illustrative purposes. Source: S&P Dow Jones Indices LLC.

FEW RAW MATERIALS ARE AS DEPENDENT ON CHINA AS IRON ORE

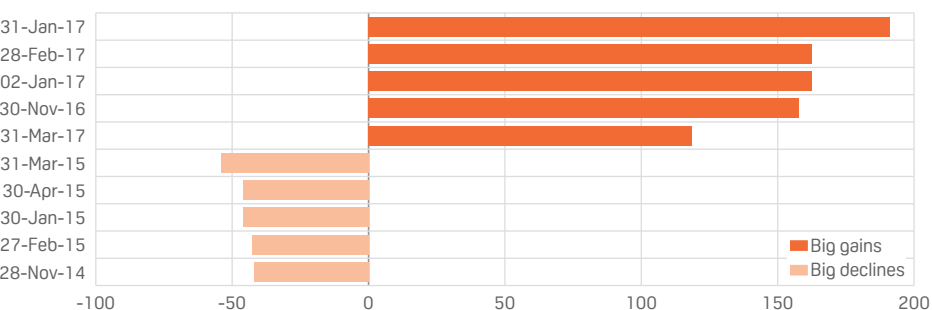


Data from 2016-2018 depending on commodity. USD trade value. Table is provided for illustrative purposes and reflects hypothetical historical performance.

Source: The Observatory of Economic Complexity

* Excludes intra European trade

BIGGEST 12-MONTH ROLLING RETURNS IN IRON ORE (%)



Data from May 2013 to Feb 2020. Past performance is no guarantee of future results. Graph is provided for illustrative purposes.

Source: S&P Dow Jones Indices LLC

Investing in iron ore directly was restricted to only a few groups prior to the development of a number of iron ore futures contracts, such as the SGX TSI Iron Ore CFR China (62% Fe Fines) Index Futures, and subsequent launch of the S&P GSCI Iron Ore. The creation of these

futures and the S&P GSCI single commodity index has fostered an environment of solid liquidity and improved price transparency. It has also allowed market participants to gain the direct exposure to iron ore they were previously unable to obtain.

Iron ore has also outperformed equity proxies over the last seven years. Metals and mining equities are roughly flat while the S&P GSCI Iron Ore Index has more than tripled over the last seven years. Utilizing the direct exposure as opposed to buying equities has proved quite lucrative over this time.. Interestingly, iron ore has been one of the least volatile commodities of 2020 to date, outperforming industrial metals and energy-related commodities.

“Widely regarded by many as the second most important commodity behind oil, iron ore’s evolution has mirrored the transformation of China – awaking from its slumber as a sleepy, annually negotiated contract to a lofty prominence as a leading macro barometer of Chinese economic health,” said William Chin, Head of Commodities at SGX. “Financial participation in iron ore derivatives has grown strongly over the years, representing close to 40% of the market in 2019. With strong interest from funds and the asset management

industry to gain exposure to iron ore as the backbone of global infrastructure, iron ore is firmly entrenched as Asia’s first truly global commodity product.”

Physical lens: macroeconomics and rumors

So how would one characterize the physical iron ore market? Well, it clearly has a personality. Its prices often buck the trend of other global commodities, perhaps reflecting its uniquely strong exposure to China or the widespread consumption of Chinese news among its traders. This has been especially true of recent weeks, with iron ore showing a rare resilience in the face of the major global impact that COVID-19 is threatening to impose on global industries.

“Traders tend to look at Chinese macroeconomic indicators, including GDP, FDI, construction activity and housing starts. Obviously, these are important for many commodities, but especially so for iron ore,” said an executive at an iron ore producer on

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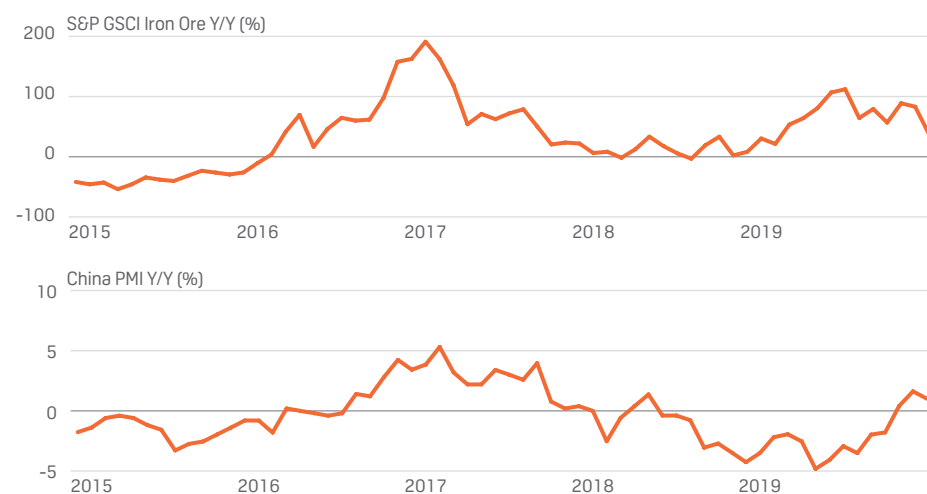
— William Chin, Head of Commodities, SGX

condition of anonymity. “Iron ore is heavily influenced by Chinese speculative activity, and this means sentiment plays a big role, particularly on the front months. We’ll occasionally see local rumors, including on Chinese policy, initiating price moves,” he said, adding these policies could be trade- or environment-related, for example.

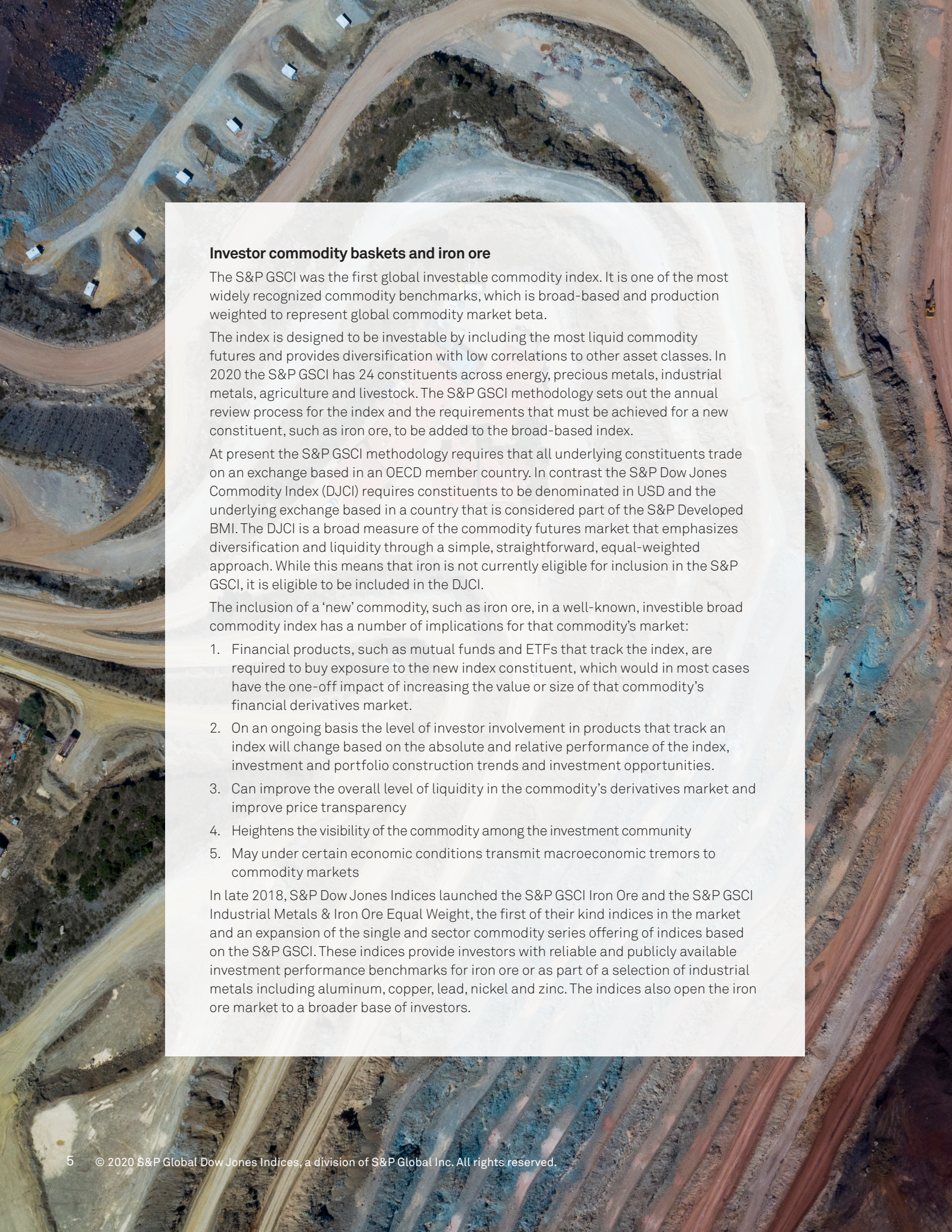
On a day-to-day basis between 9 am and 3 pm Beijing/Singapore time, these trends tend to play out on DCE and SGX’s iron ore futures, while also having an undeniable impact on the sentiment of physical iron ore traders. Price formation towards the end of the day tends to be driven by the reporting of physical transactions, bids and offers by publishers such as Platts.

Though it still arguably has some way to go, the physical iron ore market has become increasingly transparent over recent years, and a large ecosystem of brokers and information providers has flourished around it. Spot market activity is deep, with transactions accounting for 12%-15% of total market size, according to Platts price reporting data. This, together with ever higher transparency of information available,

RELATIONSHIP BETWEEN IRON ORE & CHINESE MANUFACTURING PMI



Monthly data from December 2014 to December 2019. Past performance is no guarantee of future results. Chart is provided for illustrative purposes. Source: S&P Dow Jones Indices LLC.



Investor commodity baskets and iron ore

The S&P GSCI was the first global investable commodity index. It is one of the most widely recognized commodity benchmarks, which is broad-based and production weighted to represent global commodity market beta.

The index is designed to be investable by including the most liquid commodity futures and provides diversification with low correlations to other asset classes. In 2020 the S&P GSCI has 24 constituents across energy, precious metals, industrial metals, agriculture and livestock. The S&P GSCI methodology sets out the annual review process for the index and the requirements that must be achieved for a new constituent, such as iron ore, to be added to the broad-based index.

At present the S&P GSCI methodology requires that all underlying constituents trade on an exchange based in an OECD member country. In contrast the S&P Dow Jones Commodity Index (DJCI) requires constituents to be denominated in USD and the underlying exchange based in a country that is considered part of the S&P Developed BMI. The DJCI is a broad measure of the commodity futures market that emphasizes diversification and liquidity through a simple, straightforward, equal-weighted approach. While this means that iron is not currently eligible for inclusion in the S&P GSCI, it is eligible to be included in the DJCI.

The inclusion of a 'new' commodity, such as iron ore, in a well-known, investible broad commodity index has a number of implications for that commodity's market:

1. Financial products, such as mutual funds and ETFs that track the index, are required to buy exposure to the new index constituent, which would in most cases have the one-off impact of increasing the value or size of that commodity's financial derivatives market.
2. On an ongoing basis the level of investor involvement in products that track an index will change based on the absolute and relative performance of the index, investment and portfolio construction trends and investment opportunities.
3. Can improve the overall level of liquidity in the commodity's derivatives market and improve price transparency
4. Heightens the visibility of the commodity among the investment community
5. May under certain economic conditions transmit macroeconomic tremors to commodity markets

In late 2018, S&P Dow Jones Indices launched the S&P GSCI Iron Ore and the S&P GSCI Industrial Metals & Iron Ore Equal Weight, the first of their kind indices in the market and an expansion of the single and sector commodity series offering of indices based on the S&P GSCI. These indices provide investors with reliable and publicly available investment performance benchmarks for iron ore or as part of a selection of industrial metals including aluminum, copper, lead, nickel and zinc. The indices also open the iron ore market to a broader base of investors.

has tightened bid-offer spreads in the physical market and facilitated increasingly precise price assessments.

In the first quarter of 2020 for example, the typical bid-offer gap in the physical market for mainstream brands of iron ore was probably around 50 cents at the time of assessment. Granted however, it isn't yet at the 1 cent/barrel typically seen at the close of the Platts Market on Close assessment process for Dated Brent or Dubai crude or the 5-10 cents usually seen in many other oil markets.

Physical lens: evolving market

The iron ore market has seen tremendous change in the last decade, but in several ways, it remains a very traditional physical supply chain, both in its inherent setup and attitudes.

The length of trading chains, often seen as a barometer of commoditization and market maturity, is still rather short in iron ore, with most cargoes only changing hands once or twice, compared with up to 15 times in some energy markets. "It is a supply chain that inherently has less optionality than energy markets," the iron ore producer

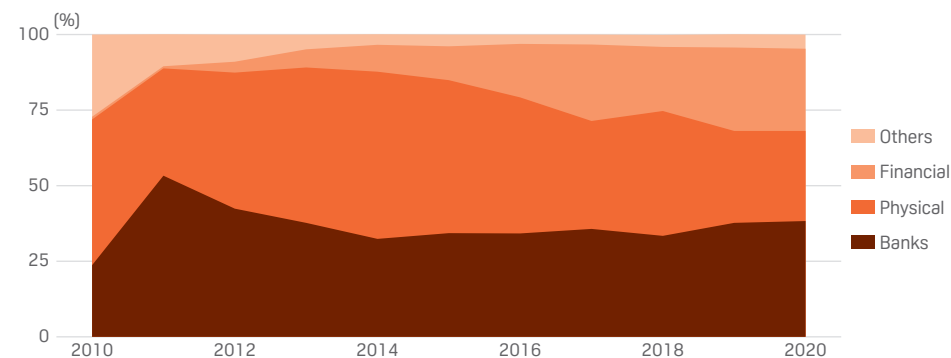
said. "It is very much a unidirectional trade flow, with limited re-loading and blending infrastructure."

Evolution towards a more liquid, fungible market may have also been stifled by certain commercial practices, including the fact that producers have been reluctant to openly bid for material. This hesitancy is said to stem from fears of an outcry from steelmakers claiming this could in some way amount to abuse by the miners. It is worth noting that Chinese steelmakers routinely sell in the open market.

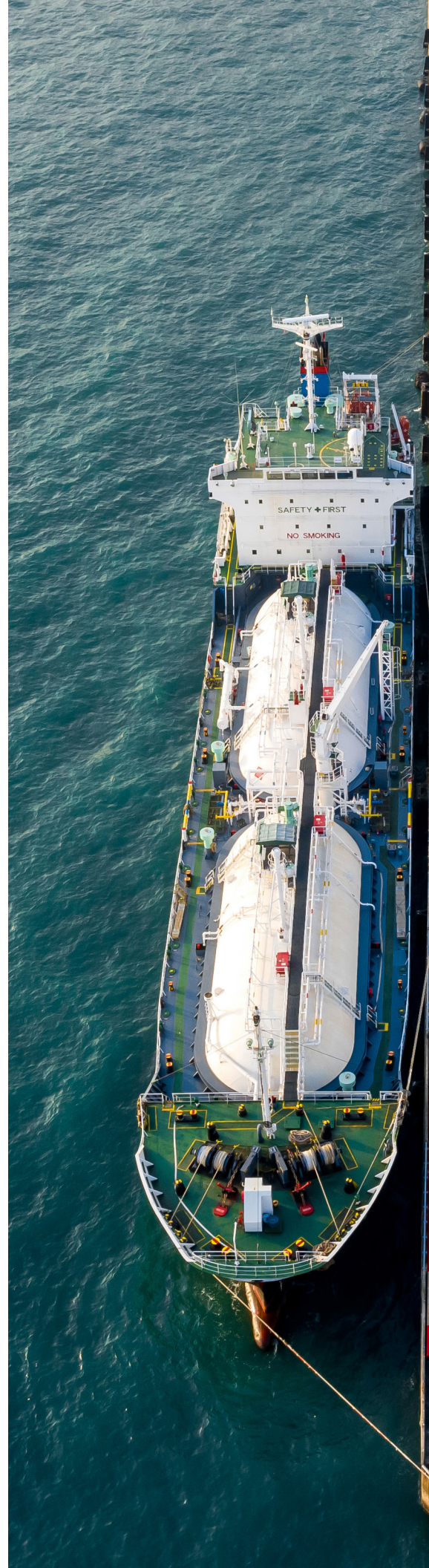
Another odd feature of the iron ore market is that aside from rare occasions, its derivative forward curve is almost always backwardated. The producer source believes this reflects the rapid scalability of potential additional supply. "Given the speed to market for new supply, traders are assuming that upward price moves would be met with offers rapidly; [unlike other commodities] the cheapest way to store iron ore is in the ground."


Trading and book optimization are only just emerging in iron ore. Of the miners, Anglo American has been the most experimental, purchasing and blending third-party ores and trading paper to

SHARE OF SGX IRON ORE FUTURES TRADE PARTICIPATION BY TYPE



Source: SGX





“The advent of oil futures... brought a whole new perspective. People weren’t just looking at fundamentals anymore, but also at general economic indicators and how commodities compared to other asset classes”

— John Driscoll, Director, JTD Services

create fixed/floating pricing optionality for its customers.

A key benefit of financialization for physical market participants has been the ability to better manage short- and long-term risks through hedging, a practice that is gradually becoming more prevalent in the ferrous supply chain. While iron ore traders routinely hedge their cargoes, steelmakers and miners have remained more tentative in their forays into derivative markets. Steelmaking raw materials can move in different directions and by hedging iron ore alone and leaving metallurgical coal, steel or scrap unhedged, market participants have pointed out that steelmakers can in some cases create even more risk for themselves.

Meanwhile large mining companies tend to prefer to keep their iron ore unhedged, giving their equity investors an opportunity to trade their share price as a proxy for the daily market price, a practice first deployed at BHP under former CEO Marius Kloppers. With the continued growth in iron ore futures volumes, it will be interesting to see whether investors opt for a “cleaner” proxy by trading iron ore directly instead.

It is worth remembering that under Kloppers, BHP was also instrumental in setting the iron ore market on its path of evolution, being one of the initial players providing liquidity to the iron ore derivatives market during its infancy. The goal was helping the market get to a stage where there is enough liquidity such that steel mills can hedge and do not need to default on term contracts as a first resort, as seen during the Lehman crisis. Credit Suisse and Deutsche Bank had announced the launch of OTC swaps for iron ore in May 2008, less than a year before SGX launched its clearing contract.

Over the last decade, the growth in iron ore derivatives has also made it easier to raise financing for new mining projects. “Having a hedge in place is one of the criteria for mine financing and you can now get almost any volume of hedge done, though it can take longer for bigger volumes,” the producer said.

Implications: volatility, factor strategies & data asymmetry

So, what will the continuing influx of financial participants and a rise in

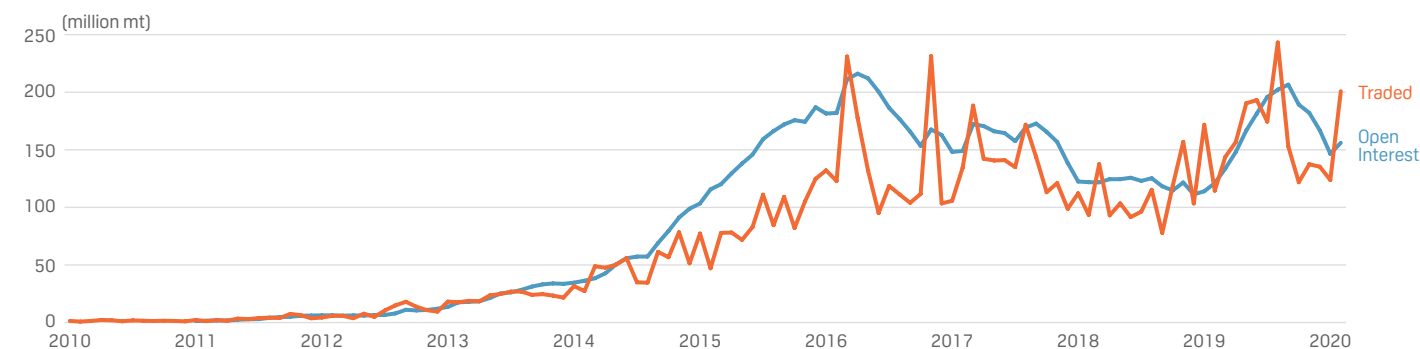
derivative liquidity do to the existing iron ore market?

One of main topics of discussion is what it might mean for overall market volatility. “In my experience, derivatives that are more liquid tend to be more stable day to day. Less liquid futures tend to have wider bid-offer spreads and can see bigger price jumps, with irrational moves persisting for days at a time,” the producer source said. “These days with increased liquidity [in iron ore], divergences tend to be short-lived. This is also helped by the fact that SGX iron ore is a cash-settled futures, which forces a natural convergence between physical and paper.”

The view is not universally held, however. “More liquid markets react more to information and become more volatile,” Adi Imsirovic of the Oxford Institute of Energy Studies said, adding that volatility needs to be managed which, in turn, encourages development of a plethora of derivative products.

The biggest change in investment strategies over the last decade has been the rise of systematic or quantitative trade strategies, often referred to as factor strategies.

SGX IRON ORE VOLUMES AND OPEN INTEREST



Source: SGX

Factor-based investing refers to the identification of persistent risk premia that can be both systematically measured and beneficially captured in a rules-based manner. It assumes that systematic risk factors explain the bulk of long-term asset returns. The underlying idea of risk premia is that investors can achieve repeatable returns by, in effect, selling insurance to other investors and, in the case of commodities, to hedgers.

The prevalence of non-profit-seeking participants in commodity markets may make commodity risk premia factors particularly attractive. For a market like iron ore, investors are attracted to its reliance on China, ease of trading on major exchanges and inherent volatility. Another attraction of commodities in systematic trading strategies is that over the long run, individual commodities tend to display low correlations with other asset classes and each other.

One of the newest areas of investment research is concerned with utilizing non-price data to develop systematic trading strategies. This approach, which often incorporates artificial intelligence and machine learning, is well suited to commodity markets because there is usually a plethora of supply and demand data. An example of a strategy in this vein could be using satellite data to quantitatively measure visible iron ore inventory at points of production (mines), transportation (ports) and end-users (steel mills) and calculating an investment signal based on this unique data set.

Financialization means a broadening of the potential market drivers and, overall, a greater sensitivity to news. “The advent of oil futures really changed

the whole game,” said John Driscoll, Director at JTD Services. “It brought a whole new perspective. People weren’t just looking at fundamentals anymore, but also at general economic indicators and how commodities compared to other asset classes. The Wall Street refiner had arrived.”

Oil markets had generally been less efficient, and traders’ positions exacerbated by information asymmetry could result in “price distortions,” Driscoll said. “Today we have so much information we need tools to help us parse through it!”

Derivative trading strategies necessitate broader and deeper data, delivered faster, and there is strong anecdotal evidence of increased demand from the financial community for granular, real-time independent market information from the physical market. But too much information can be “toxic,” Driscoll warned, adding that it could stop you “seeing the forest from the trees”. “It’s about finding the right information. And that’s where physical players can have an advantage. Physical players have unique, proprietary information. That information is power,” Driscoll added.

In commodity markets the role of financial participants is to provide liquidity and warehouse risk. There is little academic research to support the premise that financial participants in commodity markets adversely impact the price discovery mechanism in major commodity markets. As investors increasingly look to incorporate commodities in their systematic investment strategies, the iron ore market will undoubtedly attract more attention from financial players. On the whole, this attention should be welcome.



Financialization increases hedging, trading sophistication



Vito Turitto
Lead Quantitative Analyst,
S&P Global Platts

The commodity financialization process in modern times started with the oil market in the early 1980s and has since expanded to many other commodity markets around the globe. The process has started, in almost every case, with futures trading because many key industry players recognized the need for a more advanced handling of their cash flows.

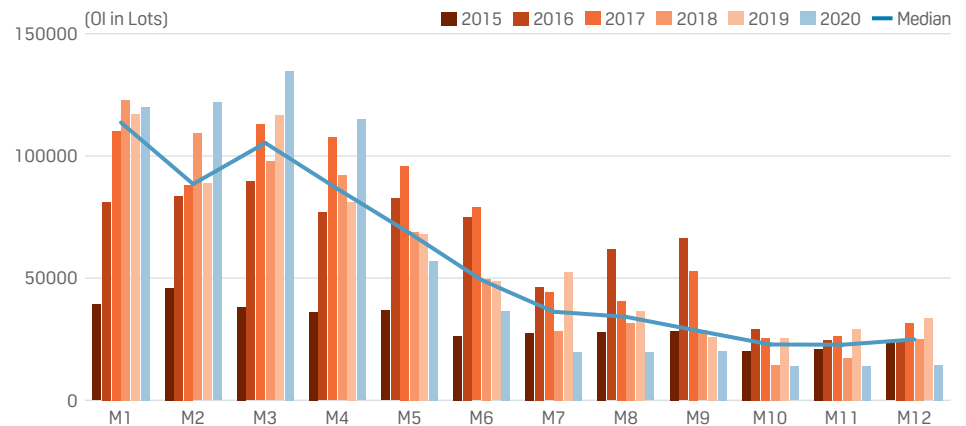
Hence, in order to stabilize and better forecast the income flow coming from physical commodity trading activities, many companies began to hedge their market exposure with financial instruments. The instruments utilized differ from market to market and depend on the company size but, predominantly, the financialization process begins with the trading of futures contracts. It is fair to note that other financial derivatives, like forwards or swaps, are also popularly traded in the over-the-counter market.

The iron ore market is currently undergoing deep and crucial changes. It is developing at a fast pace and many companies are now looking to more sophisticated tools to counterbalance unwanted physical portfolio exposure to market risk. The rise in financial derivatives traded on iron ore is clearly evident by analysing the open interest data on iron ore futures traded on the Singapore Exchange.

The chart displays the median open interest for iron ore futures contracts traded since January 2015 to March 2020 and categorizes the figures by month of expiry for each year.

First, it is important to note that market participants seem to consistently use iron ore futures to hedge their physical exposure, as the open interest figures tend to be rather constant on a year-to-year basis. This suggests that market participants find futures markets

IRON ORE FUTURES: OPEN INTEREST BY MONTH



Source: SGX

effectively and efficiently reflect the value of physical iron ore prices and that they confidently use them to counterbalance price volatility spikes.

Furthermore, the analytics suggests that market participants are concentrating much of their hedging

activity in the front end of the curve. The vast majority of the open interest seems to be concentrated between the front month and the 4th front month contract. This is not uncommon; the most mature and liquid commodity markets like Brent crude or gold tend to follow the same

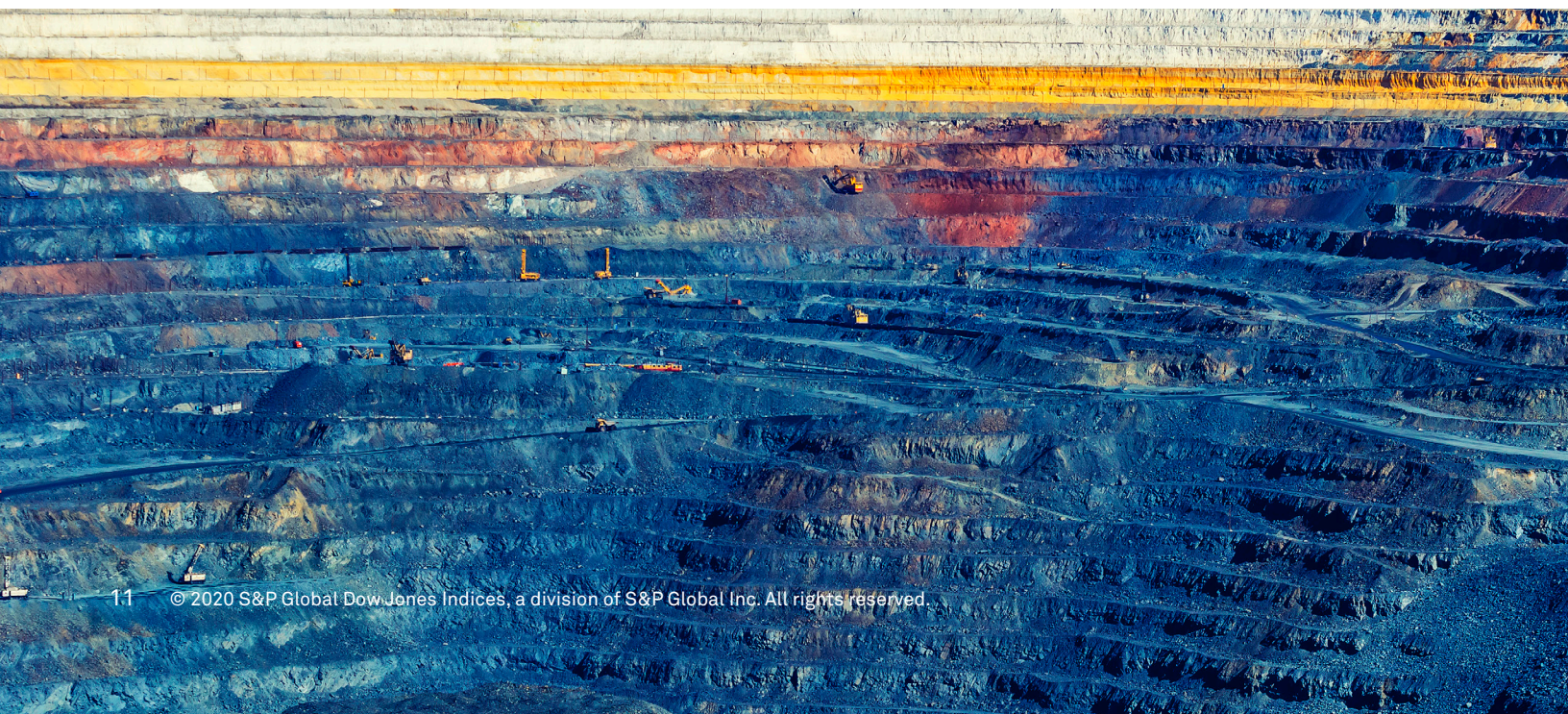
pattern, indicating that iron ore is undergoing the same process. The volume will probably increase over the next few years with more and more financial players, such as hedge funds and asset managers, participating in the price discovery along with industrial producers.

CROSS-COMMODITY COMPARISON

	Crude Oil	Natural Gas	Soybean	Corn	Copper	Gold	Iron ore	LNG
Global production (in standard unit)	100	4100	337	1,109	21	3,260	2,250	341
Standard unit	million b/d	Bcm/yr	million mt/yr	million mt/yr	million mt/yr	mt/y	million dmt/yr	million mt/yr
Global annual production (million mt/mtoe)	4853.72	3691.74	337	1,109	21	0.00326	2,250	341
Current price (Apr 19, 2020)	27.98	1.76	832	343	5175	1680	94	113.7
Standard price unit	\$/b	\$/MMBtu	¢/bu	¢/bu	\$/mt	\$/oz	\$/dmt	\$/mt
Estimated global physical market size (\$ billion)	1021.27	261.22	103.02	149.75	108.68	176.08	211.50	38.77
Primary physical benchmark	Platts Dated Brent	Henry Hub	CME	CME	LME	CME	Platts IODEX	Platts JKM
Primary international derivative	ICE	CME	CME	CME	LME	CME	SGX	ICE
Annual volume on primary international derivative in 2019 (lots x contract size)	201,096,968	103,394,504	53,333,211	103,189,062	37,091,448	86,508,741	19,350,000	102
Unit	barrels	MMBtu	bu	bu	mt	tr oz	mt	mt
Derivatives to physical multiple (on primary exchange only)	5.5	7.0	21.5	11.8	44.2	82.5	0.9	0.3
Other derivative venues (with notable open interest)	BME, DGCX, DME, ROFEX, MICEX, MCEX, Nasdaq, NYMEX, SIEX	MICEX, MCEX, Nasdaq, ICE	B3, DCE, ROFEX, NCDE	B3, Euronext, DCE, ROFEX	HKeX, MCEI, COMEX, SHFE	Borsa Istanbul, Eurex, HKEC, LME, ROFEX, MICEX, DGCX, SHFE, TOCOM, TAIFEX	DCE, CME, HKEX, ShCH	CME, EEX
Volatility (based on 2019 Annualized S&P GSCI single commodity indices) (%)	25.86	18.11	14.11	23.92	14.24	12.49	40.28	41.2*

* Based on Platts JKM assessment. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Sources: S&P Global Platts, S&P Dow Jones Indices, CME, LME, ICE, SGX



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