

BDRY

Dry Bulk Market Primer



Democratizing Shipping | Decarbonizing Maritime

The Shipping Industry

Shipping is a Global Industry and a Vital Economic Sector

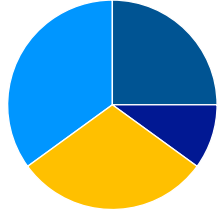
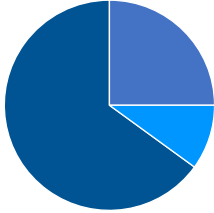
- Shipping is a vital part of the global economy and an integrated part of commodity trading
- Crude Oil, Iron Ore and Coal are the three major commodities shipped around the world
- China dominates the demand side, with more than 80% of incremental seaborne volumes going to China over the last decade
- The source of commodities is quite dispersed, with both the Atlantic basin and the Pacific basin supplying cargoes to the market



“God must have been a shipowner. He placed the raw materials far from where they were needed and covered two thirds of the earth with water.”

Erling Naess, Shipowner 1901-1993

Commodity Shipping Overview: Ships & Sizes

MAIN USE	NUMBER OF SHIPS	PRIMARY SHIP USERS	SHIP SIZES	FEATURE
Dry Bulk  <ul style="list-style-type: none"> ■ Iron Ore ■ Coal ■ Grains ■ Other 	~12,700 worldwide	Commodity Producers: Vale, Rio Tinto, BHP Commodity Traders: Cargill, Louis Dreyfus End Users: ED&F Man, RWE	Capesize: ~180,000 tons	Largest dry bulk ship; Mainly used for long-haul iron ore
			Panamax: ~75,000 tons	The “workhorse” of the industry; Mainly used for coal and grains; Can use Panama Canal
			Supramax: ~55,000 tons	Largest ship with onboard cranes; Most versatile due to ability to access small ports
			Handysize: ~32,000 tons	Smallest category of ship; Carries various cargoes
Tankers  <ul style="list-style-type: none"> ■ Crude Oil ■ Refined Products ■ Chemicals 	~7,250 worldwide	Oil Majors: ExxonMobil, BP, Shell Commodity Traders: Vitol, Trafigura End Users: Valero, CNOC	VLCC: ~300,000 tons	Largest cargo ship; Mainly used for transporting crude oil to US and Asia from Middle East
			Suezmax: ~150,000 tons	Half-size of VLCCs; Mainly used in the Atlantic; Largest tanker that can use the Suez Canal
			Aframax: ~105,000 tons	Most versatile crude oil tanker; Can access most ports
			MR: ~45,000 tons	Mainly used for refined oil product trading

CAPE SIZE



SUPRAMAX



VLCC



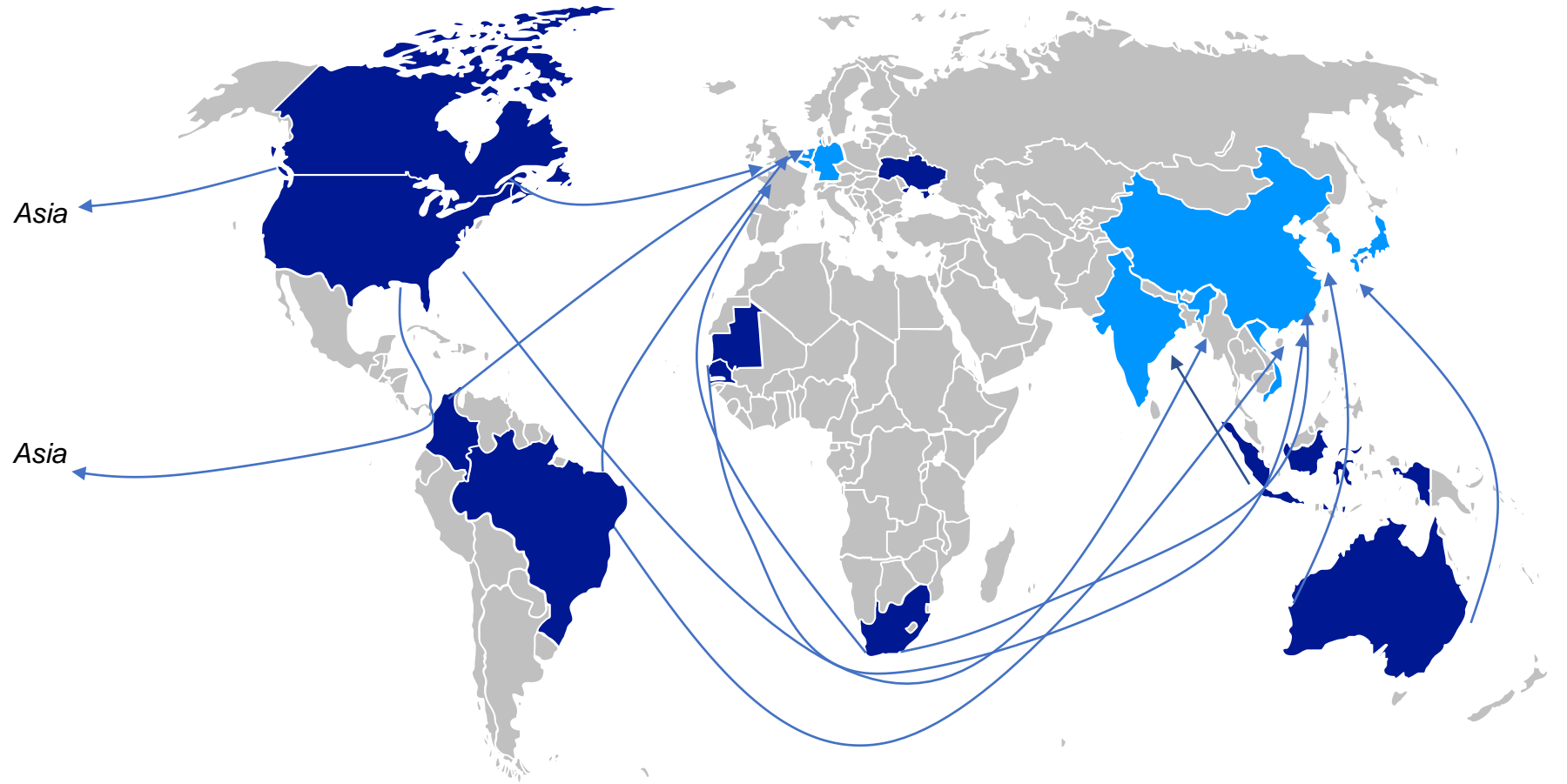
Dry Bulk Shipping

- Dry bulk vessels are involved in the seaborne transport of major commodities such as iron ore, coal, grain, and other commodities such as bauxite and phosphate, minerals, fertilizers and forestry products
- Dry bulk carriers are ships that have cargo loaded directly into the ship's storage holds. As a result, bulk carriers provide economies of scale that enable users to save on transportation costs
- For dry bulk shipping to be economically viable, the cargo must be homogenous so that it can be loaded directly into the ship's holds, and available in large quantities to enable economies of scale
- Dry bulk carriers load and unload cargo at ports using either the port equipment or on-board self-unloading cranes
- Presently, there are approximately 12,700 such vessels in the world's dry bulk fleet, generally ranging in size from 10,000 deadweight tons (Dwt) to 400,000 Dwt
- The total dry bulk fleet capacity is approximately 940m dwt
- Dry bulk carriers have an average useful life of about 25 years



Trade Routes: Dry Bulk

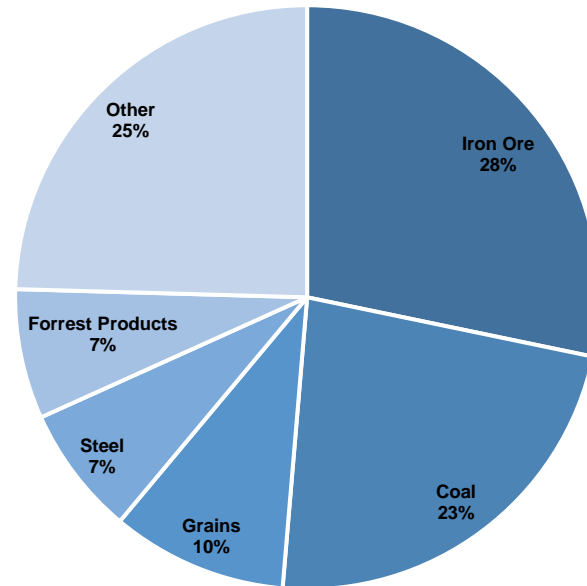
● Major Importing Nations ● Major Exporting Nations



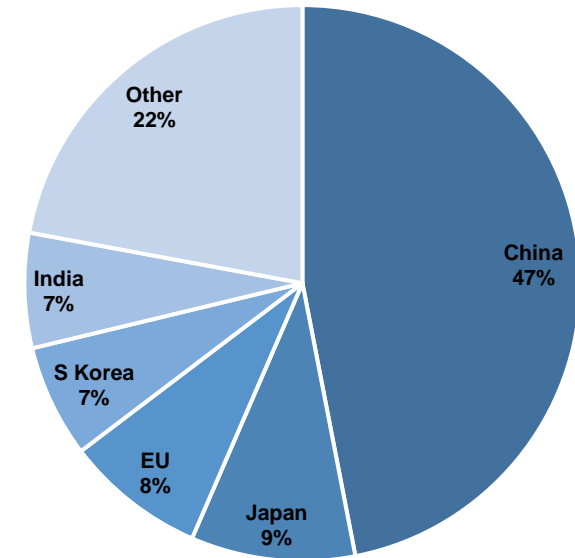
Source: Breakwave Internal Research

Dry Bulk Trade

Dry Bulk Trade by Cargo Type, 2021

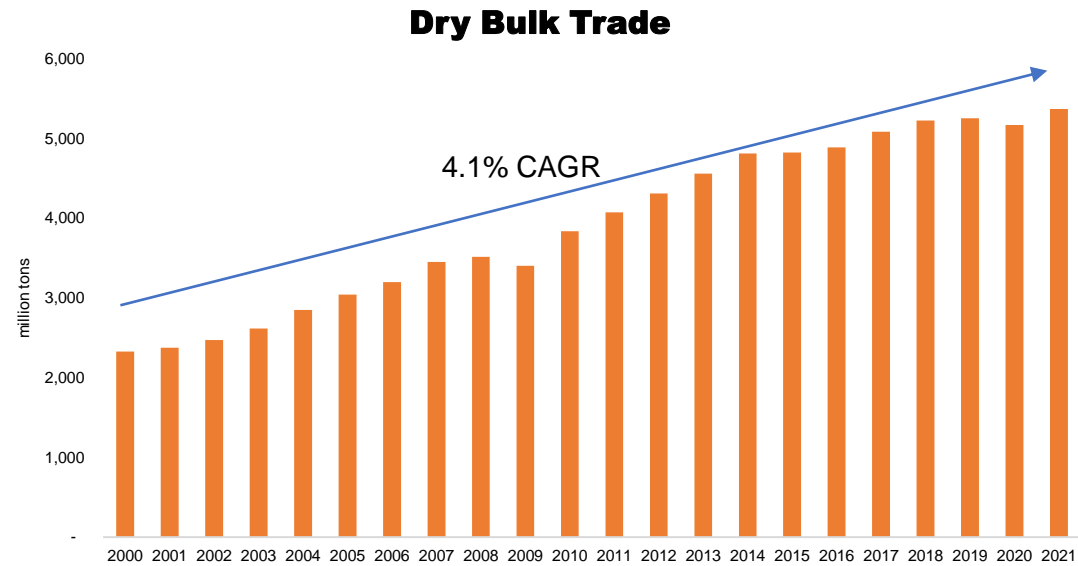


Percentage of Dry Bulk Trade, Imports, 2021



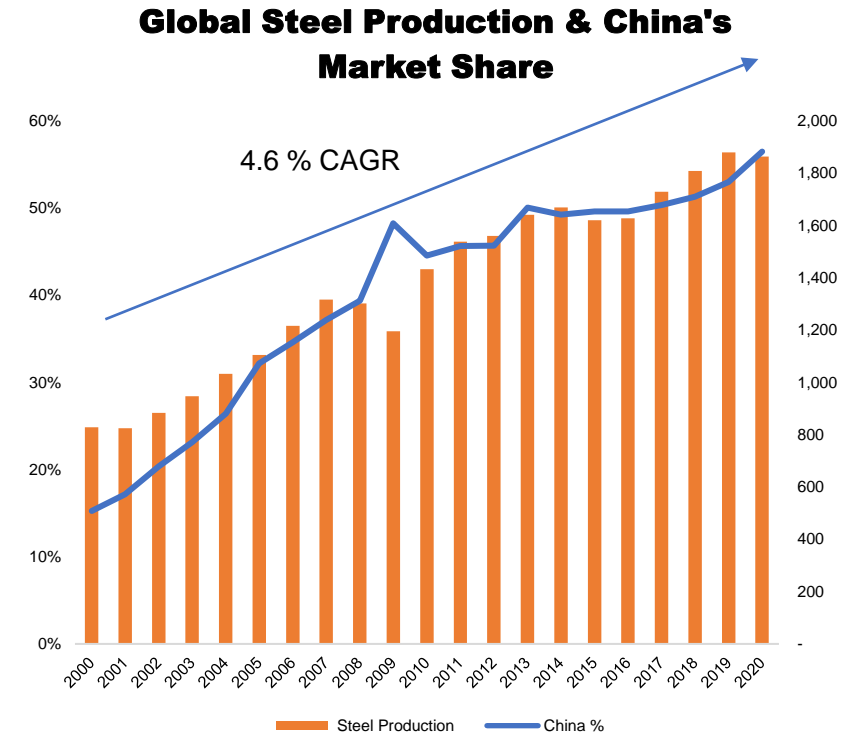
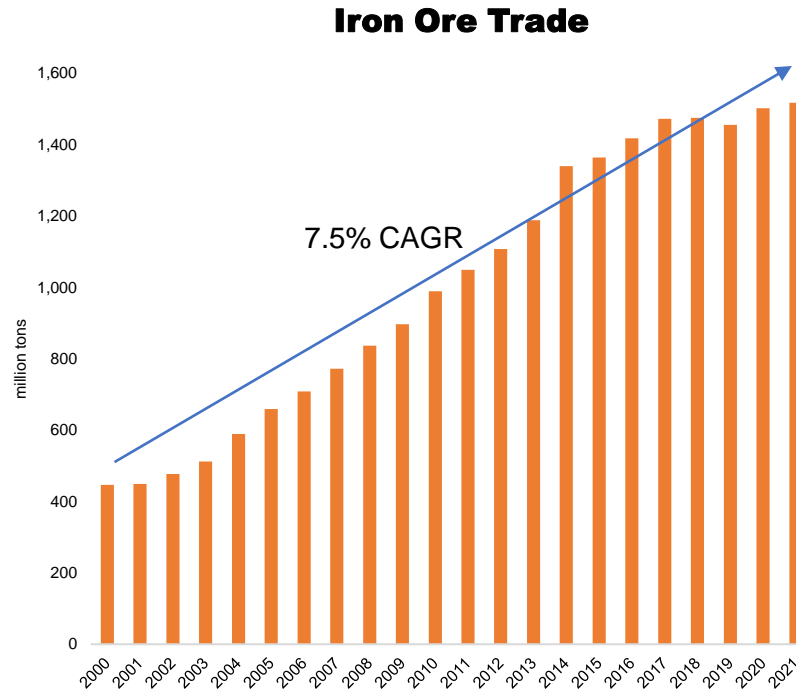
- China dominates dry bulk trade, accounting for ~47% of total major dry bulk goods trade and more than 70% of iron ore trade
- Japan and South Korea remain strong in terms of coal imports, accounting for ~24% of total coal trade
- Distance plays an equally important factor when it comes to demand, as far away sourced goods increase demand for dry bulk ships
- The Brazil to China route remains the most important one, as it takes almost 3x the days for a vessel to transport cargo compared to Australia to China

Dry Bulk Demand



- Dry bulk demand is driven by global economic growth, emerging markets growth infrastructure spending and, to a lesser extend, population growth
- Since 2000, seaborne dry bulk trade has increased at a Compound Annual Growth Rate (CAGR) of 4.1%
- China's admittance into the World Trade Organization (WTO) in 2001 and demand growth for dry bulk goods in the Far East, has been the main drivers behind the strong growth over the past 20 years
- India's coal demand has also played an increasing role in the market growth since 2010
- Iron ore and coal account for the majority of the incremental demand over the period as grain trade has seen a steadier increase

Iron Ore Trade

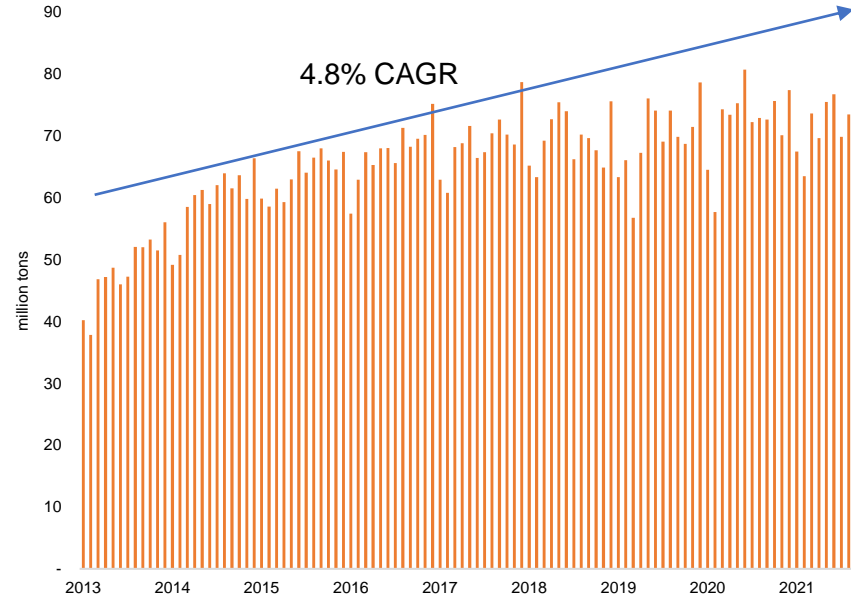


- Iron ore is unrefined iron and the main ingredient in steel making process
- Iron ore deposits are found across the globe, but the main exporting regions are Brazil, Australia and South Africa
- Infrastructure and construction spending and, as a result, global steel production are the main drivers for iron ore trade
- Steel demand has been steadily increasing in the last two decades, albeit at a slower pace over the last few years
- China dominates the steel market with more than half of the world's steelmaking capacity
- China's share of global steel production has increased considerably since the early 2000s

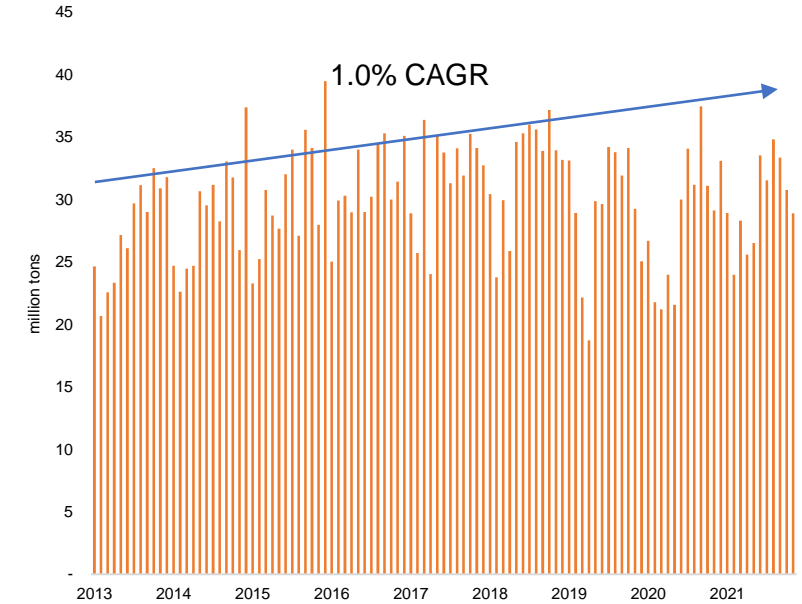
Iron Ore Trade

Brazil and Australia

Australia Iron Ore Exports



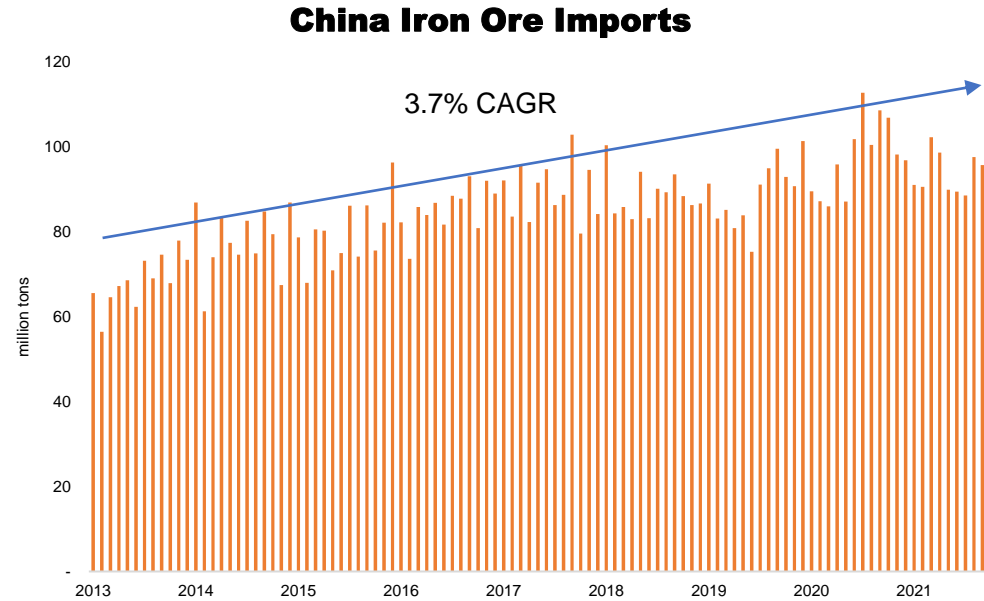
Brazil Iron Ore Exports



- Brazil and Australia are the two major countries in terms of iron ore exports
- Combined, they account for 81% of global iron ore exports, based on 2021 figures
- Australia has seen iron ore exports increasing by about 7.8% per year since 2009, as major projects in the Pilbara region begun production
- Brazil has experienced slower growth, with exports increasing at less than 3% per year since 2009
- Going forward, major new projects in the Carajás region should provide most of the growth coming from Brazil

Iron Ore Trade

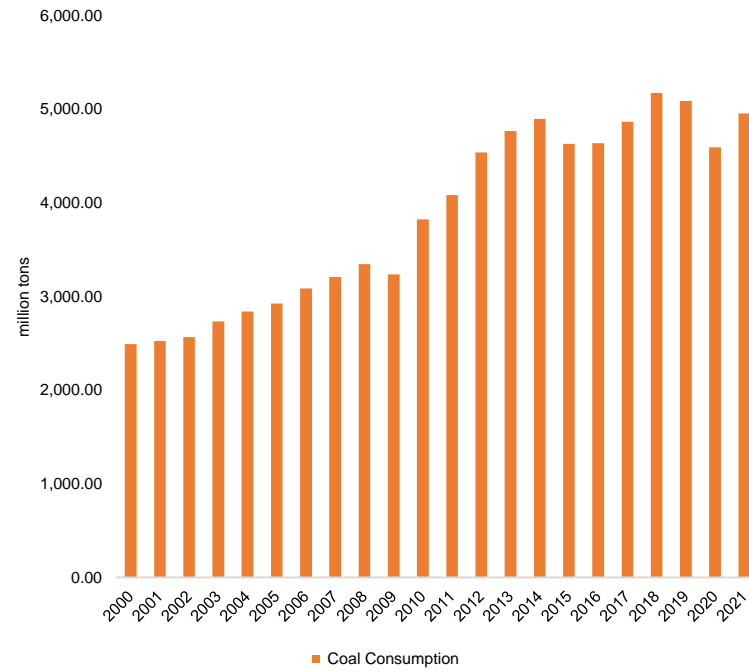
China Imports



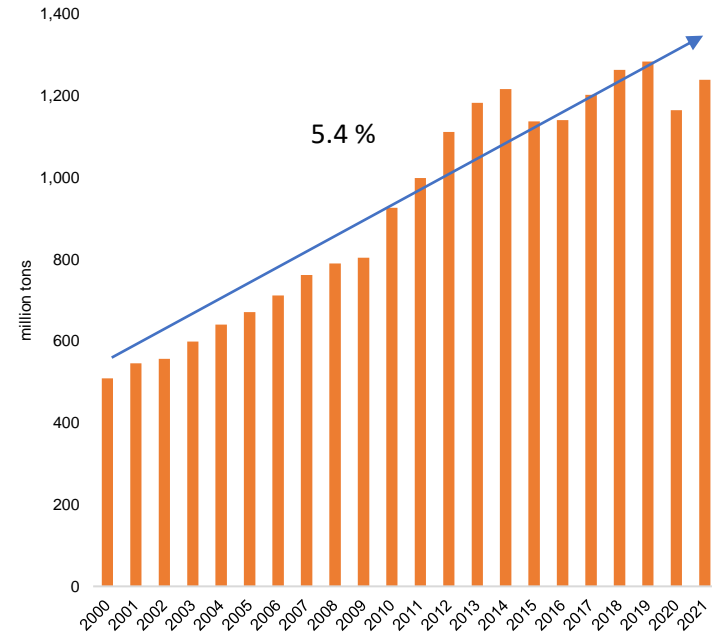
- China is the main destination when it comes to iron ore
- China accounts for more than 75% of the global iron ore trade and the great majority of the iron ore trade growth since 2014
- Iron ore imports are closely tied to the country's steel industry, which is highly dependent on infrastructure spending
- The long term "One Belt One Road" initiative should support demand for steel products, and as a result, iron ore

Coal Trade

Coal Consumption

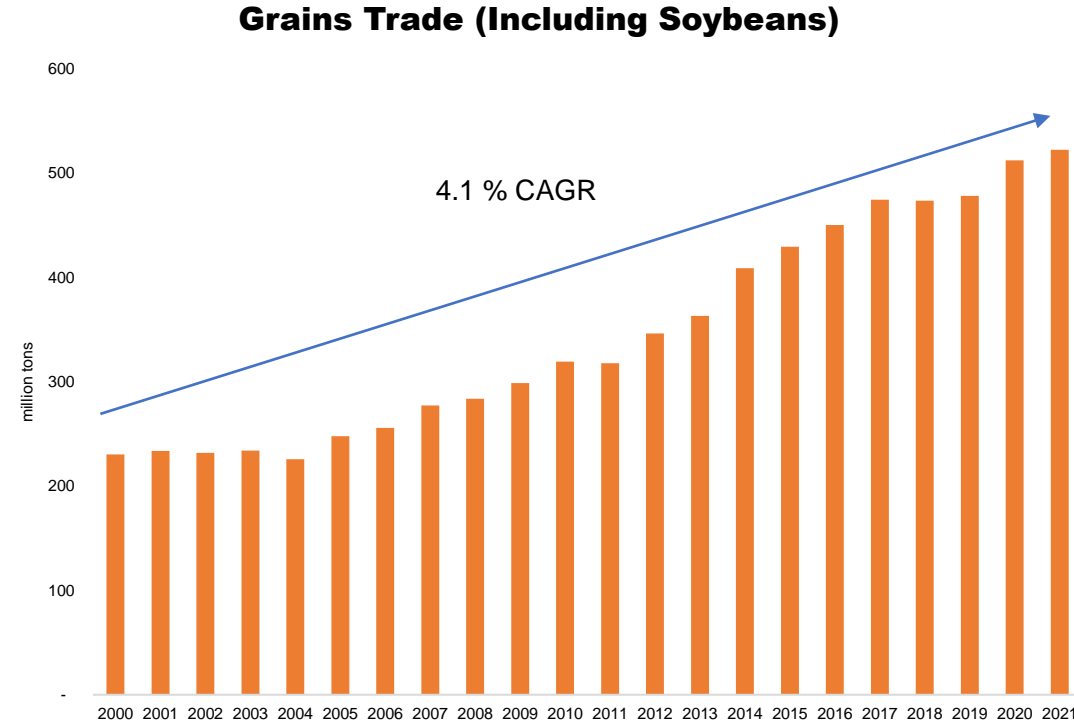


Coal Trade



- Coal consumption has been in decline over the last few years, due to global environmental policies, relative pricing and new renewable energy sources
- Coal trade has seen sizable growth since the early 2000s, but has remained fairly flat recently, as environmental pressure has been increasing against the coal industry
- China continues to dominate the coal trade market, accounting for about 25% of thermal coal import volumes; India is second, while Japan has recently seen import volumes increasing

Grains Trade



- Wheat, coarse grains (barley, oats, corn) and soybeans, and oil seeds are the main types of grains shipped by dry bulk vessels
- Australia, Brazil, Argentina, Canada, the US and the European Union are the major grain-exporting regions
- The Asian region is the world's largest importer, accounting for more than half of of global imports
- China currently stands as the world's largest importer of soybeans, primarily used as livestock feed

Dry Bulk Vessel Types



Capesize

- Largest standard dry bulk vessel mainly used in iron ore trade
- Capacity: 100kdwt +
- Average length: ~300 meters
- Average max speed: ~15 knots
- Average consumption: 60 tons/day
- Subcategories:
 - *Newcastlemax (190-250 kdwt)*
 - *Valemax (320+kdwt)*
- In the last five years, the price of a 5-year old Capesize has varied between 24m and 42m



Panamax

- Largest dry bulk vessel able to transit the Panama canal
- Capacity: 65kdwt -100kdwt
- Average length: ~225 meters
- Average max speed: ~14.5 knots
- Average consumption: 35 tons/day
- Subcategories:
 - *Kamsarmax (80-85 kdwt)*
 - *Post-Kamsarmax (85+kdwt)*
- In the last five years, the price of a 5-year old Panamax has varied between 14m and 33m



Handymax

- Medium size dry bulk vessel with onboard cranes
- Capacity: 40kdwt – 65kdwt
- Average length: ~190 meters
- Average max speed: ~14.5 knots
- Average consumption: 31 tons/day
- Subcategories:
 - *Supramax (50-60 kdwt)*
 - *Ultramax (60-65 kdwt)*
- In the last five years, the price of a 5-year old Handymax has varied between 14m and 30m

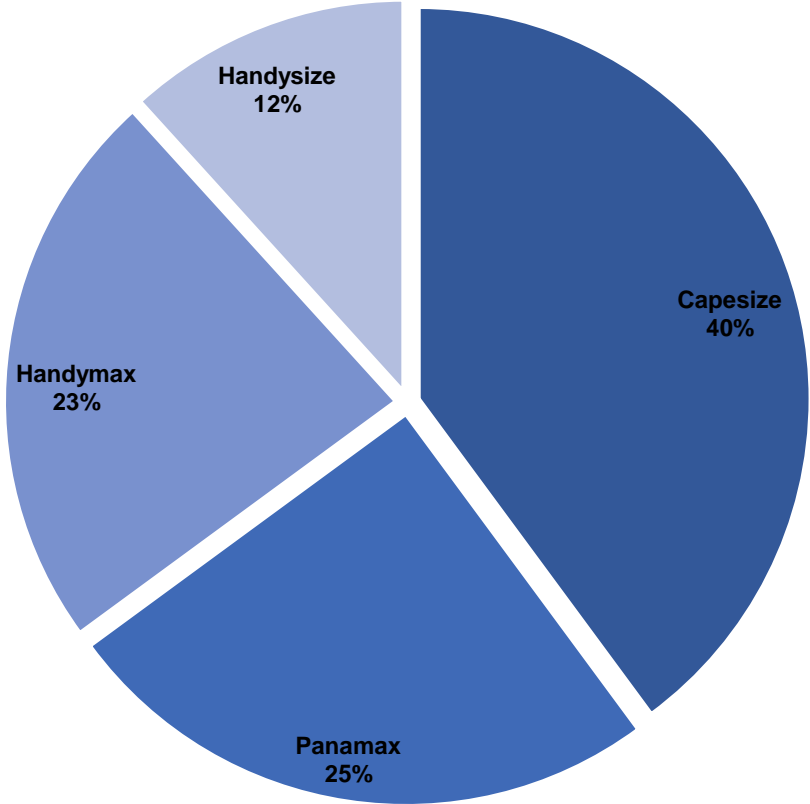


Handysize

- Small size dry bulk vessel with onboard cranes
- Capacity: 10kdwt – 40kdwt
- Average length: ~170 meters
- Average max speed: ~14 knots
- Average consumption: 23 tons/day
- In the last five years, the price of a 5-year old Handymax has varied between 12m and 25.5m

Global Dry Bulk Fleet

Fleet Composition, by Dwt, 2021



Vessel Supply

- Shipbuilding, ship demolition and fleet utilization usually determine the supply of ships
- It takes roughly two years to build a new ship, while the useful life of a ship is approximately 25 years
- Ship ordering and ship scrapping is relatively dynamic: prevailing freight rates, future freight rate expectations and ship operating economics are the main determinates of such activities
- Speed, waiting time, weather, port maintenance, congestion are also factors affecting ship supply over shorter periods of time

Ship Building

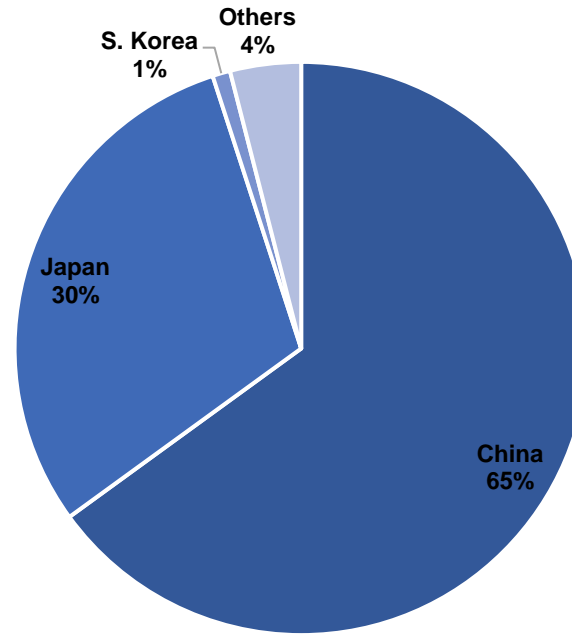


Ship Demolition

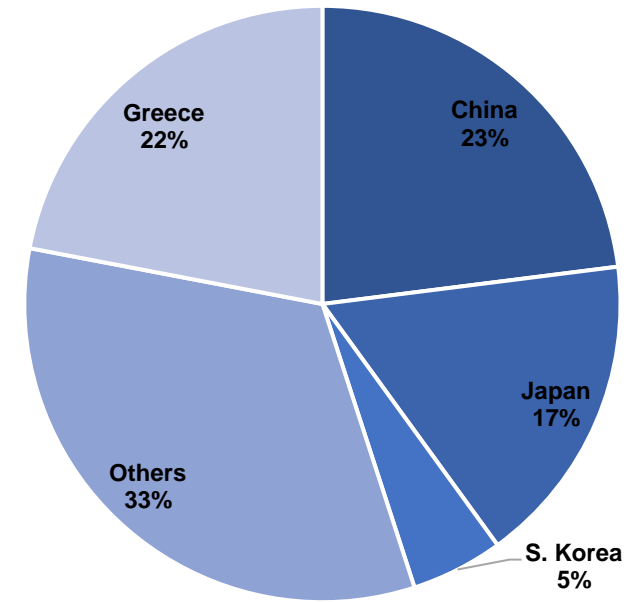


Fleet Profile

Shipbuilding Countries, 2021



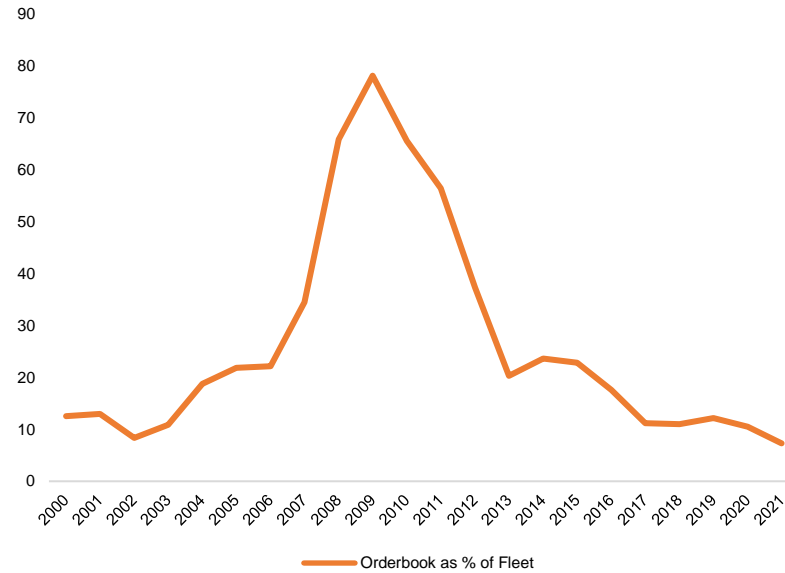
Shipowning Countries, 2021



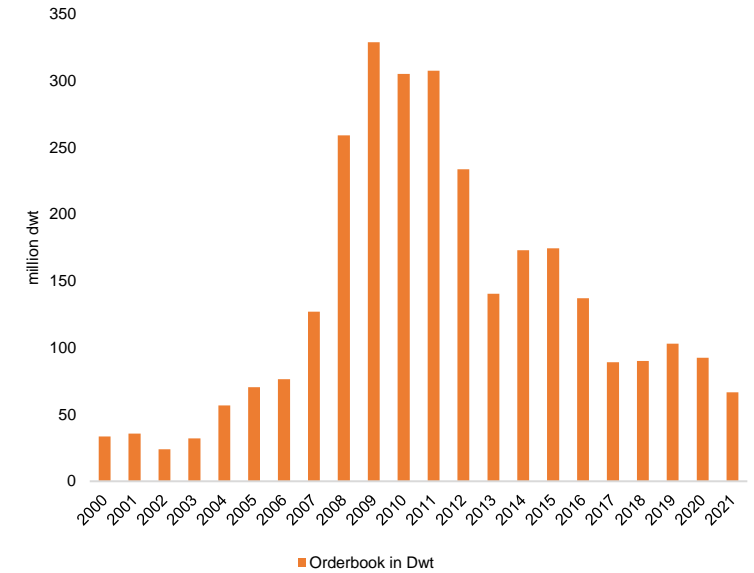
- The major shipbuilding countries are concentrated in the Far East, with China accounting for more than 65% of the global shipbuilding market
- Japan and South Korea account for most of the remaining share
- Ship-owning is more fragmented, with Greece and Japan accounting for one-fifth of the market, each, and China accounting for about 17%
- There are more than 100 shipbuilders worldwide and more than 20,000 shipowners globally (including all types of ships)

Dry Bulk Orderbook

Orderbook as % of Fleet



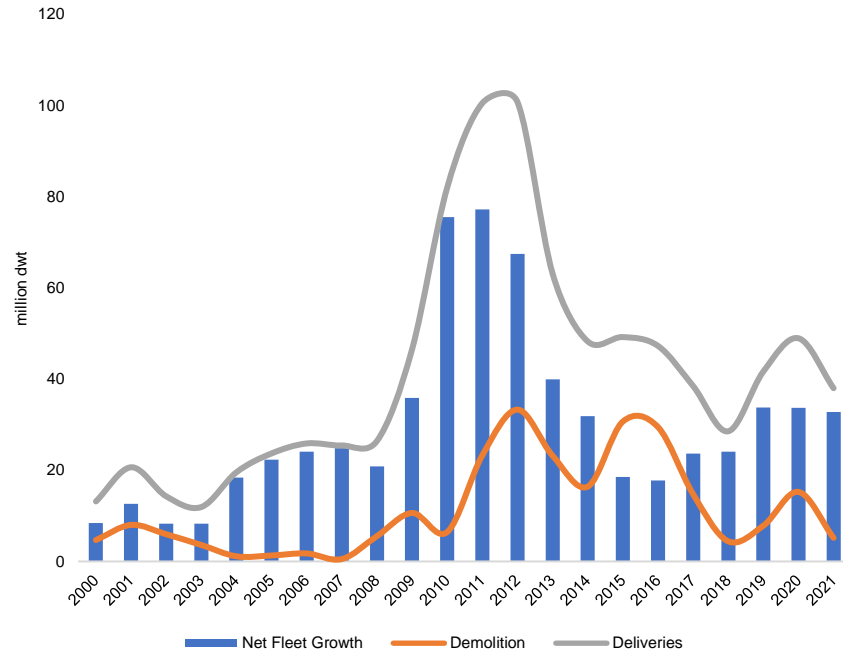
Orderbook in Dwt



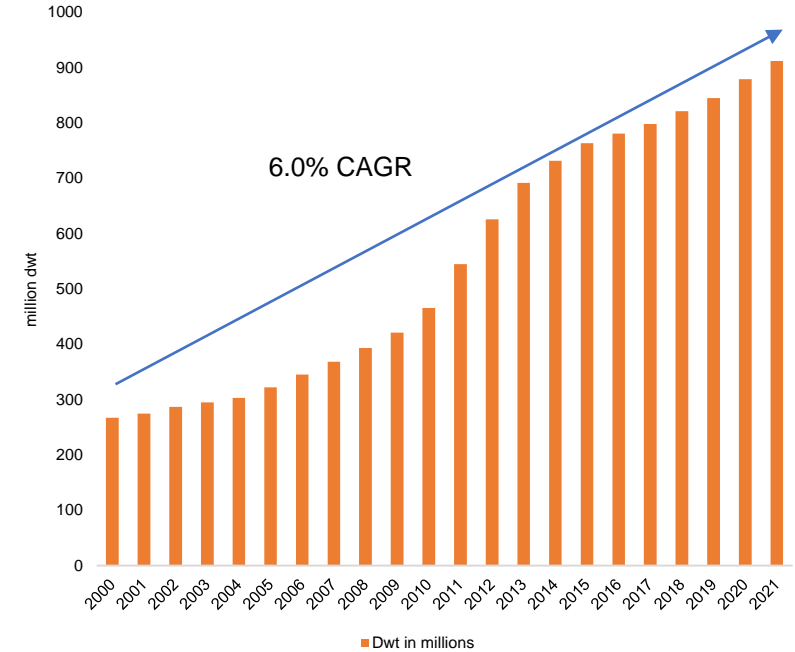
- The dry bulk orderbook, the orders for the construction of new ships, has been steadily declining since peaking in 2009
- Currently it stands at the lowest it has been since early 2000s when measured as a percentage of the fleet
- The orderbook is dynamic, subject to freight rates, newbuilding prices and owners' view of future earnings potential
- It takes roughly two years from ordering to delivering a ship, so the orderbook provides a good indicator of future fleet growth

Fleet Development

Dry Bulk Deliveries & Demolition

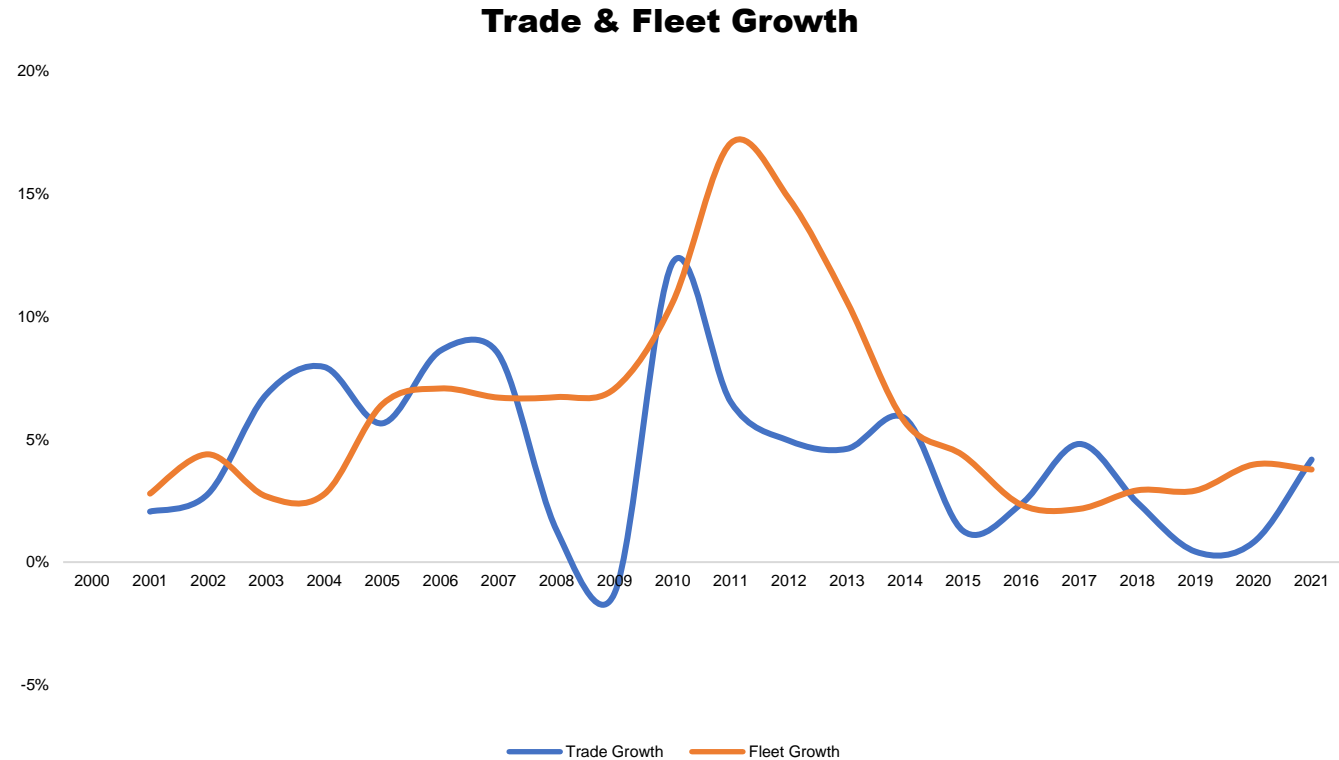


Dry Bulk Fleet



- Dry bulk deliveries have slowed down since the very high levels earlier in the decade following strong ordering in the 2007-2011 period
- Ship demolition has remained relatively steady, subject to freight rate strength and global steel prices
- Net fleet growth has also been relatively steady, but is at the lowest level as a percentage of the fleet since the early 2000s
- The global fleet average age stands at approximately 11.0 years, while 11.2% of the dry bulk fleet is 20 years or older

Supply & Demand

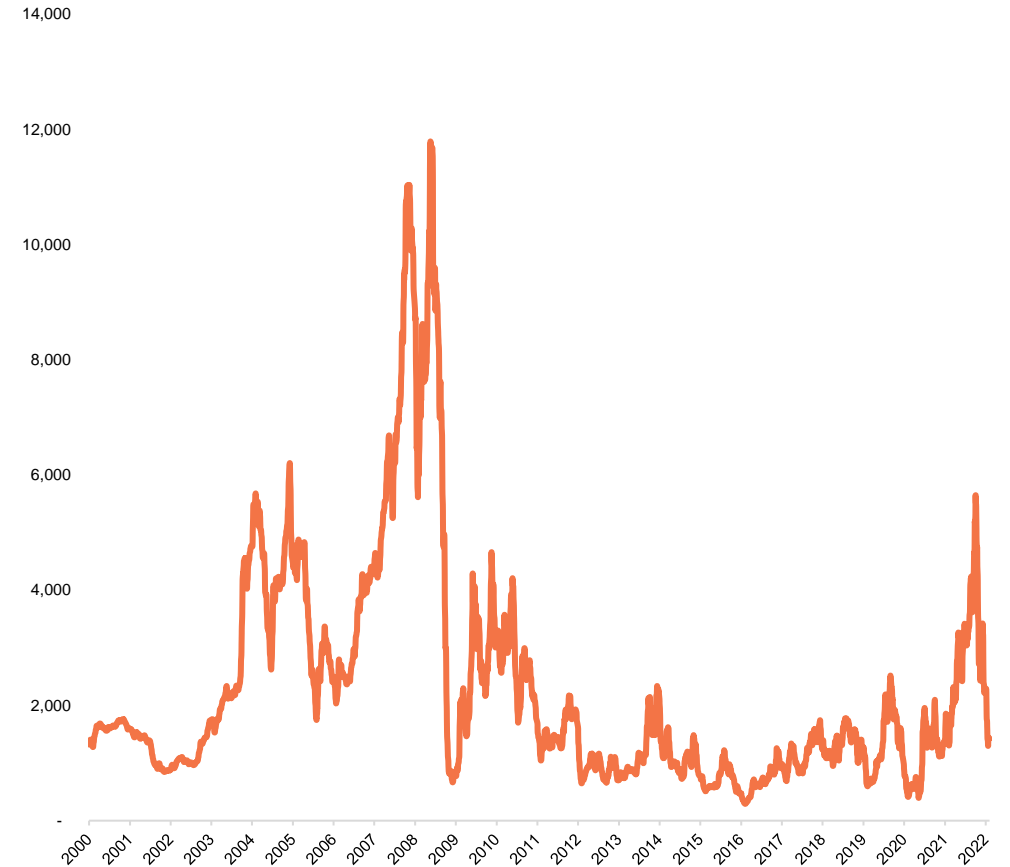


- In the early 2000s, demand for dry bulk shipping exceeded available supply, leading to strong dry bulk rates during the period
- However, a combination of strong new orders for dry bulk ships and the Global Financial Crisis lead to a sharp decline in dry bulk rates
- Since 2009, supply of ships has exceeded demand, as new ship deliveries exceeded slower demand growth
- 2021 showed a tighter balance between supply and demand
- Going forward, a low orderbook combined with expected increases in iron ore trade out of Brazil should further tighten the balance

Baltic Dry Index

- The Baltic Dry Index (BDI) is a broad measure of spot dry bulk freight rates
- The BDI is calculated daily and provided by the Baltic Exchange, reflecting average spot prices for dry bulk ships globally
- Over the last 20 years, the BDI has experienced considerable volatility, reflecting ship supply and demand imbalances over time
- Following its all-time peak in mid-2008, the BDI has fluctuated in a tighter range over the last several years, reflecting a more balanced market
- The BDI reached an all-time high of 11,793 in May 2008 and an all-time low of 290 in February 2016; the 2000-2021 average is approximately 2,300

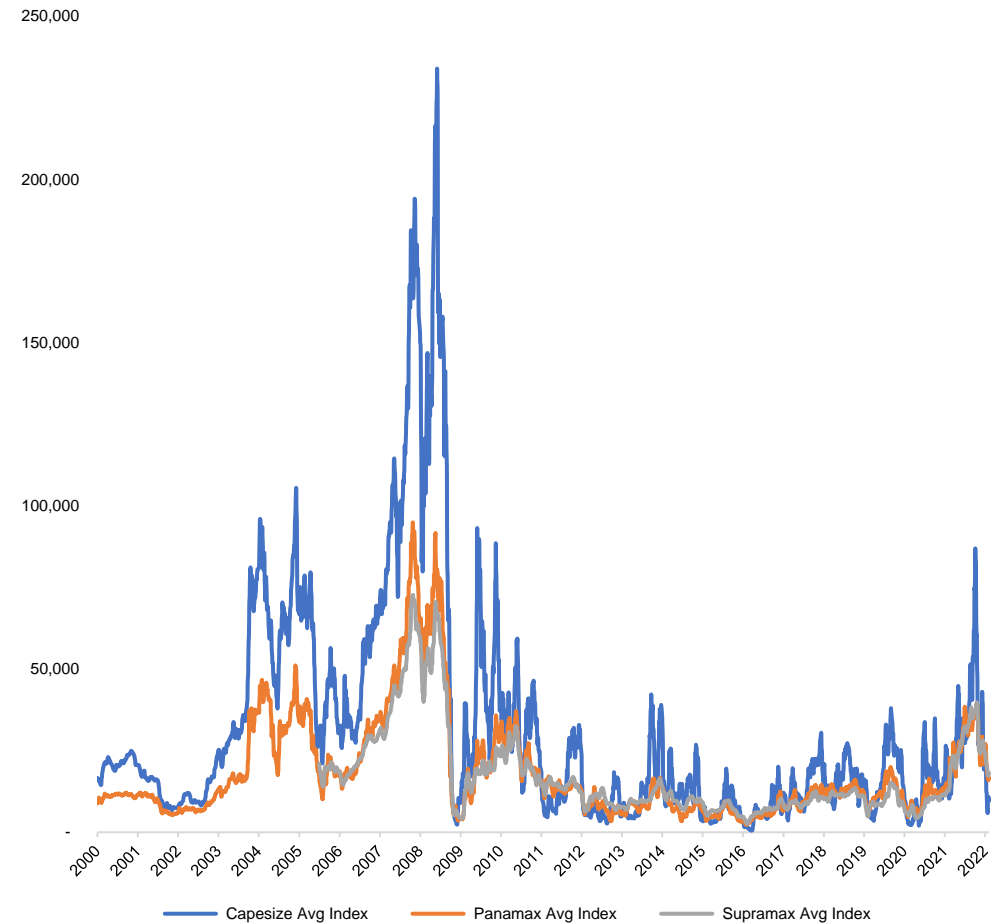
Baltic Dry Index



The above chart displays the live index data for the Baltic Dry Index (BDI) calculated daily since January 2000. The BDI is a broad and publicly available measure of average spot dry bulk freight rates. The chart is intended for illustrative purposes only and should not be used as an indicator or proxy for predicting the performance of the Breakwave Dry Bulk Shipping ETF. Past performance is not indicative of future results.

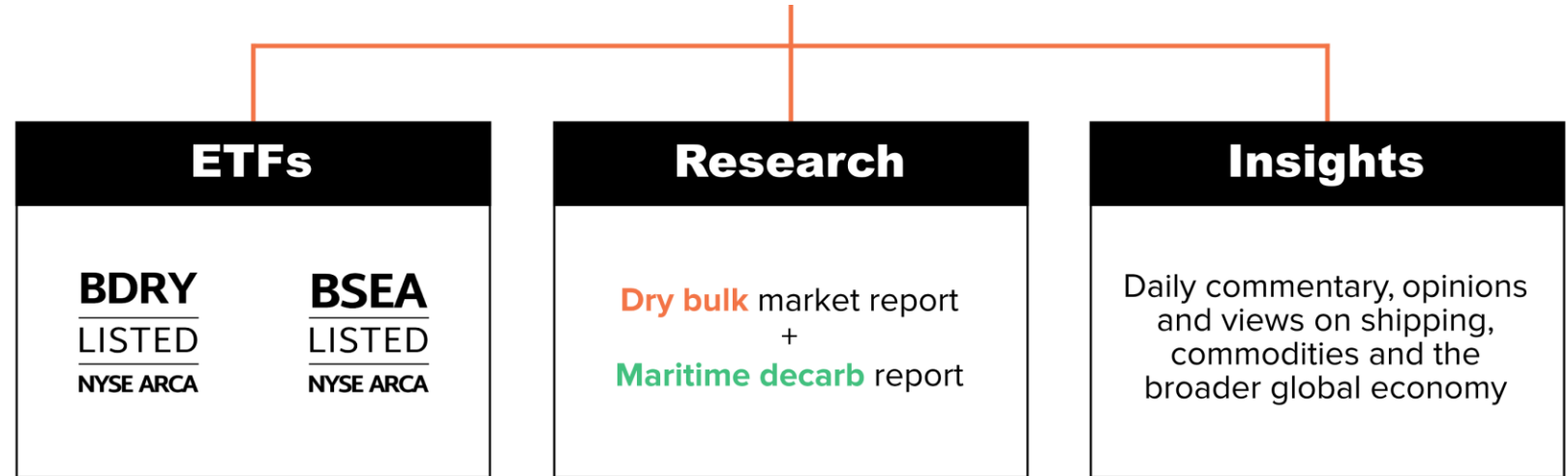
Dry Bulk Spot Freight Indices

- The individual components of the Dry Bulk Index also have seen considerable volatility in the last 20 years
- Average Capesize rates, being the most volatile, reached an all time high of more than \$200,000/day in mid 2008, before declining considerably
- In 2016, Capesize rates reached an all time low of less than \$500/day
- Panamax and Supramax rates are highly correlated to Capesize rates, but exhibit less volatility throughout the cycles
- Spot rate volatility has remained high, although the range of spot rates has declined in the last several years



The above chart displays the live index data for the sub components of the BDI, which are categorized by ship type, since January 2000. The chart is intended for illustrative purposes only and should not be used as an indicator or proxy for predicting the performance of the Breakwave Dry Bulk Shipping ETF. Past performance is not indicative of future results.

About Breakwave Advisors



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The underlying Index's decarbonization criteria, and thus the Fund's investment strategy, limits the types and number of investment opportunities available to the Fund, and, as a result, the Fund's returns may be lower than other funds that do not seek to invest in companies based on decarbonization criteria. In addition, decarbonization investing may affect the Fund's exposure to certain companies or industries and the Fund will forgo certain investment opportunities that are screened out of the decarbonization methodology. Finally, some of the companies are developing new technologies that have not yet achieved full commercialization.

The Fund is a recently organized investment company with limited operating history. As a result, prospective investors have a limited track record or history on which to base their investment decision. There can be no assurance that the Fund will grow to or maintain an economically viable size.

The Index was created by and is owned and maintained by the with Maritime Transformation Partners, LLC (the "Index Provider"), which has not previously been an index provider, which may create additional risks for investing in the Fund.

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