Chapter 7

Ocean Freight and Transportation

The United States' export supply chain and associated transportation networks consist of four major components: (road trucks, trains, barges, and ocean vessels). Each mode of transport is important, and their coordinated, timely interaction is vital to efficient operation of the supply chain.

For example; a cargo of corn might be moved from the field to the country elevator by truck. Subsequently, the grain may be loaded onto a unit train, and transported to another grain terminal on the Mississippi River, where it is loaded onto a barge; then, moved downriver to the port of New Orleans for transfer to an ocean vessel that is bound for its final country of destination.

Efficient and reliable transportation is integral to the successful functioning of the export supply chain for agricultural commodities, and is one of the key reasons the U.S. is a preferred supplier of grains to the world.

In addition to helping U.S. agricultural exporters serve their global customers, the ocean transportation network is an integral component of the agricultural supply chain and to the entire economy of the United States.

The maritime industry and U.S. ports provide access to overseas markets for agricultural products. Port facilities include services to handle dry bulk grains, shipping containers, palletized "break-bulk", and liquid services. Bulk handling facilities move large volumes of products such as grain and fertilizer. Container facilities handle a wide range of agricultural products, including fruit, vegetables, meat, poultry, processed food products, grain, peas, and hay. Palletized break-bulk services handle fruit and frozen meat and poultry products, as well as specialized grains. Liquid services handle ethanol, oils, sweeteners and other bulk liquid products.

What Is a Dry Bulk Commodity?

The greatest part of exported agricultural commodities and their products involved in international trade move from one country to another by means of an

ocean-going vessel. This is the least expensive method of transport over long distances. However, bulk agricultural commodities are just a small portion of total dry bulk commodities.

Some examples of **"major"** dry bulk commodities include iron ore, coal, non-ferris ores, and grain. Coal, along with iron ore, is one of the most traded dry bulk commodities by volume in the world. These two commodities account for nearly two-thirds of global dry bulk trade. Countries most involved in the import of coal for their primary energy and electricity needs are India, China, and Japan. Grain is another major cargo in terms of seaborne dry bulk trade and accounts for less than 18% of the total dry bulk trade worldwide.

"Minor" dry bulk commodities include steel products, sugars, fertilizer, cement, and cover the remaining one-third of global dry bulk trade.

These commodities and products are transported long distances, in large unpackaged parcels, by sea, in large cargo vessels, by companies that specialize in dry bulk delivery. For the most part, dry bulk cargoes consists of mostly unprocessed materials that are destined to be used in the global manufacturing and production process.

The transport of dry bulk commodities is highly regulated due to the possible impact that an in-transport accident could have on the environment. Since these commodities are unpackaged, any spill is likely to place them directly into the environment and can render them extremely difficult to clean up with possible damage and destruction to the environment and possible endangerment of people and wildlife.

CATEGORIES OF VESSELS

Ocean vessels are classified in many categories. Those most relevant to agriculture are dry bulk vessels, which are contracted for individual shipments (tramps), or container ships, which usually operate on scheduled routes (liners).

Tramp ships are contracted on an as-needed basis and are unconstrained by a specific route or schedule. These vessels are usually deployed by their owners when and where they can find the greatest profit. Users charter specific vessels to haul cargos. Generally, smaller shipping companies and private individuals operate tramp ships.

Most tramp vessels are designed to carry dry bulk cargo such as grain, ore, coal, or fertilizer. Some are designed to carry either dry bulk cargo or liquid bulk cargo. The market for bulk shipments is highly competitive with many firms, all with little market power. Vessels move freely from commodity market to

commodity market in response to rate changes. Rates are known, fluid, and available to the highest bidder, usually on a voyage charter (contract) for a particular vessel. This chartering system increases the flexibility of bulk vessels to respond to varying demands.

Tramp Ships

Fleet capacity is determined by the rate at which old ships are scrapped and new ones built. High shipping rates slow scrapping and spurred building activity, thereby moderating freight rates. Shipping companies may respond to a downturn in freight rates by removing ships from service or laying them up.

Liner services operate on a fixed schedule with fixed tariff rates published by the shipping companies. Each trip a liner takes is called a voyage.

Shipping containers are moved around the world by means of liner services. Shipping containers haul all types of agricultural products, from bulk grains to frozen beef. More than half of U.S. agricultural exports by value move in marine shipping containers.

Liner Services

The development of the shipping container and vessel was instrumental in marketing high-value and valued-added U.S. commodities in international markets. This mode of transportation has revolutionized shipping offering shorter transit times, less pilferage, reduced handling, delivery of better quality for perishable products, and increased security in identifying the source. The evolution of the shipping container and the intermodal supply chain has allowed agricultural producers to economically access new markets with differentiated products.

As their name implies, container ships are constructed to carry containers. Their holds are cellular, with vertical frames and guides where standard 20 and 40-foot containers are slotted securely into place for shipment.

Container ships range in capacity from as small as 500 Twenty-foot Equivalent Unit (TEU) and as large as 22,000 TEU. Vessels can load both 20-foot and 40-foot containers. Often, smaller container vessels are used as feeder ships moving contains from smaller and shallower port adjacent to major container terminals. Smaller container ships may be geared, while the larger vessels are usually gearless and can achieve top speeds exceeding 25 knots in long voyages. These larger sizes ships allow tremendous efficiency generating economies of scale with a variety of products carried on the same shipment.

Shipping Containers

Containerships operate in a different manner than other dry vessels. They are most often chartered on “period time charters” from major liner companies. The liner companies offer fixed voyage prices, or a “contract of affreightment,” to end clients for each container movement.

Container rates are typically negotiated in confidential service contracts, with the

understanding that changes in rates are closely connected to changes in fuel costs and demand.

It is important to note here that the benefits of shipping by container has led to increased dependence on containers to ship grains and other agricultural commodities, This trend has led to a situation in which the availability of containers can be the greatest challenge facing many agricultural shippers. A decline in volumes of imported goods to the interior of the U.S. will reduce the availability of containers available to receive grain at inland elevators. This can cause delays and significantly increase costs for export cargos. The result can be a loss of sales and unreliable service to overseas buyers. As such, many agricultural shippers are dependent on import flows, the railroads' willingness to position the containers, and the international rate for the full "backhaul" movement.

CHARTERING A VESSEL

Chartering a Vessel

The transport of bulk grain by and ocean ship is facilitated by chartering a suitable vessel. Chartering is an activity whereby a shipowner hires out the use of their vessel to a "charterer". The contract for transport is called a "charterparty" (originating from the French term "charte partie", or "parted document").

The charter party will clearly and unambiguously set out the rights and responsibilities of the ship owner and the charterers, as well as how to settle any subsequent dispute which may arise between them in a court of law or any agreed forum with reference to the agreed terms and conditions as embodied in the charter party contract.

There are three main types of charter parties:

- Demise (Bareboat) Charter
- Time Charter
- Voyage Charter

DEMISE (Bareboat) CHARTER

A "Demise Charter" (or **"Bareboat Charter"**) operates as a long lease of the vessel, with the charterer completely in charge.

A bareboat charter is an arrangement for the hiring of an ocean vessel or boat, whereby no administration or technical maintenance is included as part of the agreement. In addition, no crew or provisions are included as part of the agreement. Instead, the people who rent the vessel from the owner are

responsible for taking care of such things.

The charterer obtains possession and full control of the vessel along with the legal and financial responsibility for it. The charterer pays for all operating expenses, including fuel, crew, port expenses, as well as protection, indemnity (P&I) and hull insurance.

Below are some of the major points in the bareboat charter contract:

1. Description of the parties involved: the owner, the charterer and the name of the vessel. A detailed vessel description is usually attached to the rider but charters can be negotiated that allow for a generic vessel type, a specific vessel "to be nominated" or TBN.

2. Establishment of the amount of time the named vessel is under charter.

3. Designation of the delivery point or range.

Bareboat Charter

4. Stoppage of the time count if the vessel arrives at the initial load port and is not ready for loading.

5. Specifications that the owner will pay for all provisions, wages, insurance and regular maintenance.

6. Specifications that the charterer will pay all fuel costs and customary port charges.

7. Establishment of an amount, in dollars-per-day, that the charterer must pay the owner for the use of the ship, the payment schedule and the method exchange.

8. Establishment of return conditions, including where the owner regains control of the vessel after the time charter expires and with what notice it shall be done.

9. Specifications of the time frame in which the vessel has to be delivered from the owners to the charterer, for example, not before April 1 and not after April 20. If the vessel is not handed over on or before April 20, it is the charterer's option to cancel the time charter.

There are legal differences between a bareboat charter and other types of arrangements, such as voyage charters or time charters. In a voyage or time charter, the charterer charters the ship (or part of it) for a particular voyage or for a set period of time. In these charters, the charterer can direct where the ship will go, but the owner of the ship retains possession of the ship through its employment of the master and crew.

The giving up of possession of the ship by the owner is the defining characteristic of a demise or bareboat. With a demise or bare-boat charter the owner gives possession of the ship to the charterer and the charterer hires its own master and crew. In this type of charterer party the charterer is sometimes referred to a "desponent owner".

In some commercial bareboat chartering, the charter period may last for many years and may end with the charterer acquiring title and ownership of the ship. In this case, a bareboat charter is a form of "hire to purchase" from the owners, who may have well been the shipbuilders.

Demise or bareboat chartering is common for bulk carriers; however, less common in the bulk grain trade. More common in bulk grain shipments are voyage charters.

TIME CHARTER

A "Time Charter" is the hiring of a vessel for a specific period of time. In this arrangement the owner still manages and runs the vessel, but the charterer selects the ports and directs the vessel where to go. When in port the charterer becomes responsible for loading and unloading the ship within the agreed period of laytime. If the charterer exceeds the allowed laytime, demurrage may become payable. The charterer also pays for all fuel the vessel consumes, port charges, commissions, and a daily hire to the owner of the vessel.

Like much about the maritime trade, the standard time charter form or contract is old (1943), but it is used as a foundation by most participants. Nearly every ship owner and charterer have terms that they like to include in their negotiations. Many of these are included in a common rider that each party customizes to the party's view.

Below are some of the major points in the time charter contract:

Time Charter

1. Description of the parties involved: the owner, the charterer and the name of the vessel. A detailed vessel description is usually attached to the rider but charters can be negotiated that allow for a generic vessel type, a specific vessel "to be nominated" or TBN.

2. Establishment of the amount of time the named vessel is under time charter.

3. Designation of the delivery point or range.

4. Stoppage of the time count if the vessel arrives at the initial load port and is

not ready for loading.

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VOYAGE CHARTER

A "Voyage Charter" is the hiring of a vessel and crew for a voyage between a load port and a discharge port. In a voyage charter, the shipowner still runs the ship

In a voyage charter, the route is pre-arranged, and the charterer has little scope to interfere. In his arrangement the charterer pays the vessel owner on a per-ton or lump-sum basis. The owner pays the port costs, (excluding stevedoring), fuel costs and crew costs. The payment for the use of the vessel is known as freight.

In a voyage charter when in port the charterer becomes responsible for loading and unloading the ship within the agreed period of "laytime". If laytime is exceeded, the charterer must pay "demurrage". If laytime is saved, the charter party may require the shipowner to pay "dispatch" to the charterer.

Voyage Charter

The standard form for a freight contract, or voyage charter, is called the Baltimore Berth Grain Charter Party or BFC. It too is an old contract form, initially written in 1913, but it is the basis of most grain charters from the United States. However, the BFC does not cover many of the details in today's more complicated charter parties. As can be seen from the sample in Appendix I, some language in the BFC has been eliminated or changed and a rider is attached with additional terms. The rider and the BFC form make up the complete charter

party. Most of the recommended terms of the charter party are self-explanatory.

Another commonly used standard form freight contract, or voyage charter, is the North American Grain Charter Party or NOR Grain CP. This charter party was issued by the Association of Ship Brokers and Agents (USA).. The latest edition of this contract is NORGRAIN 89.

There may be other standard form charterparties available, but the BFC and NOR Grains are the two are most common forms used when shipping grain out of North America.

In comparison, a "time charter" is almost a halfway-house between a "demise charter" and a "voyage charter", in that the charterer decides on the voyages and the ports, and instructs the shipowner's crew to comply. These differences can lead to legal issues of indemnity; whereas, the shipowner in a "voyage charter" takes responsibility for the ship, while in a "time charter" the shipowner may need to be indemnified against losses or liabilities proximately caused by the charterer.

CONTRACT OF AFFREIGHTMENT

A Contract of "Affreightment" (COA) is a binding agreement signed between a charterer and an ocean or water vessel carrier to secure space for shipping goods.

Under COA, the shipowner agrees to provide his vessel or vessels to the Charterers for a series of voyages. The price paid by the charterer is known as freight. [i] The charterer will pay the freight even if the goods are not ready to be shipped at the specified time. On the other hand, the shipowner is responsible for taking the goods to a specific destination at a specific time. If they fail to reach the destination on time, the carrier will be subject to a penalty for being late.

This type of Contract is suitable for carrying a pre-specified amount of cargo or performing a pre-specified number of voyages. In this case, the C/P terms will remain the same for each voyage with perhaps only the freight rates being adjusted for the prevailing market conditions.

A contract of affreightment sets forth the obligations and rights of the shipowner and the charterer. The main purpose of this document is to put the onus on the carrier to transfer a certain amount of goods at a certain time.

A bill of the agreement is receipt of goods taken on board for carrying to a specified destination. The ship owners or their agents sign this document acknowledging the shipment of a parcel of goods is received for transportation. This agreement explains the terms and conditions under which the shipment will

be carried to a pre-decided destination.

The bill of lading document assumes a triple identity. It works as a receipt of freight services, an agreement between a freight carrier and shipper, and a document of title. This document is important for moving a freight shipment. It provides all the details that are needed to process the freight shipment and invoice it correctly.

NON-NEGOTIABLE TERMS

1. Name of the parties entering into the contract and the vessel ("TBN" is acceptable but a negotiable term).

2. Type of commodity. The ship owner will want to know what type of commodity is going to be loaded into the vessel; i.e coal, iron ore, fertilizer, grain, salt, steel, etc. For grain it will be HGSS - Heavy Grains/Soybeans/Sorghum; for light grains, such as barley, it is simply barley.

3. All cargoes loaded in the United States must be loaded under the inspection of the National Cargo Bureau (NCB) in order to ensure proper and safe loading and stowage.

4. Payment of freight is made upon presentation of the Mate's Receipt, which is made immediately upon completion of loading. Once the freight is paid by the shipper a signed Bill of Lading will be issued.

5. A vessel is considered load ready when it has been entered at the local customs house and has passed the NCB and FGIS inspections. When either the charterer or the charterer's agents are notified of the vessel's readiness to load; NOR – Notice of Readiness, (which must be before 1600 hours on a weekday or 1200 hours on a Saturday), the vessel's laytime begins the following morning at 0700 hours (see laydays - item two under negotiable terms).

6. A charter party can be cancelled by the charterer if the vessel has not been presented as load ready by 1200 hours on the last day of the shipment period. However, the charterer must absorb the difference in the chartered rate and the replacement value - what the charterer has to pay for a vessel to replace the original charter. This can be either a loss or a gain.

NEGOTIABLE TERMS

Size of the Ship: This generally refers to the size of the cargo and the tolerances, but the actual deadweight size of the vessel can be negotiated too. It is critical to ensure that the charter party tolerances match the grain purchase contract tolerances. If the importer charters for a larger tolerance than the charterer has on the charter's FOB grain purchase, the charterer might be liable to the vessel owner for dead freight. The tolerance on a charter party is the owner's option.

The charterer should try to obtain a small tolerance and if a specific vessel is being considered, it is even possible to charter a specific quantity - no more and no less. This would be expressed, for example, as 25,000 MT min/max.

Laydays: This specifies the time period in which the vessel must be ready to load the cargo. Typically, laydays are from 6 to 20 days. Narrower laydays are better for the charterer because the charterer will have greater control over the actual shipment period of the cargo. For example, if the laydays are April 20 to 30, the vessel must be ready to load no later than April 30. The earliest that time can start counting for the charterer is April 20, even if the vessel is ready five days early.

If the vessel is not ready to load on or before April 30, the charterer may cancel the charter party. There is, however, no recourse for the charterer if the market freight level is higher than when the charter party initially was fixed.

Commodity: This specifies the types of products that are loadable at the freight rate in the charter party. Different commodities will take up more space per metric ton than others. For instance, the specific weight of corn is greater than barley; therefore, it stows better, taking up less space.

In some charter parties, the charterer can convert from paying a freight rate per metric ton to making a lump sum payment. The "conversion" gives the charterer the right to load commodities not covered in the charter party, such as seeds.

Load/Discharge Ports: This stipulates how many load ports/berths and discharge ports/berths are included in the freight rate. Since more complicated load conditions - for example, three load ports compared to one - prolong the length of time the vessel is tied up in the charter, multiple port/berth options demand premium rates.

Typically, feed grains charters require only one berth at the loading point and one or two discharge ports/berths at the destination. Options for multiple discharge ports/berths at the destination are at a negotiated premium, declarable, for example, when the vessel completes loading.

From a freight standpoint, lifting a large cargo is more economical. Since the marginal cost of operating a 65,000 ton deadweight vessel is little different in these modern days than a 20,000 ton deadweight vessel. It is necessary for the

charterer to combine as much cargo as is possible, putting different products, even destined for different discharge ports (within geographic reason), on the same vessel. In most cases, the premium for multiple load or discharge ports/berths will be much less than the savings from chartering the larger vessel.

Freight Rate: This is expressed in dollars per metric ton, or long ton. Also defined in the freight rate is who arranges and pays for the trimming of the cargo. A few definitions follow:

- FIOT: Free In/Out Trimmed - the charterer pays all of the trimming expenses.

- FIOST: Free In/Out Spout Trimmed - the charterer pays all of the trimming expenses except when special machine or hand trimming is required.

- Gross Load - the vessel owner pays all of the trimming costs.

The most common way to charter in the feed grains trade is FIOST, since the vast majority of vessels used are self-trimming bulk carriers and only require spout trimming. Tween-deckers and tankers require special machine trimming and consequently cost the charterer extra trimming charges.

Demurrage/Despatch: Demurrage is the daily penalty rate the charterer pays the owner if the vessel has not been loaded within the time allowed in the charter party. Despatch is the daily rate the owner pays the charterer on the number of days/hours the vessel is loaded faster than the time allowed. To some extent, demurrage rates reflect the daily value of a vessel and will, over time, vary with the freight market. For example, a 50,000 MT vessel with a daily value of approximately 14,000 USD should reflect a demurrage rate of about 12,000 USD to 20,000 USD per day. When the freight markets are depressed, the demurrage rate could be only 8,000 USD to 9,000 USD. The standard despatch rate is half of the demurrage rate and gives the charterer the incentive to load the vessel as quickly as possible.

RIDERS

Riders are contract extension clauses which are attached to standard contracts. They may include the following provisions:

1. The Baltimore Grain Charter Party (BFC) and the North American Grain Charter Party (NOR Grain) specify all situations in which the vessel owner is not responsible for damage to the cargo. Therefore, often times a rider will include that marine insurance is required.

2. The rider will specify who is to appoint agents at the load and discharge

ports. In either case, the owner pays all agent fees.

3. The BFC Saturday clause is used in all charters originating in the United States and specifies the conditions under which Saturdays may count as laydays. Saturdays ordinarily are not considered laydays unless stated as such in a rider.

4. The "lighterage" clause specifies the maximum weight the vessel is allowed to have at its destination port. If the vessel is too heavy, the owner must pay the cost of lightening the vessel. If conditions have changed at discharge so the vessel cannot unload, it is the charterer's responsibility to pay for lightening the vessel.

5. The owner must pay for any securing and strapping of the cargo. Only natural separations are allowed; charterers pay for artificial separations.

6. Overtime is paid by whoever orders it - owners or charterers, unless ordered by the port, in which case the charterer pays for it.

7. The vessel cannot be loaded or discharged in Cuba, Libya or North Korea, and cannot enter into ports in those countries before or during the charter party.

8. Any dispute between the owner and charterer is to be settled by the nominated dispute resolution process; or a three-person arbitration panel. Each party appoints one commercial arbitrator. Together, the parties and the arbitrators then appoint a third arbitrator. The three make a final decision.

ROLE OF AN AGENT

A charterer generally appoints an agent to execute an FOB contract.
The agent's responsibilities include the following:

1. With local authorities:
    - customs requirements
    - immigration
    - plant protection and quarantine (PPQ)
    - hold inspection
    - pilots, tugs, lines and so forth
    - U.S.C.G. (United States Coast Guard)
    - documentation

2. With owners:
    - bunkers

- crew business
- repairs
- cargo
- invoices and documentation

3. With charterers:
   - cargo
   - documentation
   - invoices

The following charges, including agents' fees, are normally paid for by the shipowner:

- pilots
- tugs
- lines
- customs
- immigration
- plant protection and quarantine (PPQ)
- inspection
- repairs
- bunkers
- tonnage tax

Role of the Agent

An important part of the agent's work is to discuss with the master of the ship specific issues of the cargo, such as the stow plan of the vessel, load rotation (when the vessel will go into berth) and expected cargo lift. The agent will also obtain the master's permission to sign bills of lading.

Sometimes two agents will be involved - one appointed by the charterer and one appointed by the owner to protect his interests. The owner's agent will be involved with the specific issues of the vessel owner, such as repairs, crew and bunkers.

One of the agent's most important jobs is to secure the documentation necessary to permit the cargo to be loaded onto the vessel. This documentation includes:

National Cargo Board (NCB) Loading Pass: When the vessel arrives at port, the first vessel inspection is by the NCB which studies the master's stow plan and inspects the vessel to ensure that the vessel is structurally safe to load. The NCB also checks the stability of the cargo based on the stow plan and judges if the stowage is safe for the voyage. If all is to the satisfaction of the NCB, it issues a pass allowing the vessel to load the cargo.

USDA Pass: After the NCB inspection, USDA inspects the cargo spaces for cleanliness. If the space is clean to the USDA's satisfaction, it issues a pass to the

vessel's agent.

NOR (Notice of Readiness): After the vessel has passed the NCB and USDA inspections, it will tender its NOR to the charterer's agent and the agent will then file an application for berth with the loading elevator. This has to be done by 1600 hours on weekdays or 0900 hours on Saturdays, and time will commence for the charterer the following workday at 0700 hours. The agent passes the NOR to the loading elevator.

Final USDA Pass: As the cargo is being loaded, USDA (or its designated state inspectors) supervises the weighing and grading and issues weight and grade certificates for the completed cargo.

Mate's Receipt: As soon as loading is completed, the master of the ship issues a mate's receipt and signs it. The mate's receipt is a temporary title of ownership to the cargo given to the seller. The seller surrenders it to the agent who in turn issues the bill of lading (B/L). The charterer pays the freight cost against a release of a signed B/L.

Bills of Lading: While the cargo is being loaded on the vessel at the port elevator, the agent will draft bills of lading. The B/L specifies the amount of goods delivered to the ship, the parties involved, load port and destination, and the date of vessel completion. The B/L date determines the shipment date. As soon as the owner's agency confirms freight payment, the agent signs the B/L and releases it to the seller who in turn surrenders the mate's receipt.

In buying CNF or CIF, the buyer avoids all of the complications of chartering vessels, arranging logistics and executing an FOB purchase. The buyer only has to specify the shipment period and discharge terms; the seller arranges the rest. It is clearly an easier but not necessarily economical way to purchase grain.

SHIP TYPES

Car Bulkers: These are designed to transport vehicles, but they can also transport grain in a way similar to a self-trimming bulk carrier. A car bulker might bring cars from Japan to the United States, remove the cars and load U.S. grain for the return trip to Japan.

Oil/Bulk/Ore Carriers (OBO): These are used to transport these three commodities. A special trimming cost would be incurred if an OBO transported grain. Before chartering a vessel, one should pay special attention to the type of cargo carried previously. For example, if the vessel carried oil, it might require special cleaning procedures.

Self-Trimming Bulk Carriers (STBC): These are the most commonly chartered vessels in the U.S. grain trade business. They are especially suited for grain transport because their bulkheads slope at an approximate 45-degree angle to the horizontal, preventing empty spaces from developing in the wings of the hold.

The self-trimming bulk carrier is the most economical vessel to charter because the holds are easy to clean and loading does not require special trimming, which would make stevedoring expensive. Some vessels are referred to as PANAMAX type, which simply means the vessels can transit the Panama Canal. The term is typically reserved for bulk carriers in the 50,000-70,000 MT dead weight tonnage (DWT) range.

Tankers: As vessels designed to transport petroleum products, chemicals or other liquids, tankers are rarely used to transport grain because their design makes loading bulk grain difficult and expensive. The charter rate of a tanker would have to be at a substantial discount to that of a STBC to allow the charterer to recoup the costs.

Ship Types

Tween-Deckers: These vessels are suited for loading general cargo, not necessarily grain. They have two decks which are separated, allowing for multiple products transport. The disadvantage is that loading and discharging a tween-decker takes longer and costs more than loading an STBC that is the same size.

Vessels are built under the supervision of a classification society which approves the builders' plans, supervises the actual construction and certifies the vessels. This extensive supervision is done for safety and insurance reasons. The most active class societies are Lloyds Register, London, United Kingdom; American Bureau of Shipping, New York City, USA; Norski Veritas, Oslo, Norway; Bureau Veritas, Paris, France. The societies also inspect the vessels annually.

SHIP SIZES – DRY BULK CARRIERS FOR GRAIN

Dry bulk carriers transport large quantities of dry goods. These vessels vary in size, with the choice 1of size depending on the commodity being shipped, limitations of both the loading and unloading port capacities, and demand within the market.

There are several different types of bulk carriers with the main distinction between each other being their size. The smaller bulk carriers, from mini-bulkers up to ultramaxes usually, but not always, are geared while the larger bulkers from panamax to ULOC are almost always gearless. However, note here there are also a few geared panamax and kamsarmax bulkers.

Smaller bulkers can carry all the types of bulk cargoes as well as some general cargoes and usually used in shorter distances. Panamax and capesizes, on the other hand, are used to load mainly grains, coal, iron ore, and other minerals. Ultra Large Ore Carriers (ULOC) and Valemax are used to carry iron ore.

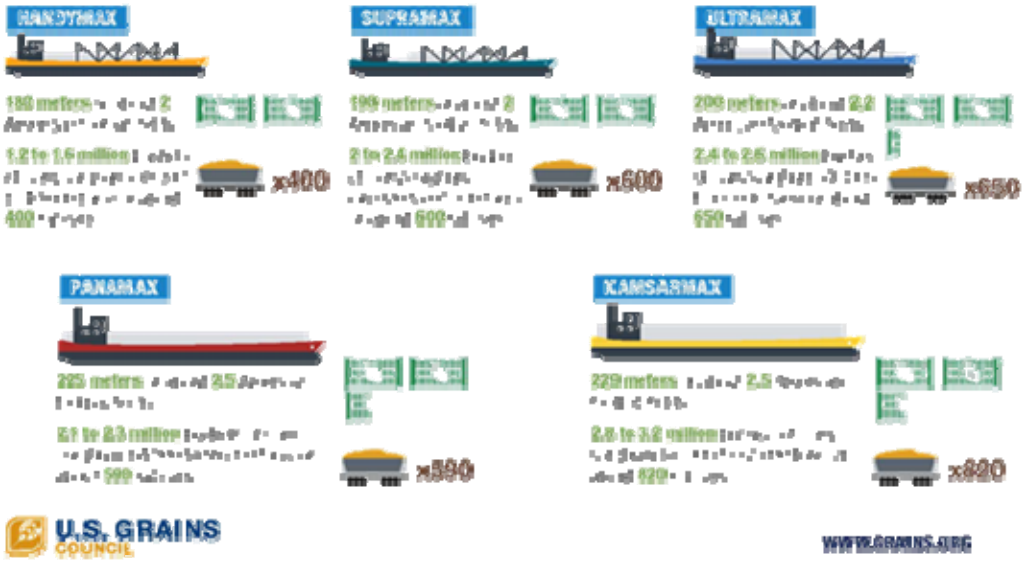
Accordingly, vessels can be divided in to the following categories:

Type	DWT mts	Draught mts	LOA mts	Beam mts	Geared	Number of Holds
Handysize	35,000	10.2	150	28.40	Yes	5
Handymax	48,000	12.2	199	28.40	Yes	5
Supramax	52,000	12.2	199	32.20	Yes	5
Ultramax	62,000	13	200	32.24	Yes	5
Panamax	75,000	14.1	225	32.26	No	7
Kamsarmax	82,000	14.5	229	32.26	No	7
Post-Panamax	98,000	14.6	240	28	No	7
Capesize	172,000	17.95	289	45	No	9
ULOC (Valemax)	400,000	23	362	65	No	9

Source: Open Sea. Pro[ii]
Read More: https://opensea.pro/blog/ships-types-and-sizes

The capacity of a ship is measured in "Deadweight" tonnage (DWT), and is the measure of how much weight a ship can carry. DWT is often used to specify a ship's maximum permissible capacity when it is fully loaded so that its Plimsoll line is at water level. *(The Plimsoll line is a reference mark located on a ship's hull that indicates the maximum depth to which the vessel may be safely immersed when loaded with cargo.)* DWT is the sum of the weights of cargo, fuel, fresh water, ballast water, provisions, passengers, and crew.

Ship Sizes



Mini Bulkers: These vessels have a carrying capacity of up to about 15,000 DWT. They are mainly used in short sea trades however most vessels of this size are either general cargo ships or short sea specialized vessels rather than common bulk carriers.

Handysize: These vessels have a carrying capacity of 15,000 to 35,000 DWT, and range in length from 130 to 150 meters, with a 10 meter draught. They typically contain five cargo holds for diversified storage with four on-deck cranes. Their shallow draught and small size allow them to operate in most ports across the world, making them the most common bulk carrier over 10,000 DWT.

Handymax: These vessels with more modern builds can carry between 35,000 and 48,000 DWT, and range in length from 150 to 200 meters, with a draft of 11 to 12 meters. They generally have five cargo holds and four on-deck cranes, making them popular for unloading cargo in ports without sophisticated infrastructure.

Handysize vessels can carry a variety of dry bulk cargo, including iron ore, coal, cement, phosphate, finished steel products, wooden logs, fertilizer, and grains.
These vessels are typically built in Japan, South Korea, China, Vietnam, India, and the Philippines.

Ship Sizes

Supramax: These vessels are medium-sized vessels with a carrying capacity between 48,000 and 60,000 DWT, and a length of up to 199 meters, with a typical draught of 12.2m.
Because of their smaller size, Supramax vessels can enter and exit smaller ports.

Ultramax: These vessels are medium-sized bulk carriers. They have a carrying capacity generally between 60,000 to 65,000 DWT. These vessels are considered an upgrade over the smaller Supramax carriers.

Panamax: These vessels are medium-sized bulk carriers with a carrying capacity of 65,000 and 80,000 DWT. These vessels each have seven cargo holds and are designed to fit the locks of the Panama Canal.

Post-Panamax vessels are larger vessels with carrying capacities between 85,000 and 110,000 DWT. Revised size regulations set by the Panama Canal Authority mean these vessels can now reach dimensions of 366m in length, 49m in width, and 15.2m in depth.

Panamax vessels are the size most commonly used for agricultural products. They is the largest size vessel capable of traversing the Panama Canal. However, this size vessel is also active in transporting grain from the U.S. Gulf and PNW ports to Asian markets.

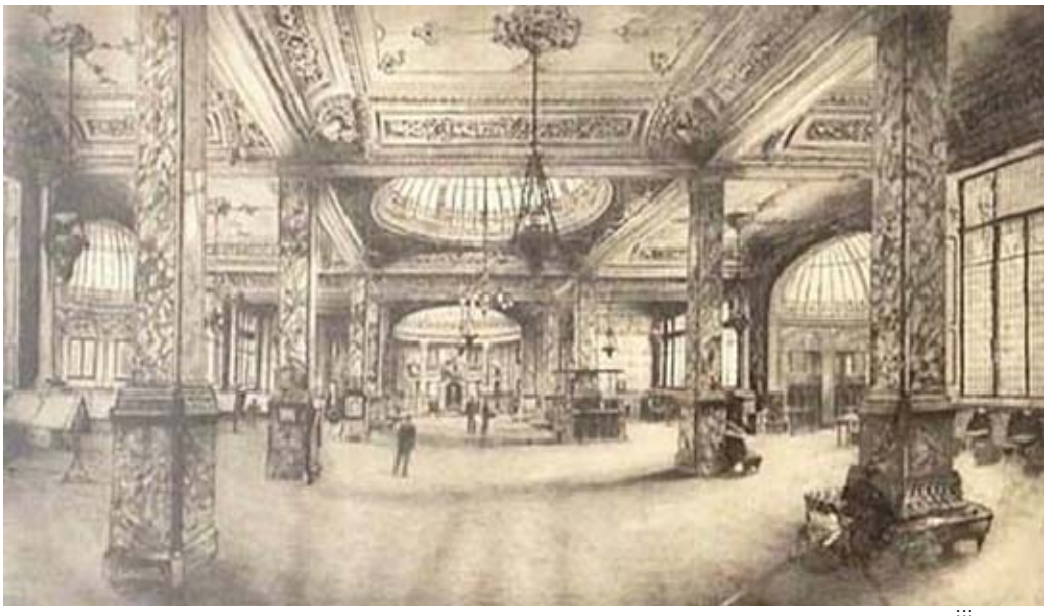
Kamsarmax: These vessels are medium-sized vessels with a carrying capacity between 80,000 and 85,000 DWT.
These vessels are specialized in that they designed to fit both through the Panama Canal, as well as fit within Port Kamsar in West Africa.

Capesize: These vessels are the largest dry bulk carrier. Their carrying capacity is between 110,000 and 200,000 DWT. They measure roughly 230 to 270 meters long, with a draft of 17 meters, with nine cargo holds.

Due to their larger size, not every port can accommodate such a vessel while fully loaded. Capesize vessels are used in the transportation of coal, iron ore, and commodity raw materials.

Ultra Large Ore Carriers: (ULOC) These are bulkers which are larger than capesizes and they are mainly used to load iron ore. The largest vessels in this category are the Valemax (or Chinamax) vessels which have a capacity as high as 400,000 DWT.

Due to their larger size, only a few ports can accommodate such a vessel while fully loaded. ULOC vessels are used in the transportation of coal, iron ore, and commodity raw materials, primarily between Australia and China, and Brazil and China.



Photograph of engraving by Joseph Finnemore of the Baltic Exchange dated 1918 [iii]

LONDON BALTIC EXCHANGE[iv]

The Baltic Exchange is a London-based exchange that provides real-time maritime shipping information to traders for settling physical and derivative shipping contracts. The exchange has regional offices in Singapore, Shanghai, and Athens.

History[v]

The Baltic Exchange was started in 1744 at a coffee house, where shipowners and merchants gathered to transact business, in Threadneedle Street in London.

To bring order to informal trades, membership and rules of trades were devised in 1823. As England's trading connections and prowess grew, the exchange also gained in the number of its members and transactions.

It was acquired by the Singapore Exchange SGX in November 2016.

WHAT IS THE BALTIC DRY INDEX?

Today, the London based Baltic Exchange issues the daily Baltic Dry Index as a market barometer and leading indicator of the shipping industry.

The exchange publishes five major Baltic Indices. These are the:

- Baltic Exchange Dry Index (BDI),
- Baltic Exchange Capesize Index (BCI),
- Baltic Exchange Panamax Index (BPI),

- Baltic Exchange Supramax Index (BSI),
- Baltic Exchange Handysize index (BHSI),

The Baltic Dry Index is considered a leading indicator for economic activity because a rise in dry bulk shipping signals a surge in raw production materials that stimulate growth.

A shipowner uses the index to monitor and protect against a drop in freight rates. Charters, on the hand, use it to mitigate the risks of rising freight rates.

The index also provides investors with insight into the price of moving major raw materials by sea but also helps price freight derivatives.

How it works…

These indices are estimates of moving cargoes of raw materials for 20 shipping routes measured by a time charter across the seas by leading shipbrokers. The routes are meant to be representative, i.e. large enough in volume to matter for the overall market. Every working day, a panel of international shipbrokers submits their assessment of the current freight cost on various routes to the Baltic Exchange.

To derive the aggregate Baltic Dry Index (BDI) three different sizes of ocean-going dry bulk transport vessels are taken into consideration. These rate assessments are then weighted together to create both the overall BDI.

Following consultation with members, as of March 2018 the Baltic Exchange implemented changes to the Baltic Dry Index (BDI), re-weighting the BDI to the following ratios of time charter assessments:

- 40% Capesize,
- 30% Panamax
- 30% Supramax
- *no longer includes the Handysize time charter average*

The indices are used to settle physical contracts as well as derivatives based on those contracts.

OCEAN FREIGHT DERIVATIVES AND FORWARD FREIGHT AGREEMENTS (FFA)

Freight derivatives include exchange-traded futures, swap futures, forward freight agreements (FFAs), container freight swap agreements, container freight derivatives, and physical deliverable freight derivatives.

Forward Freight Agreements (FFAs) are commodity derivatives which derive from the underlying physical shipping markets and the future levels of freight rates for dry bulk carriers and oil tankers. The instruments are settled against various freight rate indexes published by the Baltic Exchange and the Shanghai Shipping Exchange.

Freight derivatives were first traded by dry bulk shipping companies in the mid-1980s. Today they are widely used in the dry bulk and tanker sectors.

Cleared contracts, in contrast, are margined on a daily basis through the designated clearinghouse. At the end of each day, investors receive or owe the difference between the price of the paper contracts and the market index. Clearing services are provided by leading exchanges, including the NASDAQ OMX Commodities, European Energy Exchange, and Chicago Mercantile Exchange (CME), to name a few.

With shipping markets bearing more risky, freight derivatives have become a viable method for shipowners and operators, oil companies, trading companies, and grain houses to manage freight rate risk and hedge against price volatility in the supply chain.

As with any derivative, market speculators, (like hedge funds and retail traders) care engage in both the buying and selling of FFA contracts providing for a new, more liquid, marketplace.

In a volatile market, FFAs give companies the ability to manage their freight risk. They also provide a mechanism for companies to take on price risk through an exposure to global trade and are an important element of the shipping markets.

FORWARD FREIGHT AGREEMENTS (FFA)

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FFAs were developed for shipping in the early 1990s. FFAs are traded both over-the-counter (OTC) and exchange-traded. Trades are often unpublished and done on trust alone.

FFAs are traded over the counter on the terms and conditions of the Forward Freight Agreement Broker Association (FFABA) standard contracts. The primary

terms of an FFA agreement include the agreed route, time of settlement, contract size, and the rate at which differences are settled.

When the contract expires on the settlement date:

- If the agreed price is higher than the settlement price the seller pays the difference to the contract buyer.
- If the agreed price is lower than the settlement price, the buyer pays the seller the difference.

The settlement and contract price difference is then multiplied by the cargo size or the voyage duration.

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[ii] Source: OpenSea.Pro https://opensea.pro/blog/ships-types-and-sizes Accessed 15 November 2021

[iii] Baltic Exchange https://balticexchange.com/en/who-we-are.html Accessed 5 March 2022

[iv] Baltic Exchange https://balticexchange.com/en/who-we-are.html Accessed 5 March 2022

[v] Baltic Exchange https://balticexchange.com/en/who-we-are.html Accessed 5 March 2022