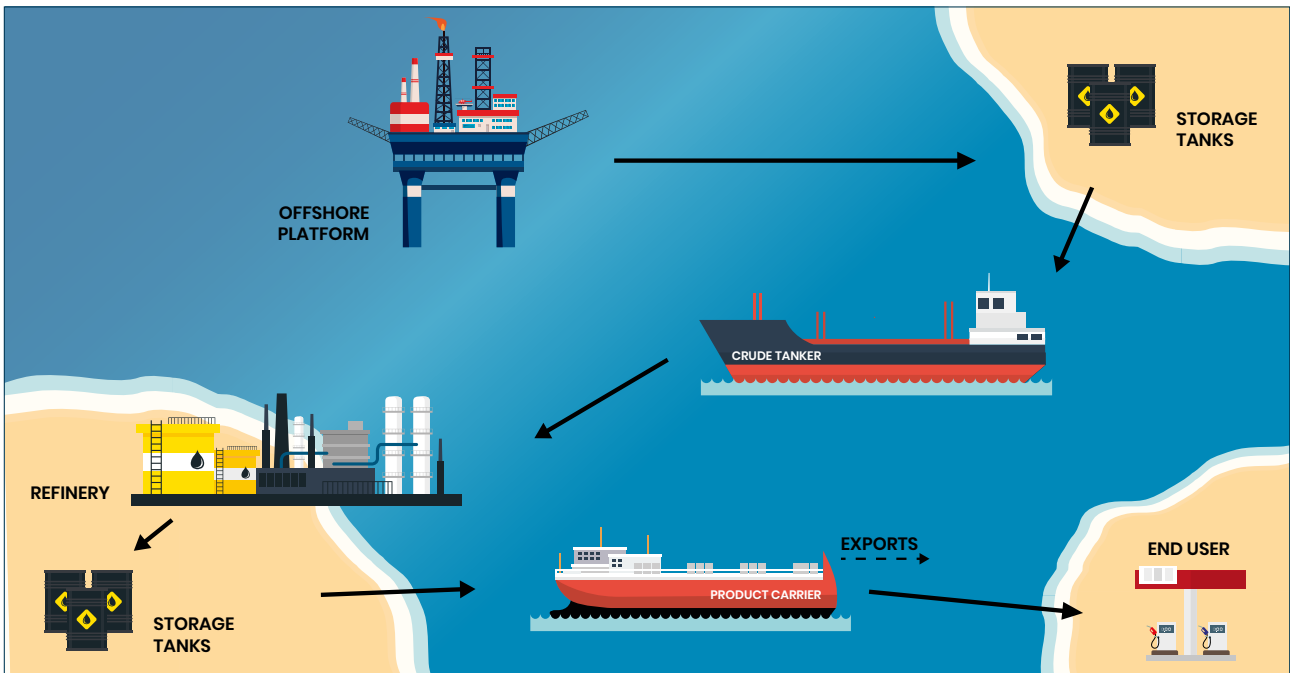




The Basics of the Tanker Shipping Market

This year's special report focuses on the key drivers and influences on the crude tanker market. The aim is to provide some basic market background and explain key market drivers to investors, commentators and observers alike.

Where do Crude tankers sit within the Value chain?



Crude oil tankers have a vital role to play within the energy value chain. Their main role is to transport crude oil from production point to refinery, although they are also sometimes used for storing crude oil post production. Crude tankers can also be used for carrying oil products such as fuel oil. Any clean products that come out of the refinery are carried on 'clean' or 'product' tankers, which are smaller in size due to the smaller parcel sizes in which these products are traded. Euronav only operates in the VLCC and Suezmax segment, this report will therefore focus on crude oil tankers.

The Asset

Crude oil tankers come in various sizes, the biggest standard size being a Very Large Crude Carrier – or 'VLCC'. These tankers take up to 2 million barrels of crude oil per shipment, while the second largest size is the 'Suezmax' which takes around half of that amount and is the largest size ship that can sail through the Suez Canal fully laden. The smallest size of dedicated crude oil tankers is an 'Aframax' which can carry around 600,000 barrels of oil. There are smaller tankers in the market, but these tend to carry refined oil products and fuel oil, not crude oil.

	DWT	Barrel capacity	Length (m)	Breadth (m)	Draught (m)	Fleet size*	% owned by top 10
VLCC	300,000	2,000,000	320	60	20	735	43%
Suezmax	160,000	1,000,000	265	50	17	523	39%
Aframax	115,000	600,000	240	45	15	959	36%

Construction of crude oil tankers takes 9 to 15 months from the time the keel is first laid. This means that it will take at least two years from the time of newbuilding contract signature (ordering) until the vessel is delivered because many critical parts are long-lead items that needs to be ordered and produced before the construction of the ship can commence. Their sheer size dictates that there is a limited number of sites capable of building them and these are concentrated in Asia, more specifically in South Korea, China, and Japan. The price for contracting a tanker newbuilding is influenced by a number of factors such as the underlying price of energy, steel, labor costs and available construction finance. The relative demand for contracting new tonnage also plays a role and may lengthen or shorten waiting time to delivery and affect price. Over the last ten years the cost of a new VLCC has ranged from around USD 80 million to USD 160 million. The payment profile on the ships tends to be very back loaded, typically with a 10% deposit on signing the contract, 20% to 40% in milestone payments and finally 50% to 70% on delivery.

The economic lifespan of an oil tanker has historically been 25 years, although more recently this has dropped closer to 20 years. Different tanker companies operate with their own asset depreciation policies, ranging from 18 to 25 years. At Euronav, we depreciate the original cost of a vessel to zero value over 20 years.

The Cost Structure

A ship owner chartering his vessel to a customer is paid 'freight'; this is the gross revenue agreed with the charterer to cover the entire voyage from port of loading to port of discharge. This revenue is used to cover the cost for the owner to undertake the voyage, the cost of operating the vessel, any interest payments to loan providers and other costs associated with owning a ship. Certain fixed costs vary between shipping companies, most important the purchase price, and each will therefore have their individual breakeven cost at which it becomes profitable to run the vessels. However once these fixed costs are covered, all additional revenue results in profit.

Earnings are reported by companies and market watchers in terms of 'dollars per day' also known as the Time Charter Equivalent (TCE). The cash breakeven TCE for a VLCC is between USD 20,000 per day to USD 35,000 per day depending for example

* January 1, 2018

[Source: Clarksons SIN Excludes shuttle tankers]

“
At Euronav, we depreciate the original cost of a vessel to zero value over 20 years.

Gross Revenue: Money agreed with charterer to cover entire voyage from A to B

Voyage Expenses: Cost of fuel, port stay, tolls, cargo handling, commission

Net Revenue: Gross revenue minus voyage expenses

Vessel Expenses (OPEX): cost of crew, vessel stores & supplies, lubrication, oils, insurance

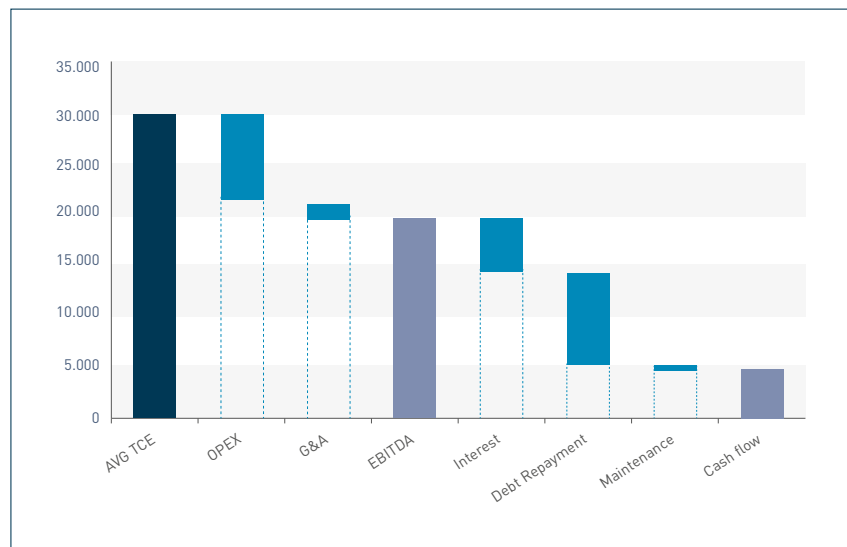
Interest: cost of debt servicing

Debt repayment: debt repayment will depend on financing but depreciation is a real cost

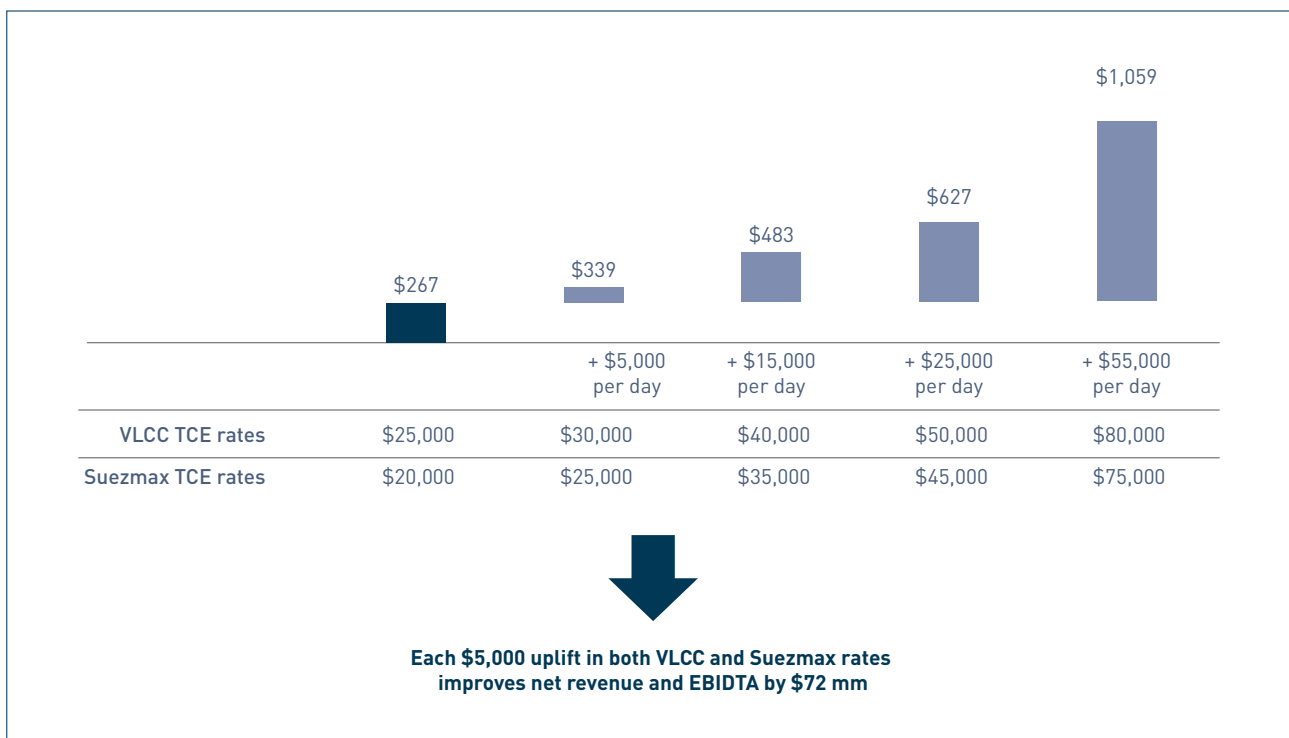
Maintenance Capex: Cost of special surveys

[Source: Euronav]

on the level of loan interest, fixed operating costs depreciation (or amortization) and G&A expenses.



For the purpose of this report, the tax issues will not be covered in-depth, but for more details please refer to the annual report. As a consequence of this cost structure, most tanker companies are highly operationally levered. Therefore, every additional dollar earned in revenue over and above the “fixed” cost base will fall through to profit. Euronav’s illustrative operational leverage for its cost structure is depicted below.



[Source: Investor Presentation High Yield Conference 2017]

Tanker Customers

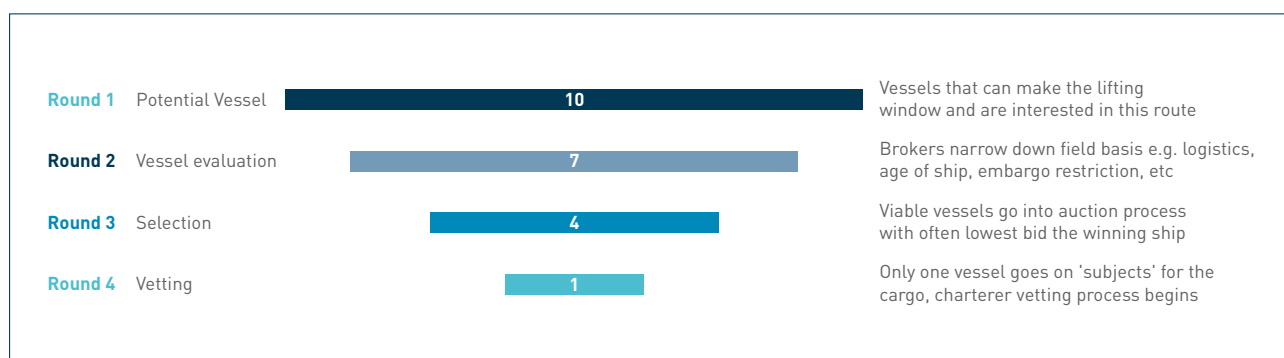
Tanker shipping is a business to business environment with a number of key customers who regard the shipping element as an integral part of their logistical chain. These key customers are the oil majors – both National Oil Companies (e.g. Unipet, Saudi Aramco, Petrobras) and International Oil Companies (e.g. Total, Shell and Chevron) – and there are trading houses such as Trafigura and Glencore, and

large refiners. The oil majors generally require ships to take oil or to deliver to or from third party refineries oil to their customers. This type of business depends on physical oil flows, which refineries require what type of crude oil at any given time. The trading houses are often more opportunistic in their trading of oil and therefore also more unpredictable in terms of when and where they may need a ship. Most counterparties in the large crude tanker space are large multinational companies with strong credit ratings. The customer is often referred to as the 'charterer' of the vessel.

When a charterer requires a tanker to move oil from A to B they will typically get in touch with a ship broker, who will in turn contact a number of vessel owners and act as a middle man in negotiating price, terms and conditions for carrying the cargo. The charterer can go directly to the ship owner himself, although this happens less often.

How the price of freight is set

The following chart gives a broad worked example on how the price of freight is set. A number of vessels will be eligible to take a cargo and the broker (who has been mandated by the cargo owner to find a vessel to carry the cargo) will over the course of several rounds bring down the number of potential ships. This process will also be driven by the ship owners themselves as some will voluntarily drop out of any potential bidding for a range of reasons (logistics, price, other cargo to bid on etc.).



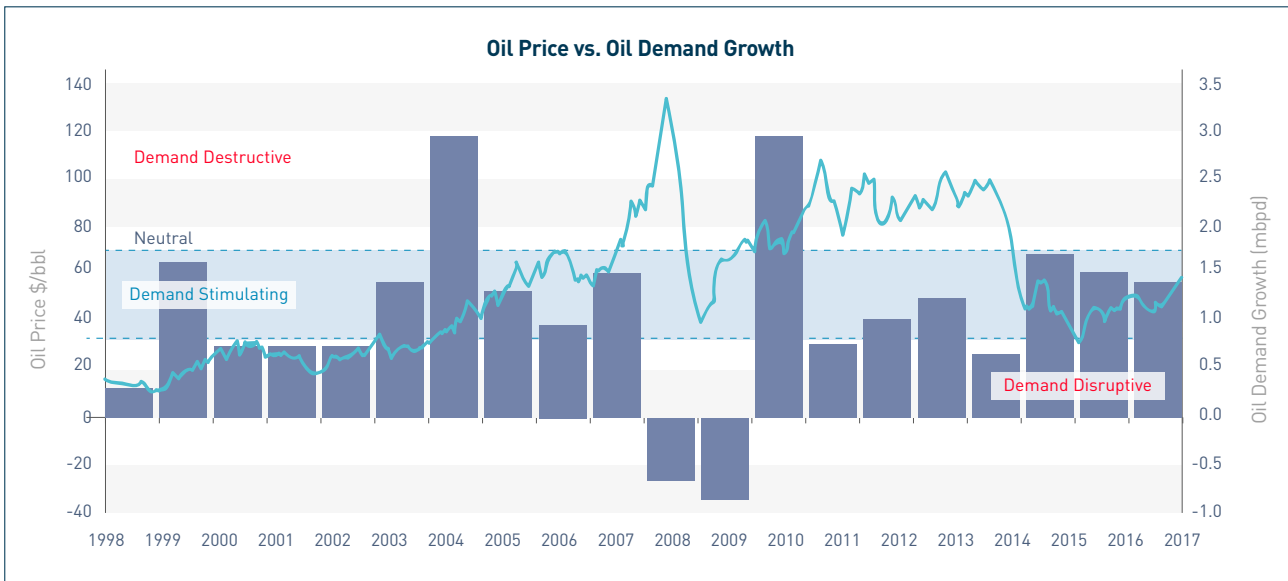
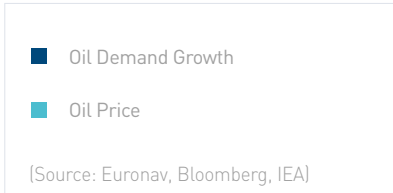
Quite simply the higher the number of potential ships, the lower the eventual freight rate will likely be as more qualifying bidders logically should mean more pressure on the price. However, it is important to understand only one ship will be selected to go through a final vetting process whereby the cargo owner will assess the vessel's seaworthiness and suitability for the trade via previous survey results and inspections. Ship owners competing with each other drive pricing down sometimes below fixed costs.

(Source: Euronav)



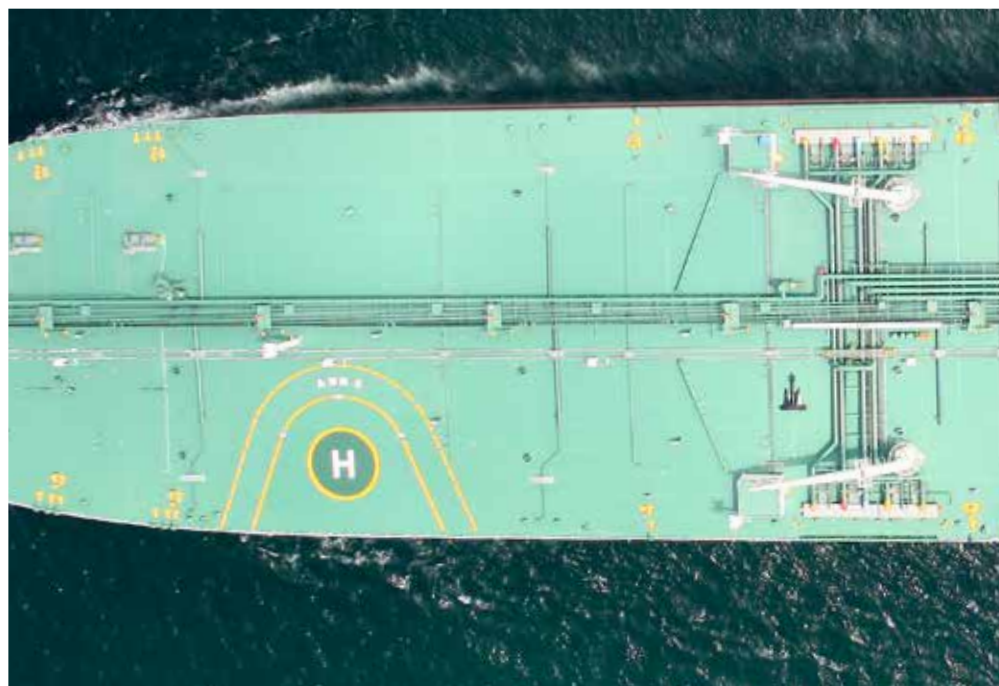
Price of Oil – impact on tankers

Like any commodity, the greater the demand for it, the more demand for its transportation. Crude is no different and the sharp reduction in the price of oil the market experienced from the fourth quarter of 2014 prompted a boost in demand in both the U.S. and Europe where oil demand is highly price sensitive. With improved demand for oil products, more crude oil was needed by refineries worldwide. These refineries are rarely located close to the sources of crude oil, so more oil tankers were needed to transport the crude from oil field to refinery. Generally speaking the lower the oil price the stronger demand for it. However the relationship is not linear. In our view there is a band between USD 35 and USD 70 where the oil price will be demand stimulating. Between around USD 70 and USD 80 this is neutral and above this level the price is demand destructive. However, as the market saw in the first quarter of 2016, a very low oil price can be demand disruptive – primarily for oil producing and exporting nations; hence the relationship is not linear. Ships also burn oil as fuel so high prices increase costs of transport.



Key Market Drivers – Demand for Oil

The demand for oil is an obvious driver of crude tanker demand; the more oil that is needed around the world, the bigger the demand for moving this oil from production to refinery. Global demand for oil has generally been rising year-on-year with the average growth rate from 1990 being 1.1 million barrels per annum. Since 2015 this growth rate has been above trend and is forecast to remain so until 2022.



Translating oil demand growth into actual vessel demand is an inexact science as many factors impact how this oil is being traded and what means of transportation is used to move it. A rough calculation looks something like this: demand growth of say 1 million barrels per day equates to 365 million barrels per year. If all this incremental demand was shipped and carried on VLCCs in 2 million barrel parcels this would be an additional 182 cargoes per year. With a VLCC performing on average six voyages a year we can conclude that these additional cargoes would require around 30 extra ships provided all the additional demand is carried by sea.

Key Market Drivers – Supply of Oil

Clearly for any oil transportation business the supply of oil is critical to the status of its markets. Oil supply dynamics have undergone a transformation in the past decade, away from being very Middle East focused to having a more diverse supply base, in particular with the development of U.S. shale oil. This quick-to-production process of shale oil (less than six months) has made global oil production far more responsive to short-term changes in demand. The fact that the U.S. government started to allow the export of crude oil in December 2015 has developed a new trade flow currently exporting 1.4 mbpd compared to zero exports two years ago (since end September 2017 average weekly export 1.424 mbpd (source: DOE)). Oil supply is dynamic with for instance OPEC (the national oil producers cartel) and Russia voluntarily cutting their crude production and removing cargoes from the traditional trade routes emanating in the Middle East as from the first quarter of 2017.

Key Market Drivers – Vessel Supply

Perhaps the key driver of tanker markets is vessel supply. This is the ultimate driver of market fluctuation; when the market is in short supply of ships, the cost of chartering a ship – the freight – goes up but of course down if there are too many ships available. This over- or undersupply of vessels can be viewed on a macro level with the total global supply of ships, which will drive more long-term trends in freight levels, but it can also be viewed on a more regional level where the number of ships available in a specific load area can drive short-term freight fluctuations, which may vary in different load areas.

On a global scale the supply of ships is a function of how many newbuild ships are delivered versus how many ships are removed from the fleet. The vessel supply picture can be compared to a bathtub – new vessel order flow reflect when the taps are on filling up the fleet with more ships. Vessel scrapping is when the plug is out and vessels are removed from the fleet rebalancing what is in the tub. The water contained in the bathtub represents the size of the fleet – see in this respect also the special report included in the 2016 annual report 'What is the effective size of the operational tanker fleet'.



The demand for oil is an obvious driver of crude tanker demand.



It is important to keep in mind that trade routes are not static

Trade Routes & Dynamic Market

The different sizes of ships cater for different trade routes. We have already discussed how smaller ships carry oil products, but within the crude tanker segment we also see a divergence. Economies of scale dictate that. The size of a VLCC makes them more cost efficient for longer international trade routes between large ports that can physically accommodate their larger size. The smaller the vessel size, the more regional the trade routes become. However, there is cross elasticity between vessel sizes when the price of utilizing a VLCC becomes too expensive it may become more price efficient for a customer to use two Suezmax vessels to transport the same amount of oil instead. So we do sometimes see Suezmaxes compete for the long haul international routes that are dominated by VLCCs and vice versa. The same applies for smaller vessel segments.



It is important to keep in mind that trade routes are not static; these routes are highly dependent on oil flows. For example when we began to see crude oil exports from the U.S. destined for the Far East, the market developed a need for large crude tankers to load in the U.S. Gulf, something not seen before. Please find more details below.

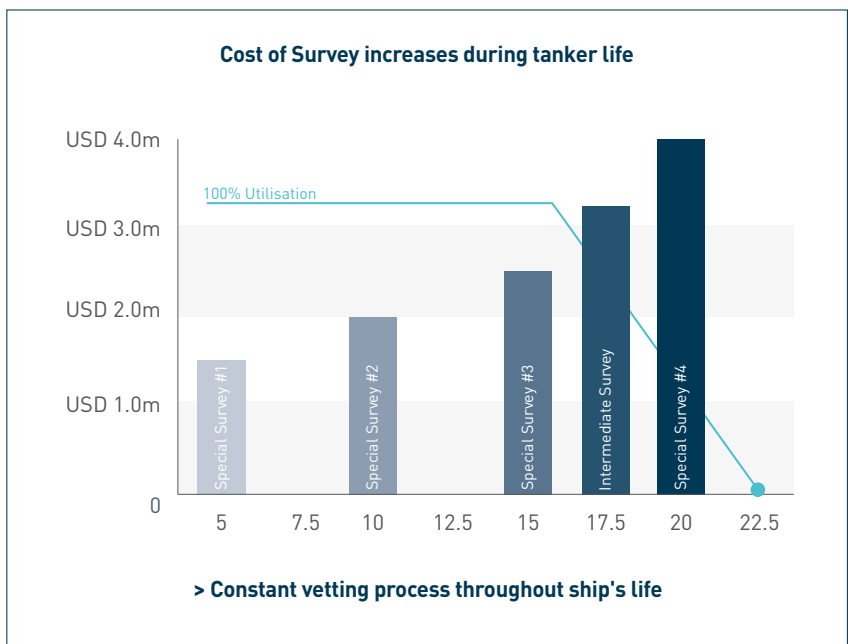
Regulation of assets and operating businesses

The tanker industry is highly regulated, to ensure that all vessels are safe to use for the crew, the cargo and the environment. Until the age of 15 years, the ship must undergo a survey in dry dock only every five years. The vessels have to have certification of classification society, which is an independent organization that establishes and maintains technical standards for the operation of all ships. Vessels have a five year survey cycle with an annual survey (12 months), intermediate survey (30 months) and special survey (60 months). Performing this survey can take a couple of weeks and will test for steel thickness and other indicators of seaworthiness. After 15 years, the intermediate survey cycle also needs to be done in dry dock every 30 months so at 17.5 years and 22.5 years. This is to account for the associated wear-and-tear due to the vessel's age. The cost of these surveys increase as the vessel gets older - see diagram.

Some important charterers consider the overall risks associated with carrying oil on an older ship as being too large when the vessel reaches 15 years of age, and only charter ships until this age limit. However, most oil tankers find employment up until around their 20th anniversary, which is currently the expected life of a vessel, although some trade for longer. Looking at tankers that have been scrapped since 2009, the average scrapping age for both VLCCs and Suezmaxes has been around 20 years.



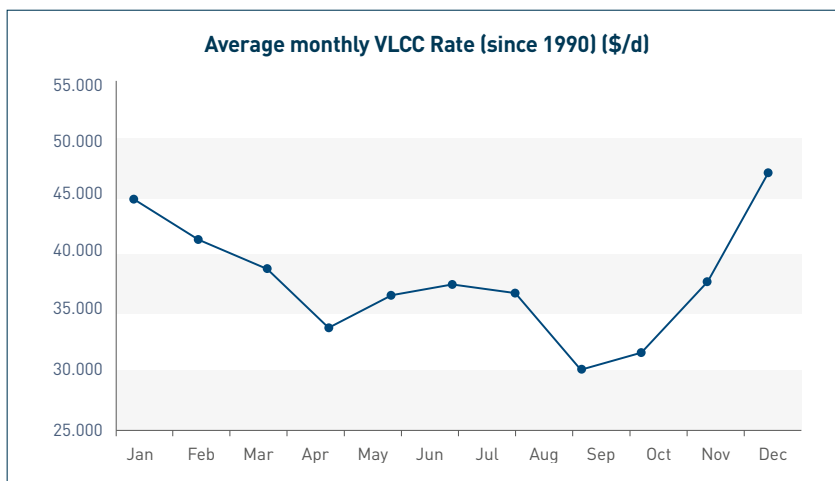
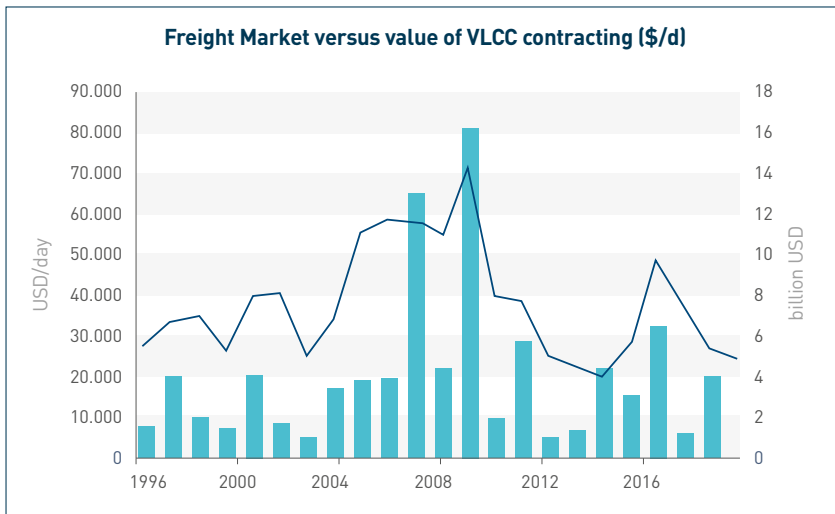
-  Ballast Water treatment Sept-2019
-  Sulphur emission controls Jan-2020



Seasonality and Cyclicity

Historically, there has been a visible degree of seasonality in the tanker market as freight rates have tended to perform better during the first quarter and the fourth quarter of a calendar year. With 90% of the global population living in the northern hemisphere, more oil is required during the northern hemisphere winter hence more oil is consumed during these quarters. Below chart shows the seasonality differential in average VLCC rates since 1990. However this marked contrast in seasonality has been less evident in recent years. This can be explained by most demand growth now originating from Asia, where oil demand is less affected by seasonal consumption patterns.

Tanker shipping is a highly cyclical business with freight rates driven by numerous factors, but in the medium to long-term vessel supply and demand are the main drivers. Vessel supply is the one factor controlled by the shipping industry and the supply of vessels is impacted largely by capital flows into and out of the sector, but also availability of financing from banks and other investors. A tanker market cycle generally begins with an oversupplied market where too many ships depress any earnings and therefore the capital flows out of the sector. This will cause some owners to get rid of their older ships as these become uneconomical to run. As vessels are removed from the fleet, the market will become rebalanced, owners will start earning more profits and more capital flows into the sector. This encourages owners to start ordering new tonnage, although the lead time on delivery is at least two years. Once these newly contracted vessels start delivering to the market it will slowly, once again, become oversupplied and earnings will hit another trough – we are back where the cycle started. These cycles are of varying duration but generally take five to ten years to complete but like seasonality do appear to be more variable in length.



(Source: Clarksons SIN)