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DEPARTMENT OF MARITIME STUDIES

MSc in SHIPPING MANAGEMENT

**WAR CONFLICTS AND HOW THEY
AFFECT THE FREIGHT MARKETS**

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A thesis

submitted in the Department of Maritime Studies as a partial fulfillment of the
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List of abbreviations

AFRA – Average Freight Rate Assessment
AGCS – Allianz Global Corporae & Specialty
BCE – before the Common Era
BP – British Petroleum
BPCL – Bharat Petroleum Corporation Limited
CLC - Civil Liability Convention
CN code - Combined Nomenclature code
CPP - Clean Petroleum Products
DWT - Deadweight
EU – European Union
FFA – Forward Freight Agreement
GP – General Purpose
H&M – Hull and Machinery
IEA - International Energy Agency
IMF - International Monetary Fund
IMO - International Maritime Organization
IT - Information Technology
IUA - International Underwriting Association
IV – Increased value
JWC - Joint War Committee
JWLA – Joint War Listed Areas
Kb/d – kilo barrels per day
LNG – Liquefied Natural Gas
CNG - Compressed Natural Gas
LPG - Liquefied Petroleum Gas
LR – Long range
LSMGO – Low Sulphur Marine Gas Oil
LTBP - London Tanker Brokers' Panel
Mb/d – million barrels per day
MR – Medium range
Mt – Million tonnes
mt – metric tonnes

NCB – Non Claim Bonus
NGL - Natural Gas Liquids
OECD - Organization for Economic Co-operation and Development
OFAC - Office of Foreign Assets Control
OPEC - Organization of the Petroleum Exporting Countries
OPEX - Operating Expense
P&I – Protection and Indemnity
pp - percentage point
SBP - Special boiling point
SDN - Specially Designated Nationals
SWIFT - Society for Worldwide Interbank Financial Telecommunication
TC – Tanker Clean
TCE – Time Charter Equivalent
TD – Tanker Dirty
UK – United Kingdom
UKC – United Kingdom Continent
ULCC – Ultra Large Crude Carrier
UNCTAD - United Nations Conference on Trade and Development
UNL - Unleaded
US – United States
USD - United States Dollar
VLCC – Very Large Crude Carrier
VLSFO – Very Low Sulphur Fuel Oil
WHO - World Health Organization
WS - Worldscale

ABSTRACT

Title of thesis: War conflicts and how they affect the shipping markets

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Key words: shipping, war, freight market, freight levels

The aim of this Master thesis is to provide analysis of the changes occurred in the shipping freight market due to war. Although shipping is driven by the demand-supply mechanism, it is also a sector affected by the global current affairs and unforeseen events like the war. The present Russia-Ukraine war is of much interest since on the one hand oil is one of the most demanded goods and on the other hand Russia is one of the major oil exporting countries. For the purpose of this thesis, we investigated the fluctuations in the Baltic Exchange indices of various shipping routes for the months after the outbreak of the Russia-Ukraine war. Comparing the prices to those of the previous years it was found out that the war had indeed impacts on the oil shipping sector due to a variety of causes, especially to the routes involving directly Russia as a load port.

Ο σκοπός της συγκεκριμένης Διπλωματικής εργασίας είναι να αναλύσει το εύρος επιρροής ενός πολέμου στη ναυτιλιακή ναυλαγορά. Η ναυτιλία λειτουργεί βάσει του μηχανισμού ζήτησης και προσφοράς αλλά αποτελεί και έναν κλάδο ο οποίος επηρεάζεται από την παγκόσμια επικαιρότητα και άλλα απρόβλεπτα γεγονότα όπως ο πόλεμος. Ο υπάρχων πόλεμος μεταξύ της Ρωσίας και της Ουκρανίας παρουσιάζει ενδιαφέρον και εύφορο έδαφος προς μελέτη και ανάλυση, αφού αφενός το πετρέλαιο είναι ένα αγαθό μέγιστης ζήτησης και αφετέρου η Ρωσία αποτελεί μία από τις σημαντικότερες εξαγωγικές χώρες πετρελαϊκών προϊόντων. Η μελέτη πραγματοποιήθηκε πάνω στις διακυμάνσεις που υπήρξαν σε δείκτες του Χρηματιστηρίου Ναύλων του Λονδίνου για διαφορετικά δρομολόγια πλοίων μετά το ξεκίνημα του πολέμου Ρωσίας-Ουκρανίας. Συγκρίνοντας τις τιμές της συγκεκριμένης περιόδου με εκείνες των προηγούμενων ετών, παρατηρήθηκε ότι η ναυλαγορά και ο πόλεμος συσχετίζονται και ότι η ναυλαγορά επηρεάζεται λόγω διαφόρων αιτιών τα οποία πηγάζουν από τον πόλεμο, ειδικά για τα δρομολόγια που συμπεριλαμβάνουν κάποιο Ρωσικό λιμάνι.

INTRODUCTION

We live in a global society which is supported by a global economy and without ships and the shipping industry that economy would not be able to run as smoothly as it does. Without shipping we could not wear clothes made in Morocco, use electronic devices made in China, drive a car manufactured in South Africa or heat our home with petroleum exported in Russia.

Working at the Post Fixture/Freight collection department of a well-established shipping company for the last five years, I see freight calculations every day. There are freights which can surprise you or disappoint you both by their quantum always depending on the position of market. In those five years there were many times that I heard that instability and turbulence in the global background is what brings money to the tanker Shipowners. And war is one of those situations of turbulence. This was the reason why I wanted to explore in more detail the freight market and the freight values and how these are affected by the war.

On the whole, this Master thesis attempts to examine the reaction of the shipping industry and more specifically of the freight market to a war crises. In the first chapter, the role of shipping in the global trade was analyzed and then the analysis was specialized to the tanker sector and the significant role of the cargo transported – the oil. The research could not be continued without analyzing the economic theory which is driving the shipping sector and the tools like the Worldscale and the Baltic Exchange indices used every day in order to make the freights calculations (chapter 2). However, to come to result and make conclusions, an analysis of the current situation and affairs born by the Russia-Ukraine war should have been made and this was done in chapter 3. The last chapter of the thesis focuses in the analysis of specific Baltic Exchange tanker indices for a 10-year period in order to compare the freight percentages and the time charter equivalents of the shipping routes of the previous years to those after February 2022 when the Russia-Ukraine war started.

CHAPTER 1: MARITIME SHIPPING AND INTERNATIONAL TRADE

1.1 THE SEABORNE TRADING

Shipping is the practice of moving both cargo and people over sea. The majority of the raw materials, components, and finished goods that drive the world economy are transported via maritime shipping. Efficient and relatively low-cost, transoceanic shipping permits the import and export of goods and supports the livelihoods of billions of people. Compared to air or ground transportation, water transportation is less expensive¹ yet much slower over larger distances. Approximately 80% of global trade is carried out by maritime transport, according to UNCTAD in 2020.

Like land and air modes, maritime transportation also functions in its own space, which is likewise geographical by virtue of its physical characteristics, strategically controlled, and commercially utilized. Geographical factors, with the exception of seasonal weather patterns, tend to stay constant across time, whereas strategic and especially commercial factors, are much more dynamic. Rivers and oceans make up the two main components of the physiography of maritime transportation. Despite its connections, each one stands for a distinct area of marine circulation – sea and fluvial transportation. Regular itineraries, also referred to as maritime routes, are the foundation of the concept of maritime transportation.

By connecting ports which are the primary components of the maritime/land interface, maritime routes are corridors of a few kilometers in width that attempt to avoid the discontinuities of land transport. Maritime routes are a function of obligatory points of passage, which are strategic places, of physical constraints (coasts, winds, marine currents, depth, reefs, ice), and political borders. The primary commercial locations between which maritime shipping services are formed are connected by maritime routes. According to IMO, for safety reasons, shipping companies operating passenger ships across the North Atlantic developed the practice of adhering to predetermined shipping routes, which dates back to 1898.

The most recent technological advancements that have an impact on water transportation have been concentrated on changing water channels, such as deepening port channels and increasing the capacity of transoceanic passes like the Panama and

¹ *Stopford, Martin (1997-01-01). Maritime Economics*

Suez. The focus has also been on expanding the size, automating, and specializing ships (such as container ships, tankers, and bulk carriers). To satisfy the technical requirements of maritime transportation, this has necessitated the building of enormous port terminal facilities. The movement of raw materials, the location of the major grain markets, the rise of the trade in intermediate and completed goods, and not least, the rising demand for energy have all forced changes in maritime traffic patterns. However, there are different levels of connectedness to global shipping, and this process is not consistent.

1.2 HISTORY OF MARINE TRANSPORT

Freight transport by sea has been widely used throughout recorded history. The shipping industry has prehistoric origins. The Egyptians as sea traders, the Phoenicians as general carriers, the Greek merchants, the Carthaginians, the Chinese, the Vikings, the Omanis, the Spaniards, the Portuguese, the Italians, the British, the French, the Dutch, the Polynesians and Celts are parts of the shipping history.

Since its humble beginnings as Egyptian river and coastal sail ships approximately 3,200 BCE, marine transportation has been the main driver of international trade. By 1,200 BCE, one of the world's longest sea routes had been traveled by Egyptian ships, which traded all the way to Sumatra. Chinese traders began creating regional trade networks by the 10th century as they frequently traveled to the South China Sea and the Indian Ocean. The establishment of maritime trade routes between the Middle East and Asia took place at the same time, mostly under the leadership of Arab traders. Admiral Zheng He commanded a sizable Chinese fleet of more than 300 ships with a crew of 28,000 on seven significant expeditions in the early 15th century, one of which reached the coast of East Africa. However, China's attempt to establish marine control in the region was unsuccessful. Because China saw itself as a continental state with little interest in sea trade, such missions were not allowed to continue.

The expansion of marine power, however, turned to be a geopolitical concern with crucial economic significance for other countries. In the 16th century, European colonial powers—primarily Spain, Portugal, England, the Netherlands, and France—became the first to create a reliable system for international marine trade. The

Mediterranean, the northern Indian Ocean, Pacific Asia, and the North Atlantic, including the Caribbean, saw the majority of maritime shipping activity.

Trade networks significantly extended as a result of the invention of the steam engine in the middle of the 19th century, as ships were no longer influenced by prevailing wind patterns. As a result, and concurrently with the completion of the Suez Canal, marine traffic to and across the Pacific increased in the second half of the 19th century. As global trade changed and seaborne trade more intertwined in the 20th century, maritime transport increased rapidly.

1.3 SEABORNE TRADE BY CARGO TYPE

Without effective transportation, global trade is impossible, making it a crucial trade facilitator. Almost all of the cargo that is transported by maritime shipping is regarded as international trade. A significant portion of total trade costs is made up of transportation costs, including time and freight expenditures.

Through the years, shipping has exactly the same meaning i.e. moving X from point A to point B. Access to trade goods is still the primary factor shaping marine networks today and throughout history. Shipping allows countries to access the raw materials needed to develop their economies and enables the manufacture and export of affordable goods and products when having the lowest environmental footprint in the transport segment on a per-ton basis according to the International Chamber of Shipping.

Since the development of global trade, nearly no country can now be completely self-sufficient. Each nation engages in a process of selling what it produces and getting what it lacks on some level; no nation can rely only on its own resources. From machinery and equipment to foodstuff and vehicles and petroleum products, ships are modified to handle various types of goods. The 7 major types of cargo transported through the shipping industry are:

1. Dry Bulk Cargo
2. Liquid Bulk Cargo like petroleum products
3. LNG, CNG, and Other Gas-Based Fuels
4. Cars and Other Vehicles

5. Chemical, Hazardous, and Toxic Products
6. Food including fresh, packaged, frozen and partially processed goods
7. Livestock and animals

The maritime routes are formed basis the major importers and exporters, the demand and the supply of the above products. For the purpose of this Master thesis, the “wet” market will be explored thus in the following subchapter we will focus on the transportation of oil which includes the crude oil and the petroleum products like the fuel oil.

1.4 CLASSIFICATION OF BULK TANKER VESSELS BY DEADWIGHT – AFRA SCALE

A classification system is used by the whole world's fleet of crude oil and refined product tankers to standardize contract clauses, calculate transportation fees, and designate which straits and channels and ports ships can navigate. The London Tanker Brokers' Panel (LTBP), an independent group of maritime brokers, is in charge of this system, also known as the Average Freight Rate Assessment (AFRA) system, which was initially developed by Royal Dutch Shell and later by BP (British Petroleum).

AFRA uses a scale that classifies tanker vessels according to deadweight tons, a measure of a ship's capacity to carry cargo. The approximate capacity of a ship in barrels is determined by using an estimated 90% of a ship's deadweight tonnage, and multiplying that by a barrel per metric ton conversion factor specific to each type of petroleum product and crude oil, as liquid fuel densities vary by type and grade.

As per the AFRA scale there are 6 different DWT categories of vessels as follows:

1. General Purpose: 16,500 – 24,999
2. Medium Range: 25,000 – 44,999
3. Large Range 1: 45,000 – 79,999
4. Large Range 2: 80,000 – 159,999
5. VLCC: 160,000 – 320,000
6. ULCC: 320,000 – 549,000

Average Freight Rate Assessment (AFRA) Scale - Fixed

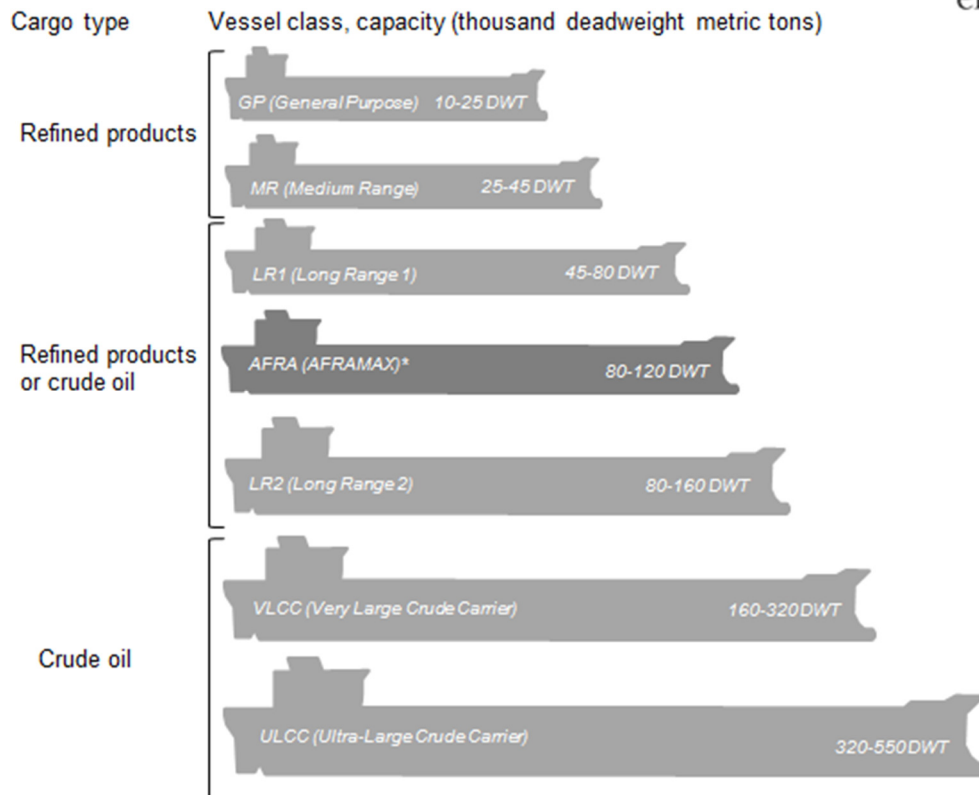


Figure 1: The sizes of vessels basis AFRA scale

Source: U.S. Energy Information Administration, London Tanker Brokers' Panel

General Purpose (GP) and Medium Range (MR) tankers, which are smaller ships on the AFRA scale, are frequently employed to transport cargoes of refined petroleum products across relatively short distances, as from Europe to the U.S. East Coast. Due to their lower size, they may enter the majority of ports worldwide. Motor gasoline can be transported in tankers with capacities ranging from 70,000 to 190,000 barrels (3.2 to 8 million gallons) and from 190,000 to 345,000 barrels (8 to 14.5 million gallons) by MR tankers.

Since they can transport both refined goods and crude oil, Long Range (LR) class ships are the most prevalent in the world's tanker fleet. Most significant ports that transport crude oil and petroleum products can be reached by these ships. A LR1 tanker can transport between 310,000 and 550,000 barrels of light crude oil, or between 345,000 and 615,000 barrels of gasoline (14.5 to 25.8 million gallons).

AFRAMAX is a categorization that is used to describe a significant section of the global tanker fleet. Ships between 80,000 and 120,000 deadweight tonnage are referred to as

AFRAMAX vessels. Many ships have been constructed to this design because oil firms frequently use this ship size for logistical reasons.

The size of vessels increased over the course of AFRA's existence, and more classifications were created. As the global oil trade grew and larger ships offered better economics for shipping petroleum, the Very Large Crude Carrier (VLCC) and Ultra Large Crude Carrier (ULCC) were added. There aren't many ULCC vessels in service right now because their size necessitates particular infrastructure, which limits the locations where these vessels can load and unload. These enormous ships have a carrying capacity of between 2 million and 3.7 million barrels of crude oil.

1.5 CRUDE OIL AND REFINED PETROLEUM PRODUCTS

Crude oil as defined by Eurostat “is a mineral oil, extracted from underground reserves, comprising a mixture of hydrocarbons and associated impurities such as Sulphur. It was formed when large quantities of dead organisms, usually zooplankton and algae, were buried underneath sedimentary rock and subjected to both intense heat and pressure”.

On the other hand, “petroleum products are products derived from crude oil (e.g. when processed in oil refineries). This products category includes product sub-categories like refinery gas, ethane, liquefied petroleum gas (LPG), Gasoline (Motor Gasoline), aviation gasoline, other kerosene, gasoline type jet fuel, kerosene type jet fuel, naphtha, gas/diesel oil (automotive diesel and heating gas/diesel oil), fuel oil, white Spirit and SBP, lubricants, bitumen, petroleum coke, paraffin waxes and other oil products.

Crude oil by itself has few uses. Plastic requires crude oil for its production. Since there are so many products that use plastic, this resource is in high demand. Cars is another item that uses crude oil in the manufacturing process. Many parts of the cars are made with high-performance plastics. Crude oil is being used even in the production of food items, as a necessary piece of the process since some fertilizers used to grow the food need this product.

The above mentioned uses are just a small percentage of the processes where oil is used. Once refined, petroleum finds more many uses. Bharat Petroleum Corporation Limited (BPCL) which is one of the biggest oil producers in India has a long list of the petroleum products and their uses some of which are briefly described in the following sentences.

Petrol or gasoline, as also known, is the most common type of petroleum product. It is the fuel for cars, scooters, motorcycles and other domestic and commercial vehicles. **Fuel oil** is commonly used for lamps, heaters, stoves, engines and lanterns when in the same time it is the energy source for industries that use boilers and furnaces. **Diesel** is consumed by trucks, certain kinds of ships and submarines and lots of other commercial vehicles. Furthermore, diesel is also used for generation of electric power. Paints, skin creams and beauty products need **naphtha** and **medical paraffin** in order to be produced.

The role of the oil and its products is obvious and easily understood since petroleum or crude oil touches almost every part of the modern life.

1.6 EXPORTS AND IMPORTS OF CRUDE OIL AND PETROLEUM PRODUCTS

As already mentioned the role of oil is significant in almost every part of our life. However, not every country is capable of exporting crude oil and refining it to products in order to cover its needs. This is the reason why these countries import the necessary products from the “richer” ones who have oversufficiency in crude oil and have also the capability to export it.

The following chart of the International Energy Agency (IEA) shows clearly the world top 7 exporters (Saudi Arabia, Russia, Iraq, Canada, United Arab Emirates, Kuwait and United States of America) of crude oil and natural gas liquids (NGL) from 1997 to 2019. The x-axis represents the year and the y-axis represents the millions tons of goods exported.

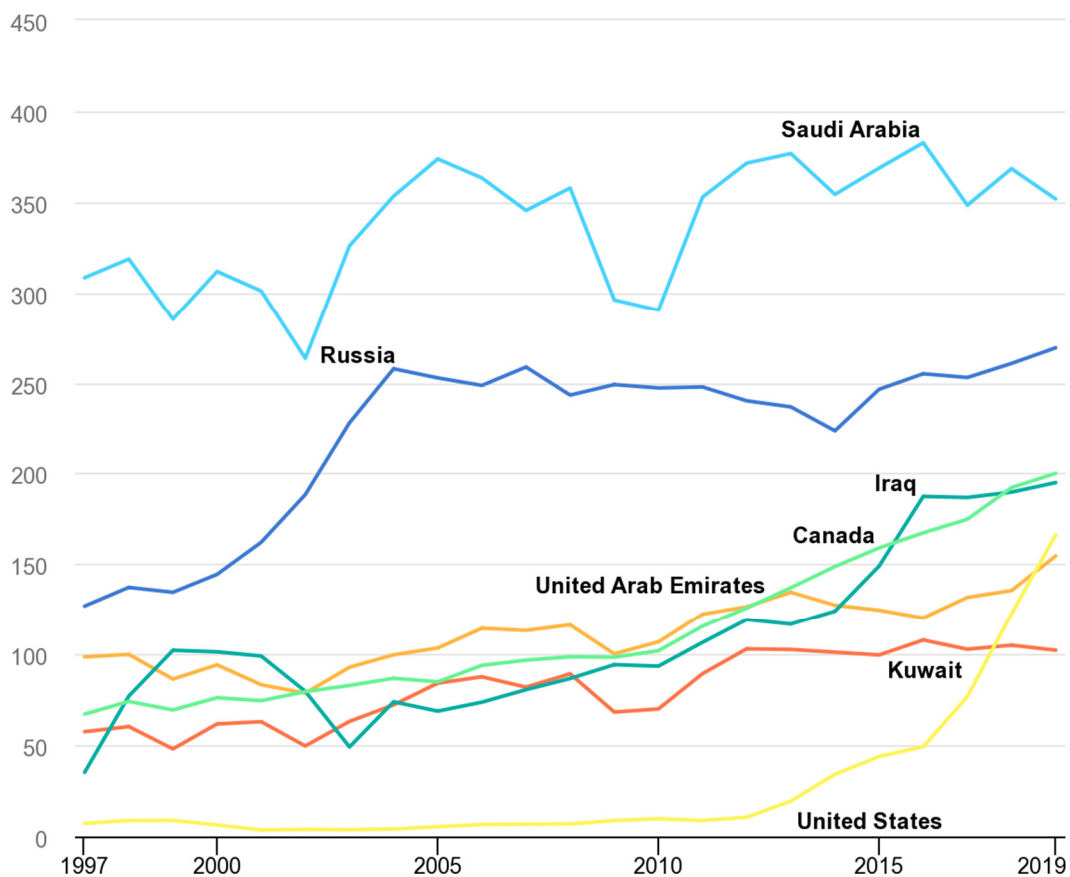


Figure 2: World top crude and NGL exporters 1997-2019
 Source: <https://www.iea.org>

For comparison reasons, the total consumption of the EU members of oil and petroleum products for energy use in 2021 was 327.46 million tons.²

As far as the European Union is concerned Eurostat claims that “the production of crude oil in 2021 in the European Union (EU) continued decreasing and in 2021 reached its lowest point at 17.5 million tonnes (Mt)”. Following the decline in demand brought on by the COVID-19 problems in 2020, this is a new record low in production. At 41.7 Mt, crude oil production reached its peak in 2004. In 2021, Italy (4.8 Mt), Denmark (3.2 Mt), and Romania (3.2 Mt) produced the most oil in the EU.

² Eurostat

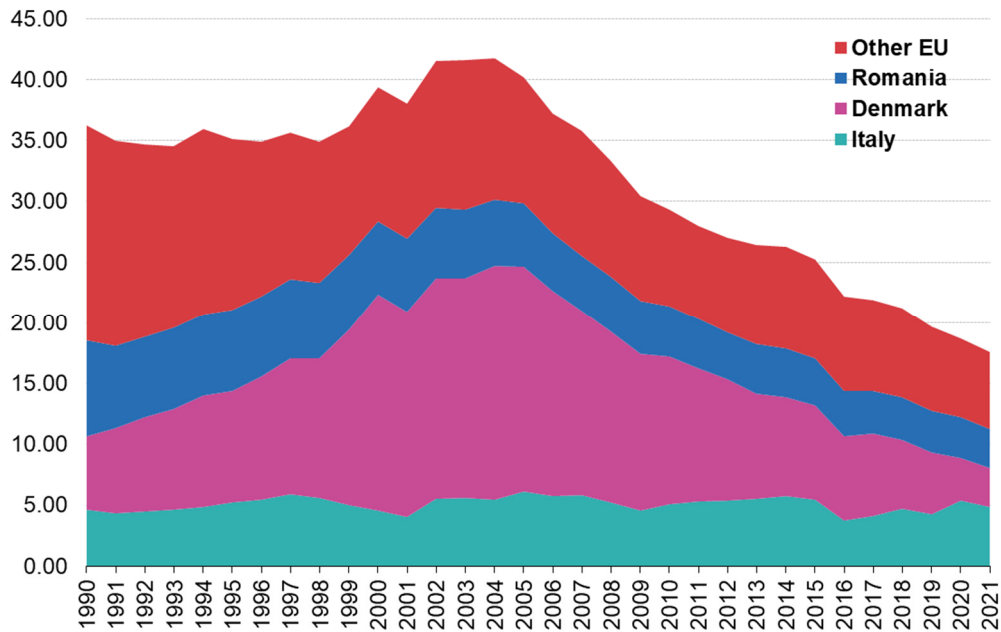


Figure 3: Indigenous production of crude oil (million tonnes), EU, 1990-2021
Source: Eurostat

On the other hand, when taking into consideration the imports of crude oil, as per Eurostat, in 2021, total imports to the EU amounted to 446.5 Mt. This represents a small increase from the 2020 level which was lowest value in the 31 years' time series starting in 1990. Over time, the places from which crude oil is imported into the EU have varied.

1.7 THE ROLE OF RUSSIA

Despite the fact that crude oil imports from Russia continued declining since their last peak in 2005 (184.7 Mt), for 2021 most imports came from Russia (112.3 Mt) followed by Norway (43.6 Mt), USA (37.4 Mt), Kazakhstan (35.7 Mt) and Libya (35.6 Mt).

TIME	2000	2020	2021
Russia	117.67	112.98	112.34
Norway	82.68	38.18	43.61
Kazakhstan	9.72	37.36	35.75
Iraq	31.32	29.12	32.41
Nigeria	22.53	33.91	29.09
United States	0.00	35.07	37.45
Saudi Arabia	63.04	34.56	23.88
Libya	45.52	9.19	35.57
United Kingdom	45.77	24.35	20.94

Azerbaijan	3.71	20.28	20.34
Algeria	16.15	9.77	10.58
Mexico	9.04	8.44	7.68
Brazil	0.13	7.80	8.00
Other countries	102.27	38.42	28.81

Table 1: Crude Oil imports to EU per country for the years 2020, 2020, 2021
Source: Eurostat

According to a number of variables, including prices, contracts, OPEC decisions, international circumstances, shipping costs, and more, EU countries purchase crude oil from various sources.

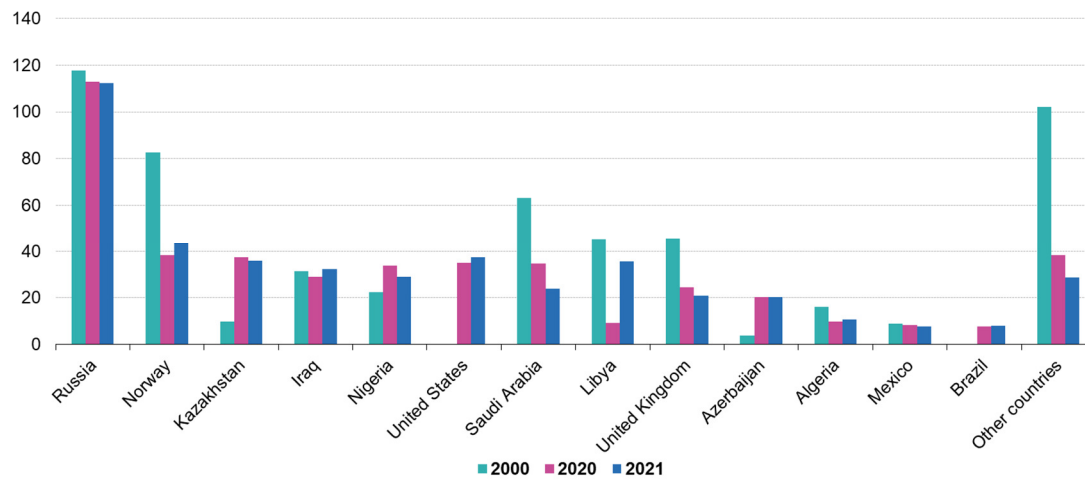


Figure 4: Crude oil imports by country of origin (millions tons), EU, 2000, 2020, 2021
Source: Eurostat

From the above, it is well understood that Russia plays an outsized role in the global oil markets. After Russia invaded Ukraine one year ago, the world's energy situation changed dramatically. Consumers have been heavily struck by rising prices in many parts of the world due to a geopolitical environment that places energy security at the forefront. Additionally, the volatility of resource prices and the world's reliance on the consumption of fossil fuels have been brought into full focus.

IEA reports that Russia is the world's third largest oil producer behind the United States and Saudi Arabia. In January 2022, Russia's total oil production was 11.3 mb/d, of which 10 mb/d was crude oil, 960 kb/d condensates and 340 kb/d NGLs. By comparison, US total oil production was 17.6 mb/d while Saudi Arabia produced 12 mb/d.

About 60% of Russia’s oil exports go to OECD (Organization for Economic Co-operation and Development) Europe, and another 20% go to China. In November, the latest month for which official monthly oil statistics are available, OECD Europe imported a total of 4.5 mb/d of oil from Russia (34% of its total imports), of which 3.1 mb/d was crude oil and feed stocks and 1.3 mb/d oil products. OECD Asia Oceania imported 440 kb/d of total oil from Russia in November (5% of total imports), while the OECD Americas imported 625 kb/d (17% of total imports).

From EU perspective, basis data available by Eurostat, with a share of 26.0%, Russia led all other suppliers of crude oil in the first quarter of 2022. Due to several restrictions that directly and indirectly affected the trade of energy products, the impact of Russia's invasion of Ukraine resulted in considerable changes in the share of the major partners. Russia's share fell by 16.0 percentage points from the first quarter of 2022 to 9.9% in the fourth quarter. Saudi Arabia's share price increased (+3.6 pp), as did that of Angola (+2.1 pp), Norway (+1.5 pp), Iraq (+1.4 pp), and the United States (+1.3 pp).

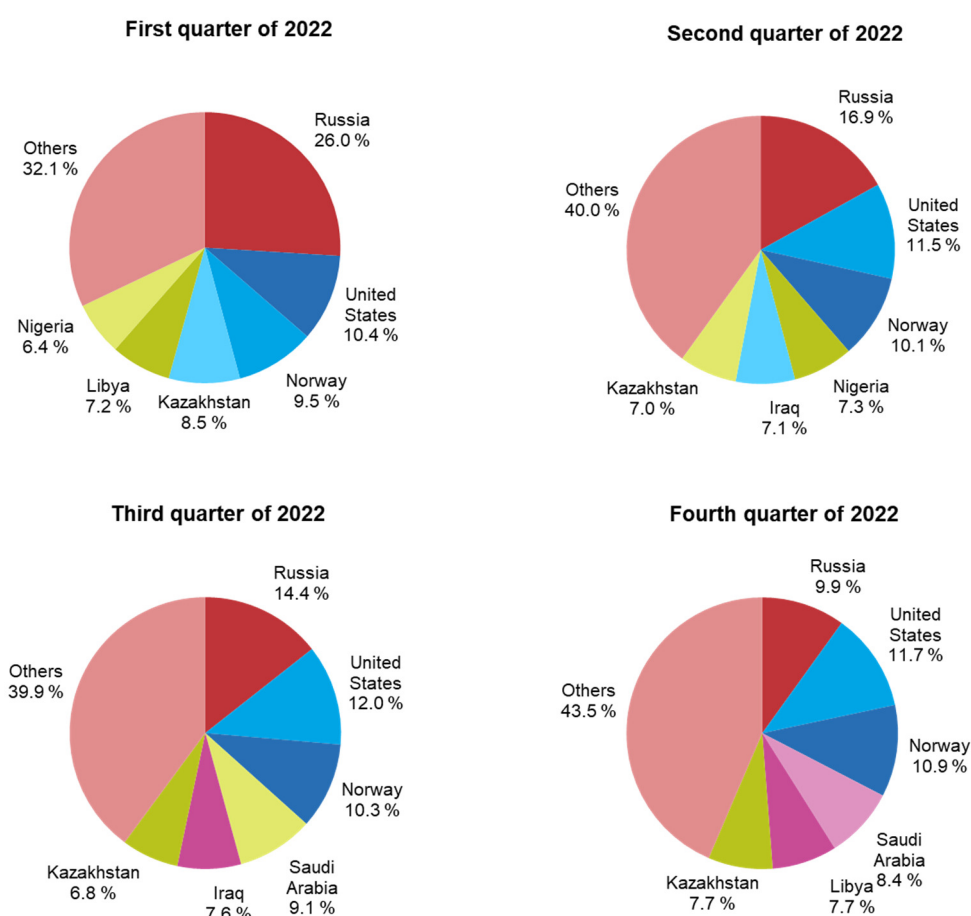


Figure 5: Extra-EU imports of petroleum oil by partner (share (%) of trade in value)
Source: Eurostat

What was expected after the invasion of Russia to Ukraine was that Russia exports of oil would fall in general. However, one year after Russia invaded Ukraine, the nation's energy supply is holding up to sanctions comparatively well. Russia has successfully rerouted petroleum shipments to Asia, and the G7 price controls are assisting in maintaining oil supply. Its total oil output in January was 11.2 mb/d. In contrast, Saudi Arabia produced 12.4 mb/d of oil per day while the United States produced 18.3 mb/d overall³. Russia, the third-largest producer in the world after the United States and Saudi Arabia, is continuing to have a significant impact on global oil markets even if production declines significantly.

This thesis is going to investigate the impacts of the war in the exporting of oil and the position of trading oil from Russia to specific regions. In order to make it more comprehensive, the following chapter will give some theory facts in respect of sea transport economics and the functions of the freight market.

³ IEA

CHAPTER 2: SHIPPING MARKET ECONOMICS

2.1 THE SHIPPING INDUSTRY AND THE FOUR SHIPPING MARKETS

The shipping business is a highly specialized sector of the global economy, mainly involved in providing transport services to support the international commodity trading. Demand and supply imbalances, fluctuating freight prices and vessel values, increased rules and regulation, environmental concerns and impacts, and geopolitical risks and opportunities are just a few of the factors that characterize the shipping industry making it tough and risky to operate in.

The international shipping industry can be divided into four closely related shipping markets: the freight market, the sale and purchase market, the newbuilding market and the demolition market.

1. The freight market is focused with finding work for ships in service. It consists of three participants – the Shipowner who provides the vessel, the Charterer who provides the cargo to be transferred and the Charter Broker who puts the deal together.

Taking one more step further, the freight market can also be divided to three sub-markets: the voyage market where the ships are fixed for a specific voyage and cargo, the time charter market where the ships are fixed for a period of time and finally the derivatives market where Forward Freight Agreements (FFAs) settle a freight rate for a specified quantity of cargo for specific shipping routes at a certain date in the future.

2. The sale and purchase market involves secondhand vessels which are traded between the Shipowners. In this market the main roles are those of the Shipowner, the Purchaser and the Shipbroker. The value of a secondhand ship is influenced by factors like freight rates, age, inflation, and expectations. Many are the reasons why a Shipowner may want to sell a vessel – advanced age of the ship, expectations of a falling market, and need for cash. In the same way, the Purchaser when buying a secondhand vessel may have expectations of a raising market or wants to enter into new investment activities. This market changes the balance sheet of the two parties (the Shipowner and the Purchaser) however it has no impact on the available shipping capacity.

3. The new building market trades new ships. Orders are placed to shipyards for building vessels at negotiated prices. These vessels will be delivered at their Owners after two to three years changing the number of the trading vessels upon their delivery. In this market, there is a binding sales contract between the Shipyard and the new Owner describing the obligations of each party.
4. The demolition market seeks services after the useful economic life of the vessels, which is typically at least twenty years, has passed. The demolition yards are buying vessels for scrap at an agreed price per lightweight ton resulting in an outflow of vessels.

2.2 ECONOMICS OF SEA TRANSPORT

2.2.1 DEMAND AND SUPPLY FOR SHIPPING SERVICES

In economics, the relationship between the quantity of a good or service that producers want to sell at different prices and the quantity that consumers want to buy is known as supply and demand. It serves as the primary model for determining prices in economic theory. The interaction of supply and demand in a market determines the price of a good. The final price is known as the equilibrium price and signifies a compromise between the good's producers and the customers. When a market is in equilibrium, the amount of a good that producers supply equals the amount that consumers desire.

Demand for a certain commodity is influenced by its price as well as potentially by a wide range of other variables, including consumer income, consumer tastes, trends and seasonal impacts. Basic economic analysis entails studying the relationship between several price levels and the maximum quantity that consumers might possibly purchase at each of those prices while frequently holding all other variables constant. The price-quantity combinations can be shown on a demand curve, where the horizontal axis represents the quantity and the vertical axis represents the price. A demand curve almost usually slopes downward, demonstrating consumers' willingness to buy more of the good at lower prices. While changes in the price of the commodity can be tracked along a stable demand curve, changes in non-price elements would result in a shift in the demand curve.

The quantity of a good that is sold on the market is determined by a number of variables, including the price that can be obtained for the good, the pricing of replacement goods, the technology used in manufacturing, the cost and availability of labor, and other production factors. Basic economic analysis entails holding all other potential price determinants constant while examining the link between different prices and the quantity that producers might offer at each price. These price-quantity combinations may be plotted on a supply curve, where price would be represented on the vertical axis and quantity would be represented on the horizontal axis.

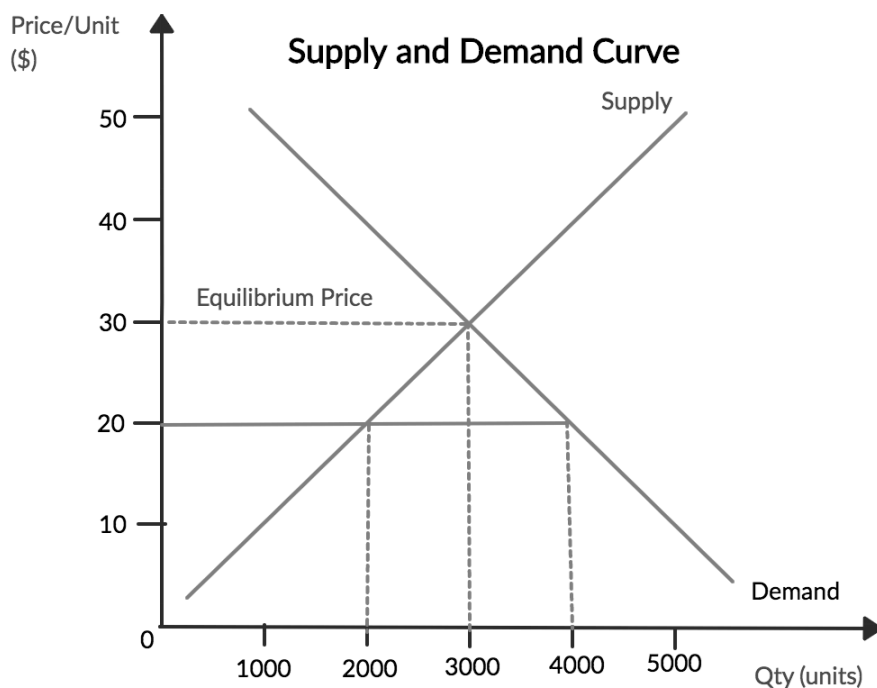


Figure 6: The supply and demand curve
 Source: *Maritime Economics, Third Edition, Martin Stopford*

In shipping terms, the requirement for freight transportation serves as a proxy for the market's demand side, while ships that deliver goods serve as its supply side. The supply and demand of maritime transport by Shipowners and charterers respectively determine freight rates.

The industry draws in new investors when its earnings are more than its operating expenses. With the admission of subsequent new entrants, the industry's overall profit share rapidly diminishes over time. At the same time, a point is reached when the supply of services outpaces the demand for those services, driving down prices to the point

where operational costs are barely covered. Speculative investors now pull out of the market. The sector gradually bounces back from the challenging market conditions and returns to the equilibrium state when profits from operational activities equal operating expenses. In the long run, demand increases as the world economy expands, existing operators once more reap the benefits of extraordinary profits, and speculative investors begin to pour in as the cycle continues. In principle, the free market's dynamics are supposed to self-regulate in a manner similar to this.

The Latin expression "ceteris paribus" (term used to denote the assumption that "all else remaining constant") is frequently used to provide for the observation of changes and their implications in one element, but theoretical frameworks in economics are based on the assumption that all other factors remain constant. Similar to this, the lives of investors in ships are not as simple as may be assumed based on the notion of competitive markets in shipping economics.

2.2.2 SHIPPING CYCLES AND SHIPPING RISKS

The fluctuations of the economy between periods of expansion (growth) and contraction (recession) can be described by the term economic cycle. An economy's circular movement as it shifts from expansion to contraction and back again is referred to as a "business cycle" or "economic cycle." Growth is a sign of an expanding economy. Contrarily, a contraction results in a recession, which is characterized by a fall in economic activity that lasts for at least a few months. Given that it directly affects everything from stocks and bonds to profits and corporate earnings, understanding the economic cycle can assist firms and investors decide whether to invest and when to withdraw their funds.

A specific kind of economic cycle is the shipping market cycle, also known as the shipping cycle. When supply and demand are out of balance, these cycles bring markets back into balance. Freight rates, which can increase, decrease, or stay the same, are what drive the shipping markets. Therefore, changes in these freight rates dictate shipping cycles.

The time period in which the alternating movements of freight rates are observed determines the type of shipping cycle:

- Seasonal patterns (fluctuations occurring within one year)
- Short cycles (or business cycles) (ranging from 3 to 12 years)
- Long-term cycles (or secular trend) (approx. 50 years)

The durations mentioned are only rough estimations because the actual lengths of the short and long cycles are not constant. Compared to the global economy as a whole, the shipping markets are much more unpredictable and volatile.

Seasonal cycles

Seasonal cycles appear within a single year and often coincide with seasonal variations in supply and demand. The demand for and supply of ship chartering fluctuates as a result of these changes, which in turn affects freight rates.

Short cycles

The short cycles happen every 3 to 12 years, depending on the time span. The four stages of a short shipping cycle are typically as follows:

- Trough:

The term "trough" refers to the beginning of the shipping cycle. At trading ports, ships start to build up, and some ships slow down cargo by delaying their arrival at crowded ports. Ships that are still transporting cargo slow down as well to conserve fuel. Costs for freight often start to decline during a slump. Usually, freight rates will fall to the level of vessel operating costs. When shipping businesses start to have a negative cash flow, their ineffective fleet is sold. Ships typically are sold for less money than their actual value when other fleets which have completed their operational working life are sold for scrap.

- Recovery:

The second phase of the shipping cycle is recovery. At this point, supply and demand are moving toward equilibrium, which means that their levels are very similar. Freight costs start to rise and eventually surpass operating expenses. As demand encourages additional orders, ships start to leave the trading ports. Optimism in the market is still weak at this point. Trade volume fluctuates as a result of the opinion pendulum's yo-yo swing between optimism and pessimism. During the recovery stage, cash flow usually steadily improves.

- Peak:

The third stage of the shipping cycle is a peak or plateau. By this time, fleet operating expenses are usually double or tripled by shipping freight rates, which are now fairly high. Nearly equal amounts of supply and demand are present. The market is under a lot of pressure between supply and demand levels, so the top could tumble at any time. Only the least effective ships are still idling in trading ports, leaving the majority of the shipping fleet in service. For shipping businesses, cash flow is fairly strong.

- Collapse:

When supply starts to outpace demand, the shipping cycle moves into its fourth stage, called collapse. During a collapse, freight rates start to drop. Fleet and shipping containers have started to reassemble in trading ports. Ships start to operate more slowly, even if maritime corporations may continue to have high cash flows. Deliveries could take longer, and ineffective fleets can stop shipping for a while.

Long cycles

In economics, long cycles are frequently referred to as trends. The short cycles oscillate around the trends, which are the long-term ups and downs of freight rates. They are more challenging to spot, and various factors are cited as to why they develop.

2.3 BALTIC EXCHANGE

2.3.1 WHAT IS THE BALTIC EXCHANGE

The Baltic Exchange (incorporated as The Baltic Exchange Limited) is a membership organization for the maritime industry, and freight market information provider for the trading and settlement of physical and derivative contracts.

2.3.2 DAILY FREIGHT MARKET INFORMATION

The Baltic Exchange is the world's leading source of independent maritime market data. The information is used by shipbrokers, owners & operators, traders, financiers and charterers as a reliable and independent view of the dry bulk, tanker, gas, container and air freight markets.

The indices and assessments are used as a settlement tool for freight derivative trades, for benchmarking physical contracts and as a general indicator of the freight markets' performance. The comprehensive information services cover voyage and time charter rates for capesize, panamax, supramax and handysize bulk carriers; Worldscale and time charter equivalent rates for VLCC, suezmax, aframax and MR tankers; time charter rates for LPG and LNG vessels; container freight rates; air cargo rates; as well as forward assessments, sale and purchase values, OPEX assessments and ship recycling prices; market reports and fixtures.

2.4 WORLSDCALE ASSOCIATION

2.4.1 WORLDSCALE – WHAT IS IT?

The "Worldwide Tanker Nominal Freight Scale", more usually know under its code name "Worldscale" is a point of reference used to help parties trading the cargo of oil tankers execute their trade. More specifically, freight rates for product carriers and oil tankers are computed using Worldscale. It is a tool for tanker chartering, and its fundamental tenet is to offer the ship-owner the same net return every day regardless of the voyage undertaken for the Worldscale Standard Vessel at WS100. The cost of each travel is determined using a standard formula, and it is then amended using a set process. Includes expenses associated with ports, transit fees, port and voyage time and vessel bunker costs assessed in relation to the Worldscale Standard Vessel basis of calculation in order to produce a comparative nominal freight scale reported in dollars per metric tonne. There are also fixed and variable differentials that must be taken into account when using world scale rates.

There are two "Associations", the Worldscale Association (NYC) Inc. and the Worldscale Association (London) Ltd. which produce the rates for the Americas and the rest of the world, respectively.

There is an annual cost for Worldscale which entitles the subscriber to the Schedule itself, notices of all modifications, and the opportunity to inquire about rates for any voyage not listed in the Schedule.

2.4.2 BASIS OF CALULATION

The concept of freight rate schedules is over 70 years old and originated during the 1939-1945 war. Today, the freight is expressed as a percentage of the published rate for a specific ship and voyage in order to reflect the freight market demand at the time of fixing. The rates are calculated using standard factors and are per tonne for a full cargo on a standard vessel traveling from loading port(s) to discharging port(s) and back to the first loading ports. Rates are prepared based upon load and discharge ports rather than ranges. Rates for any combinations of ports or transshipment areas can be calculated with up to five load ports and ten discharge ports available on the web-site. More complex voyages available from the Associations.

The factors that determine the freight rate are the following:

- Standard Vessel

Total Capacity: 75,000 tonnes

Average service speed: 14.5 knots

Bunker Consumption:

Steaming: 55 tonnes per day

Purposes other than steaming: 100 tonnes per round voyage

In port: 5 tonnes for each port involved in the voyage

Grades of fuel oil: VLSFO (max 0.5% Sulphur content) and LSMGO (max 0.1% Sulphur content) in areas requiring their use

- Port Time

4 days for a voyage from one loading port to one discharging port; an additional 12 hours being allowed for each extra port involved on a voyage

- Fixed Hire Element

USD 12,000 per day

- Bunker Prices

(i) VLSFO Bunker Price (max 0.5% Sulphur content) USD 473.95 per tonne

This price represents the average worldwide bunker price for VLSFO (max 0.5% Sulphur content) based upon data available during the period 1st October 2020 to 30th September 2021 as assessed by Clearlynx LLC.

(ii) LSMGO Bunker Price (max 0.1% Sulphur content)

Worldscale rate calculations include consideration for costs associated in complying with in-port emission regulations and within Emission Control Areas.

Bunker Prices

European: USD 522.58 per tonne

North American: USD 566.44 per tonne

Chinese and South Korea: USD 533.80 per tonne

- Port Costs

The Associations collect information about the port costs as those must be considered in the freight calculation. Usually, the port costs are in local currencies however, the Worldscale convert them to USD in order to reach the final rate.

- Canal Transit Time

24 hours is allowed for each transit of the Panama Canal.

30 hours is allowed for each transit of the Suez Canal.

Mileage is not taken into account in either case.

In line with the above, the rates are revised annually using updated Bunker Prices, Port Costs and Exchange Rates.

2.4.3 POINT OF SCALE METHOD AND MARKET LEVEL

When a vessel is fixed under a voyage Charter Party and the Charter party provides that the freight is calculated basis Worldscale, then a percentage is agreed - the so called Worldscale percentage. Worldscale 100 means 100 points of 100 per cent of the published rate or, in other words, the published rate itself, sometimes referred to as Worldscale flat, while Worldscale 250 means 250 points or 250 per cent of the

published rate and Worldscale 30 means 30 points or 30 per cent of the published rate. This method is known as "Points of Scale" and this percentage is nowadays the custom to express the market levels of freight in terms of a direct percentage of the scale rates.

The actual price negotiated between the Shipowner and the charterer can range from 1% to 1000% and is referred to respectively as WS1 to WS1000, depending on how much profit (or at times loss) the former is willing to take on that voyage, and how much the latter is willing to pay.

Charter party agreements are made simpler by Worldscale because they are stated as a percentage of Worldscale. This eliminates the need for a table of freights to be included with a contract, reducing voyage cost calculation and negotiation.

The use of Worldscale equivalents enhances freight market comparison. It is possible to evaluate and compare market levels for various vessel sizes and market routes.

It is much more challenging to obtain any market level information on various routes when vessels are fixed on a lump sum basis (or dollars per tonne). Instead of considering variables like vessel size and supply and demand, lump sum numbers will take into account varying voyage distances and times. Clearer market information and indicators are provided by vessels fixed at a Worldscale equivalent.

CHAPTER 3: RUSSIA INVASION OF UKRAINE

3.1 EFFECTS OF THE RUSSIAN INVASION OF UKRAINE

3.1.1 GENERAL EFFECTS IN TRANSPORTATION OF GOODS

Businesses wanted to move forward and put behind the stressful pandemic times of COVID-19, therefore the marine industry witnessed an uptick in demand as some countries resumed their economy after years of being on lockdown. As a result, fuel prices rose, which had a detrimental impact on the shipping sector as high shipping rates were a direct outcome of high fuel prices.

During the fourth quarter of 2021, shipping and freight forwarding companies had to increase shipping charges due to the high cost of gasoline. Even while transportation prices increased after economies reopened, this was nevertheless evidence that trade between nations was beginning to pick up. However, the Russian invasion of Ukraine came in the first few months of 2022 to affect additionally the international freight market.

On February 24, 2022, Russia essentially invaded Ukraine under the pretense of a special military operation. Following that, Russia was subjected to a number of measures that had a significant impact, including the removal of Russian oil from the market, which raised the price of both oil and gas. Oil and fuel prices were not the only thing affected by the current conflict; international freight prices also suffered as a result of sanctions, aircraft delays, cancellations, and inflation.

Due to numerous airlines cutting back on or ceasing service between Europe and Asia, the Russia-Ukraine War had an impact on air travel. Due to the closure of both Russian and Ukrainian airspace, those that maintained their operations had to employ longer aviation routes. Airlines had to consume more gasoline as a result of their longer flight itineraries, which raised fuel prices and caused a surge in product prices.

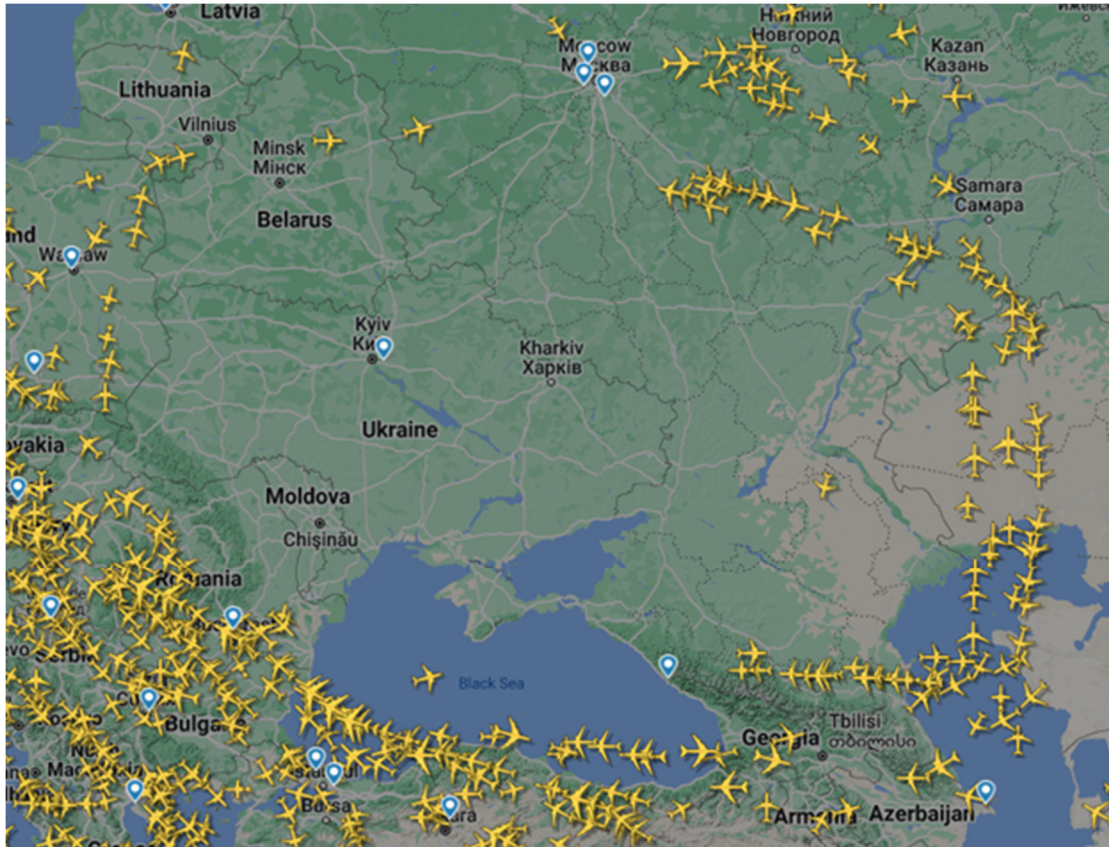


Figure 7: Photo from live flight tracker showing representatively the air traffic after the invasion of Ukraine
 Source: Flightradar24

After the start of the war, there were no longer any secure overland routes for the transportation of the goods that travel through Russia, Belarus, and Ukraine to go to and from the European Union, China, and South Asia. Due to this fact, alternative means of transportation should have been utilized and shipping was one of them.

The maritime routes couldn't remain unaffected. Due to the lack of safety, the Sea of Azov and the Black Sea have also been impacted by the conflict in Ukraine. Since several merchant ships have been attacked off the Ukrainian coast, marine freight will undoubtedly be unreliable until the war is over. As shipping costs rose, the shipping sector's profits rose as well. Flight restrictions and the redrawing of route maps had a severe impact on shipping and freight forwarding routes, which led to an increase in transportation costs as shippers and freight forwarders had to change their routes and employ alternative methods of transportation. Alternative and longer routes will drive up fuel prices, which will ultimately drive up the price of the commodities itself.

3.1.2 EFFECTS IN THE SHIPPING SECTOR

During the 2020-2021 period, the pandemic of COVID-19 affected the maritime transportation significantly -both positively as far as the dry bulk and container market is concerned and negatively when the wet market is concerned. On February 2022, the Russia-Ukraine war adds to pandemic challenges.

The war has considerably hampered international shipping, and it was expected to make the Covid-19 pandemic-related crew crises, port congestion, and ongoing supply chain disruption even worse.

The loss of people and vessels in the Black Sea, the disruption of trade between Russia and the Ukraine, and the mounting cost of sanctions have all had an impact on the shipping industry. Day-to-day operations in the sector were particularly complicated by effects on crew, the price and scarcity of bunker fuel, and the growing danger posed by cyber risk.

The International Monetary Fund (IMF)⁴ issued a warning that the crisis in Ukraine will make 2022 already high shipping costs much higher and possibly keep them that way for longer, which would have an inflationary effect. In the 18 months after March 2020, the cost of shipping a container on the world's transoceanic commerce routes climbed seven-fold, and the cost of carrying bulk goods increased even higher.

As Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS mentioned “Trade with Russia and Ukraine will suffer, adding to already strained global supply chains. Longer term, sanctions and a reduction in trade with Russia, could result in the redrawing of some supply chains and trade routes, but this all takes time and comes at a cost”.

The Black Sea and the trade with Russia have been affected most severely by the war thus far. Due to the conflict and a Russian naval blockade of Ukraine, major Ukrainian ports, including Odessa, were shut down. Over 70% of the country’s exports, including 99%⁵ of its grain exports, are exported through ships. Numerous ships were stuck in

⁴ International Monetary Fund, How soaring shipping costs raise prices around the world, March 28, 2022

⁵ Politico, Ukraine says EU road links won't make up for loss of Black Sea trade, April 5, 2022

ports or at anchor, and thousands of Russian and Ukrainian crews faced an unclear future because they were unable to leave their ships or go home.

Additionally, Russian ships were prohibited from accessing the ports of the UK and the EU and were seized for alleged sanctions violations. Access to essential marine services has also been restricted to the Russian fleet. Many ports have stopped providing bunkering for ships that are Russian-owned or -flagged, and engine makers, maintenance providers, classification societies, and insurers have declared they will no longer work with Russian ships.

Shipping outside of the war zone is also being impacted by the war. For shipping firms and insurers, US and EU sanctions, in particular, provide a considerable compliance issue. The decision by many western businesses to stop doing business with Russia has complicated the legal landscape for contracts, including insurance.

A protracted battle is also likely to have broader economic and political repercussions, possibly changing international commerce in commodities like oil. An increased prohibition on Russian oil may make bunker fuel more expensive and less readily available, which might encourage Shipowners to seek other fuels.

A large part of the shipping sector will in some way be touched by the conflict, adds Capt. Khanna. "In addition to the physical threats to shipping in and around the Black Sea from mines and rocket attacks, which is affecting trade, the availability and cost of bunker fuel, and the safety and welfare of crew, many container companies have already pulled out of Russia while the tanker sector faces huge restrictions and disruption, as do bulk and general cargo operators shipping Russian coal, wood and grain."

The crisis in Ukraine is aggravating ongoing supply/demand challenges for shipping, which have led to port congestion, increased freight costs, and longer transit. The effects of the war are likely to lead to additional inefficiencies throughout the maritime transport system, according to Clarksons Research,⁶ which also claims that container and vehicle carrier congestion at ports is moving towards historical highs.

⁶ International Union of Marine Insurance, Disruption to global logistics and supply chains remains widespread: Clarksons, March 30, 2022

3.2 MARINE CLAIMS AND COVERAGE ISSUES

Although the crisis is likely to cause confusion and legal concerns for affected hull and cargo policies, losses from marine insurance resulting from the fighting in Ukraine are still modest.

Under the terms of the war and sanctions, some assertions must be refuted. In the battle zone in the Black Sea and Sea of Azov, the insurance sector is anticipated to witness a number of claims under war policies from vessels damaged or lost due to sea mines, rocket assaults, and bombings. Insurers may potentially be subject to claims under marine war policies from ships and cargo that the Russian blockade of Ukrainian ports and coastal waterways has prevented or trapped.

The possibility of non-war claims in hull and cargo insurance from vessels involved in the conflict is more uncertain. The seizure of ships and physical damage resulting from hostilities or war, such as damage from sea mines or attacks on ships, are often not covered by marine insurance plans. But the majority of wise Shipowners will buy extra war insurance, which will pay for such damages for an extra fee and for a short time, often seven days. Additionally, insurers are unable to cover claims that are subject to fines.

The Joint War Committee comprises underwriting representatives from both the Lloyd's and IUA company markets, representing the interests of those who write marine hull war business in the London market. The JWC retains independent security advisers, Herminius, whose objective input informs and underpins the Listed Areas. From time to time, the JWC updates and disseminates the Listed Areas - these are "dangerous" areas and when a vessel calls there the Shipowners are required to notify the Underwriters. Rating is a matter for individual negotiation between Underwriters and Brokers and the JWC plays no role in that. In February 2022, the JWC added in the Listed Areas the Ukrainian and Russian waters in the Black Sea and the Sea of Azov (Joint War Committee Circular JWLA-028 dated 15 February 2022). In March 2022, a new circular was published (Joint War Committee Circular JWLA-029 dated 7 March 2022) revising the Listed Areas of Europe as follows:

Europe

1) Sea of Azov and Black Sea waters enclosed by the following boundaries

- a) On the west, around Romanian waters, from the Ukraine-Romania border at 45° 10.858'N, 29° 45.929'E to high seas point 45° 11.235'N, 29° 51.140'E
- b) Thence to high seas point 45° 11.474'N, 29° 59.563'E and on to high seas point 45° 5.354'N, 30° 2.408'E
- c) Thence to high seas point 44° 46.625'N, 30° 58.722'E and on to high seas point 44° 44.244'N, 31° 10.497'E
- d) Thence to high seas point 44° 2.877'N, 31° 24.602'E and on to high seas point 43° 27.091'N, 31° 19.954'E
- e) And then east to the Russia-Georgia border at 43° 23.126'N, 40° 0.599'E

2) All inland waters of Ukraine

3) Inland waters of Russia within the following areas:

A. Crimean Peninsula

B. River Don, from Sea of Azov to vertical line at 41° E

C. River Donets, from River Don to Ukraine border

4) All inland waters of Belarus south of horizontal line at 52° 30' N

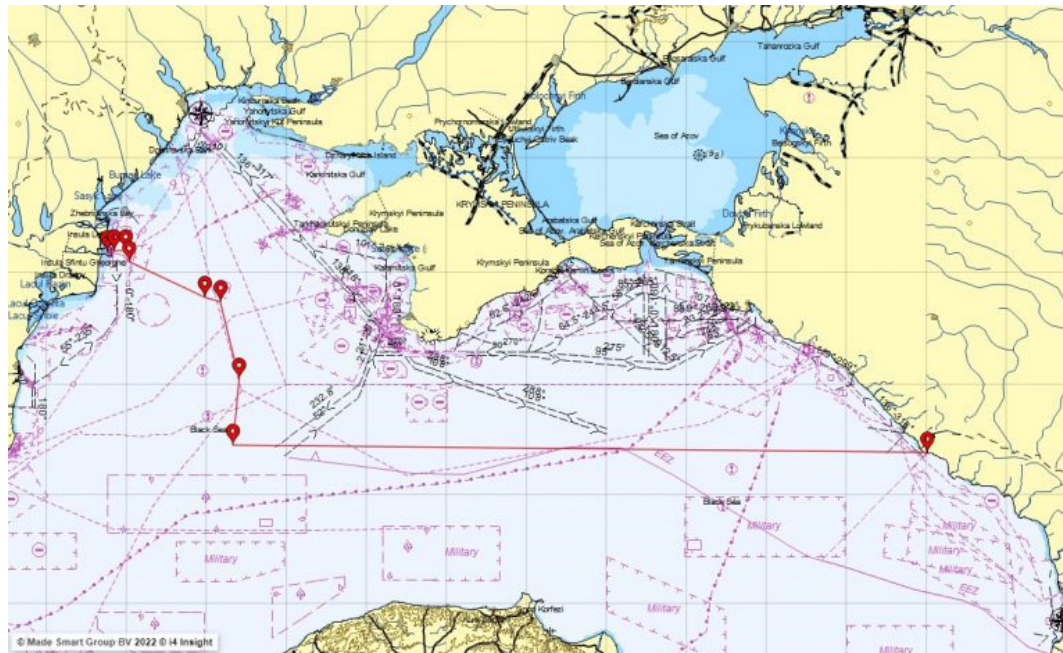


Figure 8: Black sea Listed Area as per JWLA-029

Source: <https://www.nepia.com/industry-news/russia-ukraine-military-action-impact-on-shipping/>

Another Joint War Committee Circular (JWLA-030) was issued on dated 4 April 2022, the only difference of which with the previous one JWLA-029 is the description of the Listed Areas of Europe but without changing any of the boundaries.

The latest one is the JWLA-031 with effective date the 25th April 2023 which amends the defined waters of Europe as follows:

- 1) Sea of Azov and Black Sea waters enclosed by the following boundaries
 - a) On the west, around Romanian waters, from the Ukraine-Romania border at 45° 10.858'N, 29° 45.929'E to high seas point 45° 11.235'N, 29° 51.140'E
 - b) Thence to high seas point 45° 11.474'N, 29° 59.563'E and on to high seas point 45° 5.354'N, 30° 2.408'E
 - c) Thence to high seas point 44° 46.625'N, 30° 58.722'E and on to high seas point 44° 44.244'N, 31° 10.497'E
 - d) Thence to high seas point 44° 2.877'N, 31° 24.602'E and on to high seas point 43° 27.091'N, 31° 19.954'E
 - e) And then east to the Russia-Georgia border at 43° 23.126'N, 40° 0.599'E
- 2) All inland waters of Ukraine, including inland waters within Crimea and other Ukrainian territories under Russian control
- 3) Inland waters of Russia within the following areas:
 - A. River Don, from Sea of Azov to vertical line at 41° E
 - B. River Donets, from River Don to Ukraine border
- 4) All inland waters of Belarus south of horizontal line at 52° 30' N

Below are cited some indication rates and premiums for calling at ports of Russia and Ukraine located within the above mentioned boundaries. For calling at those ports, the Owner of a vessel should provide the Underwriters with all the required information and get their permission usually paying an additional war risk premium. Even in the

case that all information for the voyage (charterer, shipper, receiver, consignee, port(s) and dates of loading, port(s) and dates of discharge, currency of the contract, bills of lading, country of origin of the cargo) under a due diligence check is given to the Underwriters, it is possible for them not to cover the vessel for the specific voyage. For calculating purposes and in order to understand the quantum of the cost, which is equivalent to the risk, a Suezmax tanker vessel of total insured value US\$ 75,000,000 (H&M US\$ 55,000,000 + IV US\$ 20,000,000) will be used.

INDICATIVE ADDITIONAL WAR RISK PREMIUMS

Date	Port	H&M rate	IV rate	NCB	Validity (hours)	Duration (days)	Premium (US\$)
23/2/2022	Taman	0.025%	@ 50%	0%	24	7	\$ 16,250.00
24/2/2022	Novorossiysk	0.035%	@ 50%	55%	24	7	\$ 10,237.50
1/3/2022	Taman	1.5%	@ 50%	0%	12	7	\$ 975,000.00
	Novorossiysk	1.5%	@ 50%	0%	12	7	\$ 975,000.00
7/3/2022	Novorossiysk	1.25%	@ 50%	0%	12	7	\$ 812,500.00
14/3/2022	Novorossiysk	1%	@ 50%	0%	24	7	\$ 650,000.00
11/4/2023	Novorossiysk	1%	@ 50%	0%	24	7	\$ 650,000.00
20/4/2022	Novorossiysk	1-1.5%	@ 50%	0%	24	7	\$ 650,000.00 - \$ 975,000.00
20/7/2022	Taman	1%	@ 50%	0%	24	7	\$ 650,000.00
7/9/2022	Novorossiysk	1%	@ 50% (not confirmed)	0%	24	7	\$ 650,000.00 (basis IV @ 50%)
7/9/2022	Taman	1%	@ 50% (not confirmed)	0%	24	7	\$ 650,000.00 (basis IV @ 50%)
7/9/2022	Kavkaz	1%	@ 50% (not confirmed)	0%	24	7	\$ 650,000.00 (basis IV @ 50%)
7/9/2022	Odessa	2%	@ 50%	0%	24	7	\$ 1,300,000.00
7/9/2022	Yuzhny	1.25-1.5%	@ 50% (not confirmed)	0%	24	7	\$ 812,500.00 - \$ 975,000.00 (basis IV @ 50%)
7/9/2022	Chronomorsk	1-1.5%	@ 50% (not confirmed)	0%	24	7	\$ 650,000.00 - \$ 975,000.00 (basis IV @ 50%)
8/9/2022	Ust Luga	0.15%	@ 50%	50%	24	7	\$ 48,750.00
12/9/2022	Murmansk	0.15%	@ 50%	50%	24	7	\$ 48,750.00
12/9/2022	Novorossiysk	1%	@ 50%	50%	24	7	\$ 325,000.00
12/9/2022	Taman	1%	@ 50%	50%	24	7	\$ 325,000.00
12/9/2022	Tuapse	1%	@ 50%	50%	24	7	\$ 325,000.00
12/9/2022	Odessa	1%	@ 50%	0%	24	7	\$ 650,000.00
16/9/2022	Ust Luga	0.15%	@ 50%	50%	24	7	\$ 48,750.00
16/9/2022	St. Petersburg	0.15%	@ 50%	50%	24	7	\$ 48,750.00
18/11/2022	Taman	1%	@ 50%	0%	24	7	\$ 650,000.00
18/11/2022	Novorossiysk	1%	@ 50%	0%	24	7	\$ 650,000.00
18/11/2022	Odessa	1%	@ 50%	0%	24	7	\$ 650,000.00
18/11/2022	Chronomorsk	1%	@ 50%	0%	24	7	\$ 650,000.00

22/11/2022	Taman	1%	@ 50%	0%	24	7	\$	650,000.00
7/1/2023	Odessa	1%	@ 50%	0%	24	7	\$	650,000.00

Table 2: Indicative rates/premiums for Russian and Ukrainian ports

The table gives information for the prevailing market rates given by War Underwriters in order to cover a vessel calling at specific Russian and Ukrainian ports inside and outside the Black Sea region. The prevailing rates were given at specific dates shown in the first column. The Underwriters provide the Owners with the market rate and in order to calculate the premium this rate has to be multiplied by the H&M value of the vessel. For the IV the rate is in relation to the H&M rate and is usually the half of it. In addition, Underwriters can give a Non Claim Bonus discount which in the case of an incident has also to be paid to the Underwriters. The “validity” column gives the number of hours for which the quotation given is valid and the “duration” column indicates the number of days for which the vessel is covered when paying the relevant premium. Finally, the premium is calculated using the following formula: Premium = [(H&M value*H&M rate) + (IV*IV rate)]*(1-NCB%).

From the above numbers and amounts it is clearly shown, that the premiums for calling at Russian and Ukrainian ports located within the Black Sea (Novorossiysk, Taman, Tuapse, Kavkaz, Odessa, Yuzhny, Chronomorsk) and the Sea of Azov are much higher than other Russian ports which are located in the Gulf of Finland (St. Petersburg, Primorsk, Ust Luga) or in the Sea of Japan (Kozmino) where the premiums are about the one thirteenth of the former as per the above table.

It is obvious how big the risk to call at a port like Odessa, Novorossiysk and Taman is, when the additional premium is close to one million or even over this. For comparison purposes, the prevailing market rate for calling at Qua Iboe, Nigeria which is also a listed area as per Joint War Committee on 07.10.2022 was 0.15% for H&M, IV @ 50% of H&M and 50% NCB, 72/7 which corresponds to an additional premium of US\$ 48,750.

The desire of the Charterer for the vessel to call at such ports puts him liable for the extra cost and it would be considered reasonable that this should be also agreed in the Charter Party agreement between the Owners and the Charterer upon fixing of the vessel. These Charterers’ expenses are one of the reasons which lead to the increase of the freight levels.

3.3 GLOBAL REACTIONS

Governments and multilateral organizations around the world strongly condemned the invasion. As a political response, fresh sanctions were imposed on Russia, which had a significant economic impact on both the Russian and global economies. Ukraine received financial support from the European Union and other Western nations, as well as military and humanitarian aid. A number of economic restrictions were placed, such as a prohibition on Russian planes flying over EU airspace, a SWIFT embargo on specific Russian institutions, and a ban on specific Russian media outlets. Responses to the invasion have been quite diverse across a wide range of issues, including public opinion, media coverage, peace initiatives, and an analysis of the invasion's legal ramifications.

As far as the shipping sector is concerned and since there are several routes including Russian ports, new sanctions were placed against Russia and Russian cargoes along with additional measures like the oil price cap.

3.3.1 SANCTIONS

Since sanctions are imposed to preserve or ensure global peace and security, they are always evolving within a complicated environment.

The aggressive and unjustified invasion of Ukraine on February 24, 2022, and the illegitimate acquisition of its Donetsk, Luhansk, Zaporizhzhia, and Kherson regions prompted the EU to apply previously unheard-of sanctions against Russia. They increased the sanctions put in place against Russia since 2014 as a result of the annexation of Crimea and the failure to implement the Minsk agreements. The measures taken include individual sanctions, targeted restrictive measures (economic sanctions), and visa restrictions. The subject of the imposed sanctions are individuals who supported, financed, carried out, or who gained from actions that undermined Ukraine's territorial integrity, sovereignty, or independence. These economic penalties, which began to be introduced in 2022, have as one of their primary goals the creation of damage to the Russian economy in order to minimize its competitiveness in the global markets in order to successfully obstruct Russian efforts to prolong the attack.

However, the export of and transactions involving food and agricultural items are not obstructed by the penalties. At the European Council on June 23–24, 2022, EU leaders emphasized that only Russia is to blame for the world food crisis and that EU sanctions do not target food or agricultural products. The EU and its member states place a high focus on affordable and secure access to food. EU sanctions only apply to bilateral trade between the EU and Russia and do not affect global trade.

Certain potash fertilizers are subject to import restrictions as a result of EU sanctions, although these limitations do not apply to exports of these fertilizers from Russia or the EU to Ukraine. For the purpose of importing or carrying agricultural supplies, including fertilizers and wheat, that are not subject to limitations, EU member states are also authorized to provide access to Russian-flagged vessels and road transporters.

Apart from the food and the agricultural products, the EU has also created some other exceptions to its sanctions: while Russian aircraft are not permitted to fly in European airspace, member states of the EU may grant permission for Russian aircraft to pass through their airspace if it is necessary for humanitarian reasons.

A timeline of the most important events as per Lloyd's List Intelligence since the invasion's start is shown below.

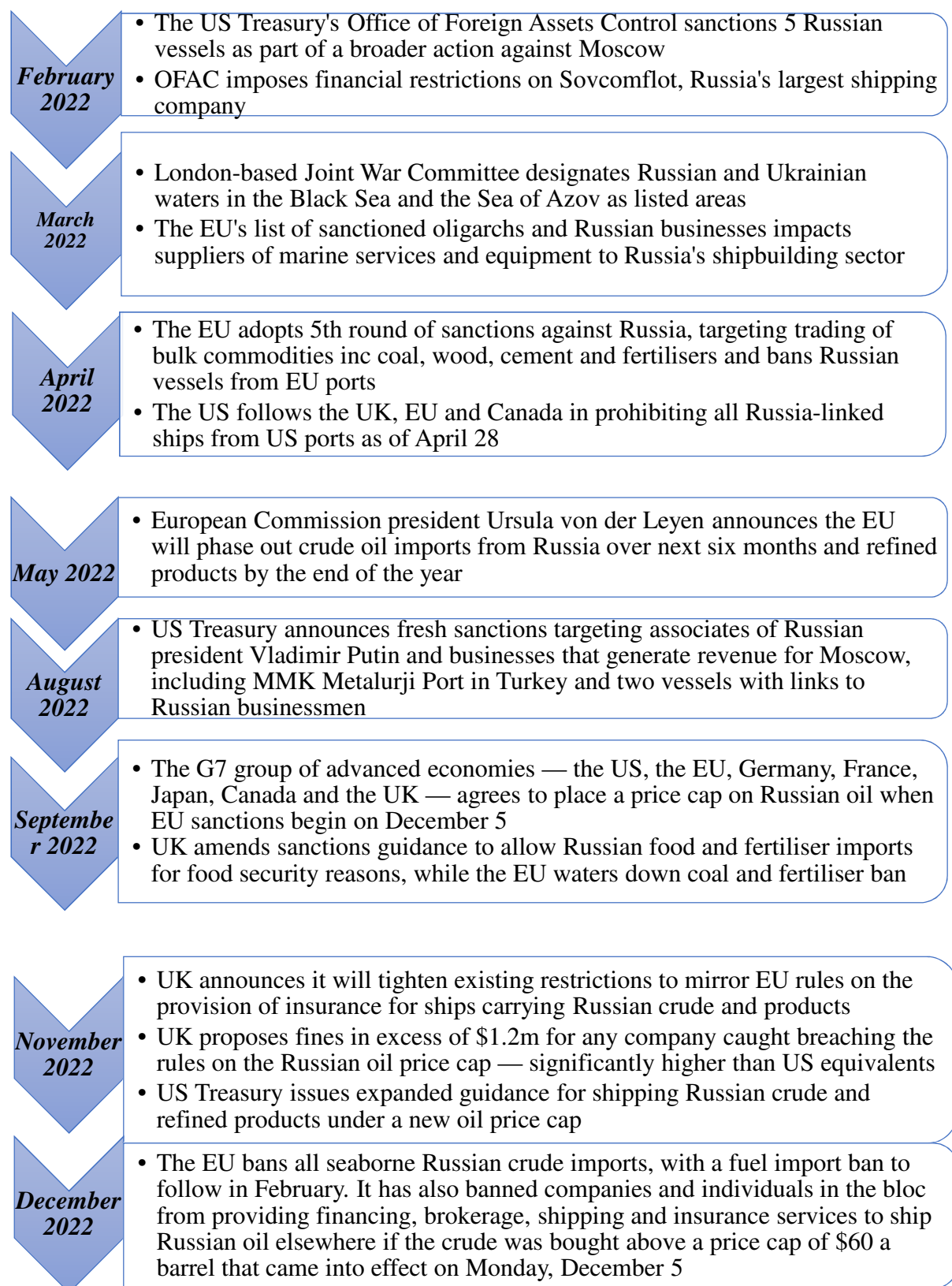


Figure 9: Timeline of the most important sanctions events

3.3.1.1 SANCTIONED PEOPLE AND ORGANIZATIONS

Initially, basis information given by the Council of the European Union, the EU has sanctioned 1386 people and 171 organizations in total, including prior individual penalties issued following the invasion of Crimea in 2014. An asset freeze against certain people, businesses, and other entities is a crucial component of most sanctions procedures. This indicates that their money and resources are frozen, and it is not permitted to provide them access to money or resources. US sanctions define the Specially Designated Nationals (SDNs) as "entities directly or indirectly owned 50% or more in the aggregate by one or more blocked persons," i.e., sanctioned individuals or businesses that are known as SDNs.

Similar to this, entities owned by a sanctioned person or entity at least 50% of the time are also considered to be sanctioned under EU sanctions. However, this also applies to entities that are "controlled" by a person or organization subject to EU sanctions. The EU Council has provided recommendations on the factors to be considered for determining whether a party is subject to asset freezes and when determining ownership or control by a sanctioned organization.

Some of the people that are included in the list are:

- Russia's President, Vladimir Putin
- Russia's Minister for Foreign Affairs, Sergey Lavrov
- former President of Ukraine, Viktor Yanukovich
- oligarchs linked to the Kremlin, such as Roman Abramovich
- members of the Russian State Duma (the lower house of parliament)
- members of the National Security Council
- ministers, governors and local politicians, such as the mayor of Moscow
- high-ranking officials and military personnel
- prominent business people (i.e. people active in the Russian steel industry and others who provide financial services, military products and technology to the Russian state)
- propagandists and disinformation actors

The list also includes individuals responsible for or involved in the:

- atrocities committed in Bucha and Mariupol
- missile strikes against civilians and critical infrastructure
- kidnappings and subsequent illegal adoptions of Ukrainian children
- recruitment of Syrian mercenaries to fight in Ukraine

As far as the entities are concerned those sanctioned are:

- banks and financial institutions
- companies in the military and defense sectors
- companies in the aviation, shipbuilding and machine building sectors
- armed forces and paramilitary groups
- political parties
- media holdings and companies disseminating pro-Kremlin and anti-Ukrainian propaganda

In practice, these individuals may be subject to asset freezes and travel restrictions as sanctions. Travel bans prevent those on the list from transiting through or entering the EU by land, air, or sea. When someone or something is identified and their assets are frozen, all of their accounts in EU banks are also blocked. Additionally, it's against the law to directly or indirectly make any assets or money available to them. This guarantees that neither they nor their money may be used to assist the Russian dictatorship or look for safety in the EU.

3.3.1.2 PRODUCTS PROHIBITED TO BE IMPORTED INTO THE EU FROM RUSSIA

There are all kinds of goods on the 'prohibited list', all with different purposes the list of sanctioned products includes among others:

- crude oil (from December 2022) and refined petroleum products (from February 2023), with limited exceptions

- coal and other solid fossil fuels
- steel, steel products and iron
- gold, including jewellery
- cement, wood, paper and plastics
- seafood and liquor (e.g. caviar, vodka)
- cigarettes and cosmetics

The goal is obvious in the case of dual-use products and weapons: to prevent Russia from having the means to conduct war. The goal is to hurt the Russian economy as hard as possible in other instances, such as with wood and gold. This is accomplished by prohibiting them from making a sizable profit to support the arms business. Russia, for example, is one of the largest exporters of gold worldwide. A ban on the import of gold takes away an important source of income for the Russian state. The Russian government loses a significant source of revenue when gold imports are prohibited. Yachts and other luxury items are prohibited in order to undercut the Russian aristocracy who are frequently the wealthy, influential oligarchs who support Putin.

3.3.1.3 OIL BAN

As mentioned above, the crude oil and the refined petroleum products are included in the list with the products that cannot be imported to EU from Russia. More specially, the sixth round of sanctions, which the Council approved in June 2022, forbids, among other things, the purchase, import, or transfer of seaborne crude oil and specific petroleum products from Russia to the EU.

For the crude oil, the limits took effect on 5 December 2022, while for the other refined petroleum products, they took effect on 5 February 2023.

Pipeline imports of crude oil into EU member states who, due to their geographic location, suffer from a unique dependency on Russian supplies and have no practical alternatives are anticipated to receive a temporary exception.

Crude oil transported by sea, petroleum oils, and oils made from bituminous minerals that come from or are exported from Russia are all subject to the price cap.

The ceiling price is set at:

- \$60 per barrel for crude oil
- \$45 per barrel for discounted petroleum products
- \$100 per barrel for premium petroleum products

In close collaboration with the Price Cap Coalition, EU nations determined the cap's level. The cap started to be adjusted on 5 December 2022 for crude oil and 5 February 2023 for petroleum products. Future modifications to the present value could take into account market trends and technological advancements. This choice aimed in cutting down on the oil revenues that Russia has been raking in ever since it started its illegitimate war of aggression against Ukraine, limiting price spikes brought on by unusually favorable market conditions. Additionally, it had as a target to stabilize global energy costs while minimizing negative effects on the supply of energy to third world countries.

The cap is an addition to the EU's and other G7 members' respective import restrictions on Russian petroleum products and crude oil when Russian crude oil and petroleum products cannot also be shipped to third nations by EU ships.

3.3.1.4 PRODUCTS PROHIBITED TO BE SHIPPED FROM THE EU TO RUSSIA

Apart from sanctioning the Russian products, the EU imposes sanctions that relate to the export of goods also from the EU to Russia. As a result of Russia's invasion of Ukraine, a rising number of tech firms, including the biggest social media companies, semiconductor manufacturers, and producers of video games, have stopped doing business with Russia.

Since the start of the conflict, more than 400 enterprises have declared their exit from Russia, according to a tally made by Professor Jeffrey Sonnenfeld and his research group at the Yale Chief Executive Leadership Institute.

Some of the products that EU cannot ship to Russia are:

- cutting-edge technology (e.g. quantum computers and advanced semiconductors, high-end electronics and software)

- certain types of machinery and transportation equipment
- specific goods and technology needed for oil refining
- energy industry equipment, technology and services
- aviation and space industry goods and technology (e.g. aircraft, aircraft engines, spare parts or any kind of equipment for planes and helicopters, jet fuel)
- maritime navigation goods and radio communication technology
- a number of dual-use goods (goods that could be used for both civil and military purposes), such as drones and software for drones or encryption devices
- luxury goods (e.g. luxury cars, watches, jewellery)
- civilian firearms and other army materiel

3.3.1.5 BANNED SERVICES TO RUSSIA

The EU has prohibited the provision of certain business-relevant services to the Russian government or to any legal persons, such as companies and other entities or bodies, established in Russia, in an effort to hurt the Russian economy, which is heavily dependent on the import of services from European businesses.

Providing accounting, auditing (including statutory audits), bookkeeping, and tax consulting services, as well as business and management consulting or public relations services, directly or indirectly, has been outlawed as of 4 June 2022.

IT consulting, legal counsel, architectural, and engineering services might all be considered public relations services, which would make them prohibited.

In October 2022, the EU made the decision to expand the list of services that can no longer be delivered to Russia by incorporating IT consulting, legal advice, architecture, and engineering services. This decision was made to increase the pressure on Russia's industrial capability.

In December 2022, a restriction was introduced that forbade the delivery of EU advertising, market research, and public opinion polling services, as well as product testing and technical inspection services.

Sanctions imposed by the EU are applicable to all entities formed there, including Russian subsidiaries.

3.3.1.6 TRANSPORTATION SANCTIONS

Road transportation

Road transport companies from Belarus and Russia are not permitted to operate within the EU, including when transporting products in transit. This penalty intends to hinder Russian industry's ability to get essential supplies and to stymie road traffic to and from Russia.

EU nations may, however, allow derogations for:

- transferring energy
- the movement of goods used in medicine, agriculture, food, and pharmaceuticals
- the provision of humanitarian relief
- transport related to the functioning of diplomatic and consular representations of the EU and its countries in Russia, or of international organisations in Russia which enjoy immunities in accordance with international law
- the transfer or export to Russia of cultural goods on loan in the context of formal cultural cooperation with Russia

Aviation sector

Russian carriers of all kinds were denied entry to EU airports and were forbidden from encroaching on EU airspace in February 2022. This means that aircraft registered anywhere, including in Russia, and leased or rented to a Russian person or company are not permitted to land at airports in the EU or fly over EU nations. The restriction includes private aircraft, such as private business jets. Additionally, the EU forbade the transfer of products and technology from the aerospace and aviation sectors to Russia. Moreover, prohibited are insurance services, maintenance services, and technical help connected to these products and technology.

Similar limitations were imposed by the United States, Canada, and the United Kingdom.

As a result, Russian airlines are unable to add any new planes, equipment, or spare parts to their fleet and are unable to carry out the required maintenance and technical checks.

Given that the EU, US, or Canada created three-quarters of Russia's present commercial air fleet, the prohibition is likely to eventually result in the grounding of a sizable section of the Russian civil aviation fleet, even for domestic flights.

Maritime transport

The entire 2,800-ship Russian commerce fleet is no longer allowed to enter EU ports. The measure, however, has no impact on ships that transport energy, pharmaceuticals, medical supplies, food, and agricultural products, as well as other necessities for the operation of civil nuclear capability and coal. Additionally, the measure has no bearing on ships making an emergency port call for the purpose of preserving maritime safety or protecting marine life. The prohibition will also apply to ships that attempt to circumvent the sanctions by switching to a different country's flag or registry. By monitoring a vessel's IMO number, port officials can spot attempts to reflag or change registration (the unique identification number assigned on behalf of the International Maritime Organization).

3.3.1.7 EUROPEAN UNION: 8TH SANCTIONS PACKAGE

On October 6, 2022, the EU passed an eighth set of sanctions in retaliation for Russia's ongoing military assault against Ukraine.

A number of Regulations and Decisions were released (the complete list is available here), but the Council Regulation (EU) 2022/1904 ("the Regulation"), which alters Council Regulation 2014/833 further, is of special importance to the Association and its Members.

This package includes the following clauses that are particularly pertinent to shipping:

Russian Maritime Register of Shipping

The list of Russian state-owned companies mentioned in Annex XIX of the Regulation that are subject to the limitations in Article 5aa now includes the Russian Maritime

Register of Shipping. As a result, EU entities are not permitted to conduct any business, directly or indirectly, with the Russian Maritime Register of Shipping. However, there was a wind-down period until January 8, 2023, which enabled the execution of any contracts made before October 7, 2022, as well as any ancillary agreements required for those contracts. Additionally, in accordance with Article 3ea, ships registered with the Russian Maritime Register of Shipping are not permitted to call at EU ports after 8 April 2023.

Iron and steel products

The list of iron and steel items listed in Annex XVII that are prohibited from being transported to any nation, including nations outside of the EU, in line with Article 3g has been greatly increased. The import or purchase of iron and steel products mentioned in Annex XVII that have been processed in a third country but contain iron and steel of Russian origin is also prohibited as of September 2023 due to new limitations that have been implemented. All of these clauses forbid EU organizations from offering insurance and reinsurance services. Therefore, Members are reminded that even if a Member is not directly affected by the Regulation (for example, because they are domiciled outside the EU), the Association may not be able to offer insurance for engaging in certain activities.

Regarding several iron and steel goods, there are additional exemptions and derogations.

Lists of products

The lists of goods that are restricted under Article 3i of Annex XXI, which dramatically increases Russia's revenue, and Article 3j of Annex XXIII, which potentially increases Russia's industrial capability, have both been greatly increased. To enable for the performance of any contracts signed into before 7 October 2022 or any ancillary contracts required for the execution of those contracts, some commodities in both Annexes are, however, subject to a wind-down period until 8 January 2023.

Crude and petroleum products

Russian crude oil and petroleum products, commonly referred to as "Russian oil," have been clarified in some significant ways, and the Regulation also outlines how EU sanctions will interact with the proposed G7 price limit system. Members will recall

that Article 3m makes it illegal to transport Russian crude oil (CN code 2709 00) and Russian petroleum products (CN code 2710) into the EU, as well as to provide (re)insurance for the transportation of such cargoes. However, under certain conditions, this prohibition is suspended until 5 December 2022 and 5 February 2023, respectively.

The provision of insurance and reinsurance for the carriage of these cargoes to non-EU countries was also forbidden, though there was an exception under Article 3n until 5 December for both groups of cargoes provided the insurance contract was in place before 4 June 2022; otherwise, the ban on insurance and reinsurance for petroleum products would have taken effect on 5 December 2022 despite the fact that carriage was permitted. The Regulation fills up this gap, and as a result, the wind-down period for insurance and reinsurance pertaining to the shipment of Russian items falling under CN 2710 has been extended until 5 February 2023. Also helpfully clarified in Article 3n(3) is the fact that claims for the transportation of Russian crude oil before 5 December 2022 and petroleum products before 5 February 2023 are payable, provided the insurance contract was signed before 4 June 2022 and that cover has ended by the end of the applicable wind-down period.

3.3.2 THE PRICE CAP ON RUSSIAN ORIGIN CRUDE OIL AN OIL PRODUCTS

3.3.2.1 FORMATION OF THE PRICE CAP

Since Russia invaded Crimea in 2014, there have been trade restrictions against that country.

The EU, G7, and other nations issued warnings about an extraordinary campaign of sanctions in the months before the current crisis in case of a Russian invasion. Following the invasion on February 24, 2022, the EU, UK, US, and other allies retaliated with a significant coordinated sanctions program that targeted Russia's financial industry, aviation, and shipping, as well as key economic sectors like defense, aerospace, and energy, in addition to those who helped Russia invade Ukraine. As long as Russian armed forces are present in the internationally recognized territory of Ukraine, these sanctions measures will likely continue to be reviewed and developed.

Russia is the third-largest crude oil exporter in the world, and the money it makes from these exports has a significant positive impact on its economy. The EU and G7 have

concentrated much of their efforts on developing sanctions that limit Russia's capacity to make money from its oil sales. These earnings are used by Russia to finance its war in Ukraine.

These efforts culminated in a meeting of the G7 and EU on September 2, 2022, in Elmau, Germany, where the G7 Finance Ministers agreed to implement a ban on maritime services for oil shipments of Russian origin when the Russian oil cargo had been sold for more than a predetermined amount, or the "Price Cap." As Watson Farley & Williams comment in their article "Russian oil Price Cap poses challenges to maritime industry", the Russian oil price cap regime is possibly the most ambitious and sophisticated sanctions regime ever contemplated.

There are three goals for the Price Cap:

1. To keep Russian oil flowing into international markets
2. To lessen the rising pressure on oil prices
3. To lower Russia's profits from the export of crude oil and oil-related goods.

According to the Price Cap scheme, it will be illegal for anyone who is subject to the jurisdiction of the EU, G7, or other coalition allies like Australia to transport or to provide services (like P&I insurance) that allow the transportation of crude oil and oil/petroleum products of Russian origin unless they have been sold at or below the Price Cap. The restriction on the provision of services by a service provider based in a jurisdiction of the EU, the G7, or another coalition member extends to shipments made by or to third parties outside of the coalition of the EU and the G7, and will therefore have extra territorial impact. The Price Cap Scheme began on 5 December 2022 for crude oil cargoes (CN2709-00), also known as "Crude Oil," and will begin on 5 February 2023 for oil/petroleum products (CN2710).

The EU/G7 Coalition declared on December 2, 2022, that the price cap for Russian crude oil after December 5, 2022, would initially be set at \$60 per barrel.

Shipowners and service providers are required to take specific actions to verify the pricing of crude oil during this time. The kind of actions depends on how close a party is to the sale contract, with closer parties being subject to more onerous requirements. The EU/G7 partnership classifies parties involved in the oil shipping into one of three "Tiers" for this purpose. When compared to Tier 2 or Tier 3 Actors, individuals that fit

the definition of a Tier 1 Actor are subject to more thorough inspections. P&I Clubs and Shipowners are examples of Tier 3 Actors, who lack direct access to data on the cost of a cargo. Depending on their proximity to and understanding of the selling contract, charterers may also be categorized as Tier 3 Actors, although they could also be Tier 2 Actors or even Tier 1 Actors.

Participants in the Price Cap Scheme are also required to preserve records of the transaction, including written confirmations or other proof (referred to as "Attestations") that the cost of the cargo was within the Price Cap. Then, these documents must be preserved for a minimum of five years.

3.3.2.2 SHIPOWNERS OBLIGATIONS

Form of Attestation required

Shipowners are regarded by the three jurisdictions of US, UK and EU as Tier 3 Actors. In order to prove that its contractual counterpart, generally the charterer, has agreed to refrain from buying crude oil or petroleum products above the Price Cap, the Shipowner must get a written guarantee from that party. Such an attestation could be a separate document or part of a larger contract.

Draft attestation wordings are offered by all three jurisdictions, and these wordings can be customized for specific contracts.

Depending on their involvement in the selling contract, charterers may be Tier 3 or more often Tier 2 Actors. In certain cases, they might qualify as Tier 1 Actors, especially if they are a party to the sale transaction or directly benefit from it. The Attestation requirements are therefore more onerous. They must collect information about the price specified in the contract as Tier 2 Actors and make it available to other parties upon request. It will be necessary to secure agreements not to buy oil beyond the Price Cap if such information is not readily available. Additional reporting requirements will be in place, including but not limited to where the Tier 1 counterparty is governed by UK law.

Record keeping

Parties to the Price Cap scheme are required by all three countries to maintain records. In the UK, records must be preserved for four years. This time frame is five years for the US and EU. Whether a party is a Tier 1, 2 or 3 Actor in the Price Cap transaction determines the extent of the record keeping.

3.3.2.3 CLUBS' COVER

In accordance with their rules, International Group clubs may offer protection to ships carrying Russian crude oil or petroleum products in a legal manner. An insured Shipowner or charterer must fully adhere to all Price Cap scheme criteria, conduct necessary due diligence, and follow the Attestation procedures in order to engage in such authorized carrying.

When transporting crude oil or petroleum products of Russian origin, members should be aware of the regulations of all three jurisdictions. They should also be ready to give their P&I club, upon request, a copy of the attestation they rely on to complete the voyage.

If there are reasonable grounds to believe that the Price Cap attestations given to a Shipowner or charterer are false, and/or if the cargo is sold after the voyage has started at a price higher than the Price Cap, Clubs are required to withdraw cover in order to be in compliance with the Price Cap scheme.

Club coverage is always subject to strict adherence to the Price Cap scheme. Any suspected violation of the Price Cap program must also be reported to the regulators in those Clubs that are subject to US and UK legislation.

In light of recent law and guidelines, clubs will now assess their current sanctions exclusion clauses to make sure they adhere to the Tier 3 Attestation standards.

3.3.2.4 PRICE CAP EXCLUSIONS

The need to ensure that sanctions do not hinder people from responding to marine crises appears to be acknowledged by price cap legislation. Similar provisions, albeit perhaps

of a narrower scope, can be found in EU law, and the US General License 57 authorizes maritime services transactions that are ordinarily incident and necessary to addressing vessel emergencies related to the health or safety of people. The UK legislation makes an exception for activities of people dealing with a marine emergency that help prevent or mitigate harm to human health or safety, infrastructure, or the environment.

The International Group Clubs welcome the recognition of the need to be able to respond to third party claims relating to the prevention and mitigation of harm caused by maritime emergencies. The International Group Clubs are mindful of their direct obligations to third party victims of maritime emergencies (including coastal states) under Blue Cards issued pursuant to the CLC, Bunkers, and Wreck conventions.

However, Club members should be aware that the Club will be able to collect such expenses from the Member if their Club incurs and is able to fulfill blue card obligations in relation to a trip that involves illegal transport.

3.3.2.5 RISKS

The EU/G7 coalition's (which also includes Australia) Price Cap proposal poses particular compliance difficulties.

Russian opposition to the Price Cap scheme raises the possibility that attempts to dodge sanctions through the use of fictitious documents and/or frequent ship-to-ship transfers to mix up and/or mask the provenance of the cargo may become routine.

While an Owner or Charterer may not violate the law if it exercises due diligence and receives an ostensibly valid Attestation, suppliers of maritime services and technical assistance, such as insurers, reinsurers, Flag states, and banks, are required to discontinue their services if they have good reason to believe that the Price Cap has not been adhered to.

When a break is discovered after a vessel has been loaded, it is possible that it will be some time before the authorities decide how to appropriately dispose of the cargo, leaving the vessel without insurance and without access to normal financial services.

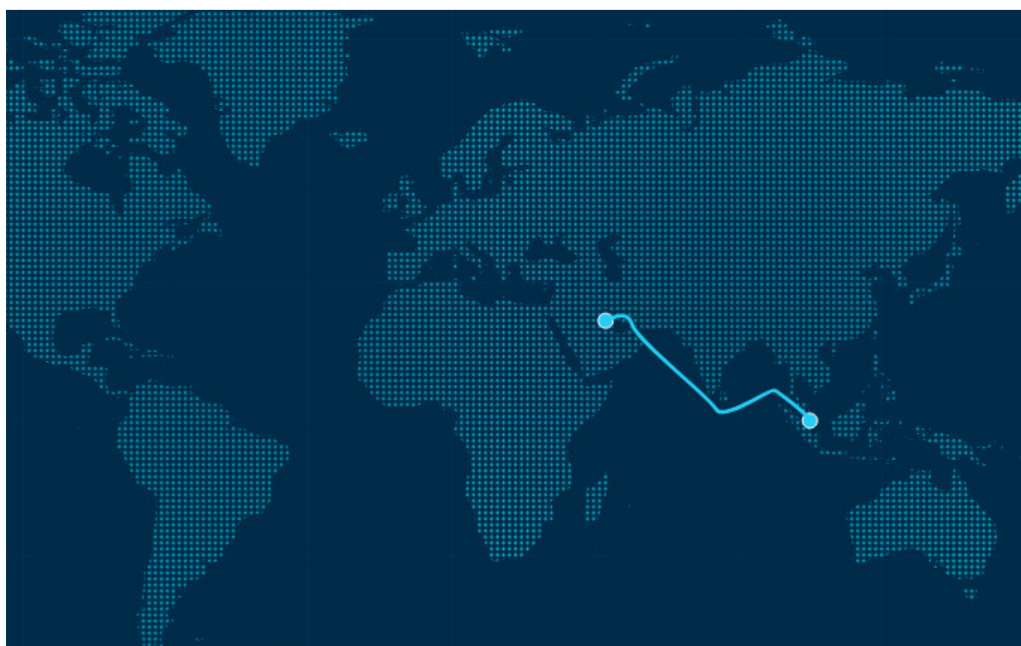
CHAPTER 4: ANALYSIS OF THE BALTIC EXCHANGE INDICES

Assessments for the dry bulk, tanker, gas, container box, and air freight markets are offered by the Baltic Exchange. Baltic Exchange tanker assessments are published on both Worldscale and Time Charter Equivalent (TCE) basis. For the purpose of this thesis, the following indices are going to be analyzed:

- TD2: Middle East Gulf to Singapore (Worldscale)
- TD6: Black Sea to Mediterranean (Worldscale and Time Charter Equivalent)
- TD17: Baltic to UK-Continent (Worldscale and Time Charter Equivalent)
- TD20: West Africa to UK-Continent (Worldscale and Time Charter Equivalent)
- TC5: Middle East Gulf to Japan (CPP, UNL, naphtha condensate) (Worldscale and Time Charter Equivalent)

The above indices were chosen with the aim to ensure the wideness and objectiveness of the sample of the data analysis. This was achieved by choosing shipping routes which include and don't include ports of a war involved country in this case Russian ports. Further on, the selected shipping routes concern different types/sizes of vessels (VLCC, Suezmax, Aframax, and Product Tanker). Last but not least, for the purpose of this research voyages including multiple types and origins of cargo were used.

4.1 ANALYSIS OF THE TD2 INDEX



*Figure 10: Interactive map for the TD2 index route
Source: Baltic Exchange*

Route description: 270,000 metric tons. Middle East Gulf to Singapore (Ras Tanura to Singapore). Laydays / cancelling 20/30 days from index date. Age max 15 yrs. 3.75% total commission.

This route represents the transportation of crude oil via a VLCC tanker of 270,000 metric tons deadweight from the second largest producing country of crude oil for 2021 (as per the U.S. Energy Information Administration) – Saudi Arabia and more specifically the port of Ras Tanura to the port of Singapore, a key port for shipping which provides services and facilities for ships to dock, bunker, load and unload goods.

The following table shows the monthly average Worldscale percentage used for the freight calculation for the above described voyage for the years 2012-2022 and the yearly average price for each of the years.

<u>TD2 WS %</u>	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
JANUARY	57.27	39.09	56.22	68.54	78.16	86.42	45.17	57.19	94.83	35.79	36.85
FEBRUARY	52.20	32.71	56.48	59.00	61.25	72.98	38.94	52.58	44.65	32.21	35.73
MARCH	61.17	34.65	43.23	51.87	74.16	53.90	40.28	61.04	127.65	31.32	45.24
APRIL	65.08	32.36	40.67	61.92	65.80	65.93	41.42	40.99	162.66	34.48	50.55
MAY	58.02	39.71	35.86	69.14	63.87	56.64	44.30	39.98	62.14	34.81	43.02
JUNE	43.47	41.78	39.92	66.06	54.65	52.56	51.77	44.43	53.66	32.96	47.51
JULY	35.38	41.52	49.58	72.17	43.33	52.69	50.13	45.53	41.10	32.45	59.48

AUGUST	36.61	36.61	36.61	36.61	36.61	36.61	55.17	36.61	36.61	36.61	36.61
SEPTEMBER	39.33	34.25	39.04	55.65	35.09	44.75	56.08	62.86	31.25	36.87	88.20
OCTOBER	36.70	40.38	47.22	74.52	61.37	68.83	83.88	137.02	28.46	42.81	95.34
NOVEMBER	47.30	60.88	56.23	64.46	69.26	68.13	94.55	93.68	26.90	43.91	113.92
DECEMBER	48.08	62.81	69.43	89.08	84.14	52.32	89.74	109.89	34.61	40.84	80.06

AVERAGE PER YEAR	48.38	41.40	47.54	64.09	60.64	59.31	57.62	65.15	62.04	36.26	61.04
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Table 3: Monthly and yearly average WS values of TD2 index for the years 2012-2022

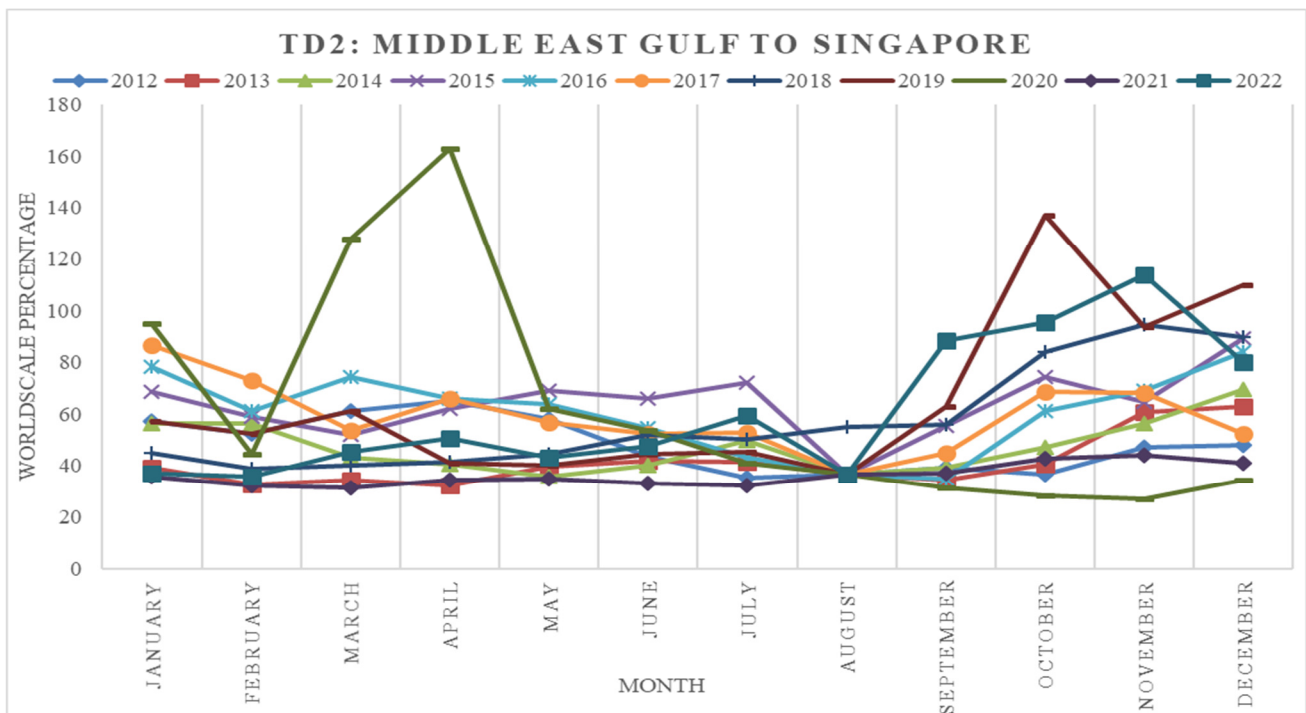


Figure 11: Monthly average WS values for TD2 index for the years 2012-2022

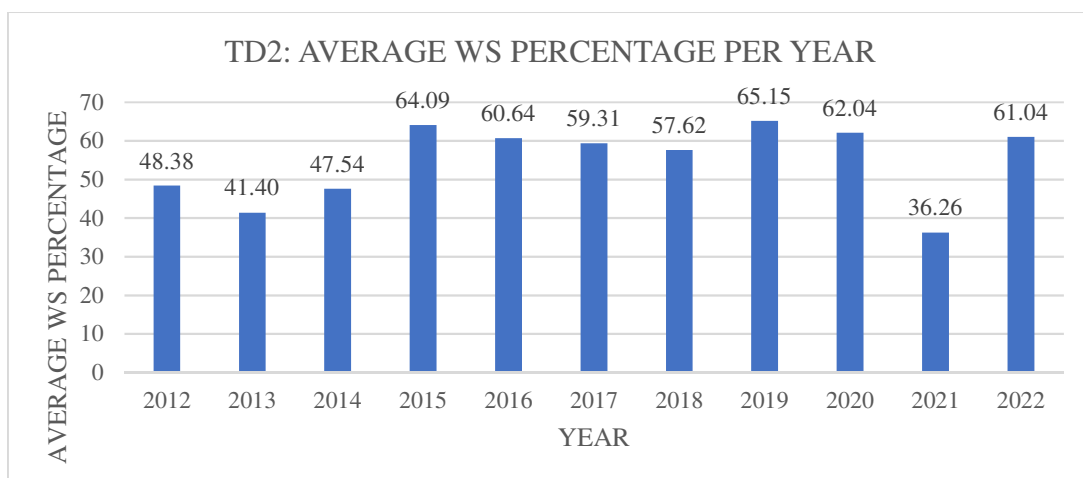


Figure 12: Yearly average WS values for TD@ index for the years 2012-2022

Throughout the years, it is noticed that there is a motif followed showing higher prices during the winter months from November to March of the next year and the minimum prices during summer months probably due to the need of more fuel/energy for heating in the winter.

Checking the 11-year overview, the highest price in April 2020 and the third highest in March 2020. At this point, it should be mentioned that on January 2020 the World Health Organization (WHO) declared the outbreak of COVID-19 a public health emergency of international concern and on March 2020 COVID-19 was declared as pandemic. In emergency cases and periods uncertainty and turbulence, countries seem to buy more and storage oil. This comes to confirm the increased prices during March and April 2020 and the continuously decreasing prices for the following months when countries had storage enough quantities and their needs were at their minimum standards as a result of the consecutive lockdowns.

Talking about the yearly average prices of the Worldscale percentage, this was remained high (about 60) for the year 2020 obviously due to the high prices of March and April. For the year 2021, the TD2 reach the minimum of the 11 years decreasing from 62.04 (2020) to 36.26 (2021) i.e. lowering 41.55%.

However, the year 2022 came to bring new facts in the history of TD2 index during which it was almost doubled in comparison to 2021 average price (68.34% increase). The increase shows to start from March 2022 i.e. the month after the Russia invasion of Ukraine. The index was more than doubled on September 2022. That was the month when the G7 group of advanced economies — the US, the EU, Germany, France, Japan, Canada and the UK — agrees to place a price cap on Russian oil which increases more during. During October 2022 the average price kept rising (95.34) and on November 2022 it reached a peak of 113.92 right before the effective date of the price cap for EU import of crude oil on December the 5th 2022.

4.2 ANALYSIS OF THE TD6 INDEX

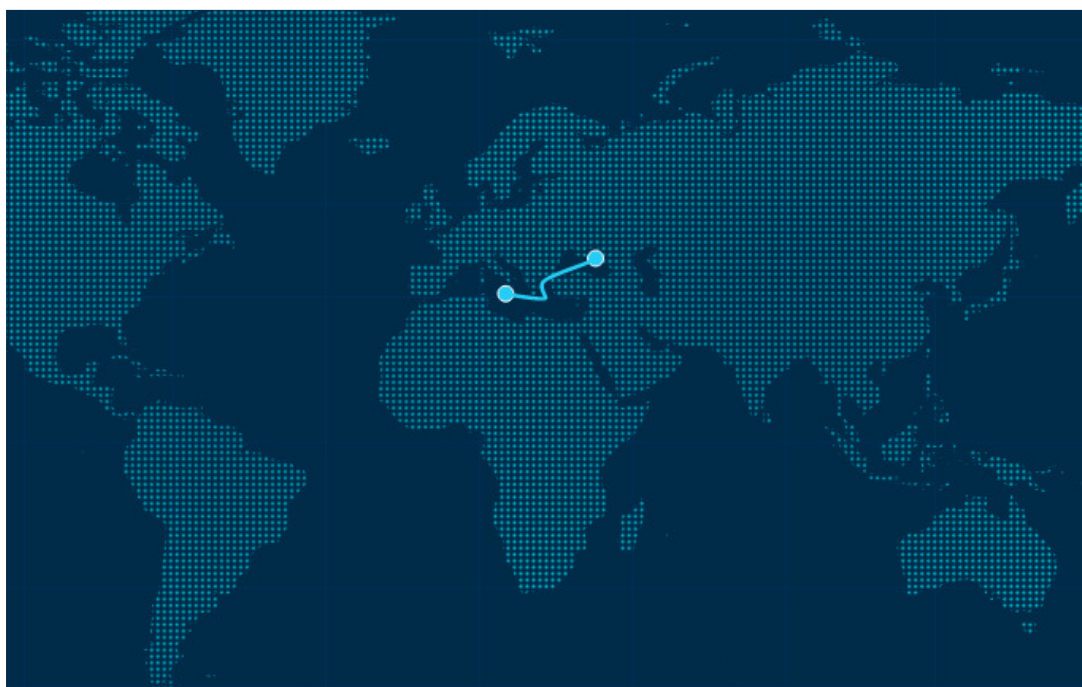


Figure 13: Interactive map for the TD6 index route

Source: Baltic Exchange

Route description: 135,000 metric tons. Black Sea to Mediterranean (Novorossiysk to Augusta). Laydays/cancelling 10/15 days from index date. Age max 15 yrs. 3.75% total commission.

This route represents the transportation of crude oil via a Suezmax tanker of 135,000 metric tons deadweight from the region of Black Sea and more specifically for the port of Novorossiysk, Russia to Mediterranean and in our case the port of Augusta, Italy.

Fuels and energy products are mostly exported from Russia. According to the U.S. Energy Information Administration, Russia was the 3rd largest producer of oil (including crude oil, all other petroleum liquids, and biofuels) for the year 2021 by producing 10.78 million barrels per day. The Sheskhari Oil Terminal is located in Russia's principal Black Sea port, the Port of Novorossiysk. Moreover, it serves as the end of the oil pipeline that originates in Tengiz Field in northwest Kazakhstan, making it the biggest oil center in the Black Sea.

TD6 WS%	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
JANUARY	94.98	63.02	143.96	100.79	114.51	104.41	66.91	117.37	148.94	62.05	66.10
FEBRUARY	81.10	63.72	65.61	92.03	86.67	82.53	69.82	87.44	90.30	71.33	92.74
MARCH	87.51	70.95	64.99	100.02	79.19	101.14	73.89	73.45	134.24	79.22	233.60
APRIL	70.99	66.97	60.78	81.34	85.13	88.28	77.77	81.07	150.88	67.10	256.79
MAY	84.93	59.95	63.28	97.43	82.34	87.70	89.67	77.29	86.09	58.81	125.70

JUNE	72.15	50.98	72.49	107.83	83.63	72.94	87.77	83.76	54.12	58.86	122.71
JULY	70.77	59.14	90.50	88.14	69.32	73.49	86.65	76.38	53.66	59.61	165.87
AUGUST	58.81	62.10	71.32	69.21	48.38	76.87	85.44	70.66	57.69	60.17	180.78
SEPTEMBER	56.88	52.37	64.69	70.75	77.07	82.11	90.07	80.24	47.34	60.67	183.61
OCTOBER	61.72	54.35	79.26	85.90	84.17	95.40	108.81	195.89	44.21	76.74	188.72
NOVEMBER	62.59	63.16	109.78	105.43	93.21	90.71	162.57	131.96	48.53	77.02	253.17
DECEMBER	73.05	103.44	97.73	100.87	109.50	94.18	150.02	149.43	53.56	75.91	284.82

Table 4: Monthly average WS values of TD6 index for the years 2012-2022

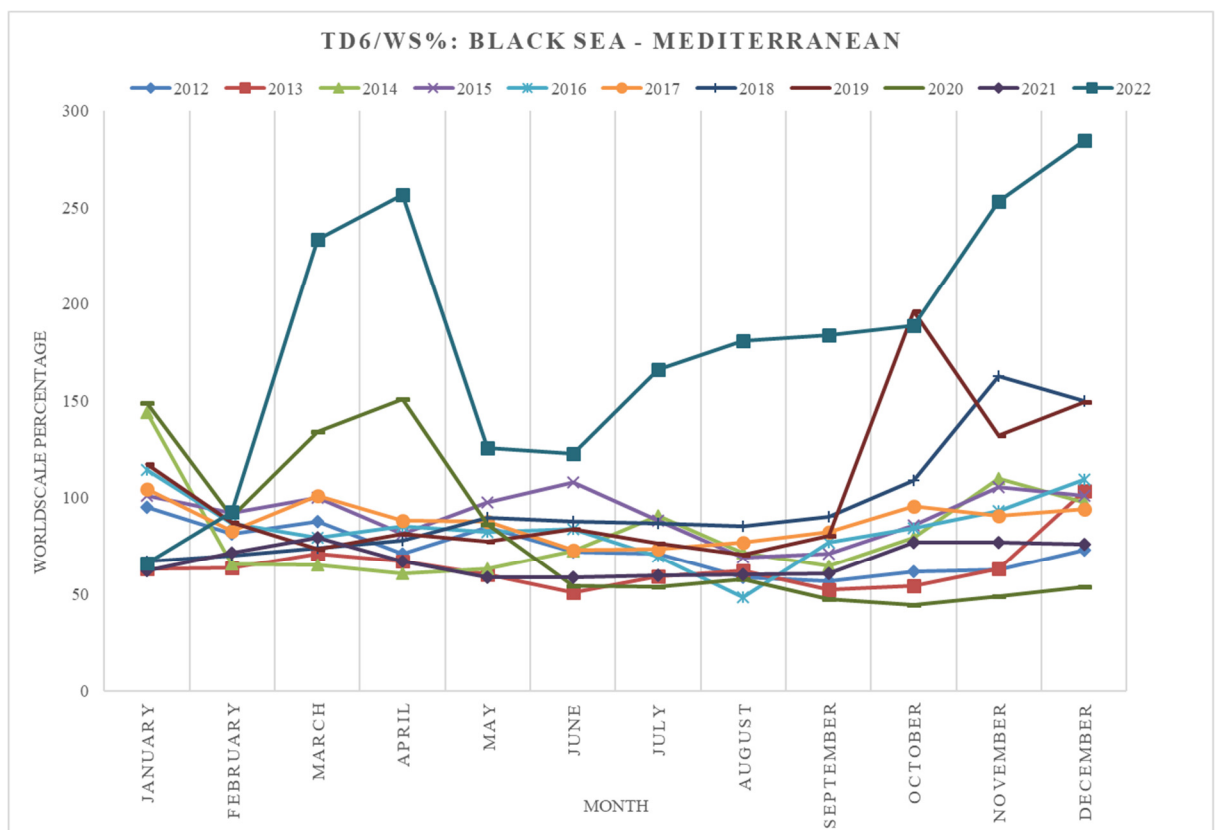


Figure 14: Monthly average WS values for TD6 index for the years 2012-2022

TD6 TCE	2012	2013	2014	2015	2016	2017
JANUARY	\$ 29,605.48	\$ 8,982.52	\$ 78,853.81	\$ 59,626.90	\$ 49,506.85	\$ 21,932.10
FEBRUARY	\$ 15,923.48	\$ 8,559.76	\$ 8,998.45	\$ 49,756.25	\$ 30,679.33	\$ 10,705.90
MARCH	\$ 20,547.73	\$ 16,859.35	\$ 8,587.95	\$ 54,791.27	\$ 24,451.00	\$ 21,859.00
APRIL	\$ 7,089.47	\$ 14,124.95	\$ 4,608.75	\$ 36,806.58	\$ 27,223.10	\$ 14,510.60
MAY	\$ 22,135.45	\$ 5,447.67	\$ 6,607.70	\$ 44,990.58	\$ 23,505.00	\$ 14,015.95
JUNE	\$ 15,293.00	\$ (2,473.35)	\$ 14,239.43	\$ 54,662.14	\$ 23,403.09	\$ 6,392.55
JULY	\$ 13,205.73	\$ 4,512.48	\$ 30,853.43	\$ 40,587.95	\$ 14,571.29	\$ 6,152.76
AUGUST	\$ (1,709.75)	\$ 2,954.75	\$ 9,174.19	\$ 26,036.69	\$ 1,902.19	\$ 7,405.00
SEPTEMBER	\$ (2,147.20)	\$ (1,883.00)	\$ 10,607.41	\$ 29,920.50	\$ 18,975.59	\$ 8,544.81

OCTOBER	\$ 3,169.17	\$ (157.00)	\$ 27,002.91	\$ 42,009.23	\$ 22,326.05	\$ 15,739.18
NOVEMBER	\$ 7,009.27	\$ 8,679.19	\$ 57,560.95	\$ 59,509.67	\$ 27,532.32	\$ 12,010.00
DECEMBER	\$ 16,070.69	\$ 44,894.94	\$ 52,237.06	\$ 57,848.41	\$ 35,963.82	\$ 13,979.13

TD6 TCE	2018	2019	2020	2021	2022
JANUARY	\$ 526.14	\$ 41,320.33	\$ 65,166.95	\$ 1,228.80	\$ (2,743.57)
FEBRUARY	\$ 2,703.95	\$ 18,514.60	\$ 25,885.80	\$ 5,693.00	\$ 12,635.89
MARCH	\$ 5,223.81	\$ 8,519.48	\$ 66,115.64	\$ 10,206.55	\$ 105,398.73
APRIL	\$ 6,664.80	\$ 13,113.20	\$ 82,504.35	\$ 2,688.53	\$ 120,274.79
MAY	\$ 12,308.71	\$ 11,538.90	\$ 33,941.21	\$ (3,892.05)	\$ 27,516.62
JUNE	\$ 11,243.19	\$ 17,237.20	\$ 6,749.23	\$ (5,247.00)	\$ 19,876.75
JULY	\$ 10,326.64	\$ 11,543.83	\$ 5,061.17	\$ (6,644.86)	\$ 56,305.95
AUGUST	\$ 10,020.88	\$ 11,476.88	\$ 4,146.81	\$ (3,897.41)	\$ 74,195.47
SEPTEMBER	\$ 12,685.45	\$ 15,983.14	\$ 1,348.09	\$ (6,153.73)	\$ 75,643.85
OCTOBER	\$ 22,387.78	\$ 95,549.52	\$ (1,972.36)	\$ 1,572.38	\$ 78,562.95
NOVEMBER	\$ 57,696.91	\$ 53,825.48	\$ 246.43	\$ 2,938.00	\$ 122,880.95
DECEMBER	\$ 52,751.27	\$ 65,445.63	\$ 1,525.06	\$ 3,986.94	\$ 146,164.59

Table 5: Monthly average TCE values of TD6 index for the years 2012-2022

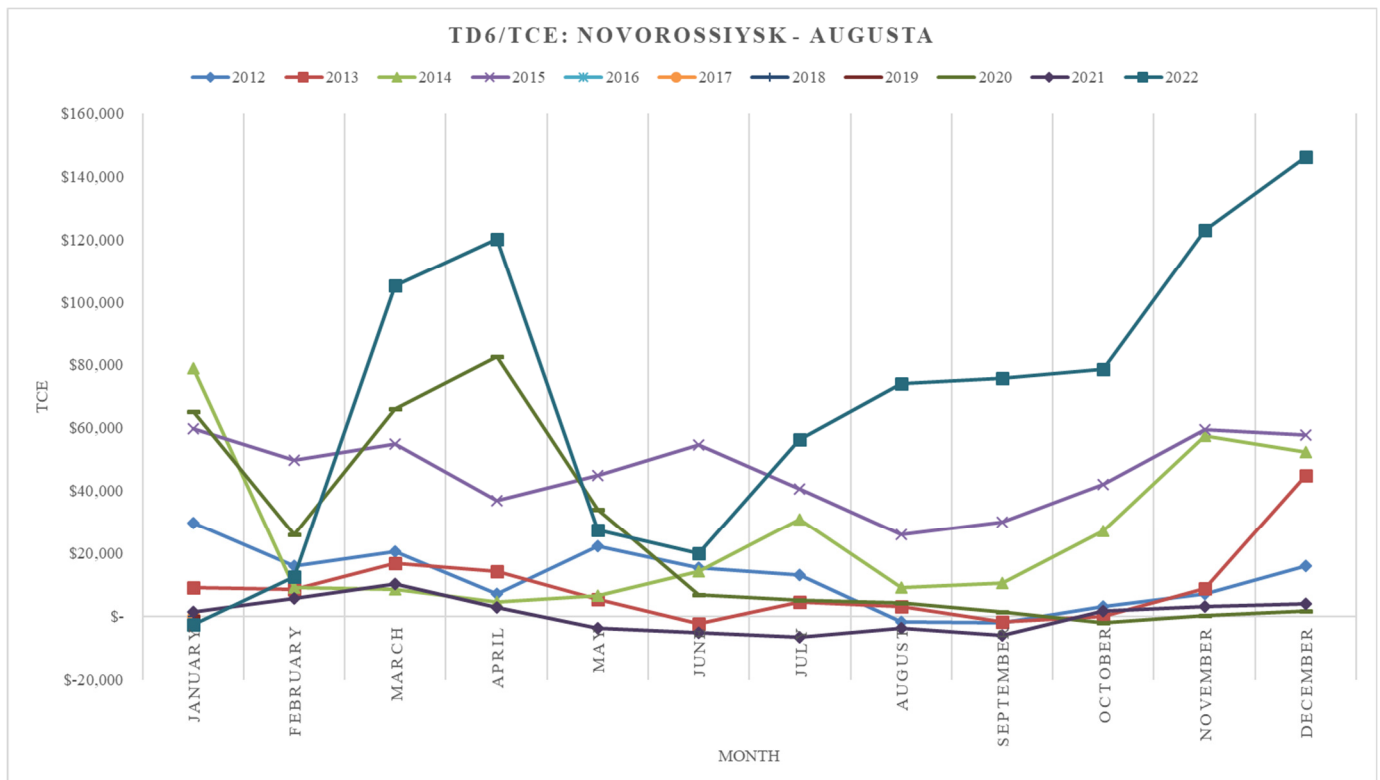


Figure 15: Monthly average TCE values of TD6 index for the years 2012-2022

AVERAGE PER YEAR		
YEAR	WS	TCE
2012	72.96	\$ 12,182.71
2013	64.18	\$ 9,208.52
2014	82.03	\$ 25,777.67
2015	91.65	\$ 46,378.85
2016	84.43	\$ 25,003.30
2017	87.48	\$ 12,770.58
2018	95.78	\$ 17,044.96
2019	102.08	\$ 30,339.02
2020	80.80	\$ 24,226.53
2021	67.29	\$ 206.60
2022	179.55	\$ 69,726.08

Table 6: Monthly and yearly average WS and TCE values for TD 6 index for the years 2012-2022

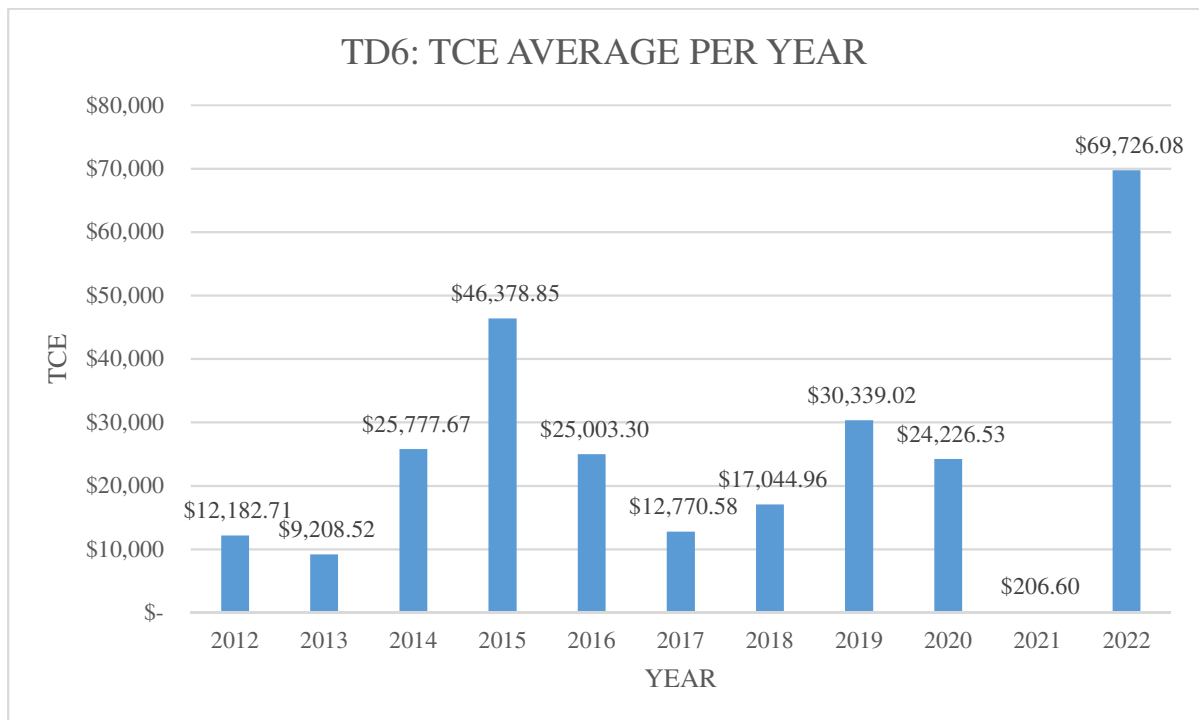


Figure 16: Yearly average TCE values for TD6 index for the years 2012-2022

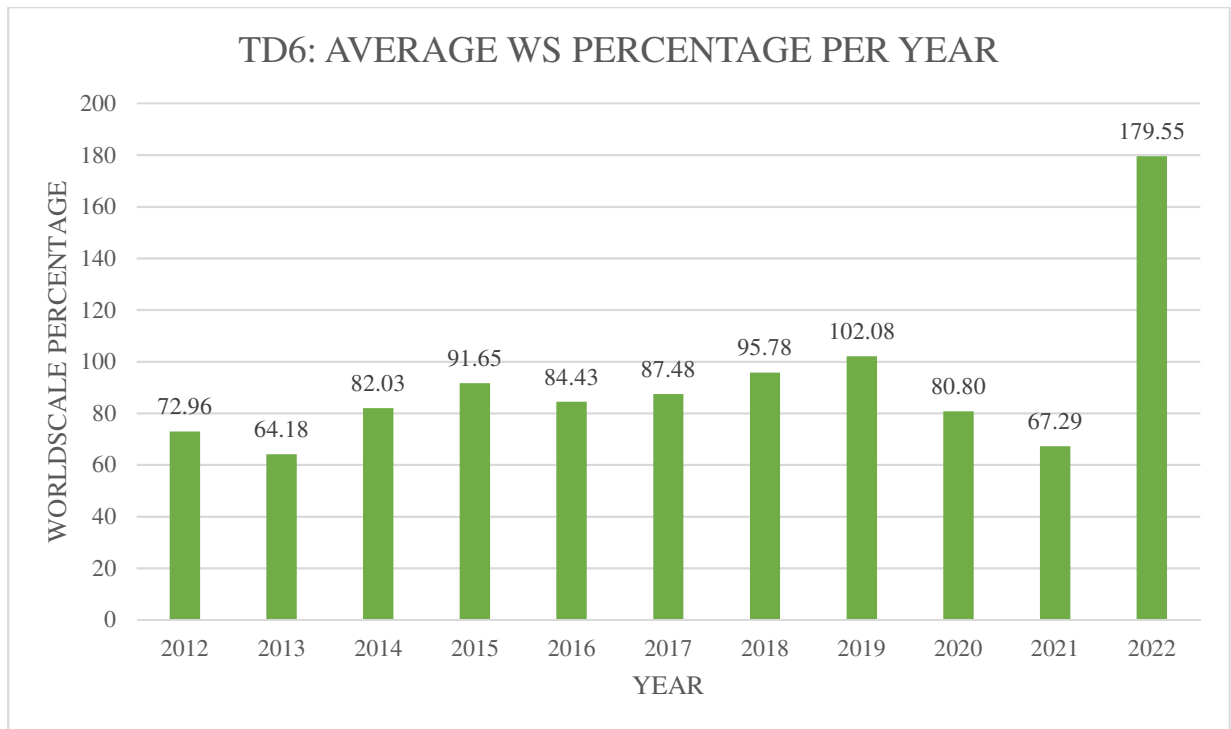


Figure 17: Yearly average WS values for TD6 index for the years 2012-2022

The Worldscale percentage used for the calculation of the freight for a voyage from Novorossiysk to Augusta follows more or less the same profile with the TD2 analyzed previously. From November to March of the next year we see the highest prices confirmed by the increased needs of energy during winter.

The pandemic of COVID-19 has affected also this shipping route and as a result two of the price's peaks showed on March and April 2022. Taking as a fact that the number of ships didn't changed in a range that could affect the result, the increased demand for the petroleum cargoes had as an outcome the increased freight levels and a bigger profit for the Shipowners operating in that region. The inactivity of the following months is reflected in the low Worldscale prices of 2021 and mostly in the Time Charter Equivalent which were not only below the Operational Expenses (OPEX) of the vessel but even below zero meaning that Shipowners had actually to pay for performing such a voyage resulting in an economic loss for them. This unfortunate situation remained till the February of 2022. However, this series of low stopped when the Russia-Ukraine war commenced. Comparing the TCE for February 2022 and March 2022, it was increased by 8.34 times (from \$ 12,635.89 it was skyrocketed to \$ 105,398.73). If we zoom in February, this skyrocketing can be reflected in a daily basis. On 24th of February, the Worldscale was 97.78 and the TCE was \$ 16,630 when on 25th of February the Worldscale was 229.44 and the TCE was \$ 107,382 and kept increasing. In order to get a clearer image at this point, we will calculate the freight a Shipowner would charge the Charterer on the 24th and on the 25th of February.

Freight calculation basis Worldscale for a Suezmax vessel carrying 135,000 mt of oil cargo from Novorossiysk to Augusta:

The Worldscale rate for 2022 for the above mentioned voyage is 8.54 \$/mt. The freight will be calculated by multiplying the quantity of the cargo with the Worldscale rate and the Worldscale percentage.

- 24th of February 2022

135,000 mt of cargo * 8.54 \$/mt * 97.78 % = \$ 1,127,305.62

- 25th of February 2022

135,000 mt of cargo * 8.54 \$/mt * 229.44 % = \$ 2,645,213.76

The freight was more than doubled in some hours. In any case, apart from the increased freight that tempted any Shipowner, in the background there was the risk of sailing in that region. Of course for a Shipowner that would overcome that risk there should be a huge profit through the freight rates.

As regards to the Operating expenses of the vessel, the OPEX of a Suezmax vessel is close to \$ 10,000 per day depending on the age of the vessel. The average TCE for the year 2022 was \$ 69,726.08 i.e. 7 times up the vessel's daily OPEX. In case that the Charter Party agreement between the Shipowner and the Charterer put the Charterer liable for the extraordinary expenses (e.g. extra insurance) of such a call at Novorossiysk then the whole benefit was for the Shipowner.

4.3 ANALYSIS OF THE TD17 INDEX



*Figure 18: Interactive map for the TD17 index route
Source: Baltic Exchange*

Route description: 100,000 metric tons. Baltic to UK-Continent (Primorsk to Wilhelmshaven), Great Belt laden/ballast. Laydays /cancelling 10/20 days from index date. Double hull, age max 15 yrs. 3.75% total commission.

This route concerns an Aframax vessel of 100,000 metric tons deadweight and includes again a Russian port but this time not in the Black Sea. It describes a voyage for loading at Primorsk, Russia located in the Gulf of Finland and discharging in the region of UK Continent. The TCE is calculated for Wilhelmshaven, Germany as discharge port.

For this route, there didn't exist data for the months of November and December 2022 during the preparation of this thesis.

TD17 WS%	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
JANUARY	90.10	80.49	165.98	133.94	96.02	104.78	79.57	95.63	129.54	60.54	99.31
FEBRUARY	79.16	67.75	83.16	90.81	84.46	101.13	73.51	90.36	97.74	70.94	121.63
MARCH	94.74	89.29	69.64	80.97	83.18	98.65	82.53	88.83	112.44	101.89	460.49
APRIL	95.65	119.63	75.17	104.16	88.79	88.06	74.06	70.83	143.83	69.35	544.69
MAY	76.46	57.30	69.19	92.40	82.04	76.83	78.21	83.23	90.55	69.46	191.29
JUNE	75.01	64.37	75.45	122.34	86.78	70.15	86.54	67.92	49.26	70.43	171.86
JULY	67.28	60.53	103.67	78.22	67.70	63.08	94.84	62.66	49.76	62.52	221.25
AUGUST	61.01	71.15	91.90	71.62	48.00	59.99	76.09	55.86	56.20	59.06	219.09
SEPTEMBER	59.98	62.30	63.72	63.53	69.74	78.65	77.18	91.22	43.82	59.99	192.38
OCTOBER	57.84	80.02	75.73	90.17	74.50	94.45	104.71	135.07	41.15	80.10	226.49
NOVEMBER	58.47	60.44	101.50	100.24	89.77	75.52	97.63	120.71	42.77	93.42	
DECEMBER	80.17	96.05	90.06	84.11	106.19	71.83	154.75	176.84	46.32	94.96	

Table 7: Monthly average WS values of TD17 index for the years 2012-2022

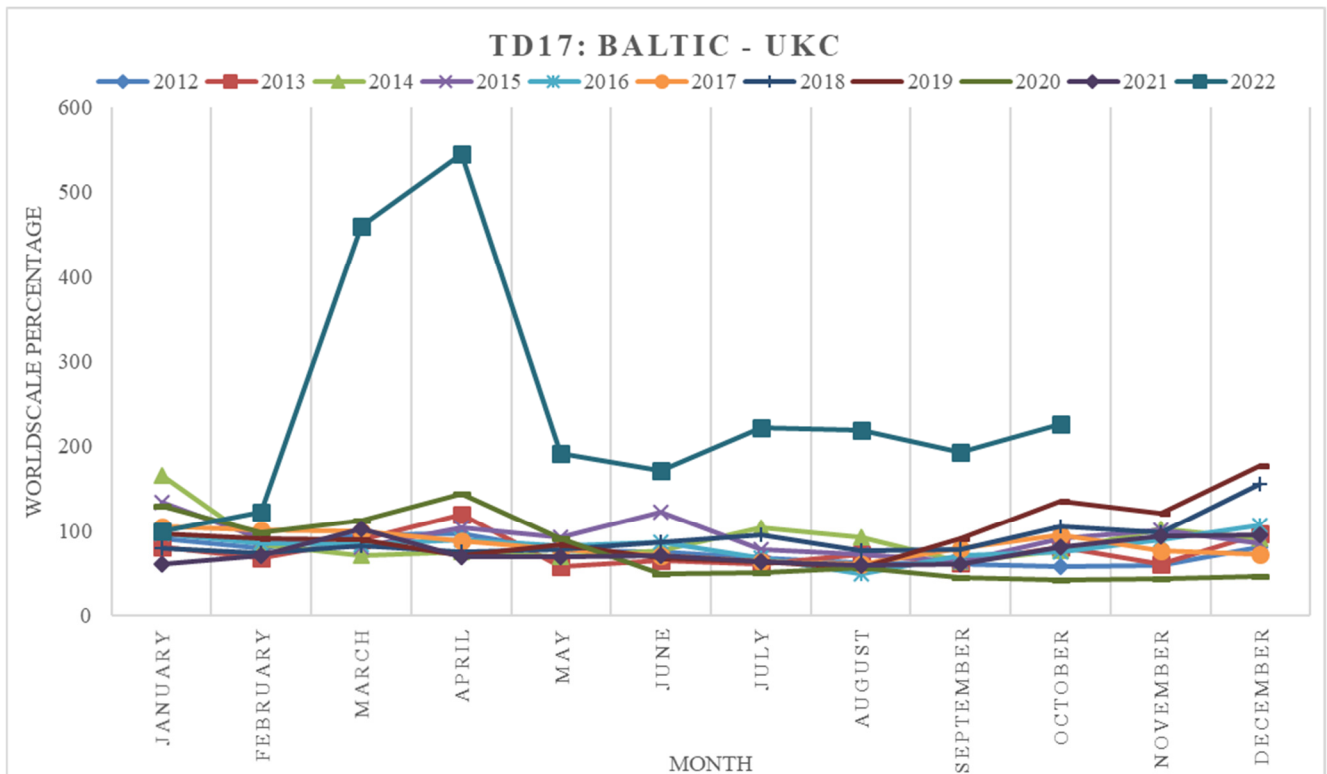


Figure 19: Monthly average WS values of TD17 index for the years 2012-2022

As far as the Worldscale is concerned, after February 2022 and including same, the prices have been higher than every other year of the last 11 years. This is clearly represented in the above chart. The prices for February to October 2022 have been at least the double of the previous years.

TD17 TCE	2012	2013	2014	2015	2016	2017
JANUARY	\$ 19,780.86	\$ 20,099.14	\$ 83,351.50	\$ 78,886.05	\$ 37,945.65	\$ 23,511.57
FEBRUARY	\$ 9,861.10	\$ 8,877.25	\$ 21,790.50	\$ 44,296.55	\$ 30,426.81	\$ 20,488.75
MARCH	\$ 19,144.36	\$ 27,578.95	\$ 11,138.52	\$ 36,660.05	\$ 27,132.10	\$ 19,457.96
APRIL	\$ 20,163.47	\$ 52,424.67	\$ 15,405.10	\$ 50,221.40	\$ 29,618.14	\$ 13,567.50
MAY	\$ 9,816.64	\$ 4,624.86	\$ 11,025.00	\$ 36,444.05	\$ 23,446.65	\$ 8,801.62
JUNE	\$ 13,009.89	\$ 9,972.55	\$ 15,414.24	\$ 57,970.27	\$ 25,206.64	\$ 6,327.68
JULY	\$ 6,150.86	\$ 7,567.26	\$ 37,475.96	\$ 30,884.70	\$ 15,300.24	\$ 2,002.33
AUGUST	\$ (925.41)	\$ 15,434.81	\$ 30,704.20	\$ 29,218.20	\$ 4,062.64	\$ (707.09)
SEPTEMBER	\$ (2,685.55)	\$ 8,321.10	\$ 11,160.23	\$ 23,591.36	\$ 16,321.14	\$ 6,688.86
OCTOBER	\$ (2,354.04)	\$ 22,088.52	\$ 22,878.91	\$ 41,708.91	\$ 17,621.29	\$ 14,561.41
NOVEMBER	\$ 1,954.18	\$ 7,505.71	\$ 45,375.10	\$ 49,846.57	\$ 26,836.32	\$ 4,252.32
DECEMBER	\$ 17,705.69	\$ 33,647.88	\$ 41,837.78	\$ 41,741.56	\$ 34,736.94	\$ 689.81

TD17 TCE	2018	2019	2020	2021	2022
JANUARY	\$ 6,412.91	\$ 28,175.68	\$ 44,458.95	\$ 2,929.00	\$ 17,718.55
FEBRUARY	\$ 4,365.45	\$ 21,039.90	\$ 27,987.85	\$ 5,030.65	\$ 26,542.75
MARCH	\$ 9,441.43	\$ 19,508.24	\$ 43,040.05	\$ 20,888.35	\$ 206,257.00
APRIL	\$ 4,388.75	\$ 7,642.25	\$ 65,774.10	\$ 4,138.90	\$ 249,265.58
MAY	\$ 5,501.71	\$ 15,195.24	\$ 32,853.42	\$ 2,649.37	\$ 49,721.52
JUNE	\$ 10,707.00	\$ 7,692.05	\$ 4,116.91	\$ 1,793.14	\$ 31,999.80
JULY	\$ 15,416.73	\$ 5,163.91	\$ 3,816.00	\$ (678.82)	\$ 67,035.67
AUGUST	\$ 6,243.32	\$ 2,102.33	\$ 7,782.00	\$ (1,715.00)	\$ 68,569.59
SEPTEMBER	\$ 5,782.00	\$ 23,279.33	\$ 1,819.39	\$ (2,663.55)	\$ 55,497.10
OCTOBER	\$ 19,725.87	\$ 50,872.39	\$ 1,075.55	\$ 4,613.76	\$ 73,387.73
NOVEMBER	\$ 18,949.05	\$ 42,139.14	\$ 1,012.86	\$ 12,825.00	
DECEMBER	\$ 53,088.60	\$ 76,943.44	\$ 774.83	\$ 15,653.94	

Table 8: Monthly average TCE values of TD17 index for the years 2012-2022

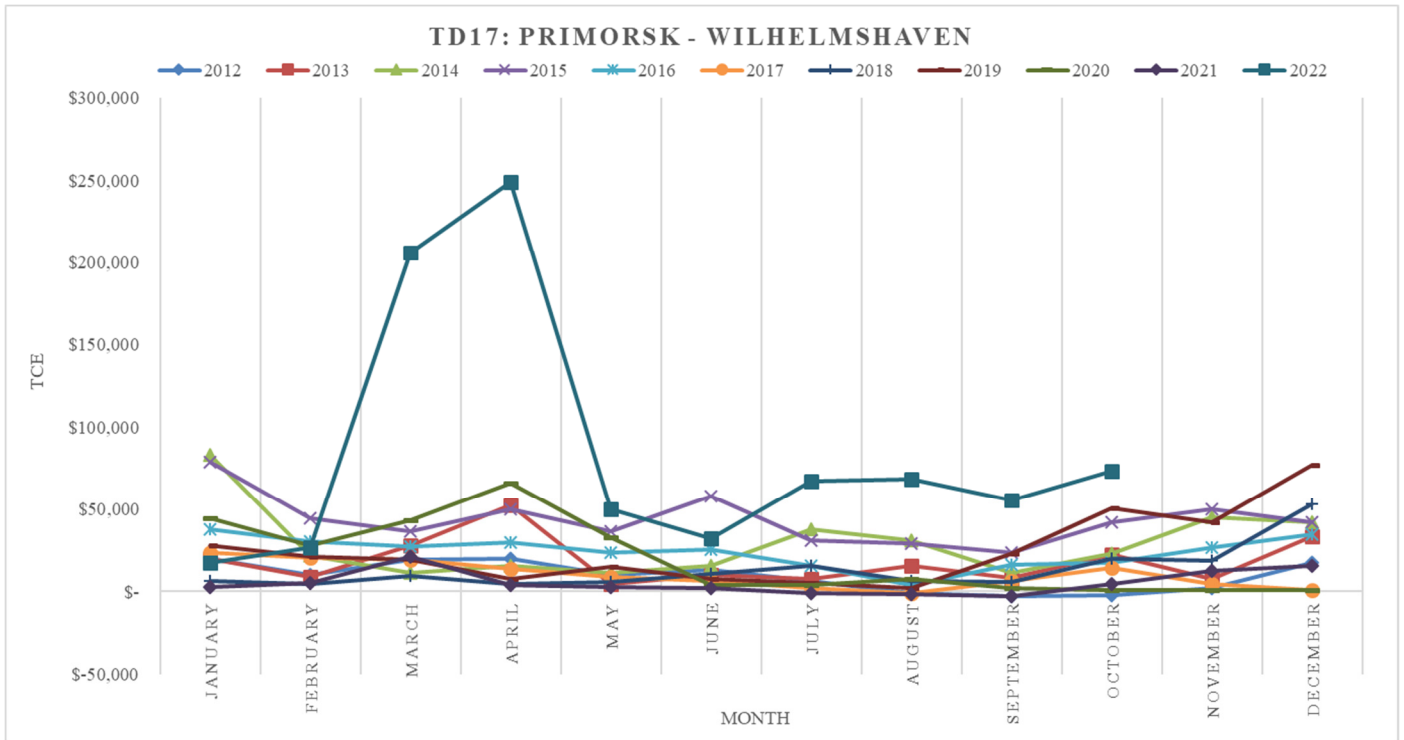


Figure 20: Monthly average TCE values of TD17 index for the years 2012-2022

Exactly the same motif is followed also by the TCE of this voyage which got 10 times up from February to March 2022 and then got even higher in April 2022. For the following months the prices witnessed didn't reach so high, however, they still remained higher than those in the previous years.

AVERAGE PER YEAR		
YEAR	WS	TCE
2012	74.66	\$ 9,301.84
2013	75.78	\$ 18,178.56
2014	88.76	\$ 28,963.09
2015	92.71	\$ 43,455.81
2016	81.43	\$ 24,054.54
2017	81.93	\$ 9,970.23
2018	89.97	\$ 13,335.23
2019	94.93	\$ 24,979.49
2020	75.28	\$ 19,542.66
2021	74.39	\$ 5,455.40
2022	244.85	\$ 84,599.53

Table 9: Monthly and yearly average WS and TCE for TD17 index values for the years 2012-2022

As Bill Lanes stated in his article “Making tanker OPEX count” at www.marinetraffic.com the daily OPEX for an Aframax vessel for the Q2 of 2020 amounted to \$ 6,833. This number was calculated basis the active fleet of tankers from the MarineTraffic vessel database and using the quarterly OPEX assessments published by the Baltic Exchange and its panel of ship managers. The following “pie” chart from Baltic Exchange shows how the amount of \$ 6,833 is distributed to the different types of expenses.

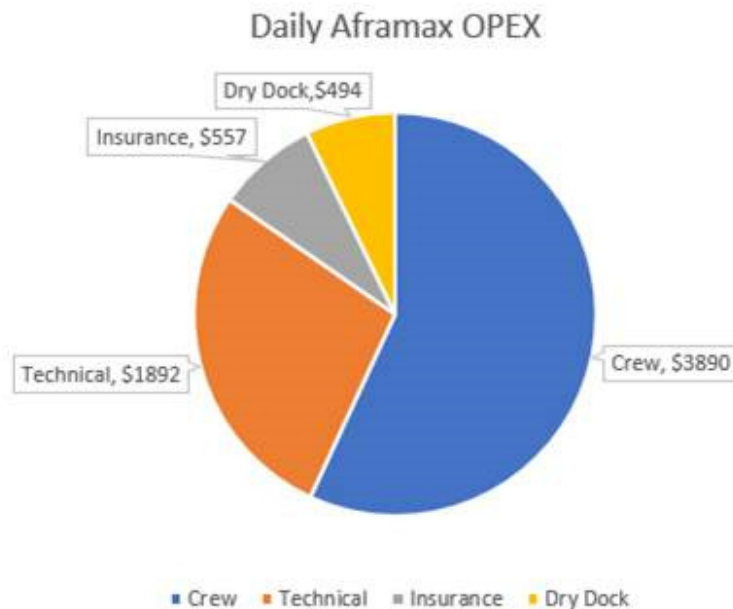


Figure 21: Daily OPEX for an Aframax vessel
Source: Baltic exchange through Marine Traffic

In general, in order to calculate the OPEX of a vessel, the Baltic Exchange consider the following expenses:

- Crew (USD per day, including all fees)
- Technical ((USD per day, including all fees)
- Insurance (USD per day, including all fees and rebates)
- Drydock cost (USD per day, the cost is apportioned in five years in order for the daily cost to be calculated accordingly)

Basis the above facts given from Baltic Exchange, it is assumed that the OPEX of an Aframax vessel that performs the voyage from Primorsk to Wilhelmshaven is about \$ 6,833.

The average 2022 TCE calculated for 10 months (from January to October) is \$ 84,599.53. This means that the daily profit of a Shipowner is \$ 77,766.53 by subtracting the daily OPEX from the TCE. Then the profit for the 10 months would be \$ 77,766.53 * 304 days = \$ 23,641,025.12 (from the 1st of January to the 31st of October). The division of this amount by the daily OPEX gives the number of days that a vessel can sail at the break even point which is approximately 3,459 days or 9.47 years. It is understood that the profit of only 10 months is so significant and could be a “pillow” for a possible period of bad market.

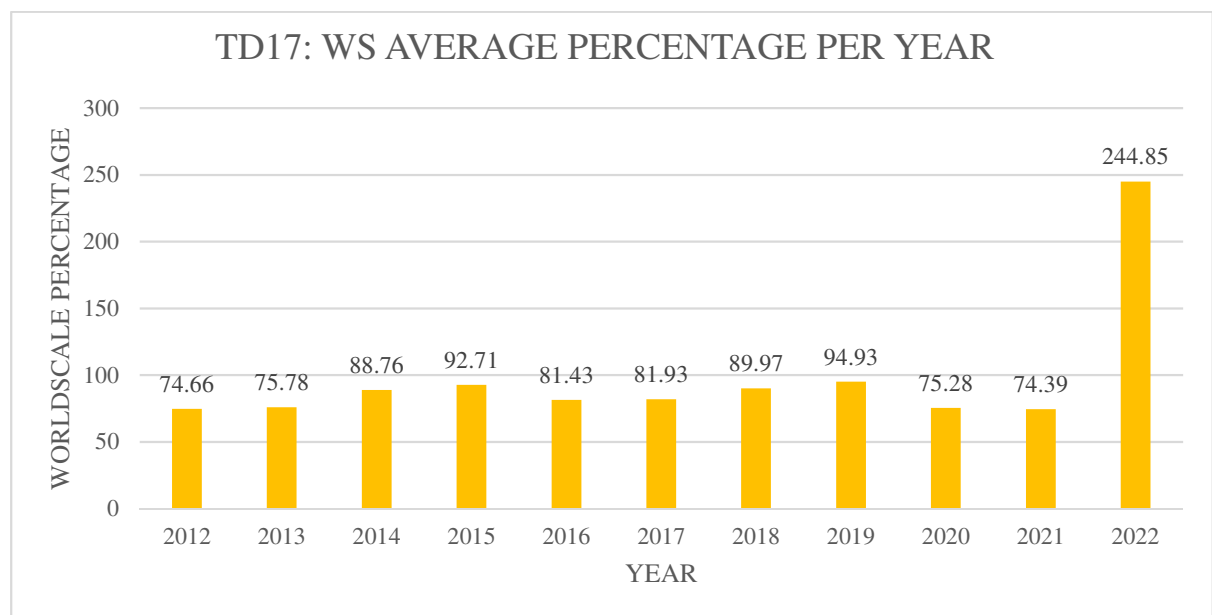


Figure 22: Yearly average WS values for the index TD17 for the years 2012-2022

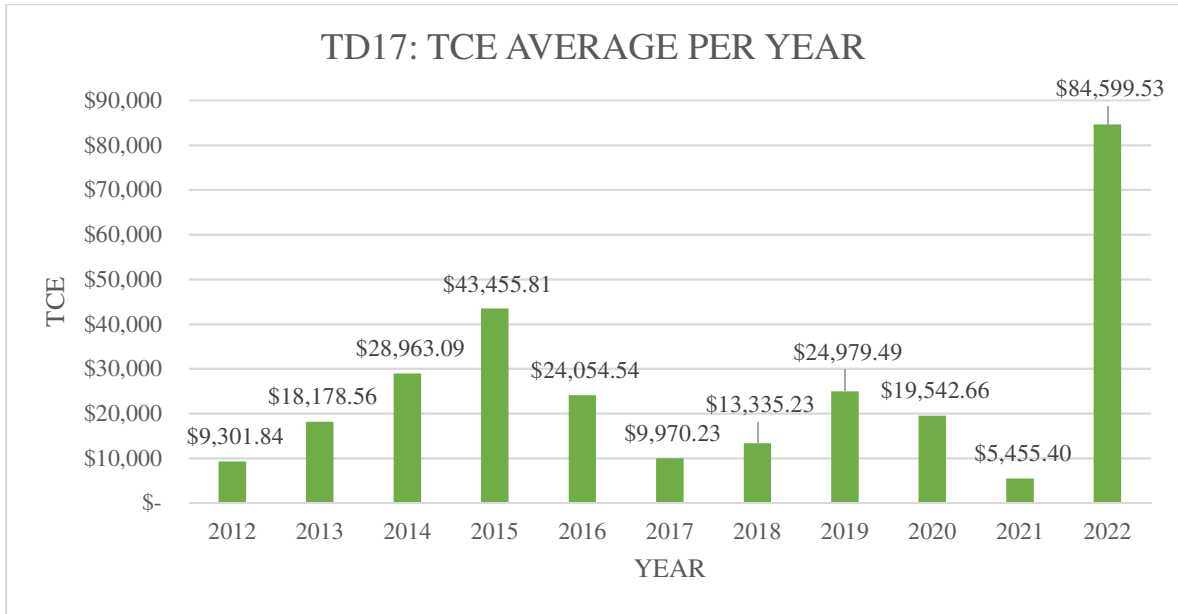


Figure 23: Yearly average TCE values for the index TD17 for the years 2012-2022

4.4 ANALYSIS OF THE TD20 INDEX

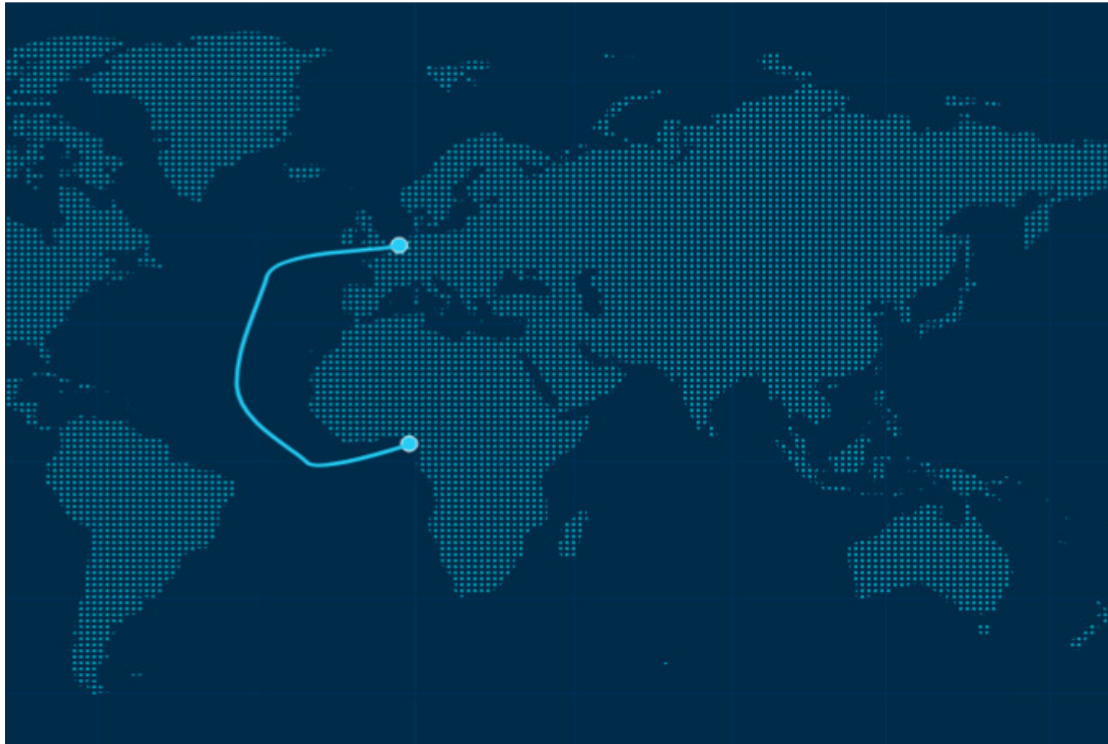


Figure 24: Interactive map for the TD20 index route
Source: Baltic Exchange

Route description: 130,000 metric tons. West Africa to UK-Continent (offshore terminal Bonny) to Rotterdam. Laydays/cancelling 15-20 days from the index date. Age max 15 years. 82,000grt. 3.75% total commission.

Nigeria, Angola and the Republic of Congo are major exporting countries of crude oil. Mostly used outside of the region, West African crude oil is well-liked feedstock for refineries on South and East Asia, Europe and the United States.

Not including any Russian or Ukrainian port and with the load port and discharge port being away from the war area, the first impression would be that this route would not be affected by the present war between Russia and Ukraine.

The data existed for this voyage last from 2015 until today.

TD20 WS%	2015	2016	2017	2018	2019	2020	2021	2022
JANUARY	91.03	97.15	98.78	55.91	82.18	135.83	48.48	57.98
FEBRUARY	85.98	80.44	77.91	54.57	68.86	82.46	55.43	69.30
MARCH	93.71	74.34	91.41	60.90	56.20	126.34	66.91	87.44
APRIL	75.02	83.47	81.91	57.98	64.81	146.34	58.05	141.90
MAY	97.13	67.15	78.01	66.96	59.70	82.43	51.12	89.55
JUNE	93.23	76.92	63.40	69.61	70.72	49.35	49.63	107.76
JULY	81.62	59.30	64.27	70.56	64.59	48.13	52.19	129.16
AUGUST	68.41	38.85	64.50	66.09	61.35	45.94	54.60	129.52
SEPTEMBER	68.59	70.86	72.47	73.00	73.15	36.33	53.14	132.82
OCTOBER	81.64	70.97	83.18	99.53	175.55	32.20	70.39	153.75
NOVEMBER	87.93	78.88	82.52	124.91	110.67	36.60	66.96	199.64
DECEMBER	79.73	96.56	90.40	114.95	143.18	38.85	68.14	171.19

Table 10: Monthly average WS values for TD20 index for the years 2015-2022

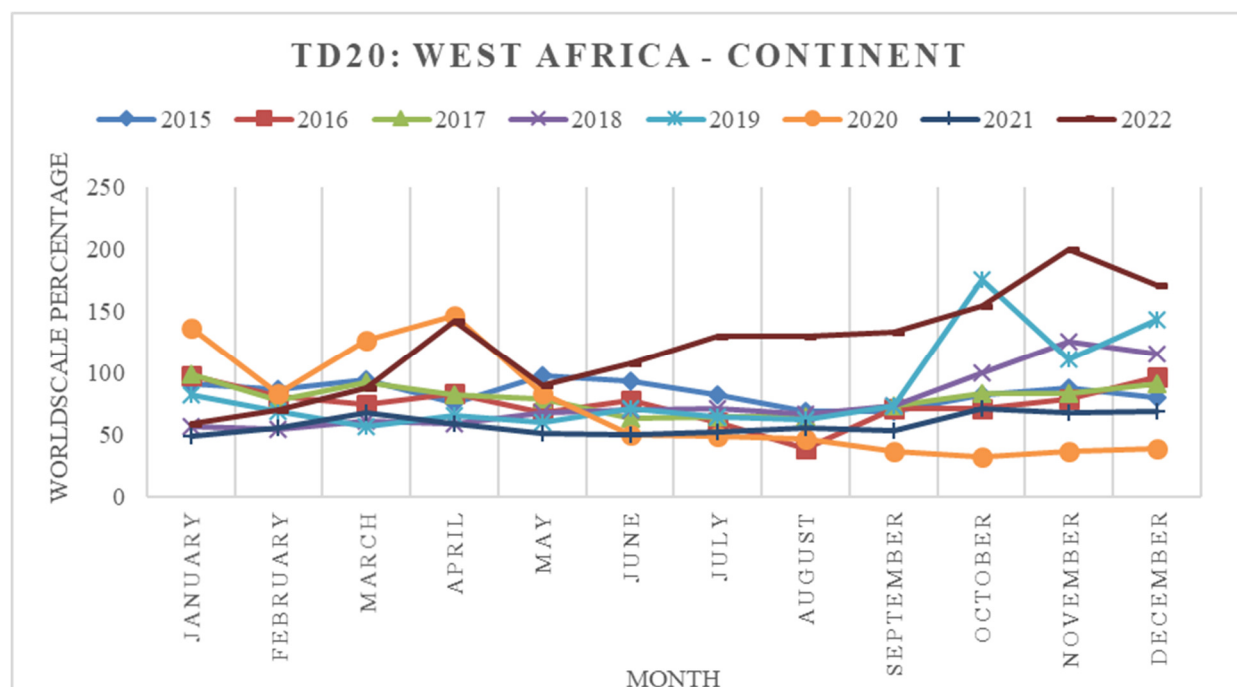


Figure 25: Monthly average WS values for TD20 index for the years 2015-2022

As regards the Worldscale percentage chart, it is observed a stable rise in the values specifically after May 2022. In addition, the recorded prices for and after May 2022 are

higher than the respective ones of the previous years. This is reflected in the yearly average Worldscale percentage which eventually has the greatest value of the last 8 years. It seems that the Russia-Ukraine war increased the demand for the West African crude oil which constitutes a substitute to the sanctioned Russian crude oil.

TD20 TCE	2015	2016	2017	2018
JANUARY	\$52,575.57	\$38,797.35	\$19,727.52	\$ 3,609.05
FEBRUARY	\$46,330.84	\$29,698.62	\$12,072.90	\$ 3,826.10
MARCH	\$52,669.68	\$25,786.48	\$18,124.65	\$ 6,685.24
APRIL	\$38,117.70	\$29,475.43	\$14,088.56	\$ 4,141.80
MAY	\$46,719.68	\$19,657.00	\$13,004.05	\$ 6,230.24
JUNE	\$44,858.82	\$23,456.27	\$ 7,961.77	\$ 7,294.90
JULY	\$38,996.13	\$15,181.57	\$ 7,651.90	\$ 7,437.55
AUGUST	\$32,911.30	\$ 5,411.77	\$ 6,945.27	\$ 5,945.86
SEPTEMBER	\$33,529.77	\$20,245.18	\$ 8,797.57	\$ 8,298.75
OCTOBER	\$42,120.18	\$19,132.57	\$12,648.45	\$18,332.65
NOVEMBER	\$47,402.00	\$23,825.45	\$10,956.14	\$32,517.59
DECEMBER	\$44,000.06	\$30,428.65	\$14,048.56	\$31,000.13

TD20 TCE	2019	2020	2021	2022
JANUARY	\$23,381.64	\$55,793.36	\$ 3,261.90	\$ 872.05
FEBRUARY	\$14,420.20	\$27,427.40	\$ 4,456.75	\$ 3,325.10
MARCH	\$ 7,230.29	\$60,901.68	\$ 9,379.09	\$ 3,949.87
APRIL	\$11,189.65	\$77,603.75	\$ 5,267.35	\$34,074.89
MAY	\$ 9,214.14	\$38,574.00	\$ 999.89	\$ 7,008.38
JUNE	\$16,535.40	\$15,406.41	\$-1,148.59	\$11,997.00
JULY	\$12,541.78	\$13,153.83	\$ -362.00	\$29,058.38
AUGUST	\$13,958.86	\$11,515.90	\$ 2,108.29	\$32,827.55
SEPTEMBER	\$18,733.24	\$ 6,781.27	\$ 18.55	\$37,981.90
OCTOBER	\$74,407.74	\$ 3,218.36	\$ 5,693.71	\$49,808.76
NOVEMBER	\$41,939.57	\$ 4,949.81	\$ 4,852.68	\$76,610.86
DECEMBER	\$58,807.00	\$ 4,168.83	\$ 7,268.17	\$64,550.06

Table 11: Monthly average TCE values for TD20 index for the years 2015-2022

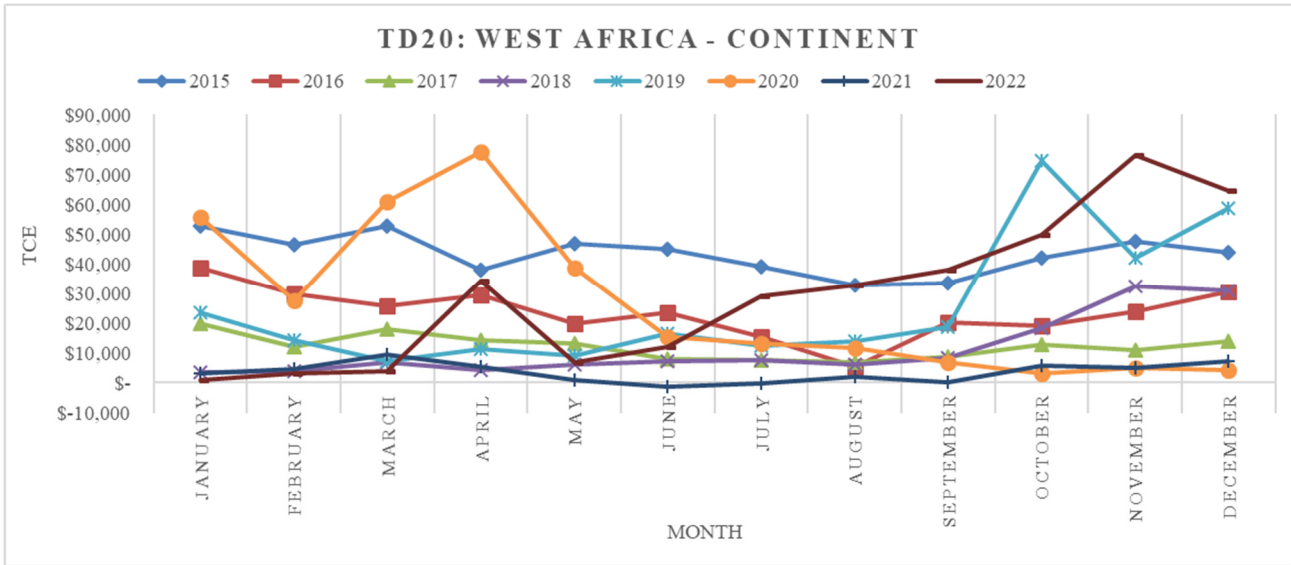


Figure 26: Monthly average TCE values for TD20 index for the years 2015-2022

As far as the TCE is concerned, the best year was 2015 with a peak of \$ 43,352.64 as yearly average. However, during 2022 the second highest value recorded (November 2022) for the period of the last 8 years pushing this year to the second highest position of the yearly average TCEs. For the year 2022, a continuous rise of the TCE prices was observed too following the same pattern as the Worldscale percentage.

AVERAGE PER YEAR		
YEAR	WS	TCE
2015	83.67	\$43,352.64
2016	74.57	\$23,424.70
2017	79.06	\$12,168.95
2018	76.25	\$11,276.65
2019	85.91	\$25,196.63
2020	71.73	\$26,624.55
2021	57.92	\$ 3,482.98
2022	122.50	\$29,338.73

Table 12: Yearly average WS and TCE values for TD20 index for the years 2015-2022

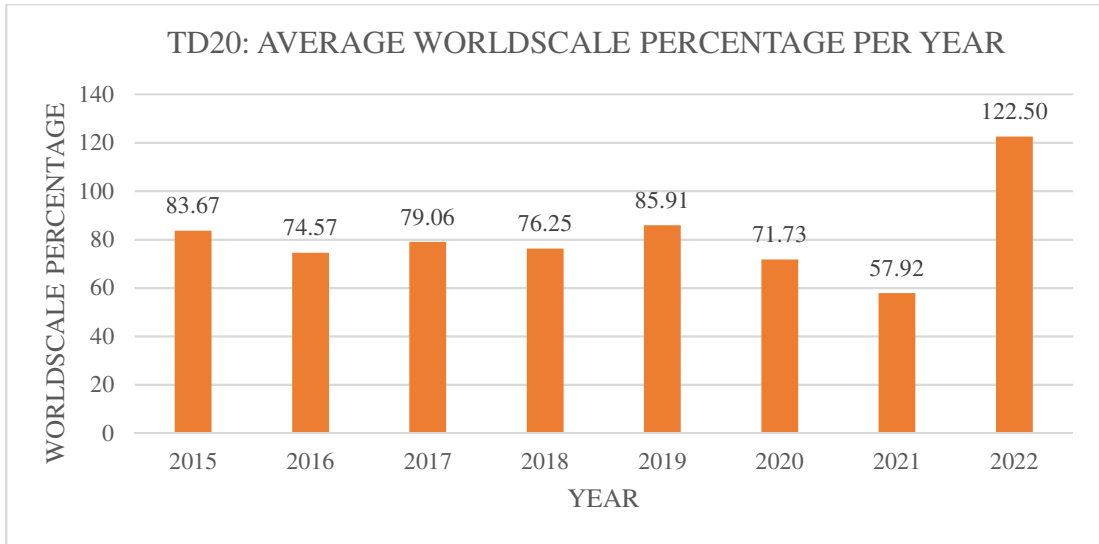


Figure 27: Yearly average WS values for TD20 index for the years 2015-2022

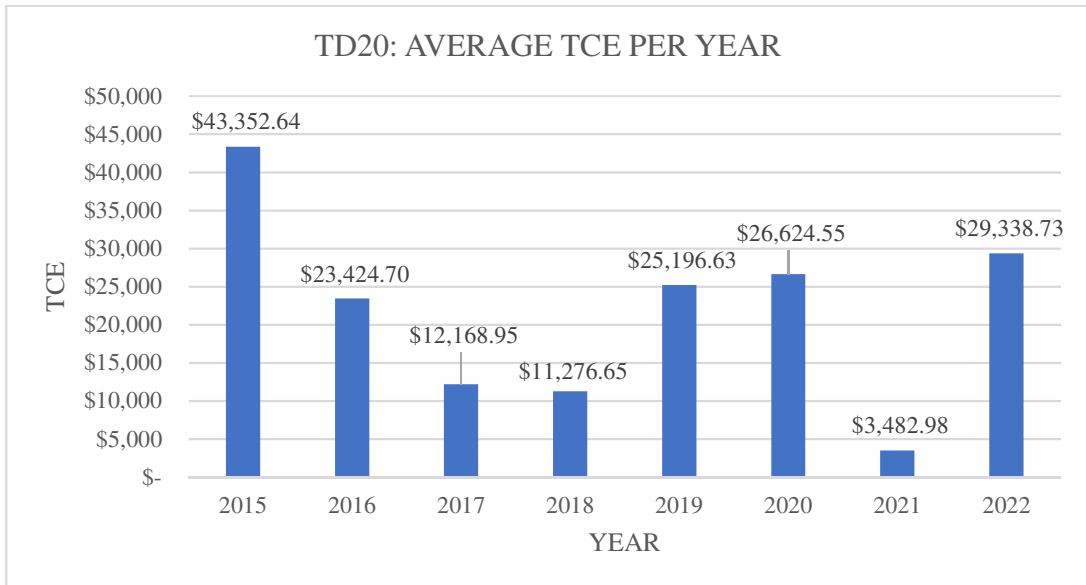


Figure 28: Yearly average TCE values for TD20 index for the years 2015-2022

4.5 ANALYSIS OF THE TC5 INDEX

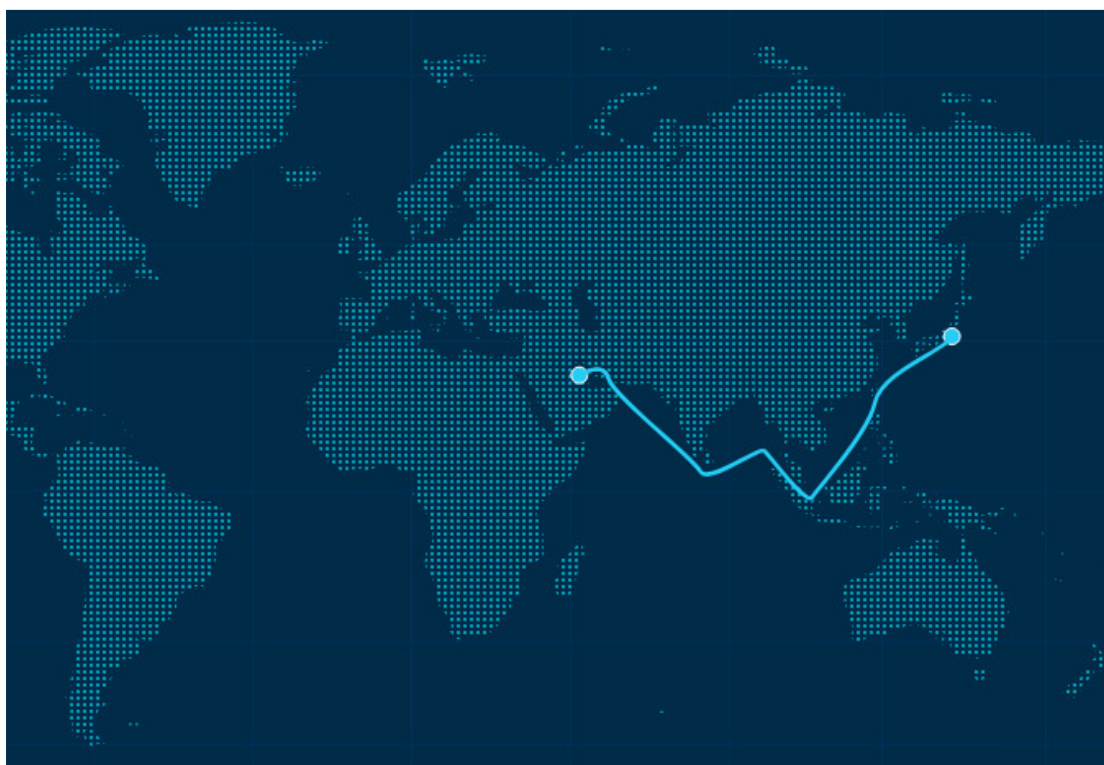


Figure 29: Interactive map for the TC5 index route

Source: Baltic Exchange

Route description: 55,000 metric tons CPP/UNL naphtha condensate. Middle East Gulf to Japan (Ras Tanura to Yokohama). Laydays cancelling 30/35 days from index date. Age max 15 yrs. 3.75% total commission.

The above shipping route describes a voyage for the transportation of Clean Petroleum Products like Gasoline and Naphtha which derive from the refining of crude oil. The Middle East Gulf countries are major refineries among other like Russia and the United States. One of the world's largest refineries is the Ras Tanura refinery (Saudi Aramco) which consists the loading port of the voyage towards Yokohama located in Japan, one of the biggest importers.

TC5 WS %	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
JANUARY	101.12	108.80	89.28	119.70	135.96	122.89	92.06	147.24	126.73	80.31	98.37
FEBRUARY	100.53	99.94	102.60	106.58	104.48	116.43	107.11	114.62	100.14	82.36	98.73
MARCH	100.05	129.44	109.17	127.41	115.75	126.93	115.22	111.45	153.32	113.82	186.54
APRIL	118.74	118.46	97.26	111.70	99.26	107.71	110.48	97.05	304.39	118.06	193.93
MAY	114.74	98.92	110.84	120.97	101.49	107.57	112.27	115.75	254.45	93.89	297.26
JUNE	105.07	94.01	109.53	141.44	96.00	108.10	116.67	114.07	81.70	87.86	317.86
JULY	124.10	78.99	104.49	163.80	101.06	114.42	117.73	96.32	61.28	85.11	284.18
AUGUST	120.33	99.45	124.22	152.75	111.16	127.18	100.43	111.93	83.08	123.40	271.20
SEPTEMBER	115.68	108.41	121.99	105.21	88.96	137.54	110.44	108.16	72.03	113.67	299.08
OCTOBER	119.36	102.31	122.48	79.63	85.12	122.83	125.07	169.54	67.04	118.49	191.71

NOVEMBER	135.23	91.58	125.19	82.31	75.50	126.10	131.29	147.88	73.49	117.49	243.18
DECEMBER	144.34	101.21	114.02	98.87	84.74	133.08	181.02	157.49	101.96	130.52	354.64

Table 13: Monthly average WS values for TC5 index for the years 2012-2022

Looking the above table, it is observed that the 2 highest values of the Worldscale percentage occurred during 2022, in particular on June and December. The third highest in the row, was during another special period, the pandemic of COVID-19, when the demand for oil was huge due to the need of storage because of the uncertainty of that times.

When overviewing the table and comparing the values by month for the 11 years period of time, the conclusion reached is that from March 2022 onwards, the highest values were those of 2022 (apart from April for which the highest value of the 11 years recorded on 2020 as already mentioned above). This is clearly mirrored in the following chart. Due to this fact, the average Worldscale percentage for the year 2022 was more than double than every other year of the under review period.

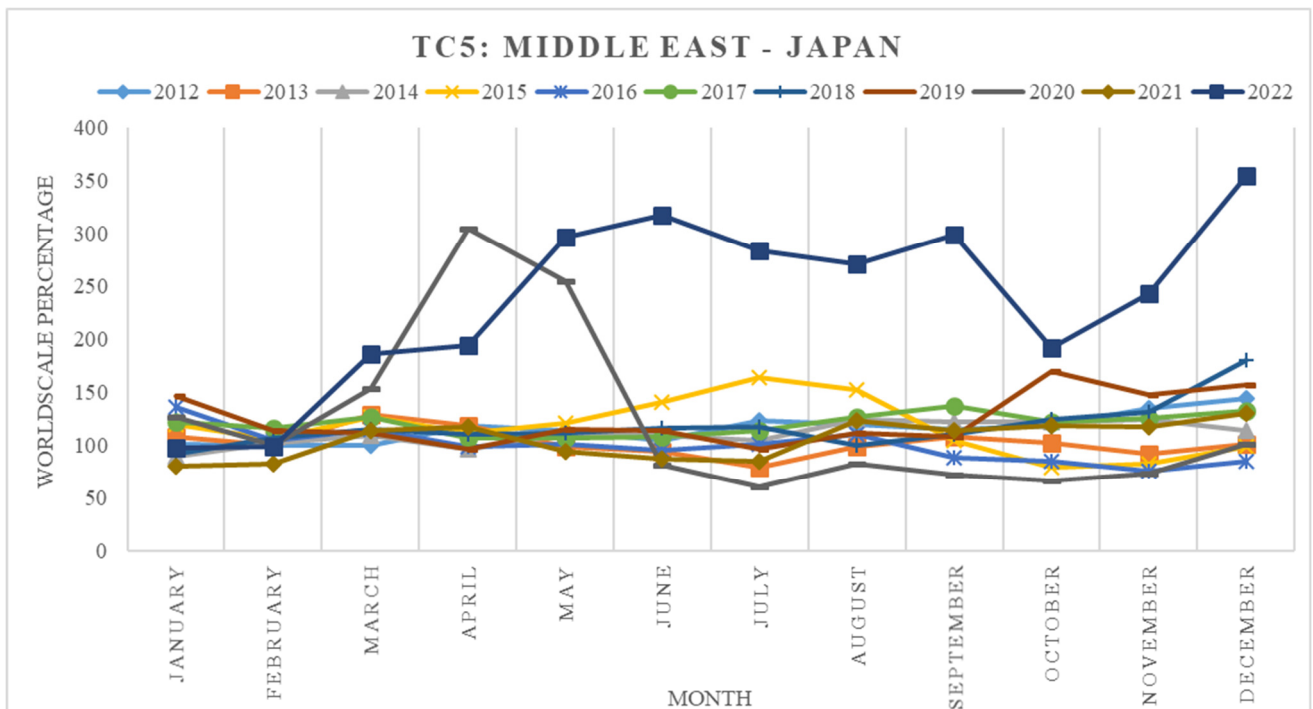


Figure 30: Monthly average WS values for TC5 index for the years 2012-2022

TC5 TCE	2012	2013	2014	2015	2016	2017
JANUARY	\$ -1,522.90	\$ 9,056.23	\$ 1,086.18	\$ 25,416.24	\$ 21,584.50	\$ 8,151.71
FEBRUARY	\$ -1,960.24	\$ 4,821.45	\$ 5,345.30	\$ 18,228.79	\$ 15,308.48	\$ 7,569.35
MARCH	\$ -2,120.64	\$ 16,462.60	\$ 8,288.24	\$ 26,114.05	\$ 17,054.10	\$ 9,747.04
APRIL	\$ 4,627.26	\$ 13,305.29	\$ 4,752.60	\$ 20,472.45	\$ 13,301.90	\$ 6,428.94
MAY	\$ 5,594.50	\$ 6,590.33	\$ 9,173.55	\$ 21,901.74	\$ 12,798.15	\$ 6,530.29
JUNE	\$ 6,156.05	\$ 5,073.60	\$ 8,004.33	\$ 28,126.23	\$ 11,199.27	\$ 6,876.18

JULY	\$ 11,617.59	\$ -46.87	\$ 6,649.65	\$ 35,741.22	\$ 12,106.19	\$ 7,808.71
AUGUST	\$ 8,007.27	\$ 7,064.95	\$ 13,690.35	\$ 34,409.10	\$ 14,242.64	\$ 9,479.77
SEPTEMBER	\$ 5,775.75	\$ 10,269.05	\$ 13,680.82	\$ 21,477.95	\$ 9,303.82	\$ 10,432.52
OCTOBER	\$ 8,464.26	\$ 7,482.96	\$ 17,160.87	\$ 14,389.18	\$ 7,801.81	\$ 7,972.36
NOVEMBER	\$ 15,395.09	\$ 4,113.81	\$ 19,771.95	\$ 15,385.29	\$ 6,005.55	\$ 7,476.23
DECEMBER	\$ 18,719.13	\$ 7,549.41	\$ 20,079.11	\$ 21,277.44	\$ 6,549.35	\$ 8,689.38

TC5 TCE	2018	2019	2020	2021	2022
JANUARY	\$ 4,611.27	\$ 19,575.59	\$ 12,247.00	\$ 3,375.10	\$ 2,826.95
FEBRUARY	\$ 7,806.80	\$ 11,463.25	\$ 9,990.40	\$ 2,509.75	\$ 1,066.80
MARCH	\$ 9,512.29	\$ 10,478.81	\$ 28,798.27	\$ 9,016.74	\$ 17,144.65
APRIL	\$ 7,897.15	\$ 7,353.25	\$ 70,184.55	\$ 10,271.35	\$ 20,464.68
MAY	\$ 6,912.48	\$ 11,705.81	\$ 56,916.84	\$ 5,003.42	\$ 42,287.81
JUNE	\$ 7,473.57	\$ 12,248.65	\$ 10,955.41	\$ 2,748.45	\$ 41,976.40
JULY	\$ 7,197.64	\$ 6,559.35	\$ 4,964.96	\$ 1,541.14	\$ 37,280.57
AUGUST	\$ 4,186.41	\$ 11,876.14	\$ 10,284.55	\$ 10,388.24	\$ 40,639.64
SEPTEMBER	\$ 5,776.00	\$ 8,816.90	\$ 7,984.41	\$ 7,546.64	\$ 49,582.19
OCTOBER	\$ 7,278.35	\$ 24,673.65	\$ 6,514.00	\$ 6,412.05	\$ 23,318.33
NOVEMBER	\$ 9,521.77	\$ 21,252.76	\$ 7,650.86	\$ 6,348.36	\$ 36,790.73
DECEMBER	\$ 20,948.75	\$ 24,238.18	\$ 13,956.06	\$ 9,780.72	\$ 64,787.00

Table 14: Monthly average TCE values for TC5 index for the years 2012-2022

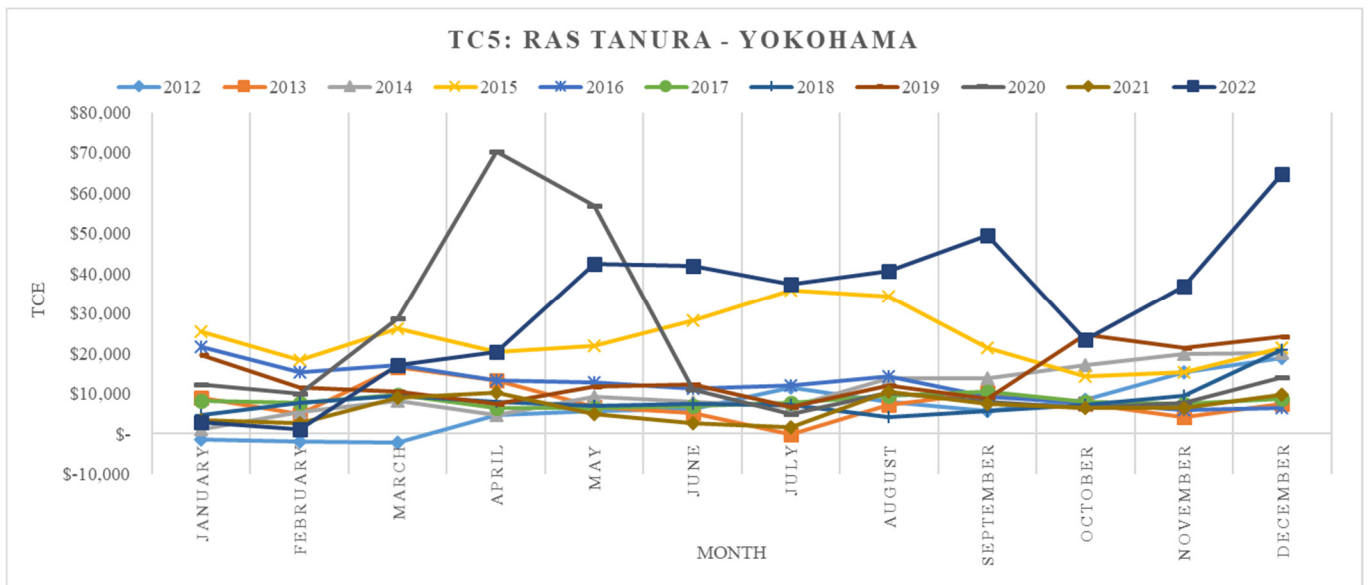


Figure 31: Monthly average TCE values for TC5 index for the years 2012-2022

AVERAGE PER YEAR		
YEAR	WS	TCE
2012	116.61	\$ 6,562.76
2013	102.63	\$ 7,645.23
2014	110.92	\$ 10,640.25
2015	117.53	\$ 23,578.31
2016	99.96	\$ 12,271.31
2017	120.90	\$ 8,096.87
2018	118.32	\$ 8,260.21
2019	124.29	\$ 14,186.86
2020	123.30	\$ 20,037.28
2021	105.42	\$ 6,245.16
2022	236.39	\$ 31,513.81

Table 15: Yearly average WS and TCE values for TC5 index for the years 2012-2022

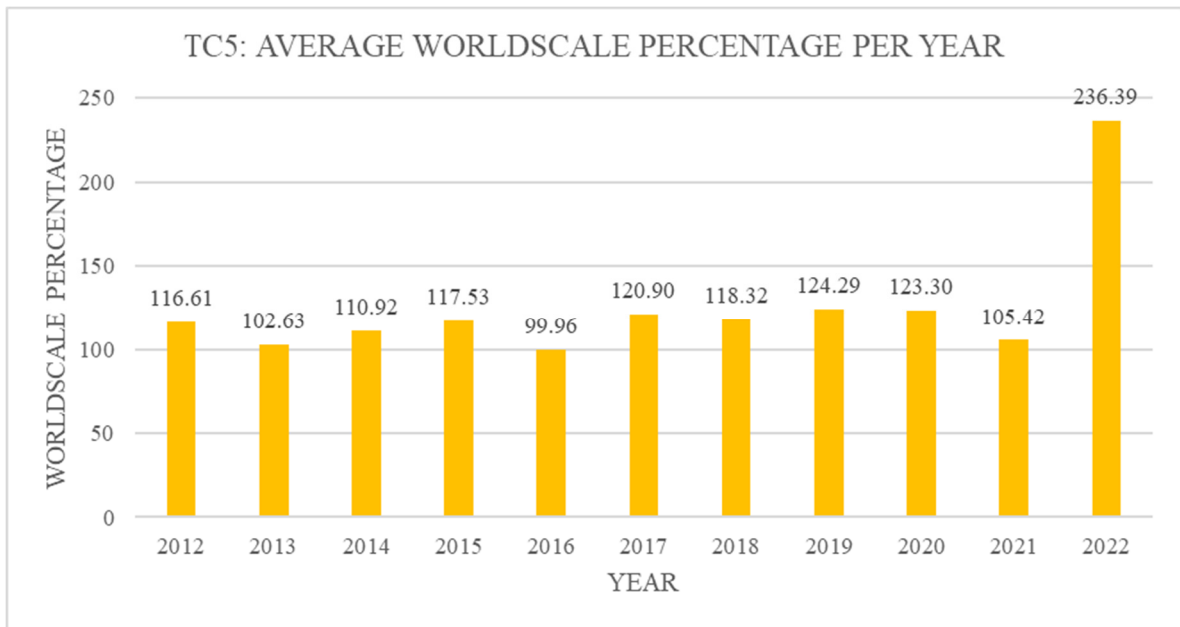


Figure 32: Yearly average WS values for TC5 index for the years 2012-2022

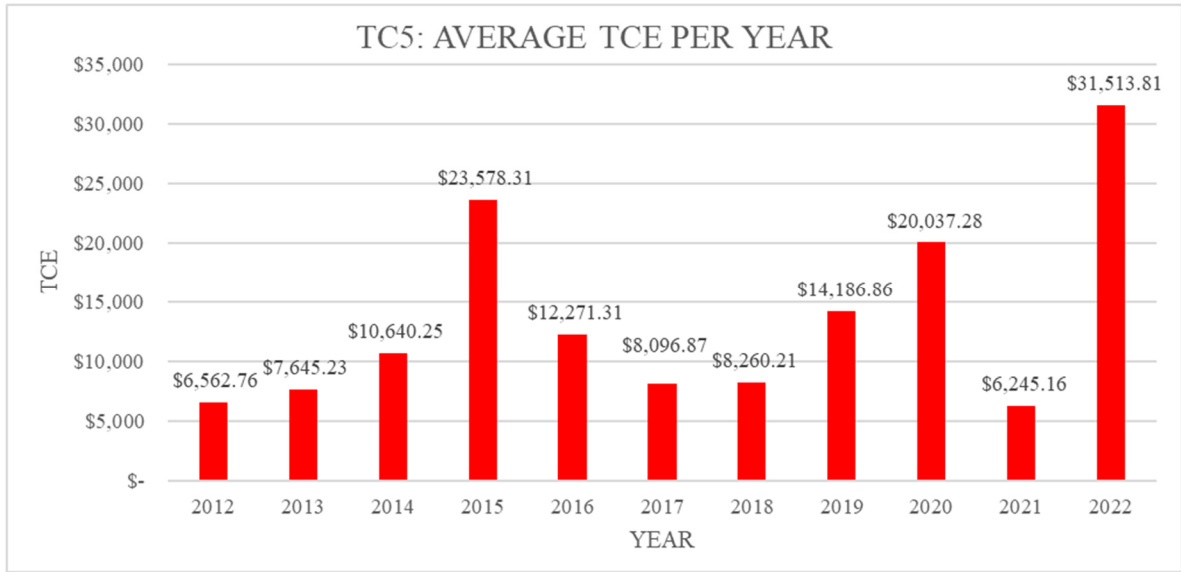


Figure 33: Yearly average TCE values for TC5 index for the years 2012-2022

CONCLUSIONS

The ongoing conflict between Russia and Ukraine has had a significant impact on the ship tanker market. The war has disrupted supply chains, making it more difficult for tankers to transport oil and other products from the Black Sea region. As a result, shipping companies have had to reroute their vessels, which has led to longer transit times and increased costs. In addition, the war has increased the risk of shipping in the Black Sea region, leading to higher insurance premiums for vessels that operate in the area. Apart from the increased premiums, the conflict has also had an impact on oil prices, which can affect the demand for tanker services. For example, if oil prices rise, it may become more profitable for tanker operators to transport crude oil rather than other products. However, a reduction in trade volumes has occurred since companies are hesitant to do business in the region due to the risk of disruption or damage to their cargo. Last but very important, the conflict has also increased the geopolitical tensions between Russia and other countries, which can have a ripple effect on the global economy and trade.

Overall, the Russia-Ukraine war has created a challenging environment for tanker operators, with increased costs and risk factors. However, the full extent of the impact on the market will depend on the duration and severity of the conflict, as well as any potential diplomatic or economic developments in the region. Up to now, it seems that this challenging environment is beneficiary for the risky Shipowners that will choose to trade in the high risk areas. For the time being, trading in Russian or Ukrainian areas is proving to be a prosperous ground for making profits.

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