



Europe in the Global Economic System

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**TANKER FLEET OF GREECE:
STRATEGY DEVELOPMENT IN THE CONDITIONS
OF SANCTIONS AGAINST RUSSIA –
THROUGH A PRACTICE LENS**

Abstract

The focus of this article is on the reorientation of the economic policy of Greece in the field of its tanker fleet development, influenced by geopolitical shifts resulting from the Russian-Ukrainian war. These shifts have led to changes in global demand for tanker fleet services due to sanctions imposed on Russia's oil exports. The primary objective of this research was to compare the Greek tanker and LNG fleets with fleets of comparable size in the United States and Singapore. The study relied on secondary data collected from articles in journals, books and official websites, and the Clarksons Research database. The findings reveal that significant portions of deadweight tonnage of the Greek oil tankers were absorbed by Asia, Africa, and the Mediterranean and Black Sea zones during the period from 2001 to 2023. Furthermore, the deadweight tonnage of Greek LNG fleet has found significant usage in Asia, America and Africa zones between 2013 and 2023. The data also demonstrate a notable increase in the volumes of Russian crude oil transported by Greek tankers over the past year, despite EU sanctions on Russia's oil exports. Greek tankers have increasingly employed «ship-to-ship»

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transfers as a means to circumvent these EU sanctions. We argue that further EU sanctions may limit these transfers, but their ultimate effects remain uncertain, as Greek tankers may continue to transport Russian oil to alternative markets, thus ensuring their profits.

Key Words:

Greek tanker fleet; Russian invasion of Ukraine; international shipping market; sanctions.

JEL: F5.

14 figures, 3 tables, 38 references.

Problem Statement and Literature Review

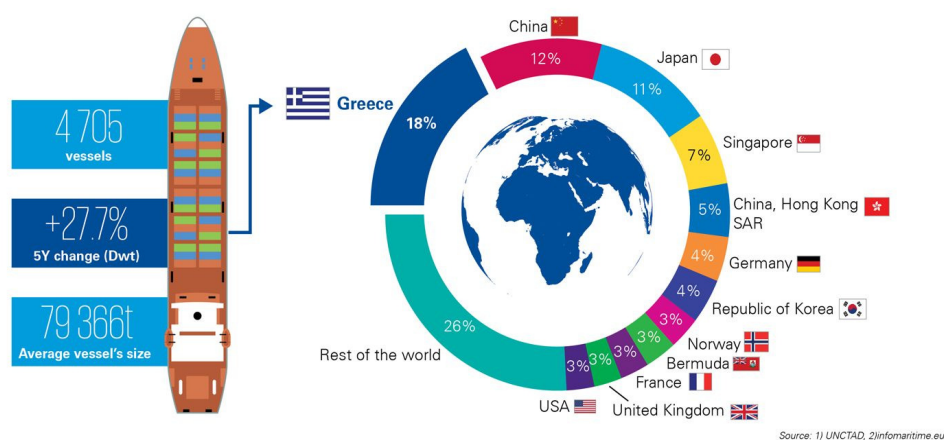
The sanctions imposed on Russia in response to its attack on Ukraine have brought about significant transformations in the global economy, particularly in the tanker fleet industry. This article explores this industry with a specific focus on Greek shipowners. It is important to note that, methodologically, this article relies on secondary sources of information. Conducting a comparative financial analysis of the Greek oil tanker fleet vs. LNG tanker fleet in the international transport market, as well as investigating the formation of transport pricing in the international crude oil and liquefied natural gas (LNG) markets, was impossible due to the novelty of the subject and the lack of relevant data.

Greece is a major maritime nation, with its shipping industry and tourism being the primary sectors of the economic system. For several consecutive years, Greece has ranked first in the world by the size of the merchant fleet owned by its nationals (Close, 2014). Greek ownership is especially prominent in the sector tankers and bulk carriers, which carry the bulk of the planet's trade (Hellenic Chamber of Shipping, 2022).

At present, approximately 90% of the world commodities' trade (in terms of capacity) is seaborne, while the global fleet has increased by 67% over the last decade. Specifically, Greece ranks 1st globally by ownership of merchandise vessels, presenting a 28% increase in owned capacity within the last five years (Figure 1). The country's average vessel size is nearly double the global average, which indicates that Greek shipowners mostly operate in high-volume markets.

Figure 1

Global market positions of Greece by ownership of merchandize vessels



Source: KPMG (2022).

Greek-flag vessels account for 1% of the global fleet count. The share of Greek-owned vessels operating under the Greek flag is 15.6%. The overall composition of Greek-owned fleet by flagship is shown in Table 1.

Recent data show that Greek shipowners are heavily investing in expansion of their fleets by investing in new vessels and maintaining the average age of the Greek-owned fleet at a lower than the world's average level. The sector's historical growth is strongly associated with changes in the global economic conditions, which have also affected the shipping industry through supply and demand for shipping services.

Table 1

The composition of Greek-owned fleet by flagship

Operating flags of Greek-owned vessels	Percentage
Liberia	25.6%
Marshall Islands	24.4%
Malta	17.6%
Greece	15.6%
Cyprus	5.6%
Bahamas	5.6%
Other countries	5.5%

Source: KPMG (2022).

Over the past two years, and especially during the pandemic period, the shipping of products has surged in response to a significant increase in demand. This surge has resulted in a sharp rise in container and dry cargo freight rates, breaking records for the Baltic Dry Index (BDI) and Freightos Baltic Global Container Index (FBGCI) that had held for the past 10 and 13 years, respectively. In contrast, tanker freight rates plummeted by nearly 50% just months after the initial lockdowns (see Figure 2).

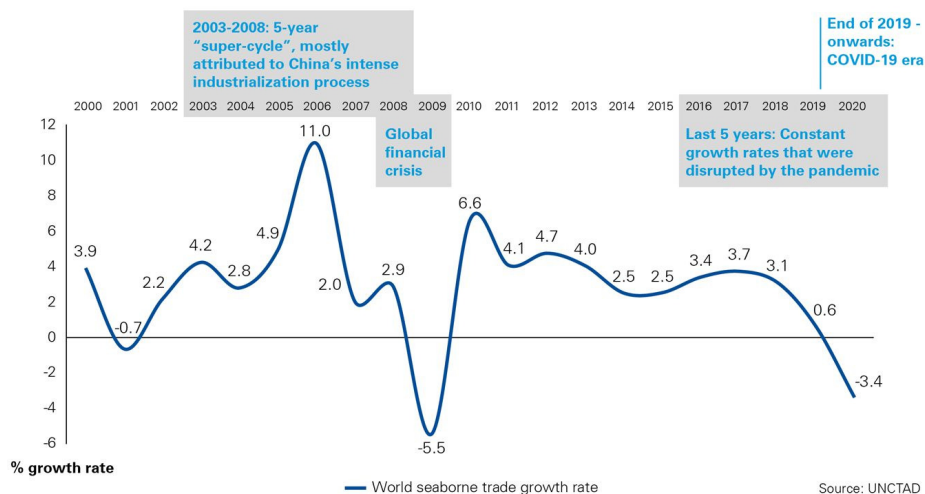
At the same time, the shipping industry is witnessing new trends and challenges related to technology. Firstly, significant implications have emerged from the recently adopted compliance regulatory framework aimed at minimizing sulfur emissions. Furthermore, the 400% increase in cyber-attacks during the COVID-19 period has underscored the importance of employing the latest technologies to enhance cyber security.

The performance of the shipping industry is determined by multiple factors shaped under the influence of the external environment, thus creating a need to search for alternative modes of financing and timely and efficient responses to emerging risks. The forces of supply and demand are yet another challenge for the industry, as an oversupply of ships leads to a percentage decrease in the cargo and freight market. A solution to many challenges is the digital transformation of shipping, which certainly stands out today as the main trend of the industry. Technology solutions help to optimize operations, efficiency and add value to shipping companies in many ways (Bravos, 2022).

Shipping operates in a highly complex economic environment characterized by imbalances in supply and demand, volatile freight rates and vessel values, increasing regulation, environmental concerns, piracy, and geopolitical risks, among other factors (Orhan, 2022).

Figure 2

World seaborne trade growth rate from 2000 to 2020, in %



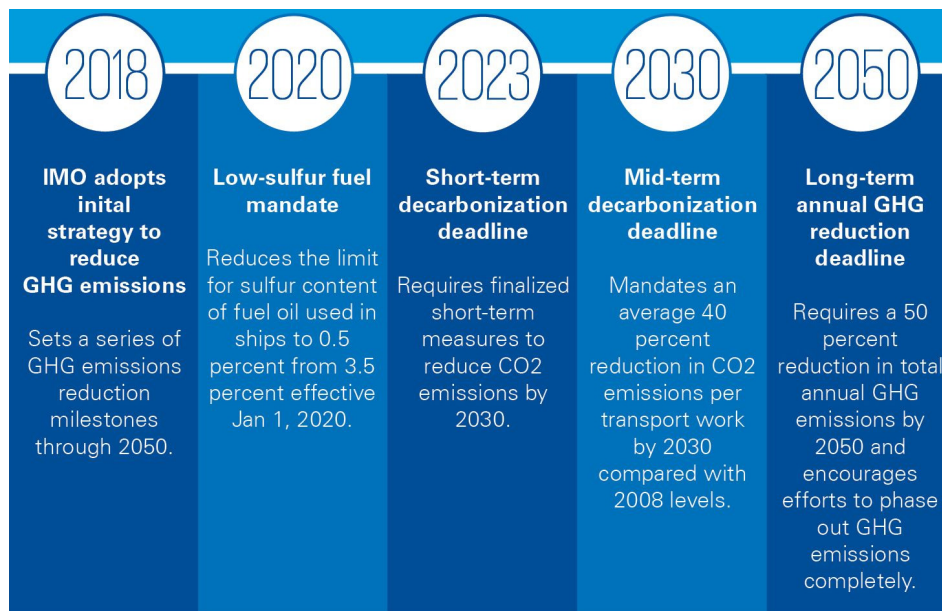
Source: KPMG (2022).

Greek shipowners hold prominent positions in the global market and in the transport industry, with their contributions being highly regarded (PWC, n. d.). Figure 3 presents the GHG emissions reduction targets for the period from 2018 to 2050, developed by the International Maritime Organization (IMO) specifically for the shipping industry.

The Russian invasion of Ukraine has prompted new shifts in the shipping industry, arising from ongoing geopolitical transformations and the associated risks. The Black Sea may be a key transit point for agricultural products, metals and energy, and perhaps oil, coal, and other commodities (Figures 4 and 5). Military actions are expected to disrupt supply chains and their operations (Fink, 2022). Consequently, shipping companies must carefully review their current contractual obligations under charter parties, supply and agency contracts, and implement due diligence procedures related to payment instructions involving Russian banks or other financial entities.

Figure 3

The IMO’s strategy on reduction of GHG emissions from ships



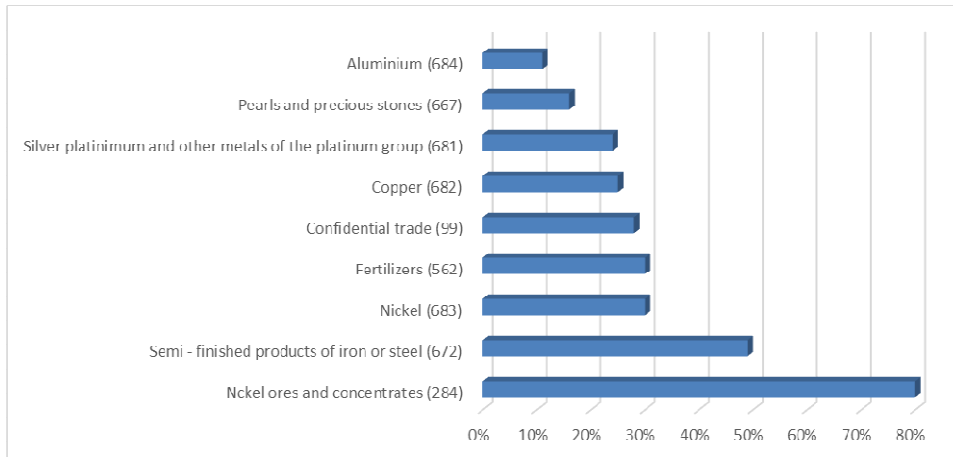
Source: KPMG (2022).

The potential damage that companies could suffer is substantial. The consequences of their involvement in the transportation of oil can range from the seizure of ships to the imposition of fines and penalties. The ongoing changes and the uncertain future they create can significantly impact the shipping industry, particularly shipowners’ revenues, and consequently, their survival (Nevitt, 2023). Exploring the insurance market for products that can mitigate the financial risks associated with geopolitical uncertainty can proactively manage and safeguard a company’s future income, which is threatened by these risks (Pothitos & Maraslis, 2022).

The ongoing conflict between Russia and Ukraine threatens to shatter the worldwide establishment and set back the globe for several decades (Stylianios, 2022). With countries and governments still trying to navigate through the pandemic, the economic impact may well be highly destructive in view of the conflict’s length and scope, as well as the extension of the sanctions imposed. While the recovery from all financial setbacks will be slow, this new reality is already leaving quite a mark on the complex shipping industry (Toygar & Yildirim, 2023).

Figure 4

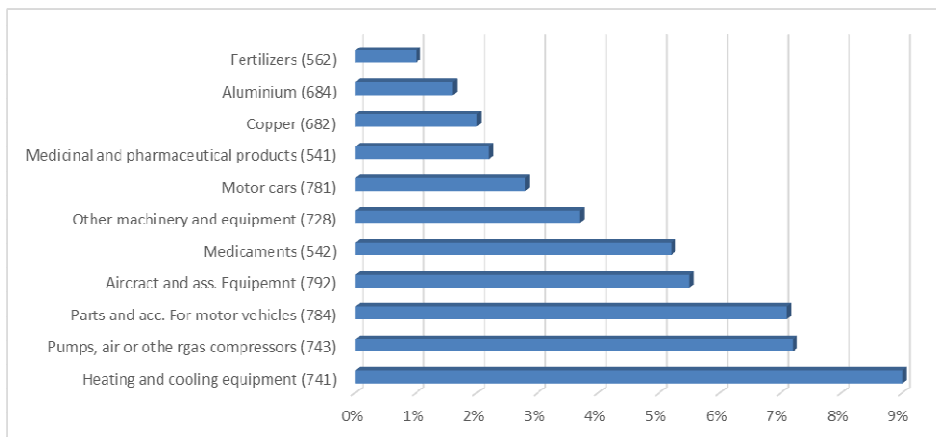
Selected imports from Russia based on most traded goods between EU and Russia, %-share of EU imports from extra-EU countries



Source: Fechner & Luman (2022).

Figure 5

Selected exports to Russia based on most traded goods between EU and Russia, %-share of Extra-EU exports



Source: Fechner & Luman (2022).

Out of the roughly 44,000 cargo and tanker vessels operating globally over the last two years, approximately 2,000 were owned by companies registered in Russia. This implies that any shipowner, company, trader, or bank working with Russian companies faces significantly higher risk exposure, as they can be black-listed at any given time. Given this uncertainty, all future deals involving Russian entities and vessels are at risk of cancellation or renegotiation (Windward, 2022).

The Russia-Ukraine war has had its fair share of impact on businesses, especially in the logistics sector, primarily because these two countries are among the world's largest exporters of raw materials. Many industries are facing the prospect of supply chain issues and macroeconomic headwinds, with shipping industry being one of those that will certainly be affected (de Dainville, 2023). Several changes in the operational status of the world's ports have been observed, creating quite challenging conditions for the seafarers. This new reality undeniably presents new shocks to how the shipping industry functions. This is due to the fact that the sanctions against Russia are also affecting logistics and, consequently, supply chains, raising concerns about the transport of goods and commodities (Haesebrouck & Taghon, 2022).

We can observe that the conflict has affected the shipping industry in two ways: a) It has resulted in higher prices for oil; b) it has led many countries to impose sanctions on Russia in order to isolate the latter. The increase in bunker prices will likely exert further upward pressure on freight rates in an already historically high market. The ongoing war in Ukraine is causing thousands of seafarers to be stranded once again for an uncertain period of time, and this will undoubtedly have a significant impact on maritime transport (Kakachia et al., 2022). Several initiatives have been launched by various countries and governments to assist seafarers across the globe. These initiatives include the following:

- INTERCARGO was among the first organizations to call upon the International Maritime Organization (IMO), its member states and their governments to facilitate effective interaction with the involved countries and local authorities, ensuring safe passage out of danger for ships and their crews (Guénette et al., 2022).
- The IMO has agreed to support the establishment of a blue safe maritime corridor, which would enable the safe evacuation of seafarers and ships from high-risk and affected areas within the Black Sea and also the Sea of Azov to a secure location, thereby safeguarding the lives of seafarers. In Greece, the Union of Greek Shipowners (UGS) welcomed this decision. Similarly, the UCS fully supports the establishment of a maritime corridor, emphasizing that seafarers must be allowed to leave the conflict area and avoid further humanitarian incidents (Gollnisch, 2022).

- ShipMedCare, a telemedical service provider in Greece, has partnered with Prime Marine Management, a Greek-based company, in addressing the humanitarian crisis affecting the families of seafarers.
- Globally, Human Rights at Sea has allocated £50,000 to aid and support those impacted by the humanitarian crisis caused by the war.
- The International maritime charity, «Sailors' Society», has launched a Ukrainian Crisis Appeal to aid desperate seafarers stranded in the conflict.
- Additionally, the Seafarers' International Relief Fund has initiated a replacement appeal to the maritime industry, to support seafarers and their affected families. SIRF is currently addressing basic human welfare needs such as shelter, food, water, transport, access to medical services, and providing practical financial assistance.
- The Paris MoU Advisory Board (MAB) has provided guidance on the repatriation of seafarers, recognizing that the repatriation outcomes extend beyond Ukrainian seafarers on board ships flying the Ukrainian flag, to include all seafarers fixed during the current situation.
- The Merchant Navy Welfare Board (MNWB) has launched an emergency SIM card fund of £5,000 to ensure Ukrainian seafarers can stay in contact with their loved ones back home (Safety4Sea, 2022).

The invasion of Ukraine has caused widespread disruption to global shipping. The shipping industry has been affected on multiple fronts, with the loss of lives and vessels in the sea, disruptions of trade with Russia and Ukraine, and the growing burden of sanctions. The industry also faces challenges in day-to-day operations, with knock-on effects for crew, the value and availability of bunker fuel, as well as the growing threat posed by cyber risk. The largest impact of the war thus far has been on vessels operating within the sea and trading with Russia (Allianz, 2022).

With the ongoing Russian invasion, Odessa stands as the most vulnerable major city along Ukraine's southern frontier. These geopolitical developments have increased frictions in international trade, as the Black Sea ports have become perilous for vessels, despite the region's significant role in handling agricultural and fertilizer products. The war has adversely affected the number of vessels berthing at Russian ports in the past two months. While, on the average, six vessels used to berth at Russian ports on any given day before the war, now only four do so (Pedrozo, 2023).

In light of the aforementioned, it becomes evident that the war in Ukraine has introduced significant shifts in the data within a broader commercial context. Studies conducted by organizations like Allianz (2022) and Windward (2022) have illustrated how the war is constraining international trade, adversely affecting the shipping industry, and reshaping previously established dependencies in the

shipping sector. While these studies acknowledge Russia's isolation and Ukraine's struggle for freedom, they do not delve into the specific changes that will occur or attempt to forecast them. The focus of this article lies in defining the new strategy of the Greek state concerning economic support for the shipping industry, particularly tankers, which have direct ties to the energy market. The central issue revolves around determining the future actions of the Greek state based on the current data available.

The goal of this article is to define the reorientation of the economic policy of Greece in the field of tanker fleet development under the conditions of geopolitical shifts caused by the Russian-Ukrainian war.

Methodology

This study is mainly based on secondary data. Bibliographic research was the sole research method employed in writing this work. During the article's preparation, the theoretical aspects of the subject were explored using sources listed in the References section of this work. Numerical data were predominantly gathered from secondary sources. When selecting sources for theoretical data, our primary consideration was their objectivity, which was assessed based on content, the academic nature of articles, and the keywords used. Ultimately, only sources published after 2021 were chosen to align the timeframe of the study with the onset of the war and its current developments.

Research Results

While the decrease in the number of birthing vessels may not appear significant when compared to the overall market, one should consider the economic implications that the maritime industry holds for the economy of a nation. Greece has a potential to significantly improve its position in global port competitiveness, particularly when comparing the safety of the Aegean Sea to the Black Sea. The Aegean Sea appears as a safe harbor in this respect. Moreover, it is important to note that for a vessel to succeed in the Black Sea it should first navigate the Bosphorus Strait, although the President of Turkey, Mr. Recep Tayyip Erdoğan, has already expressed his intentions to form an artificial channel that could be used as an alternative route. Given these circumstances, Greece currently enjoys a notable advantage in negotiations between port authorities and shipping companies. The Aegean Sea remains a tranquil place where vessels can berth without disruption from potential conflicts. Furthermore, it is worth mentioning the numerous infrastructure projects that have been recently undertaken by the Greek

state, as well as continued developments in hinterland infrastructures, such as roads and commercial trains (Melas, 2022).

Greeks are the world's single biggest tanker owners and were the foremost active transporters of Russian oil even before the invasion of Ukraine in February. Their market share has increased since, in step with several market observers, as several Western shipping companies self-sanction from the trade – for moral reasons or to avoid bad press in their countries (Papachristou & Peachey, 2022).

Table 2 demonstrates the prevalence of the Greek tanker fleet in transporting the most fossil fuels from Russia since February 24, 2022.

Table 2

Volumes of deadweight tonnes of ships transporting Russian fossil fuels to other countries, in million deadweight tonnes

Countries	Coal	Oil	Gas
Greece	12.4	49.8	2.6
China	11.4	9.5	0
United Arab Emirates	0.5	13.8	0
Germany	5	4.2	0
Singapore	2.3	6.8	0
Turkey	2.7	4.5	0
Japan	4	0.1	3
Russia	1.3	4	0
Monaco	0	5.1	0
United Kingdom	0.5	1.2	3.2

Source: Author's adaptation from Matthews et al. (2022).

Table 3 shows the top 10 shipping companies in Europe departing from Russian ports since the beginning of the invasion, that is, over the period from February 24, 2022, to August 31, 2022, showing the dominance of Greece.

Greek-owned vessels have stepped in to fill the gap of cargoes originating from Russian key export hubs. As oil exports from Russia head east, a variety of Greece's most prominent shipowners are learning new business. A fancy patchwork of maritime, banking and financial sanctions, as well as port restrictions across Europe, the UK, and North America, is failing to stem Russian energy commodities exports, with an estimated 4.5m barrels of crude worth \$509m leaving the country daily since February 24, 2022.

Table 3

Top 10 European companies departing from Russian ports since the beginning of the war

European companies	Volume of shipments (million deadweight tonnes)	Number of shipments
Tms Tankers Ltd-Greece	8.7	86
Minerva Marine Inc-Greece	6.4	75
Eastern Mediterranean Mtm-Lie-Greece	4.3	72
Scorpio Commercial Management-Monaco	3.9	71
Oldendorff Carriers GmbH & Co-Germany	3.9	67
Thenamaris Ships Management-Greece	3.5	54
Marine Trust Ltd-Mai-Greece	2.8	44
Tsakos Columbia Shipmgmt-Pan-Greece	2.7	41
German Tanker Shipping GmbH- Germany	2.6	33
Dynagas Ltd- Greece	2.6	31

Source: Author's adaptation from Matthews et al. (2022).

While many European and American traders, oil companies, and maritime service providers have terminated business with Russian shipping entities after the start of Russia's invasion in Ukraine, our analysis shows that Greece's biggest shipowners have increased exposure. During April 2022, «Greek-owned vessels stepped into the gap to lift Russian-origin cargoes because the increased number of tankers sailing longer distances to discharge at east-of-Suez Canal ports pushed up demand for these vessels. Of the 190 tankers (15,000 dwt and over) tracked shipping crude or oil cargoes out of the key ports of Primorsk, Novorossiysk, Ust-Luga and St. Petersburg from April 1 to April 27, 2022, some 76 were beneficially owned by Greek shipowners, data compiled by Lloyd's List shows» (Bockmann, 2022).

The turn towards LNG is proving particularly favorable to Greek shipowners, who hold nearly a quarter of the world's LNG transport capacity. The know-how they possess enables them to foster regional synergies. Furthermore, they have expanded their share in the transport of Russian oil, as several European companies ceased their activities due to the conflict in Ukraine (PWC, n. d.). Moreover, the growing impermeability of the Russian-European borders, which may disrupt the development of the rail component of the Chinese Silk Roads, could redirect some the flows towards the Mediterranean. This shift is likely to benefit the port of Piraeus, the primary regional entry point for Chinese products. The Ukrainian conflict thus appears to be a chance for Greece to achieve a quali-

tative and quantitative breakthrough in the maritime domain, at a time when it seeks to revitalize its maritime status and role in Europe's energy security – two key elements of its regional strategy (Marghélis, 2022).

The Russians have tried to deliver as much oil as they can before December, when the EU sanctions against it are expected to be enforced. Western countries, bound by their membership in the EU, have pledged not to purchase from Russia under the sanctions. The implementation of these sanctions will also have adverse consequences for the European tanker owners engaged in the transport of Russian oil. In addition to the itineraries they will miss, there is also a fear of how their participation in the transport will be assessed.

Greece, in alliance with Cyprus and Malta, tried to block the Commission's embargo on the transport of Russian oil by European tankers (Zgurovsky et al., 2022). The international shipowners and Greek shipowners in particular are now faced with the EU's agreement on the embargo of Russian oil. While transportation to third countries is allowed, however, insurance premiums, largely controlled by European entities, are not issued for the transportation of Russian cargo (Bastian, 2022). In other words, the final agreement was not ideal for the Greek side.

The Greek-owned fleet continues to this day to maintain its leading role in the shipping industry, despite the latest developments disrupting the landscape that had formed between February 24 and April with the onset of the war. Greek-owned ships have stepped in to fill the gap in cargo coming from Russia from the country's main export hubs (Hosoi & Johnson, 2022). Greece, whose economy heavily relies on shipping, was among the member states advocating for the removal of the provision concerning exports to third countries from the sixth package of sanctions against Russia's invasion of Ukraine. However their efforts were insufficient to prevent eventual sanctions (Saridakis et al., 2022). Some raised objections that the current energy crisis could last for up to 10 years and that past sanctions such as those imposed on Iran and Venezuela did not work (Brown, 2020). Nevertheless, Greek shipowners are not expected to lose momentum as they take their ships to new sea routes with China and India, becoming active buyers of Russia's cheap oil. Consumer countries, on the other hand, will face an entirely different burden, as they pay a premium for Russian oil to come from India and China, while Greek shipowners command higher rates for employing their ships to transport Russian oil from Asia to Europe (Bastian, 2022). In light the problematic of the article, we argue for the Greek state's need to support Greek shipping, especially the tanker market, and to impose stricter criteria for ships seeking registration under the Greek flag. These measures would not only enhance the reputation of the Greek flag but also promote serious actions and efforts in the development of the Greek shipping sector, ultimately ensuring its viability during the ongoing war and in the post-war period.

Practical Implications

Brokers specializing in oil transportation claim that the lion's share of oil was held by Greek tanker owners – those who did most of the transportation of Russian oil by doubling their routes. The sailing of long-distance tankers reaches as far as Siberia. Siberia has been a traditional gathering point not only for Greek, but also for Russian and Chinese tanker owners.

Figure 6

How Greek shipping is distributed across the globe by DWT port calls



Source: Lowry (2020).

The Kriti Legend vessel, which is owned and operated by *Avin International*, arrived July 12 at the port of Laizhou in China after lifting crude from Kozmino in Russian Siberia, according to maritime data provider *MarineTraffic*. The EU sanctions will be enacted on December 5, leading to a ban of Russian oil

shipments to Europe. Shipments outside the continent by tanker operators will not be banned, but the vessels will not be ready to get coverage, making any sailings illegal under international admiralty law. EU officials claim that the long runway before the shipment ban is supposed to grant enough time for governments to change to energy sources outside Russia.

Some information sources state that tankers belonging to European owners used to employ the «ship-to-ship» practice when transporting Russian oil. This practice is often used in ports, especially when their space is limited. However, the method used to transport the oil from Russia is not legal either. Some ships, in order to avoid sanctions, want to hide where they are and where their cargo is destined. They accomplish this by disabling their transponders. When they are off, they are usually off the ports and ferrying cargo from one ship to another. These practices may have worked in the past and during the crisis, but with the implementation of sanctions and the heavy scrutiny that will come with them, it is expected that they will no longer be used (Paris & Faucon, 2022).

Greek shipping companies have been increasingly involved in «ship-to-ship» transfers to conceal the transportation of Russian oil, according to data analyzed by London's Sunday Times newspaper. The data indicates that «ship-to-ship» transfers, where a Russian ship unloads oil from its vessel onto another vessel from a neutral company, have been on the rise in the Russian port of Kavkaz since Russia's invasion of Ukraine in February 2022. Additionally, the newspaper's findings reveal that Greek ports have experienced a surge in such transfers, in particular the port of Kalamata, which has seen them to grow by 20% in just one month (Hogg, 2022).

Greece pioneered the transportation of oil, as evidenced by the substantial number of tankers that transported oil to the country's ports. This fact is also corroborated by well-known news agencies like Reuters, which reported a doubling of oil shipments from Russia arriving at Greek ports during just one month, from March to April. Upon their arrival at Greek ports, these tankers, loaded with Russian fuel, engage in ship-to-ship transfers to export the cargo to destinations worldwide. The town of Kalamata in the Peloponnese region played a pivotal role in this process, serving as a key gateway for Russian oil. According to Reuters, Greece has historically been a significant destination for exporting fuel to countries across the globe, but the level of activity observed last month was especially high compared to the average figures.

For example, the Evidiki tanker, with a capacity of around 130,000 tonnes, loaded au courant Russian fuel off of Kalamata and then traveled to the United Arab Emirates. Similarly, the Okeanos vessel embarked on a cargo of Russian fuel in the vicinity of Kalamata and is now headed to India with its shipment. Ship-to-ship exports are just one of the many ways employed by companies to circumvent the EU's strict set of sanctions regarding the acquisition of Russian fuel. According to recently issued EU guidelines, European companies can still acquire Russian oil and gas by opening checking accounts even at Russian banks like

Gazprombank, and settling payments in the currency stipulated in their contracts (Wichmann, 2022).

Some tanker owners are publicly traded on stock exchanges, which has attracted the interest of numerous investors. These investors have emerged as winners, having reaped substantial profits from the ongoing developments, particularly in the oil sector, though the same cannot be said for all products in general. This has ignited extensive debates and speculation about the future of the shipping industry. While the oil and fuel sector, along with related products, has thrived in the current circumstances, this success may be transitory.

Despite the tragedy of Russia's invasion of Ukraine, it has brought about positive developments in the tanker transport industry. Prior to the invasion, shipping rates were falling, but afterward, the prices of commodities, and oil-based products in particular, surged. This shift is further documented by the doubling of share prices, which has been even more remarkable. This starkly contrasts with the situation just a few months ago, when some companies were struggling to survive and even resorted to selling their ships due to insufficient liquidity. According to data released by *Scorpio Tankers*, tankers earned an average of \$16,000 per day for the period from January 2022 to March of the same year. The positive trend continued into the next quarter when tanker earnings reached \$30,000 per day. It is worth noting that tanker industries have historically benefited from such disturbances in the past. This is because crises tend to boost demand for products, resulting in tankers covering much longer distances to meet it.

Furthermore, changes occurring in refineries will also contribute to these developments. Refineries are increasingly relocating to areas distant from consumer markets. This shift will be favorable for tankers, which will have to make longer journeys to transport products from refineries to consumer markets, resulting in increased revenue inflows. For example, a report on *Pyxis Tankers Inc.* (PXS) estimates cash flow yields in comparison to larger and more well-known shipping companies, with PXS boasting an estimated income yield of over 40%, a significant advantage compared to levels around 20% for *STNG*, *Torm*, and *Ardmore* (Parker, 2022).

At this stage, the most significant concern is the rising costs associated with broader economic activities, which also impact the shipping sector. Coupled with recent strong inflationary trends that have affected the economic development efforts since the pandemic crisis, there is a growing belief that the rise in prices, costs and related economic activities will persist as long as the geopolitical uncertainty resulting from the prolonged hostilities in the war zone continues. It is worth mentioning that the cost of container shipping on ocean routes surged sevenfold in the first 18 months after March 2020, and the cost of transporting bulk goods rose even more.

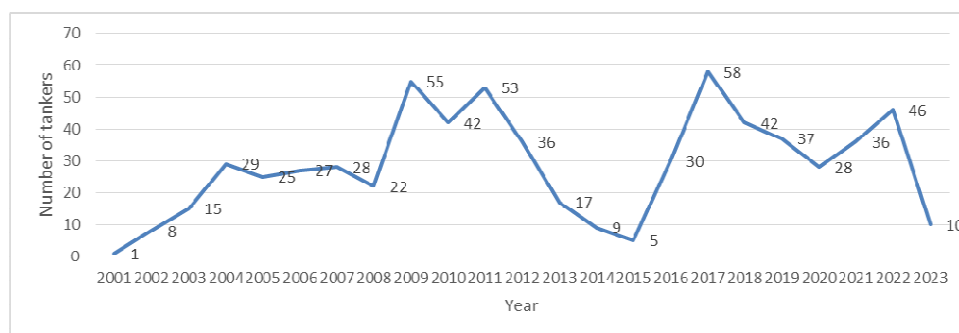
Tankers also appear to be adopting a ship-to-ship practice for Russian oil. Ship-to-ship transfers of oil are quite common. Such transfers are sometimes

used to consolidate oil shipments onto larger tankers, improving efficiency on long-distance routes. Oil sometimes changes hands after a tanker leaves the port. In these cases, it becomes more difficult to determine where it comes from. Countries require importers to report the place of origin of their cargo to customs authorities. However, some companies falsely give the location of a ship-to-ship transfer as the place of origin to hide where the oil comes from (Goerlandt & Montewka, 2015).

In this study, we aimed to gain a better understanding of the Greek shipping market by exploring six countries with the largest number of vessels in the world. Specifically, we aimed to compare the Greek tanker and LNG fleets to fleets of China (12,353 vessels), Indonesia (11,283 vessels), Japan (8,699 vessels), Greece (5,883 vessels), the USA (5,016 vessels), and Singapore (3,580 vessels). Our data source was the Shipping Intelligence Network database at Clarksons Research (Clarksons Research, n.d.). However, the data were available only for Greece, USA and Singapore. Therefore, our analysis focused on these three countries with comparable fleet sizes. We retrieved data for four variables: 1) the number of tanker fleet vessels built year each from 2001 to 2023; 2) the number of LNG fleet vessels built each year from 2001 to 2023; 3) the total deadweight tonnage of tanker fleet vessels built each year from 2001 to 2023; and 4) the total deadweight tonnage of LNG fleet vessels built each year from 2001 to 2023. These variables were selected to assess the fleet size in terms of vessel count and total tonnage. We graphically analyzed the development of both fleets from 2001 to 2023. Figure 7 illustrates that the Greek tanker fleet, comprising 659 vessels, was primarily built during two periods: from 2003 to 2012 and from 2016 to 2022.

Figure 7

Greek tanker fleet by the year each vessel was built, from 2001 to 2023



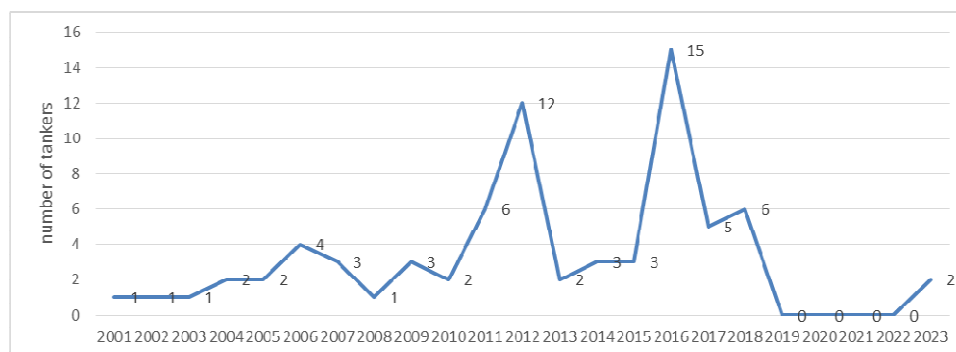
Source: Clarksons Research (n.d.).

Figure 8 demonstrates that the U. S. tanker fleet, comprising 75 vessels, was mostly built during two periods: between 2010 and 2013 and between 2016 and 2018.

Figure 9 demonstrates that Singapore’s tanker fleet of 62 vessels was primarily built during specific years between 2001 and 2023.

Figure 8

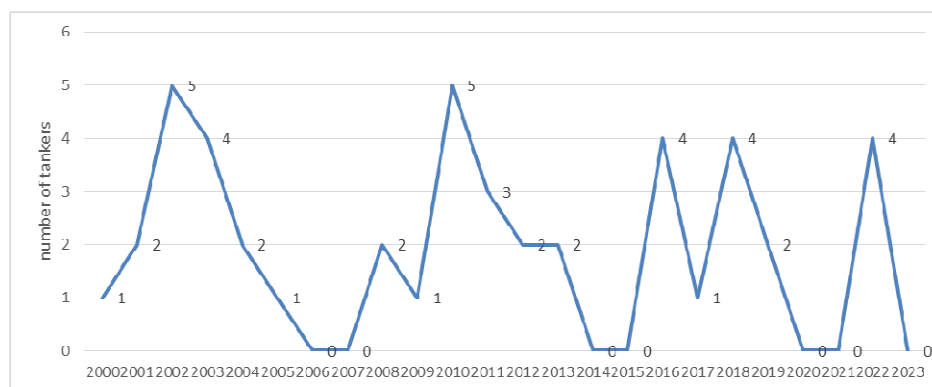
U. S. tanker fleet by the year each vessel was built, from 2001 to 2023



Source: Clarksons Research (n.d.).

Figure 9

Singapore’s tanker fleet by the year each vessel was built, from 2001 to 2023



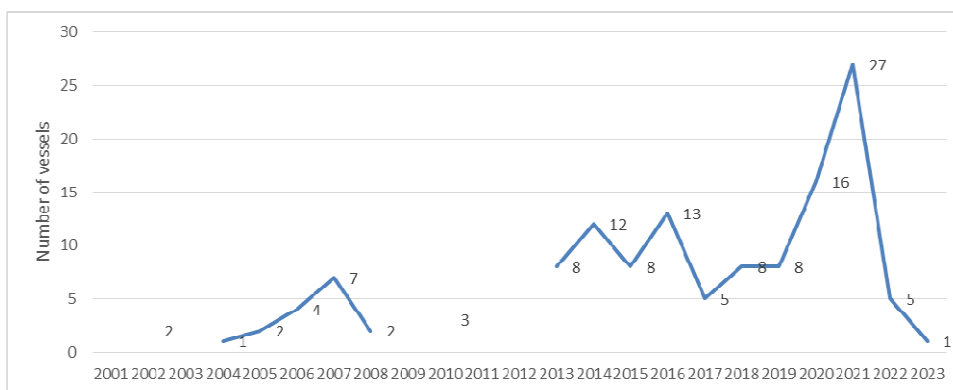
Source: Clarksons Research (n.d.).

Figure 10 illustrates that the Greek LNG fleet of 132 vessels was primarily built during two periods between 2013 and 2022.

Figure 11 illustrates that the U. S. LNG fleet, comprising 52 vessels, was predominantly built during two periods: between 2006 and 2010 and between 2014 and 2019.

Figure 10

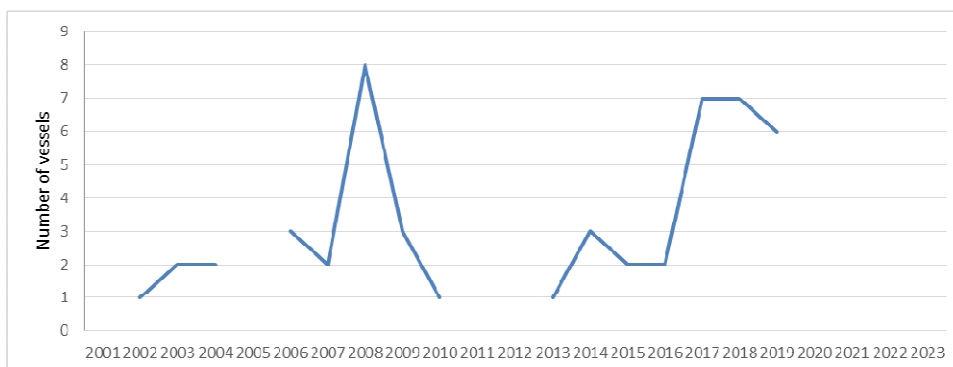
Greek LNG fleet by the year each vessel was built, from 2001 to 2023



Source: Clarksons Research (n.d.).

Figure 11

Greek USA fleet by the year each vessel was built, from 2001 to 2023

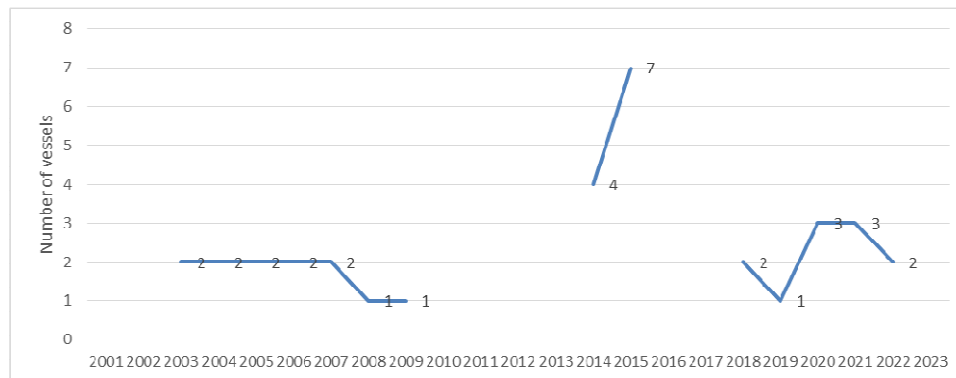


Source: Clarksons Research (n.d.).

Figure 12 demonstrates that the total number of Singapore’s LNG fleet, comprising 22 vessels, was primarily built between 2014 and 2022.

Figure 12

Singapore’s LNG fleet by the year each vessel was built, 2001–2023



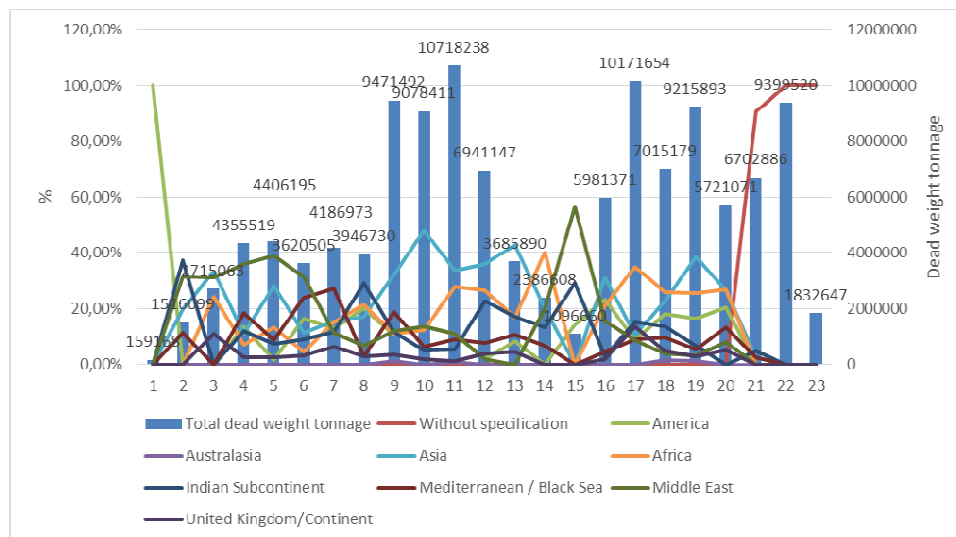
Source: Clarksons Research (n.d.).

When analyzed in terms of deadweight tonnage, Figure 13 shows that the Greek tanker fleet experienced two construction phases: from 2009 to 2012 and from 2016 to 2022. Asian, African, and the Mediterranean and Black Sea zones absorbed a significant portion of this deadweight tonnage from 2001 to 2023.

Figure 14 illustrates that, in terms of the total deadweight tonnage, the Greek LNG fleet was predominantly built between 2013 and 2022. Asia, America and Africa zones absorbed a significant portion of this deadweight tonnage from 2013 to 2023.

Figure 13

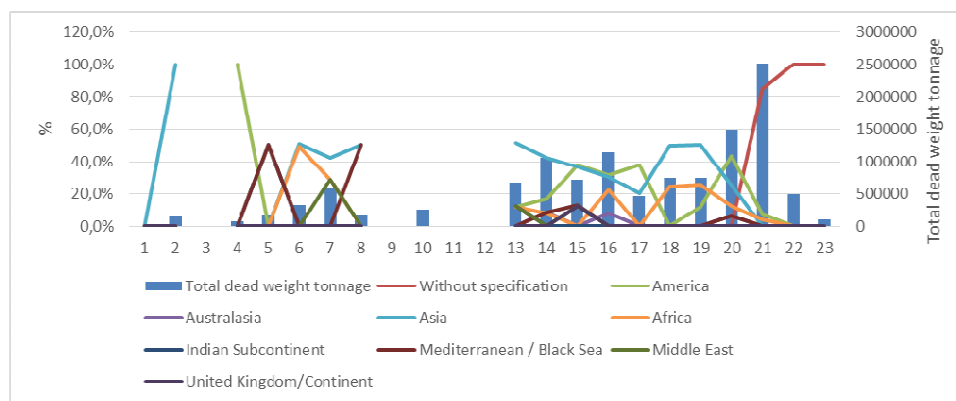
Greek tanker fleet in relation to the total dead weight tonnage and the current zone by the year each tanker was built, from 2001 to 2023



Source: Clarksons Research (n.d.).

Figure 14

Greek LNG fleet in relation to the total dead weight tonnage and the current zone by the year each tanker was built, from 2001 to 2023



Source: Clarksons Research (n.d.).

Conclusions

The study revealed that the Greek tanker fleet was primarily built during two periods: from 2003 to 2012 and from 2016 to 2022. In comparison, the U. S. tanker fleet was constructed during two periods, from 2010 to 2013 and from 2016 to 2018. Similarly, the Singaporean tanker fleet was built during specific years between 2001 and 2023. The Greek LNG tanker fleet, on the other hand, was mostly constructed during two periods between 2013 and 2022. In contrast, the U. S. LNG fleet had its primary construction phases from 2006 to 2010 and from 2014 to 2019. Singapore's LNG fleet was primarily built between 2014 and 2022.

When analyzing these fleets in terms of total deadweight tonnage, the Greek tanker had its two main construction phases from 2009 to 2012 and from 2016 to 2022. Asia, Africa, and the Mediterranean and Black Sea zones absorbed a significant portion of the total deadweight tonnage between 2001 and 2023. Similarly, in terms of total deadweight tonnage, the Greek LNG fleet was mostly constructed during the period from 2013 to 2022. Asia, America, and Africa absorbed a significant share of this deadweight tonnage between 2013 and 2023.

As mentioned earlier, global supply chains have been affected by both the pandemic and the war in Ukraine. Sanctions, on the other hand, in particular those imposed by various ports on Russian ships, which include restrictions on the provision of fuel supply or bunkering services, directly affect local economies. Moreover, these sanctions underscore significant challenges faced by different countries in ensuring compliance among port authorities, shipping companies and insurers. These challenges involve both legal issues, as well as matters related to compensation or rejection of claims falling under force majeure and war clauses. The impact of the war in Ukraine on global shipping should be regarded as a complex issue. Addressing this issue requires the formulation of a strategy that acknowledges the sector's need for increased flexibility in response to global crises.

Greek shipowners have dominated the transportation of the majority of crude and refined products exported to key ports, securing leading positions in this trade. The future of the tanker industry, however, can hardly be predicted, particularly in light of the implementation of European sanctions. One possibility is that Greek owners will continue to trade in oil, as demand for it is unlikely to wane. However, they may opt for routes unaffected by EU bans, potentially offering greater profitability due to their extended lengths. This might yield more profits for Greek shipowners, but nonetheless, the future remains uncertain.

In conclusion, it becomes important, both now and in the future, to make further investments in the shipping sector, fortify its position, and enhance the

reputation of the Greek flag again to make it more appealing in broader markets. A strong Greek shipping industry is vital for the Greek economy, helping it to strengthen its positions on the global stage.

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