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# Navigating the Shadows: Russian Oil Destinations, the Dark Fleet, and Deceptive Shipping Practices post-2022

How has the trade routes of seaborne Russian crude oil evolved in response to recent geopolitical changes, and what role does deceptive shipping practices and the dark fleet play in facilitating this change.

Bachelor's thesis in Shipping Management

Supervisor: Odd Sveinung Hareide

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Faculty of Engineering  
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## SUMMARY

This thesis presents an in-depth analysis of significant changes in the global maritime practices and oil flows, instigated by the sanctions imposed on Russia following its invasion in Ukraine. The research aims to uncover and present three crucial and interconnected topics:

**Changing Russian oil flows:** An examination of the shifts in Russia's seaborne crude oil export destinations, highlighting the transition from traditional western markets to new Eastern trade partners.

**The growth and activity of the Dark Fleet:** The thesis explores the emergence of the 'Dark Fleet' a newly amassed fleet of aging tanker vessels operating outside of sanction compliance and facilitating the continuous movement of Russian oil. The thesis analyzes the fleet composition, operational methodologies, and discusses broader implications.

**Deceptive Shipping Practices:** The thesis assesses different deceptive shipping practices including AIS spoofing and ship to ship transfers, which are used to obscure the origin and trajectory of Russian oil. Motivations behind these practices, their practical use, and their consequences are critically assessed.

Methodologically, the thesis adopts a combined qualitative and quantitative approach, encompassing expert interviews, AIS data analysis, and case study evaluation. Such a multifaceted methodology enables a nuanced understanding of the topics discussed, effectively bridging prior written theory with real-life examples and insights from market participants.

The findings of this research are pertinent to real-world scenarios. By tracing the pathway of Russian oil from the Black Sea to the far east, the case study reveals the intricate strategies deployed by Russia and Dark Fleet operators to circumvent sanctions. Additionally, the effectiveness of these sanctions, the environmental and safety dangers associated with the Dark fleet, and compliance focus in the maritime industry is examined.

## PREFACE

This thesis is written to conclude a bachelor's degree in Shipping Management at NTNU Aalesund. Each and every word is typed in the Oslo office of Gard AS, where I have spent the fall of 2023 as an intern. My experience at Gard has exceeded all expectations. I have truly felt integrated, considered, and valued within the sanctions team since week one. My sincerest gratitude to all members of the Sanction Consultancy Group.

Special thanks to Windward for their tremendous contributions, allowing me to use their service facilitating the case study.

My thesis is descriptive research of changing Russian oil flows and sanction evading behavior in relation to the sanctions against Russia. All discussion in this text is a consequence of the acts of war that started on the 24th of February last year, and my sympathies goes to everyone affected.

Finally, thank you to Odd Sveinung for your helpful, and prompt guidance.

Oslo 14.12.2023

## ABBREVIATIONS

AIS – Automatic Identification System: A tracking system used on ships and by vessel traffic services for identifying and locating vessels.

B/D – Barrels per day: Common metric for measuring oil production, export, consumption etc.

DWT – Dead weight tonnage: A measure of how much a vessel can carry.

EU – European Union

G7 – Group of Seven: An international forum consisting of France, Germany, Japan, USA, UK, Canada, and Italy.

IG – International Group of P&I clubs

IMO – International Maritime Organization

LNG – Liquefied Natural Gas

OFAC – Office of Foreign Asset Control: The financial intelligence and enforcement agency of the U.S. Treasury Department that administers and enforces economic and trade sanctions.

OPL – Outside Port Limits

P&I – Protection and Indemnity: A type of maritime insurance responding to liability for damage or loss the assured has caused to others (Gard, n.d.).

STS – Ship to Ship transfer of Cargo

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# 1.0 INTRODUCTION

The year 2022 marked a significant escalation in the then eight-year-long conflict between Russia and Ukraine. It also marked the start of a new geopolitical landscape. Geopolitics and shipping walk hand in hand, and this situation is no exception. The western reaction of heavy sanctioning against Russia can in hindsight be viewed as a black swan event in the oil and tanker markets. The sanctions created a trade shift of great proportions, redirecting Russian oil flows, and forming a shipping network independent of western standards.

## 1.1 Context

On the 24th of February 2022, Vladimir Putin ordered a full-scale invasion of Ukraine, to attack the western aligned government of Volodymyr Zelenskyy. The invasion was the escalation of an eight-year long conflict which began when Russia annexed Crimea in 2014 and armed separatists in southeastern Ukraine, an event that marked the first case since the Second World War where a European state annexed another (Masters, 2023).

Ukraine and Russia's relationship carries deep historical nuance. Economically, culturally, and politically. Ukraine was a cornerstone of the Soviet Union. The second most populated of the Soviet republics, home to massive agricultural assets, and important Black Sea ports. After the fall of the Union, Ukraine has steadily sought to differentiate itself from the Soviet way, knitting closer ties towards western institutions. This has created a cultural split, where people in the west align with western values, and a lot of east Ukrainians align with traditional Russian values. One of Russia's claimed reasons to invade in 2022 was to protect these eastern people (Masters, 2023).

The invasion sparked major international ramifications. All discussion in this task will be based on consequences related to this event. The US, EU, and UK, all responded to the event with immediate sanction packages against Russia. The sanctions targeted Russian entities and were designed to weaken the Russian war efforts. One major effect of the sanctions was a massive shift in Russian oil flows, which changed major dynamics in the tanker market.



As the geographical shift in Russian oil export destinations took place, a logistical shift immediately followed. A wave of “dark tankers” and sanction evasion has made headlines since the fall of 2022.

## 1.2 Research question

The thesis will discuss and conclude the following:

How has the trade routes of seaborne Russian crude oil evolved in response to recent geopolitical changes, and what role does deceptive shipping practices and the dark fleet play in facilitating this change.

## 1.3 Limitations

This thesis will discuss sanctions, limited to the sanctions imposed by western countries onto Russia and Russian entities in relation to territorial disputes in Ukraine. Additionally, the thesis will discuss tankers, limited to crude and oil products tankers.

## 2.0 THEORY

### 2.1 Sanctions – An Overview

Sanctioning is a governmental tool used in response to foreign policy challenges, as a preventive measure. Sanctions can be a response to terrorism, human rights violations, annexation of foreign territory, etc. (European Council, 2022). Sanctioning is a form of intervention but is generally seen as a low cost and low risk option which sits in between diplomacy and war. Policymakers can consider sanctions when the national interest is non-vital, or when military action is not feasible (Masters, 2019).

Different sanctions can be placed in categories:

- i. **Economic:** Economic sanctions refer to the withdrawal of normal trade and financial relations for foreign-policy and security purposes. These sanctions can be both comprehensive, prohibiting all trading relations with an entire country, or they can target smaller entities like certain groups or individuals. The specific measures of economic sanctions take a variety of forms. They include travel bans, asset freezes, arms embargoes, capital restraints, foreign aid reductions, and perhaps most important, trade restrictions (Masters, 2019).
- ii. **Diplomatic:** Diplomatic sanctions are political measures with an aim to demonstrate disapproval or displeasure of certain actions. As a softer approach, these measures stop short of taking economic or military steps. Diplomatic sanctioning includes eliminating embassies, removing diplomatic ties, and cancelling high level government meetings (LexisNexis, 2023).
- iii. **Military:** Military sanctions involve the intervention of armed forces and are only used in extraordinary circumstances. An arms embargo is an example of a measure that fits in the cross section of economic and military sanctioning (LexisNexis, 2023).
- iv. **Sport:** Sport sanctions target a country or the public moral and spirit, by prohibiting certain countries' athletes or teams from competing in international events (LexisNexis, 2023).
- v. **Sanctions on individuals:** A branch of economic sanctions, individual sanctions placed on political leaders and other individuals include freezing personal assets, and imposing travel bans (LexisNexis, 2023).

- vi. **Sanctions regarding the environment:** This type of sanctions is modern, but international cooperation regarding the environment is blooming in the wake of recent environmental concerns. The sanctions are designed to protect endangered species and environmental laws (LexisNexis, 2023).

The major global sanction regimes are the UN Security Council, the EU, the UK, and the US Office of Foreign Asset Control (OFAC).

## 2.2 Sanctions – Against Russia

When Russia invaded Ukraine, immediate sanctions followed. The same day, major Russian banks were subject to blocks and added to sanction lists. In these early days of war, the sanctioning was focused on asset freezing and banning transactions with Russian banks. The Russian “elite” were also targeted in the early days, as the west wanted to weaken those with close ties to Putin. (Martin, 2023)

The sheer numbers of sanctions are displayed in Figure 1, showing Russian individuals and entities sanctioned by the EU over the territorial integrity of Ukraine from March 2014 to June 2023.

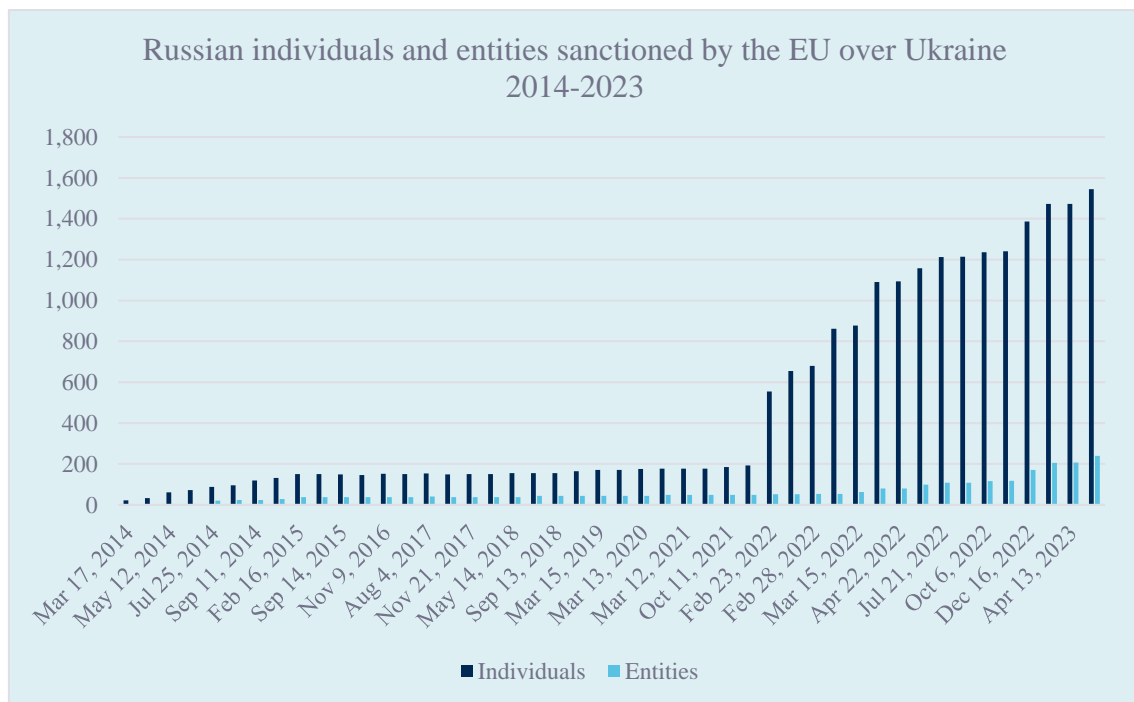


Figure 1, Cumulative number of European Union (EU) sanctions against Russian individuals and entities over the territorial integrity of Ukraine from March 2014 to June 2023. Data from Statista.

Figure 1 visualizes the immediate, drastic jump in the number of sanctioned individuals following the events of February 2022. Since then, the number has grown steadily as the

west has continued their sanctioning effort. In total, the number of individuals sanctioned by the EU alone have eight-doubled in the time span, totaling almost 1600.

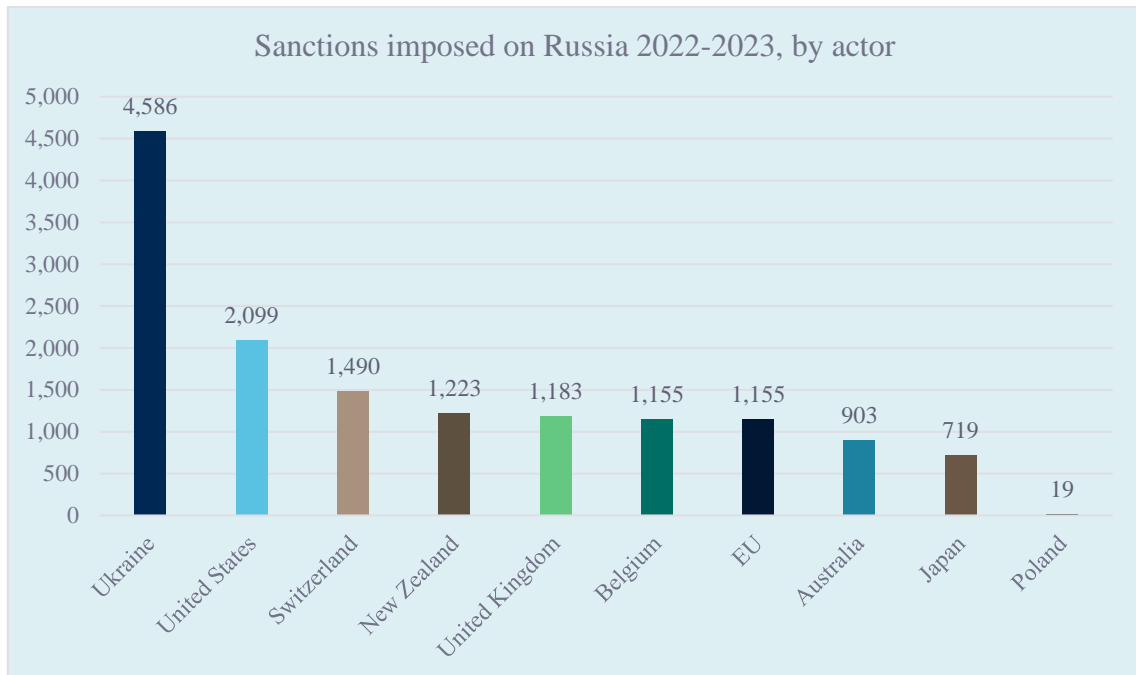


Figure 2, Total number of list-based sanctions imposed on Russia by territories and organizations from February 22, 2022, to February 10, 2023, by selected actor. Data from Statista.

Figure 2 shows the number of sanctions imposed on Russia from the invasion of Ukraine to February 10th of 2023, by actor. Many of the sanctions overlap in their effect, but the figure highlights the dramatic number of sanctions. Figure 3 shows the total number of sanctions imposed on Russia, by target from February 2022 to February 2023.

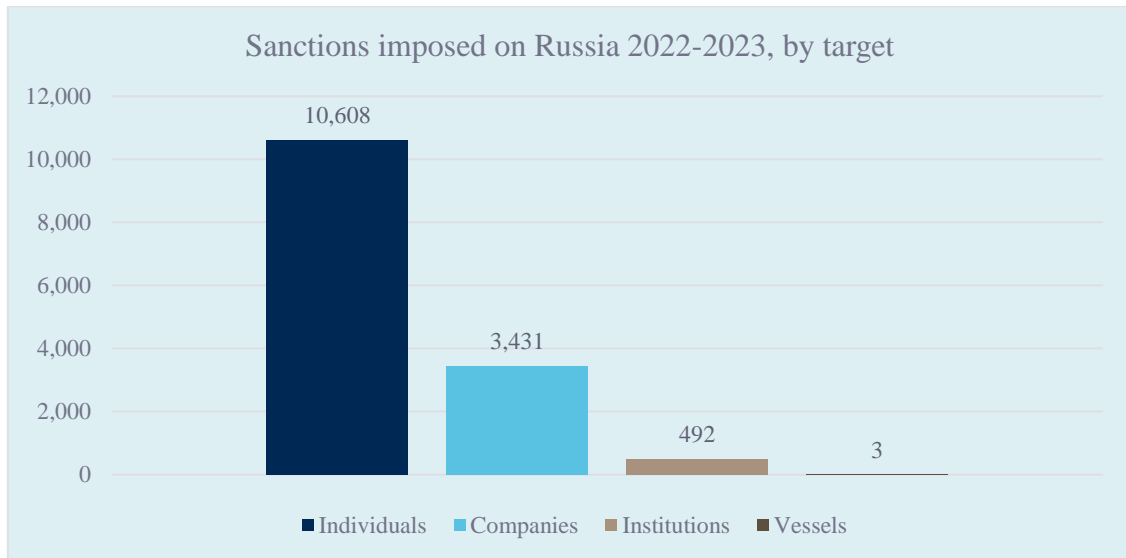


Figure 3, Total number of list-based sanctions imposed on Russia by territories and organizations worldwide from February 22, 2022, to February 10, 2023, by target. Data from Statista.

The first major energy-related sanction was executed on March 8, 2022 when the US banned all imports of Russian oil, gas, and other energy. The EU banned new investments in Russian energy sector on the March 8, and proposed an import ban on Russian coal, alongside banning Russian vessels from accessing European ports on the April 5. During the rest of April and May 2022, the West focused on tightening sanctions against Russian banks and individuals. In late June and July, the G7 started targeting the Russian mining industry, banning all trade of Russian gold. (Martin, 2023)

In December 2022, the EU and UK banned imports of Russian crude oil (Martin, 2023). As well as this, the G7 countries agreed to implement a price cap for Russian oil. The price cap was set at 60 dollars per barrel and was designed to reduce Russian revenues, while keeping global energy markets stable (European Commission, 2022). Now, Western ship owners and tanker operators had to ensure the oil was sold below \$60 per barrel and provide price cap attestations to their insurers. In February 2023, the price cap was passed to petroleum products as well, set at 45\$ per barrel for products traded at a discount to crude oil, and 100\$ per barrel for products traded at a premium to crude oil (Gard, 2023).

## 2.3 Russian seaborne crude export

These sanctions led to major disruptions in the global oil market. Traditional oil trading routes were terminated, new routes were established, and so were new connections

between global superpowers. The following Figures 4, 5, 6 and 7 are based on S&P global commodity insight data and visualizes the change in Russian crude oil (Perkins, 2023). Each charts displays the top five destinations of Russian seaborne crude in various months, measured in barrels per day.

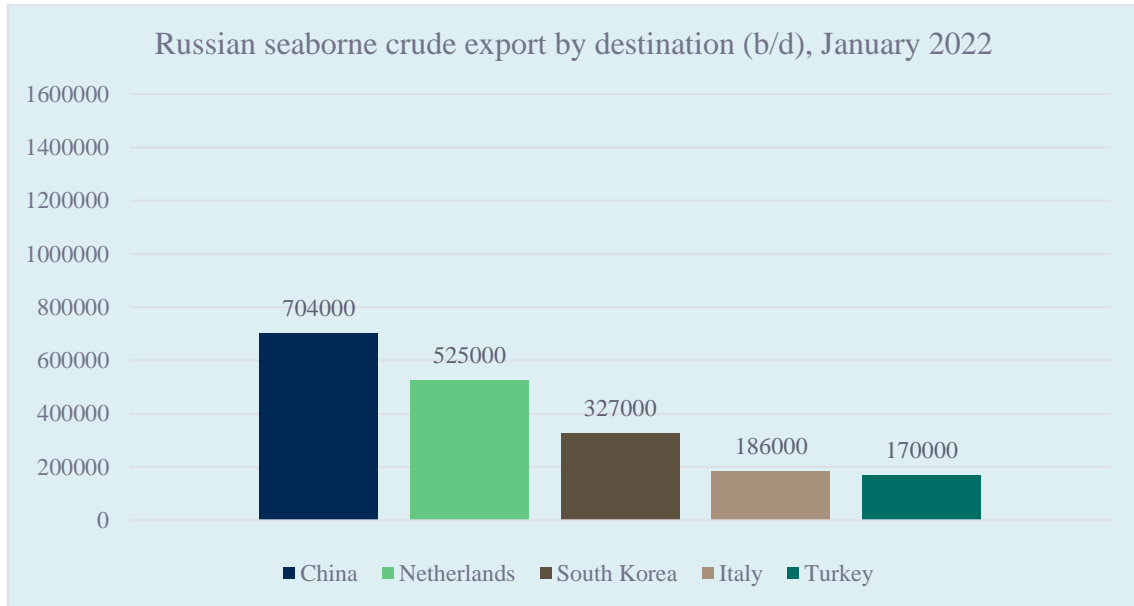


Figure 4, Russian seaborne crude export by destination (b/d) in January 2022. Data from S&P Global.

Also, before the war, China was major importer of Russian crude oil. Note that the 700.000 barrels per day of seaborne imports, is in addition to Chinas imports via the ESPO pipeline (Zu, 2022). The massive ports of the Netherlands were also a great destination, as the country houses large parts of the Northwest Europe refining hub (McKinsey, n.d.). Figure 4 shows that the rest of the destinations are spread out over European nations, reflecting a more balanced energy marked before the Russia-Ukraine war. One notable observation is that India does not crack the top fifteen destinations (Perkins, 2023).

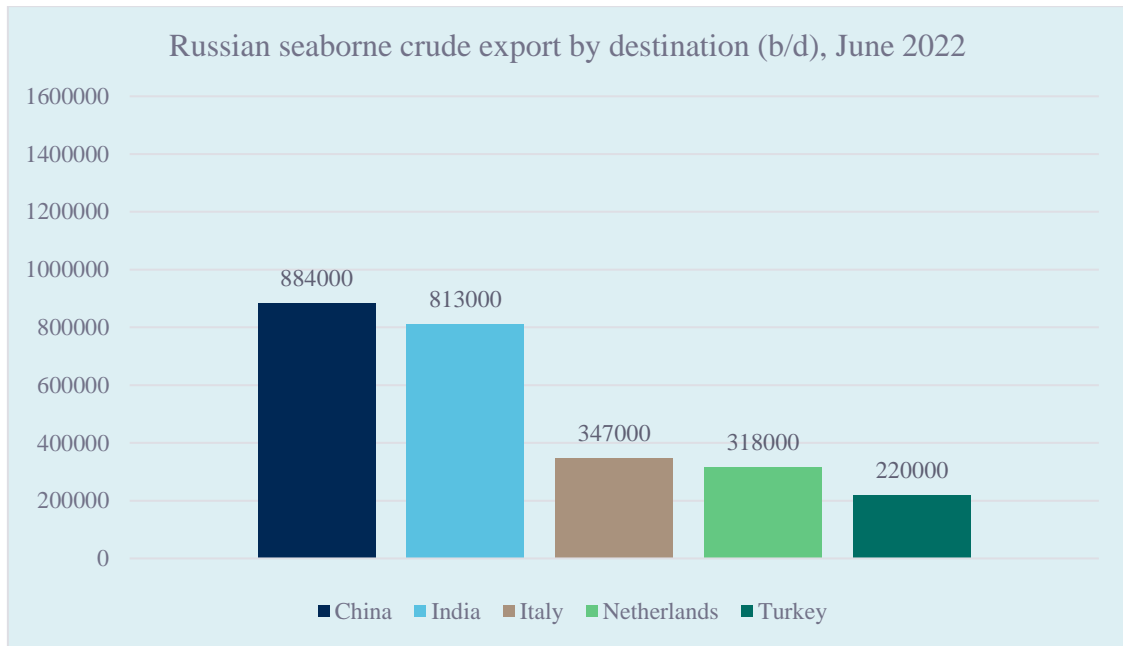


Figure 5, Russian seaborne crude export by destination (b/d) in June 2022. Data from S&P Global.

Figure 5 shows that a mere three months into the war, India has already emerged as an important destination. Swiftly rising to the second largest destination, India already imported over eight hundred thousand barrels per day in June 2022. On June 3rd, the EU introduced sanction package six, including the prohibition of importing crude oil and certain petroleum products from Russia (Martin, 2023). The European countries moved away from the Russian oil trade, with India eating up their sizable portion (Perkins, 2023). Another notable change in this period, was the US ban on Russian oil imports on March 8th (The White House, 2022). This change is not visible in the crude oil numbers, as the US themselves are the top oil producer in the world (EIA, 2023). The US were however a large importer of Russian oil products, such as diesel and gasoline, and vanished as a destination after this ban (Perkins, 2023).

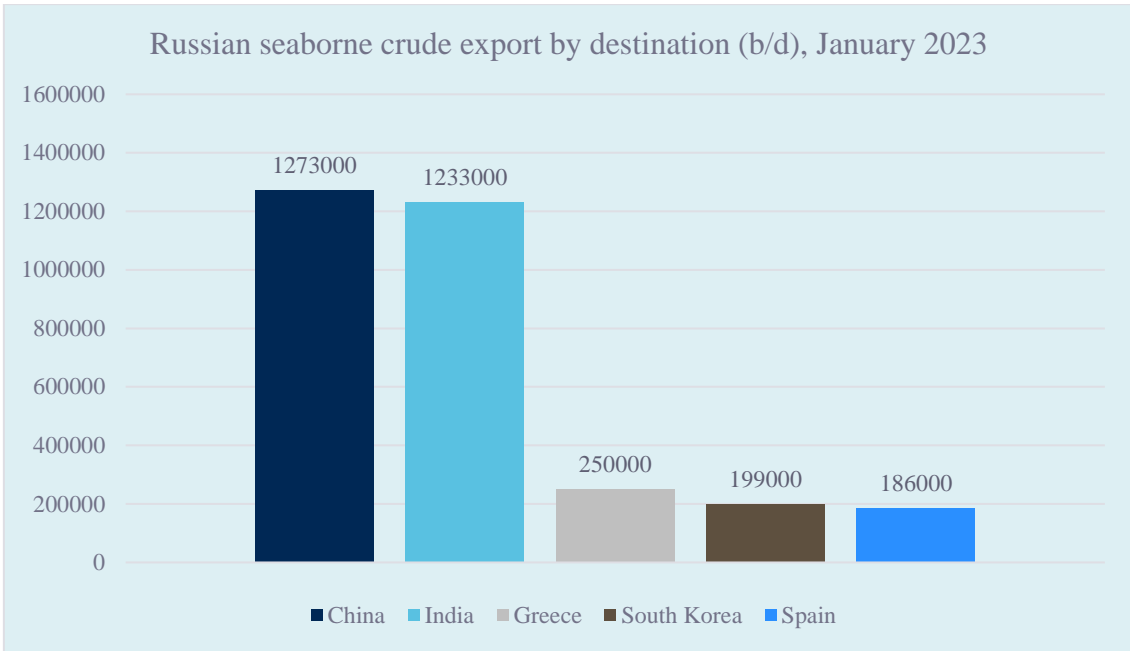


Figure 6, Russian seaborne crude export by destination (b/d) in January 2023. Data from S&P Global.

In January, Russia’s complete dependence on China and India had manifested, visualized in Figure 6. Both nations were now seaborne destinations for over 1.2 million barrels of Russian crude oil per day. The EU ban had by now proven to divert their members away from Russian crude. The G7 price cap on Russian oil, introduced on December 5, 2022, capped the legal trading price of Russian barrels at \$60. In January, this action was in full effect (Perkins, 2023).

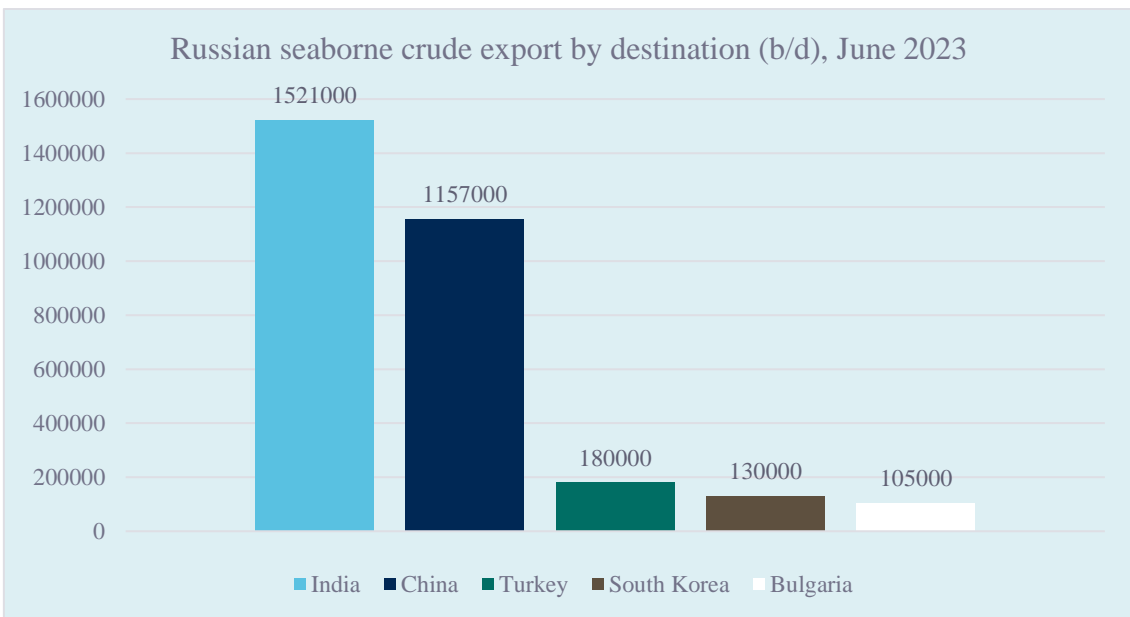


Figure 7, Russian seaborne crude export by destination (b/d) in June 2023. Data from S&P Global.



The figures from June 2023, shown in Figure 7, presents Russia's even greater dependence on the Eastern powers, especially India, whose imports rose to over 1,5 million b/d. Other than that, there has been little rotation during 2023, as India and China have stayed on top, with Turkey being the third choice. Turkey has additionally been the top destination of Russian seaborne petroleum products during 2023 (Perkins, 2023).

## 2.4 Tankers

Tanker is a term referring to the subclasses of cargo vessels designed to transport liquids in bulk. These liquids are mainly crude oil, refined oil products, chemicals, or liquified natural gas, but other liquids such as vegetable oil and fruit juice also get transported using tankers. In this thesis the term will refer to crude/oil products carriers of varied sizes.

The major size classes of oil carriers are:

**Coastal** – 3000-10,000 DWT (Dead weight tonnage). These vessels carry clean products.

**Small** - 10,000-20,000 DWT. Carries clean products.

**Handy** – 20,000-55,000 DWT. Carries clean products or crude. If used to carry products, a handy-sized tanker is usually referred to as MR (medium range).

**Panamax** – 60,000-80,000 DWT. Carries clean products or crude. Designed to be the largest tanker capable of transiting the Panama Canal. Called LR1 (long range) if used to carry products.

**Aframax** – 80,000-120,000 DWT. Carries clean products or crude. Called LR2 if used to carry product.

**Suezmax** – 120,000-180,000 DWT. Designed to be the largest tanker capable of transiting the Suez Canal. Carries crude oil.

**VLCC** – 200,000-320,000 DWT. Carries crude oil.

**ULCC** – 320,000-560,000 DWT. Carries crude oil. (McKinsey, n.d.)

## 2.5 Ship to ship operation

A ship to ship, or STS operation, is a term applied to the transfer of liquid bulk cargo, between two or more ships at open sea. An STS operation can be conducted while both ships are underway, or while one ship is at anchor and the other moored on the long side (Skuld, 2020). Although a common operation, the ship-to-ship transfers have proved to be a handy tool in the shadier part of oil trade. Since the price cap went into effect, shipowners shipping Russian oil has been relying on ship-to-ship operations in international waters to consolidate cargoes and obfuscate both destinations and cargo origin. The most active ships in this practice are old tankers that are part of the Dark Fleet. Popular STS locations include, but not limited to, OPL (outside port limits) Kalamata, OPL Gibraltar and in the Black Sea (Bockmann, 2023).

## 2.6 AIS and AIS Spoofing

The Automatic Identification System (AIS) is a navigational instrument consisting of physical transmitters, fitted on bridges of ships worldwide. The system uses the VHF radio network to signal useful information, such as positioning, vessel identification, speed, and course. The AIS was introduced by IMO as a security measure, strengthening traffic surveillance and reducing navigational risks (Norwegian Coastal Administration, n.d.).

Because the AIS relies on radio frequencies and manual data input, the system is prone to both human error and intentional manipulation. This opens for the opportunity of AIS spoofing, an umbrella term for all manipulation of AIS data. Due to the modern nature of this issue, terms and definitions are not standardized; therefore, I will only refer to Windward's whitepaper "Hiding in Plain Sight – Not All That Transmit are Legit" (Windward, n.d.), when discussing various methods of AIS spoofing, only adding my own comments. Windward is a maritime intelligence company trusted by leading organizations and governments agencies (Windward, 2023).

Here follows a list of the different AIS spoofing terms identified by Windward.

- i. **Dark Activity:** A dark activity refers to the intentional AIS transmission gap, caused by the ship's crew to conceal an operation. These concealed operations could be an oil tanker visiting Iran for a loading or partaking in an STS operation with a Russian vessel.

- ii. **Identity Change:** A change in the vessel’s MMSI (Maritime Mobile Service Identity), often along with other identification changes like name and call sign.
- iii. **Identity Tampering:** The deliberate falsification of broadcasted data from the vessel. Also includes physical alterations to the vessel’s features to misrepresent its identity (See Figure 8).
- iv. **Identity theft:** When a vessel takes on the identity of another active vessel, duplicating the same transmitting identifiers at a different location.
- v. **Identity laundering:** When one or more vessels tamper with, or misrepresent aspects of their physical, digital, and registered identities. In this method, one ship assumes a fraudulently obtained IMO registered “shell” identity.  
 Type one, a direct laundering operation, involves one “dirty” vessel taking on the acquired identity,  
 Type two, an indirect laundering operation, a “clean” vessel taking on the acquired identity, while the dirty takes on the now vacant “clean” identity,
- vi. **Dual Transmission:** The use of multiple AIS transmitters on board, transmitting separate IMO numbers.
- vii. **Flag Hopping:** Changing the vessels MMSI and flag repeatedly to avoid detection.
- viii. **AIS Handshake:** The AIS Handshake employs a decoy vessel as a disguise. While sailing near each other, a “clean” and a “dirty” vessel change their identity and go their separate ways. When the “dirty” operation is done, the vessels meet up again and switch back.
- ix. **Zombie Vessel:** Assuming the identity of a decommissioned vessel.
- x. **Location tampering (global navigation satellite system manipulation):** The use of machine-generated AIS signals following a path to hide the true position of the vessel. (Windward, n.d.).



Figure 8, “Vessel receiving Iranian oil while donning a bright red nylon tarp to mask its identification”. Picture from [twitter.com/TankerTrackers](https://twitter.com/TankerTrackers).

Recent uses of AIS spoofing to circumvent sanctions are documented. One strategy has been used in order to load cargo in Venezuela, where the vessel plots a fake AIS course along the western coast of Africa to make it seem like the vessel is loading cargo in Angola, while in reality it sails directly to Venezuela (Poetzsch, 2023).

There has been a dramatic rise in the use of these deceptive shipping practices in the last couple of years. During the first half of 2023, Windward data showed a 12% increase in location manipulation compared to the year prior, and an 82% increase compared to the first half of 2021 (Daniel, 2023).

## 2.7 Dark Fleet

The most significant maritime effect of the trade shift was the rise and development of the Dark Fleet. The Dark Fleet is a loose term associated with non-Western actors in the tanker market who are active in the sanctioned oil trade. Lloyds List defines a tanker as part of the Dark Fleet if it is:

Aged 15 years or over, anonymously owned and/or has a corporate structure designed to obfuscate beneficial ownership discovery, solely deployed in sanctioned oil trades, and engaged in one or more of the deceptive shipping practices outlined by US State Department guidance issued in May 2020 (Bockmann, 2023).

Lloyd’s List’s definition, as such, excludes tankers linked to government-controlled entities in Russia and Iran.

Windward has a broader definition.

The Dark Fleet refers to tankers that engage in dark activities, such as disabling their AIS, or using deceptive shipping practices – like GNSS manipulation, ID, and location tampering – to transport crude oil, chemicals, and other wet cargo. The fleet is characterized by weak ownership structures and the use of multiple flags of convenience over short periods of time (Windward, 2023).

When discussing the development of this Dark Fleet, both in terms of activity and size, I will stick to the Lloyd’s List definition (Bockmann, 2023), as they have continuously provided updated numbers detailing the size of the fleet. Figure 9 shows the historical growth of the Dark Fleet by number of vessels and is based on data from several Lloyd’s List articles.

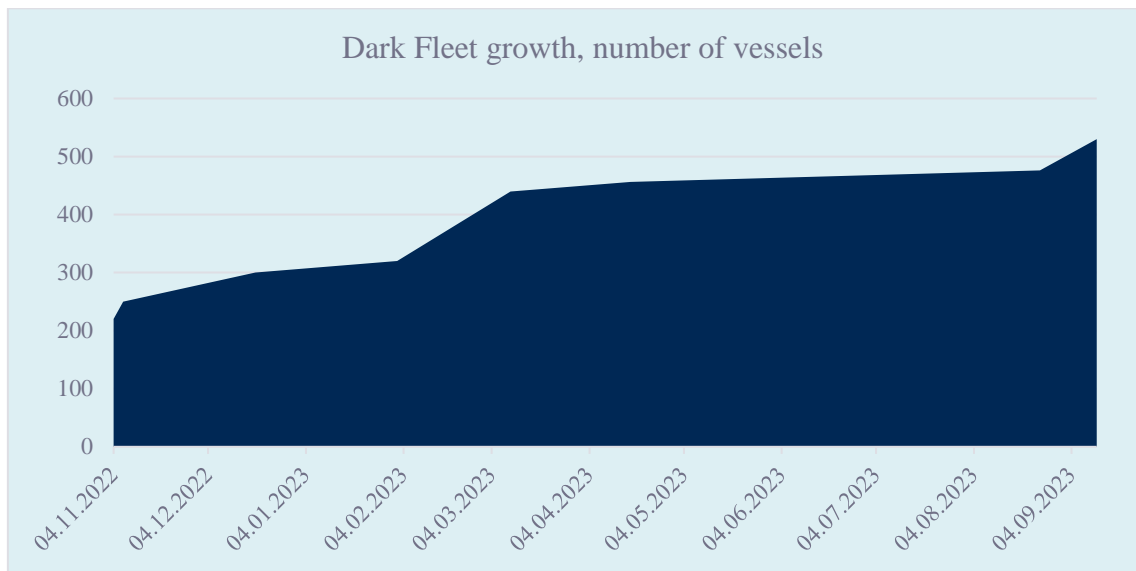


Figure 9, Dark Fleet growth, number of vessels. Data from multiple Lloyd's List articles.

As a term conjured by journalists, it is difficult to identify when the term “Dark Fleet” was first coined. The first time Lloyd’s List used the term was in October of 2022, in an article named “Russia needs giant tanker fleet to continue oil exports amid sanctions” (Bakhsh, 2022). Before this, Bockmann refers to these vessels as “subterfuge tankers” (Bockmann, 2021). In a private email exchange, Bockmann states that a common metric is that the group of tankers, now known as the dark fleet, consisted of approximately 220 vessels, prior to the invasion of Ukraine.

The need for “dark” oil carriers existed before the sanctions against Russia. Although not of discussion in this thesis, oil exporters Iran and Venezuela have both been on the receiving end of major oil related sanctions (Blas, 2023). Export-restricting sanctions

created the demand for tankers operating outside of the western compliance and incentivized the accumulation of these 220 vessels.

The significant growth of the dark fleet started late 2022, when murmurs of the price cap agreement emerged. The first time the number three hundred was mentioned by Lloyd's list was in their tanker outlook for 2023 (Bockmann, 2022).

In DHT's, a shipowner involved in crude oil trade, quarterly call from February 2023, CEO Svein Moxnes Harfjeld shared multiple concerns about the rise of dark tankers. He states that the dark fleet is becoming a big deal and delivers a since echoed phrase; that selling vessels to the dark fleet "could be viewed as the new scrapping" (Miller, 2023). He explains that in the last six to nine months, a significant amount of funding has been made available to companies in Dubai which are owned by Russian people (Miller, 2023).

We have a sense that a lot of the businesses buying the older ships are funded by Russian capital in some form and they are buying these ships to transport Russian crude oil — and they do that at a significant premium. They make more money than in the 'compliant' market (Miller, 2023).

The four hundred mark was aggressively crossed on March 10, 2023, in an article where Bockmann states that "Dark fleet tankers now comprises 10% of seaborne oil transport", this 10% amounting to 440 vessels (Bockmann, 2023). After this the growth slowed down quite significantly. The number 456 was mentioned on the 17th of April (Bockmann, 2023), but after this there were no updates all summer. In late August, the number was cited as 476 (Bockmann, 2023), and the latest figures have the number at 530 vessels (Bockmann, 2023).

Numerical size is not the only parameter of importance when measuring the Dark Fleet. The other important metric to consider is the utilization of the dark fleet. One proxy one can use to represent the dark fleet is vessels without IG insurance. Figure 10 shows the percentage of tanker calls in the Russian Baltic and Black Sea ports distributed between vessels insured by the IG and vessels with an unknown insurer, measured in dead weight ton.

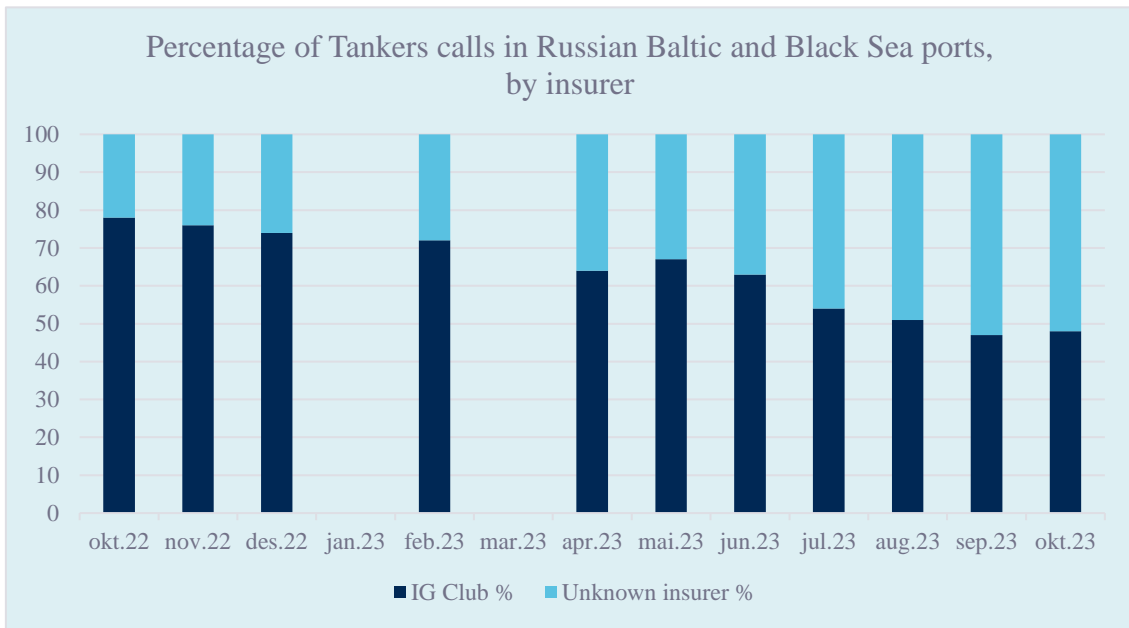


Figure 10, Percentage of Tankers calling Baltic and Black Sea ports, by insurer, measured in DWT. Data from Lloyd's List

The figure shows a clear trend, increased activity in the Baltic ports of Ust-Luga, Primorsk, and Black Sea ports, mainly Novorossiysk, is done by vessels outside of western insurance framework. A trend clearly indicating that the dark fleet is not only growing, but Russia's dependency on the western shipowners is reducing significantly.

## 3.0 METHODOLOGY

### 3.1 Qualitative and Quantitative

When choosing our method of data collection, there are primarily two methodological approaches. Qualitative and Quantitative data collection. The chosen method dictates how we collect data and what type of data is acquired. Qualitative methodology seeks the unmeasurable and intangible data, such as values, expectations, and feelings, commonly known as soft data. This type of data is usually extracted through in-depth interviews, encouraging subjects to express their own opinions. Quantitative data on the other hand shows us measurable, numerical information about statistics like ad-engagement and consumer habits, commonly referred to as hard data. (Larsen, 2020)

#### 3.1.1 PROS AND CONS OF QUALITATIVE

A broad specter of qualitative methods exists, but this thesis will only present the pros and cons of the interview as it is the chosen method. The primary advantage of this qualitative method is the personal connection that is established during the interview. The researcher sits face to face with the subject, giving them the opportunity to influence the mood of the conversation and informant. The interviewer can ask follow-up questions and extract information and perspectives from a broader conversation. In a depth interview, we get elaborated answers and a deeper understanding. Another major benefit is the possibility of instant correction in the instance of misunderstandings and unclarity.

However, qualitative methods also come with their disadvantages. These methods entail a time-consuming process. Preparing, conducting, processing, and analyzing the data - all four of the stages can be more time consuming compared to quantitative methods. Data processing is challenging as the data is not standardized. Additionally, the validity of the data might be questionable, as informants may not be entirely honest. In an anonymous survey, respondents might feel safer being truthful than in a more personal interview. The informant's responses may also be influenced by the interviewer's presence, leading to answers that align with what the interviewer wants to hear.

#### 3.1.2 PROS AND CONS OF QUANTITATIVE

In this thesis, one could have chosen to use a survey to collect information. This quantitative method is based on numbers and generalizing, allowing the researcher to



gather data from a broader population, giving a clearer indication of consensus. There is little gathering of personal information, as the questions of a typical survey are rigid and structural. The benefits of quantitative data largely lie in the ability to translate the data directly to numbers. With this benefit, the researcher has countless analytical possibilities to draw conclusions and correlations. Another benefit is the ability to drastically widen the scope of research compared to qualitative methods. Sending out a survey which can be answered in five minutes allows the researchers to reach a high number of units, adding quality to the research.

However, the drawbacks of quantitative methods contrast with the advantages of qualitative methods. Answers are impersonal, and intangible metrics are not considered. In an anonymous survey, we must trust the data blindly, so we must choose our population carefully to ensure the inclusion of trustworthy participants. While anonymity makes it easier to reveal uncomfortable truths, it also makes it simpler to provide inaccurate information.

## 3.2 Case study

The Merriam-Webster dictionary defines the case study as “an intensive analysis of an individual unit (such as a person or community) stressing developmental factors in relation to environment” (Merriam-Webster, 2023). This definition outlines four key characteristics of a case study:

- i. **Intensive analysis:** A case study involves the thorough and detailed examination of a particular unit, which can be an individual, group, organization, community, or any other defined entity.
- ii. **Individual Unit:** The focus of the study should be on this specific unit. The researcher’s goal is to gain a deep understanding of the unique qualities, behaviors, and characteristics of that unit.
- iii. **Developmental Factors:** The analysis emphasizes the factors related to development. This could be various aspects of development, and the intention is to explore how the unit is evolving over time.
- iv. **Relation to Environment:** The study considers the context of the environment in which the individual unit exists. This involves examining how external factors impact the development and behavior of the unit.

In essence a case study is a method of research that goes beyond superficial observations and seeks to provide a richer and more detailed understanding of a particular case. It aims to uncover the complexity and relationship between the unit and the environment, focusing on the developmental aspects.

The case study also has its limitations. It can be challenging to extract general assumptions about phenomena and relationships based on a singular unit. One unit does not necessarily represent a larger group, and the time-consuming nature of the case study makes it very resource expensive to follow multiple units. It can also be difficult to determine causation solely based on a case study. There are often multiple phenomena which can influence a given outcome. (Espen Wæhle, 2023)

### 3.3 Validity and Reliability

In any research validity and reliability are key factors. Validity refers to whether research can be confirmed, believed, and translated (Larsen, 2020, s. 93). In qualitative studies this boils down to the data that has been collected; if it is relevant to the research question and allows the conclusions to be valid. Since the thesis studies a real-world situation, the term also means whether the assumptions made are valid in the reality that is assessed (Larsen, 2020). To ensure validity in this thesis, it is imperative for the question design to be tailored to answer the research question and make sure all assumptions are realistic.

Reliability refers to precision and trustworthiness. Ensuring reliability in the qualitative study is challenging in the qualitative study as the data gathering is difficult to replicate, should one attempt to prove reliability in this way. Therefore, it is important to make sure that questions are clear and precise, and all data is treated with care and precision (Larsen, 2020).

### 3.4 Choice of method

What method one decides to use is determined by several factors related to the research. The most principal factor is the problem itself. We differ between quantitative and qualitative questions of research. Quantitative questions are used in descriptive, comparative, or relational research. While qualitative questions are used when the

scientist is working on phenomenological and ethnographic research. Qualitative questions are also used in descriptive research. (Larsen, 2020)

The next crucial factor is the purpose of research, to envision the final product. If we want statistics as our product, we need to use quantitative methods with uniform questions that are easily translated to numbers. If our envisioned product is a thorough, personal rapport, with perspective and opinions, we choose qualitative methods. The other common factors to consider are approach, resources, characteristics of research objects, and relationship to your sources. Summarized, qualitative research emphasizes insight and seeks understanding, and quantitative research emphasizes overview and seeks explanation. (Larsen, 2020)

To choose a method for this thesis, we need to analyze the purpose, and research question. In this thesis, the aim is to answer the research question; How has the trade routes of seaborne Russian crude oil evolved in response to recent geopolitical changes, and what role does deceptive shipping practices and the Dark Fleet play in facilitating this change. This categorizes the research as descriptive, as it seeks to describe a real-life situation and phenomenon. As previously discussed, a descriptive study can utilize both qualitative and quantitative methods. When combining the two, it is referred to as mix-methods research (Larsen, 2020, s. 30). In this method we try to exploit the best of both worlds. This thesis's methodology is centered around expert interviews, to extract data in the form of observations, while providing a case study that proves prior written theory and showcases a real case of sanction evasion.

The case study is conducted employing a quantitative method where the gathering process is extracting AIS data from Windward.com, of whom I have been given permission to use their service and analyze the data to discuss sanctions evading behavior. AIS data are a form quantitative data, classifying the case study as quantitative research. Borrowing from the theory section, we know that the case study should reflect the four components of the definition (Merriam-Webster, 2023):

- i. **Intensive analysis:** The case study will present a thorough and detailed examination of the unit, which in this case can be interpreted either as the oil cargo tracked, or the group of vessels who cooperate to transport it.
- ii. **Individual Unit:** The focus is on the unit's behavior and characteristics, and why their activity could be interpreted as a form of sanction evading behavior.

- iii. **Developmental Factors:** The analysis emphasizes development in the physical, geographical aspect, tracking the movement of the group of vessels, and the cargo.
- iv. **Relation to Environment:** Most importantly the study considers the environment in which the unit exists. The point of the study is to visualize an effect of sanctions against Russia.

As the case study unveils highly irregular behavior, or at least irregular prior to the current situation, the study examines and shows how external factors impact the development and behavior of the unit.

### 3.5 Interview design

When designing the questions for my interview guide, the primary focus has been on asking the informant about their personal observations in the market. The questions are specifically designed to answer how Russian oil flows have shifted geographically, and which deceptive shipping practices the informants have observed employed by operators and vessels. In addition to this, to add nuance for discussion, I want to ask the informants about their concerns regarding sanction evasion, their expectations regarding long term consequences of the sanctions, and their assessment on whether the G7 price cap has worked as intended.

## 4.0 CASE STUDY

The following is a case study detailing and tracking a cargo of Russian oil, from terminals in Novorossiysk, through multiple ship to ship operations, AIS manipulation, and engine problems, to discharge in Malaysia.

The information and opinions set out in this report are the result of research carried out by the author based predominantly on AIS data from third party data sources. The author does not have any intimate knowledge or association with any of the vessels named in the report. The author's opinions and conclusions are based on the author's own interpretation of the information available to the author at the time of writing and as recorded in this report. The opinions and conclusions of the author should not in any way be interpreted as statements of fact.

### 4.1 New Trust

The first protagonist in this study is New Trust, a Liberian flagged, Greek owned, 2004 built Suezmax tanker. Suezmax tankers are designed to be the most efficient mode of crude oil transport through the Suez Canal. These vessels saw rocketing demand in 2022 after the war broke out, resulting in high rates (Bertzeletou, 2022). When the US and EU banned Russian oil imports, the eastern powers of India and China became the primary purchasers of the Russian crude oil, leading to a massive shift of trade routes. Russia exports 15-20% of their oil exports through the Black Sea ports, and additionally the CPC terminal offshore of Novorossiysk exports Kazakh crude (Bloomberg News, 2023). In this situation, the most efficient mode of transport, moving oil from Russian to India and China, is a Black Sea loading with a voyage through Suez.

New Trust has, curiously, not traversed the canal a single time since the war broke out. Even more interesting, the vessel has been at anchor offshore of Romania since the 22nd of April 2023. To confirm this, we look at the vessel's AIS data in this selected period.

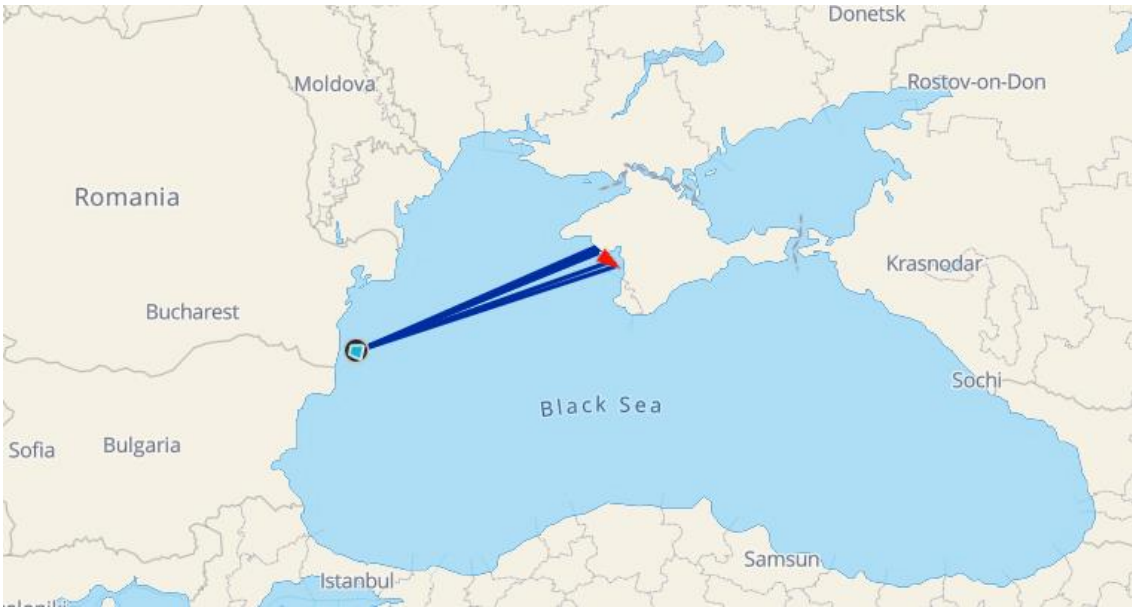


Figure 11, AIS data from New Trust in time span 22.04.23-28.09.23.

The straight lines in Figure 11, indicating multiple voyages to Crimea in the time span, are with high certainty not real signals from the vessel. They are likely attempts at AIS spoofing with unknown motivation. We assume this because the vessel’s signals between Romania and Crimea are timed only minutes apart, shown in Figure 12. This distance would be impossible to sail in mere minutes. Similar patterns were reported in May 2023, when AIS “hackers” created false patterns of the coast of Crimea displaying a ‘Z’, allegedly a Russian pro-war symbol (Chambers, 2023).

The blue square outside of Romania in Figure 11 shows the location where the vessel has lied stationary for over 5 months, as of September 28.



Figure 12, AIS data from New Trust.

## 4.2 Black Sea Shuttle Operation

We have now concluded that New Trust has been stationary for 5 months as of September 28., but why would a Suezmax tanker lie at anchor in Romanian waters for such a long time? It is reasonable to think the owners would like to capitalize on high Suezmax spot rates, or perhaps sell it to Russian owners while the vessel values are inflated. The answers start to appear when we look at the vessels reported meetings.

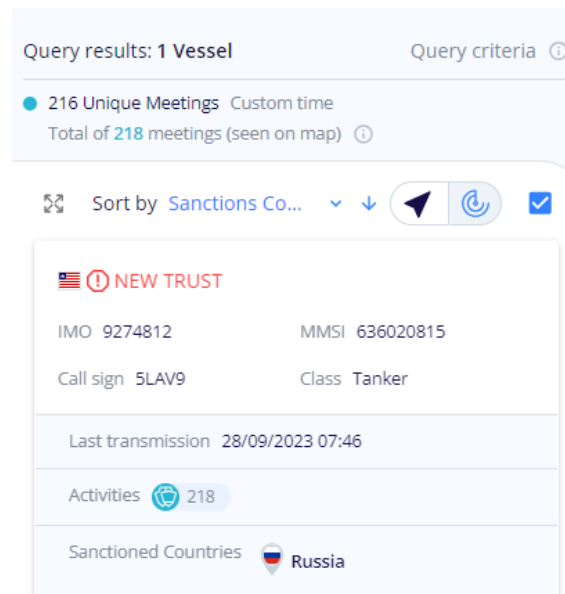


Figure 13, Search result, query: All meetings involving New Trust in time span 21.04.23 - 28.09.23.

In the period 22.04.23-28.09.23, the vessel registered 216 unique meetings, all at her anchored position in Romanian waters, shown in Figure 14. When we ignore the meetings with service vessels, we see that New Trust has been visited by other tanker vessels almost every day. Some of the tankers are the same size as New Trust, and some are smaller tankers. Let us first look at the smaller ones.

The AIS logs report frequent meetings with four vessels, VF Tanker-3, VF Tanker 4, Dmitry Pokrovsky, and Andropov. These four vessels are all Russian flagged, with Russian owners, and have 4000-7000 dwt carry capacity. Looking at these four vessels' activity, in the same timespan as New Trust has been anchored, we observe a clear pattern.

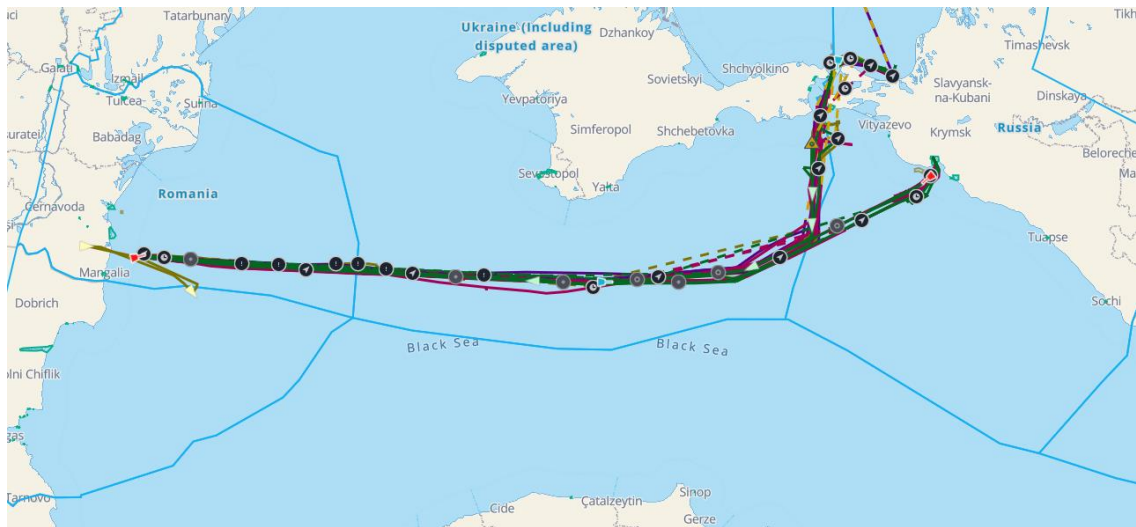


Figure 14, AIS data from VF Tanker-3, VF Tanker-4, Dmitry Pokrovsky and Andropov. Time span 22/04/23 – 28/09/23.

The four Russian vessels have been constantly sailing between the Russian Black Sea ports, and the area where New Trust is located. This pattern triggers a suspicious thought indicating that the vessels have been shuttling Russian oil to the New Trust, consolidating cargo in the sleeping Suezmax. Looking at AIS data, we can confirm this suspicion.



Figure 15, AIS Data from 25/09/23, 18/09/23, and 22/08/23.

The three examples in Figure 15 are just a few of many frequent ship-to-ship operations between New Trust and the Russian vessels. In the first stage of this operation, the Russian between New Trust, and Russian Black Sea ports, until New Trust is fully loaded in Romanian waters, a strategy which does not seem very logical. If the smaller vessel were to consolidate cargo on the New Trust because of limited capacity in the Russian ports, then the operation would be more efficient if the New Trust were at anchor closer to Novorossiysk.



This operation would not seem all that suspicious should New Trust load this Russian Oil and move on. Russian oil trade is not illegal, with the proper price cap attestations, any shipowner can be complying to current sanctions while carrying Russian barrels. You can also load oil at the CPC terminal which is in Russian waters but pumps primarily Kazakh oil (Caspian Pipeline Consortium, n.d.). Oil that is not sanctioned. New Trust demands attention, because this is a vessel which loads Russian oil, but never leaves the Black Sea.

### 4.3 Romanian Nightlife

New Trust does in fact not operate as a classic tanker vessel at all and is in effect a floating storage unit. When the vessel is fully loaded after a number of visits from the Russian tankers, it is time for a new, different meeting.



Figure 16, New Trust, and Simba together on the 14th of September AIS data.

From the 12th till the 14th of September, New Trust welcomed a visit by Cameroon flagged Suezmax tanker Simba, see Figure 16. Satellite imagery from the 14th, see Figure 17, confirms this meeting, and we can speculate with a high degree of certainty that this meeting is a ship-to-ship transfer of Russian cargo. Now again, this activity is not inherently illegal. Even if Simba has western insurers, this is a legal operation, given the ship provides the proper attestation.

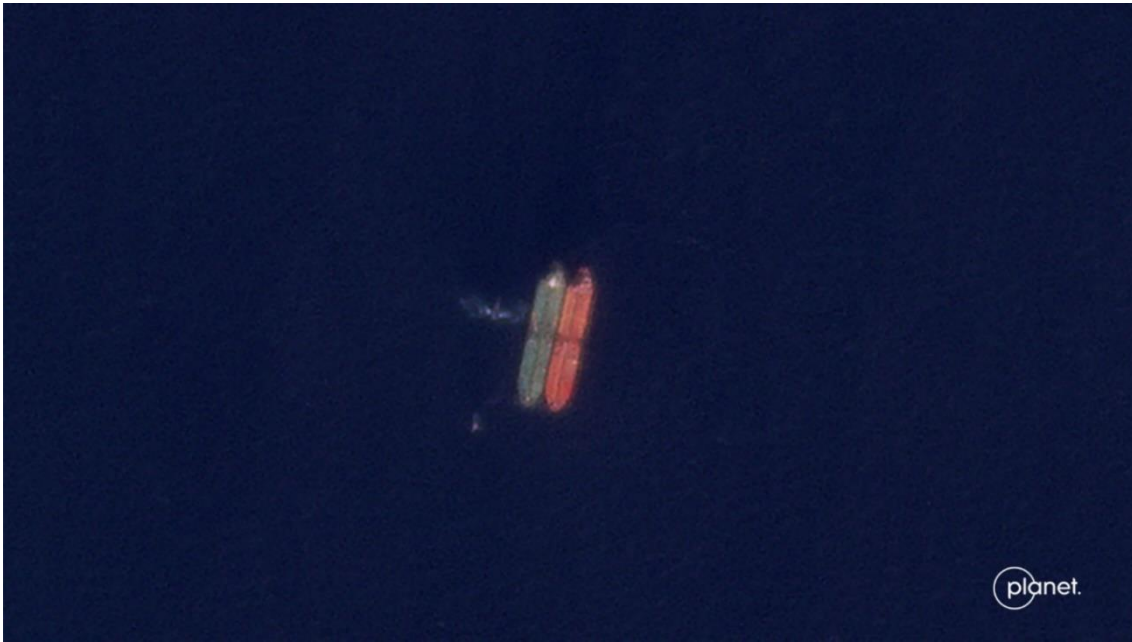


Figure 17, New Trust and Simba together on the 14th of September, satellite image.

The topic of legitimacy in this trade will be revisited in the discussion section because this trade pattern is highly irregular. As stated in the theory section, ship to ship transfers of oil has been used as tactic to obfuscate the cargo country of origin. If we take this statement into consideration, we can start to speculate whether an STS in Romanian waters is a strategic decision. In any case, the Simba is now loaded with Russian oil.

#### 4.4 Greek Rendezvous

Fully loaded after the meeting with New Trust, Simba sets sail.

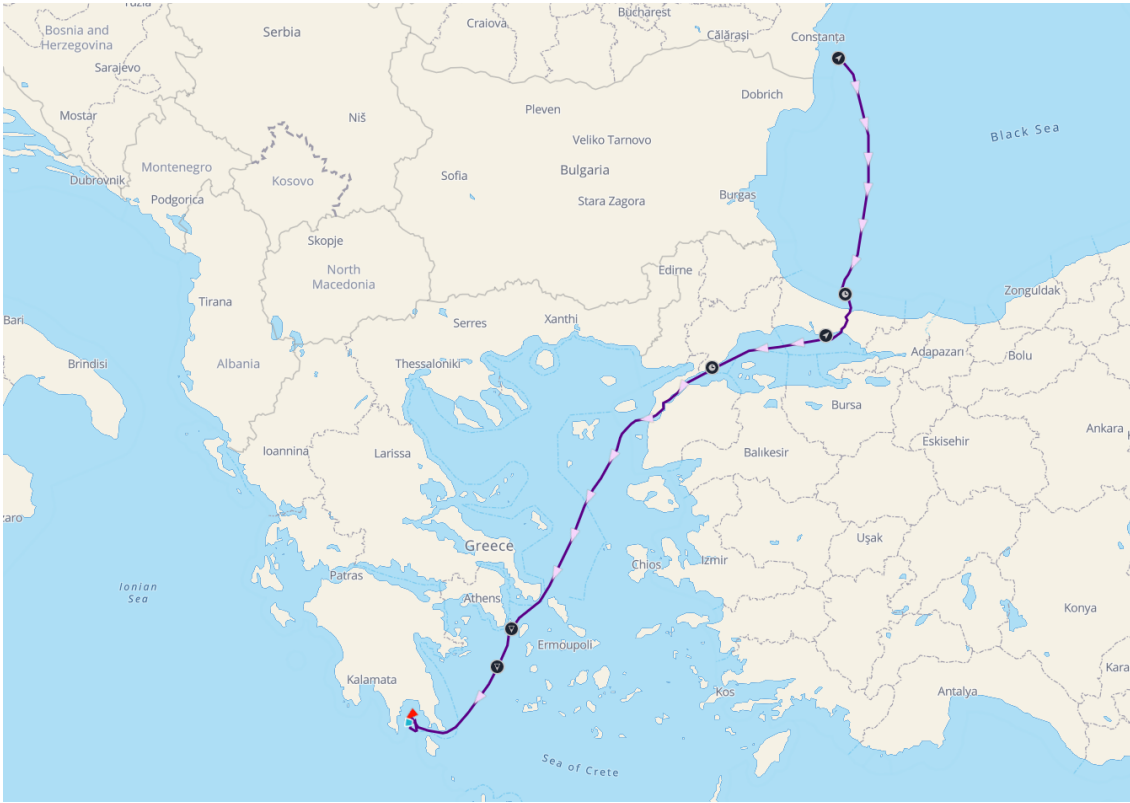


Figure 18, Simba's AIS signal from 14/09/23 - 19/09/23.

The vessel departs for a five-day voyage to Kalamata, Greece, shown in Figure 18. Specifically, the Laconian Gulf. The gulf has become a hotspot for ship-to-ship operations involving sanctioned oil. It is a convenient location because international waters begin a mere six nautical miles off the coast, meaning that Greek authorities have no power to police the area, and Greek companies are hence allowed to service the vessels. The Greek six-mile line is a result of the Aegean dispute, between Greece and Turkey (Republic of Türkiye Ministry of Foreign Affairs, 2022). Because of Greece's cluster of islands located in the Aegean Sea, the territorial water limit is shortened. Should the limit be extended to the common 12-mile line, Greece would own 71,5 percent of the sea (Republic of Türkiye Ministry of Foreign Affairs, 2022).

An AIS data snapshot from the 21st of September in Figure 20 highlights the popularity of the area, but does not tell the whole story, as there are probably multiple dark vessels not showing.

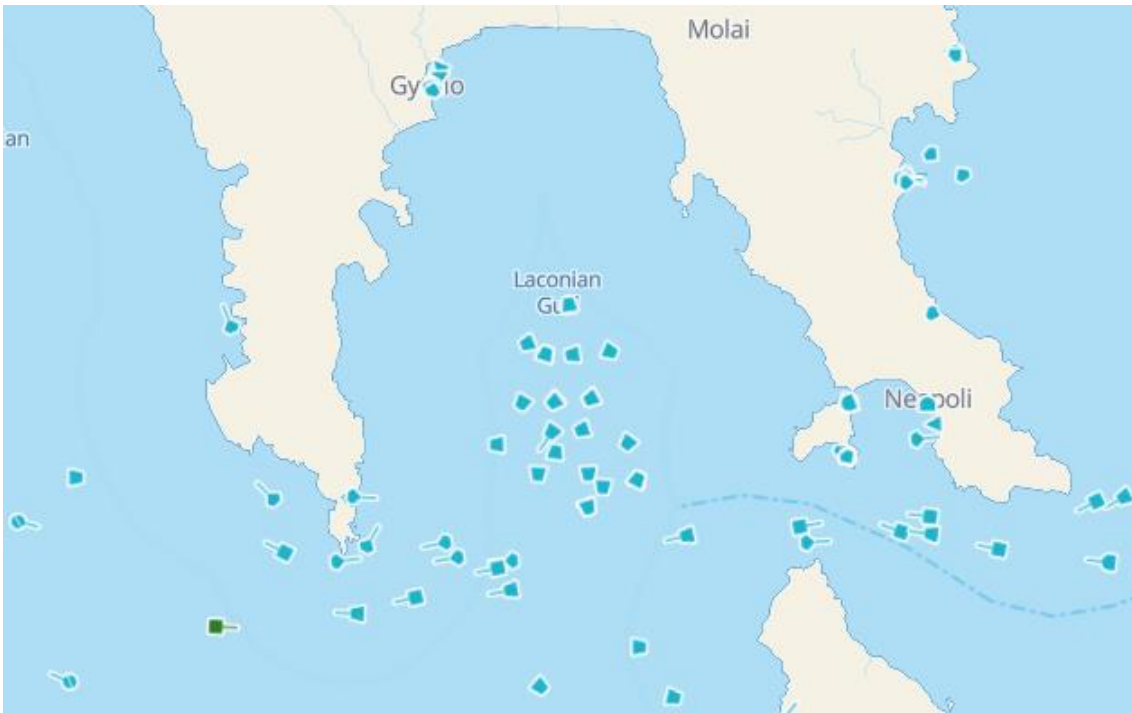


Figure 19, AIS data from the Laconian Gulf captured at 21/09/2023.

Among these vessels can locate Simba.

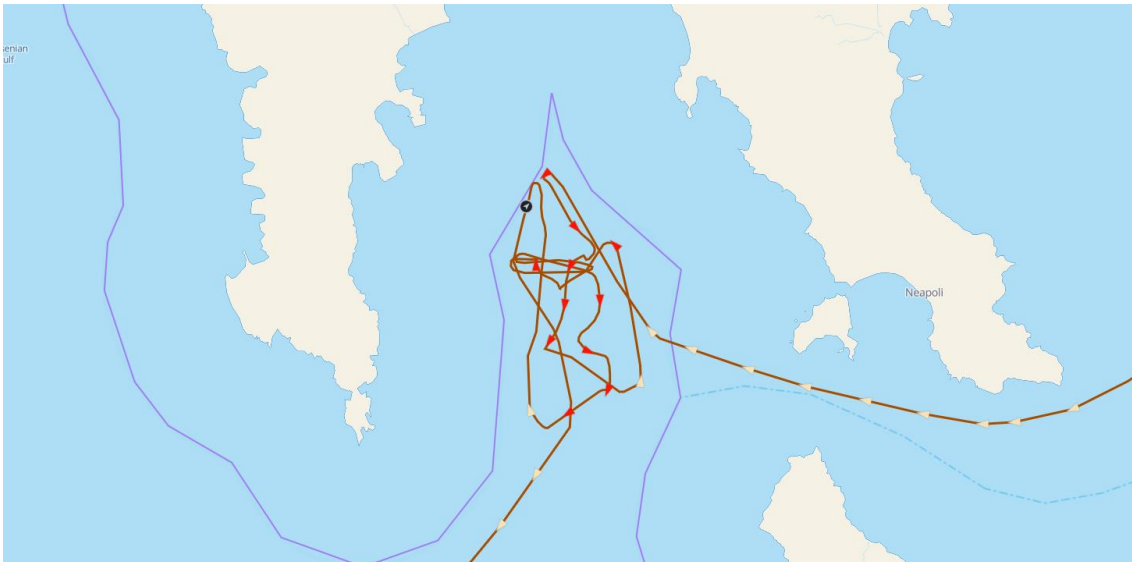


Figure 20, Simba AIS data from 18.09.23 to 22.09.23.

The vessel sailed within the Gulf for a total of almost four days, meticulously avoiding the Greek territorial waters, outlined in purple in Figure 21. The intriguing aspect of this data sample is that Simba registered no meetings with other tanker vessels during this period but registered a decrease in draft on September 20., indicating that the vessel dispatched cargo. The counterparty of this STS operation either went dark during the

transfer or used one of the previously described AIS spoofing methods while conducting the transfer. Without any more information or satellite images, we are unable to know what ship took the cargo, and the sanction evasion is in theory successful.

This is where the investigation originally ended, with the Russian cargo loaded onto the mystery vessel, and on its way, likely eastward.

However, on the 27th of September, during this initial investigation, Bloomberg's Alaric Nightingale posted an article named "Fake Coordinates and Tanker Tricks Expose Shadowy Russian Oil Trade". This article is centered around a case study of ship-to-ship transfers, much like this case study. In an act of unprecedented coincidence, and to my pleasant surprise, this was a case study of Simba and the until now unnamed counterparty in Greece. The red tanker is identified as Turba. Another Cameroon flagged tanker with obscure ownership structure. The reporters identified this on site and photographed the vessels, shown in Figure 21. (Nightingale, 2023)

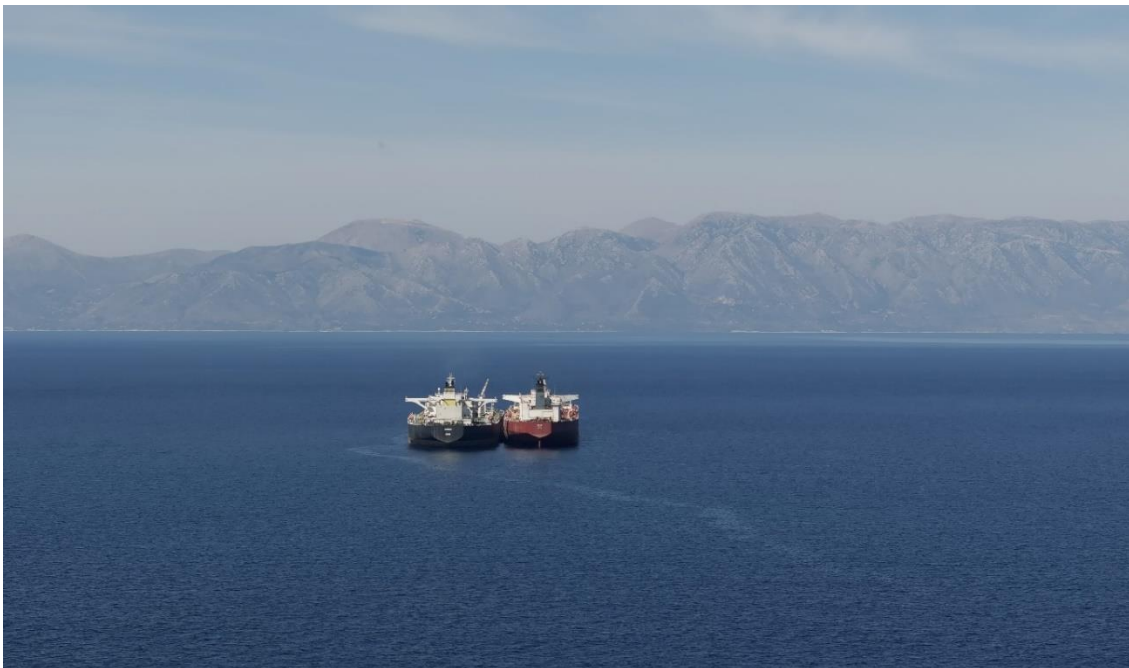


Figure 21, The two tankers Turba, right, and Simba side by side off the coast in the Laconian Gulf, on Sept. 19. Photographer: Laurent Laughlin/Bloomberg

Turba is a prime example of a Dark Fleet vessel. A vessel of scrapping age, with obscure ownership and unknown insurance provider. The vessel is also a somewhat famous one, being mentioned in as many as five Lloyds list articles, the first in 2021, when the vessel was accused of having links to Iranian oil trading (Bockmann, 2021).

The vessel was specifically brought up during discussions at the International Maritime Organization (IMO) in March 2023, when discussing the growing risk of these poorly maintained tankers. Turba has not had a full inspection since 2017. (Paul Peachey, 2023)

Although photographed together by Bloomberg. The AIS signals transmitted from the vessels tells a different story. The signals from the same day, gives no suspicion of foul play. The patterns seem normal, and do not show a single meeting between the two. The screenshot from 14:25 on September 19. indicates that the vessels are 4,2 nautical miles apart, almost eight kilometers. In real life the vessels were transferring cargo, as proven by Bloomberg.

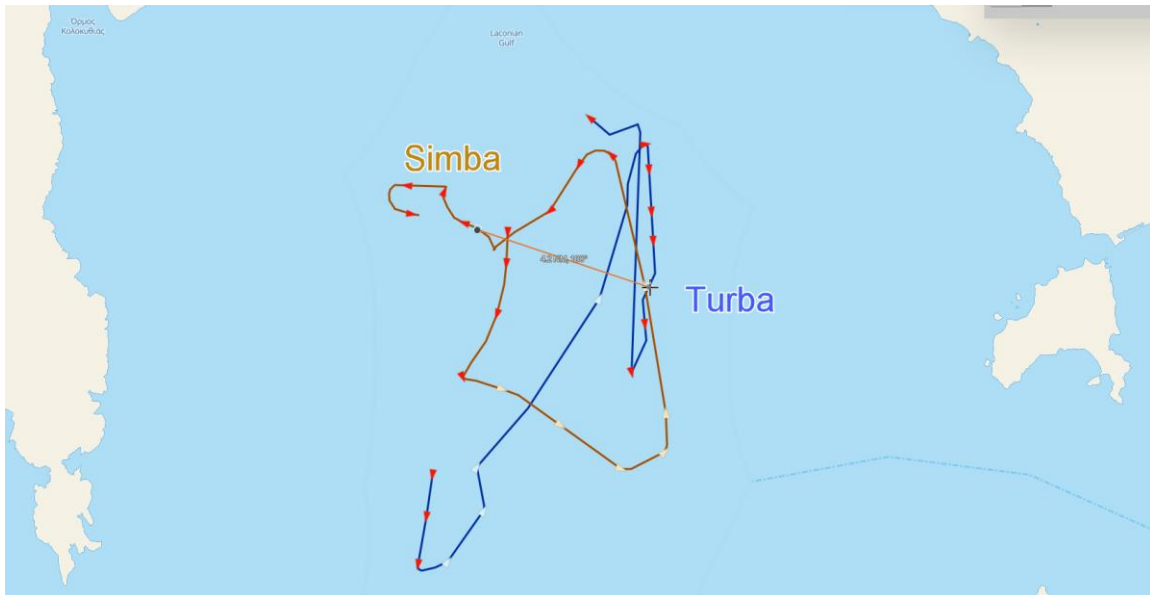


Figure 22, AIS signals from SIMBA and TURBA on the 19th of September.

Another piece of information the article provides is that the cargo is oil products (Nightingale, 2023). Given the Turba, Simba, and New Trust's classification as crude oil carriers, the assumption during investigation was that the cargo was crude oil, but crude tankers can also be used for carrying oil products such as fuel oil (Euronav, 2018).

## 4.5 Indian Ocean troubles

With the cargo loaded onto Turba, Simba departs Greece and returns to the Black Sea. Turba on the other hand, sets sail for the next voyage of this batch of Russian oil. The vessel's destination is set for Jurong Island, Singapore. Figure 23 shows the first leg of this journey.



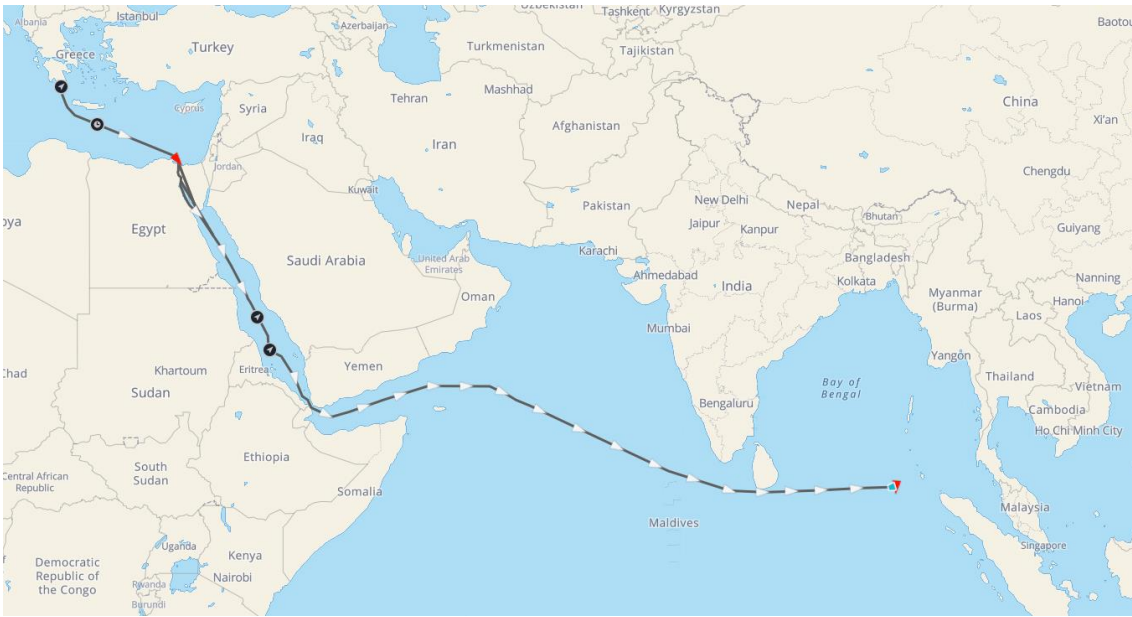


Figure 23, Turba voyage AIS signal after departing Kalamata.

This voyage proved to be troublesome for the Turba, as she once again made media headlines. Closing in on her destination in southeast Asia, the vessel started signaling the navigational status “Not Under Command” outside of Indonesian waters, see Figure 24. This command is reserved for use when a vessel “through some exceptional circumstance is unable to maneuver as required by these rules and is therefore unable to keep out of the way of another vessel” (Thomas, 2021). This signal is often a report of mechanical or related failure. AIS data shows that the vessel drifted in the Indian ocean for two days, before resuming control.

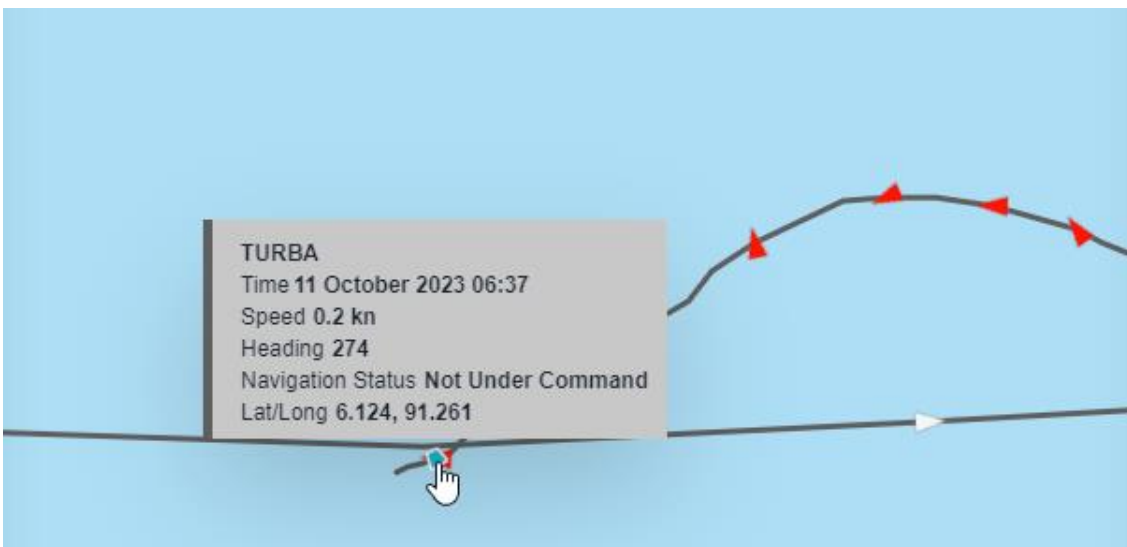


Figure 24, Turba AIS status 11th October 2023

This situation highlights a significant risk with the current dark fleet activity. The vessels that comprise most dark vessels are tankers well beyond scrapping age. The overutilization of a 26-year-old tanker involves a significant risk of engine failure and structural problems.

## 4.6 Destination Far East



Figure 25, Turba AIS data from October 10. to October 22.

After regaining control, Turba resumes her journey east, passing through the Malacca- and Singapore straits, continuing north seemingly toward China, seen in Figure 25. Surprisingly, the vessel turns 180 degrees outside of Vietnam and changes course back towards Malacca.

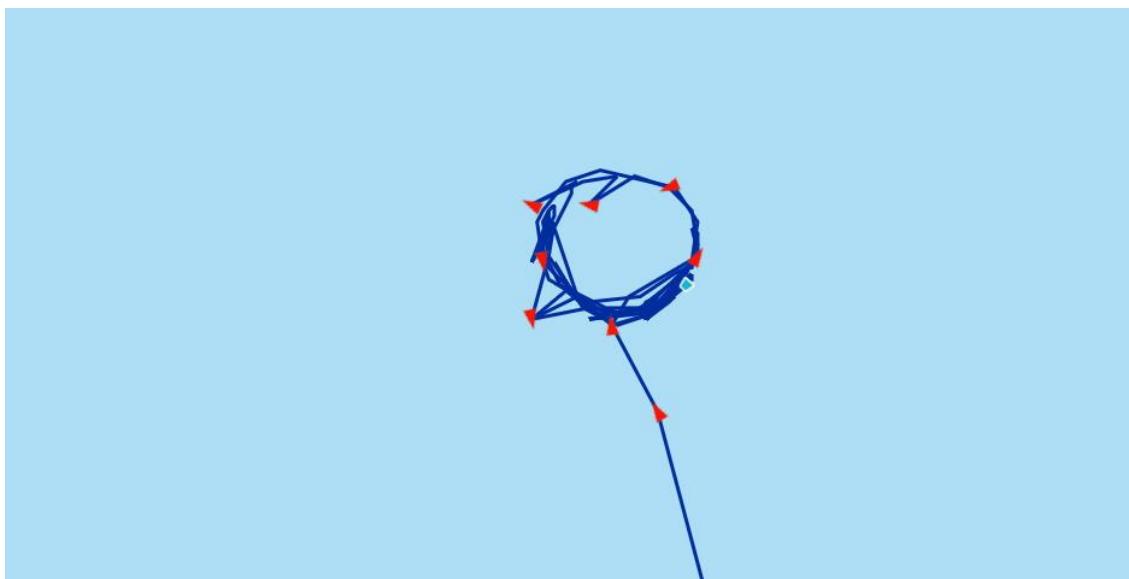


Figure 26, Turba displaying a typical STS pattern on the 22nd of October.



Outside of Malacca City, the vessel sets anchor the 22nd of October, and is ready for another transfer of this Russian oil. Disappointingly, AIS data now provides no answer as to who took the cargo. The oil is nevertheless dispatched in the far east, and Turba reports a significant draft decrease, confirming that the cargo was dispatched. Figure 26 is the vessel at anchor outside of Malacca.

This case study is a salient example of the typical Russian tanker trade. We have identified the certain use of seven ships to transport a cargo of Russian oil and tracked it all the way to its dispatch in the far east. Along the way, uncovering the real-life use of deceptive shipping practices.

## 5.0 INTERVIEW ABSTRACTS

This subsection is based on information gathered from two interviews with people within the maritime sector. Both interviewees are directly involved with compliance within this sanction environment, and the following are their summarized thoughts on the subjects at matter.

For context: Interviewee 1 (I1) is a customer success manager at a global maritime data provider. Interviewee 2 (I2) works with sanctions and compliance within a major P&I club.

### 5.1 Sanction compliance focus in the maritime industry

I1 noted that before the invasion, sanctions and sanctions compliance were primarily focused on Venezuela and Iran. After the invasion, the heavy volume of sanctions against Russia accelerated the importance for sanctions screening for many companies, particularly in the shipping sector. The complexity of the Russian sanctions, coupled with Russia's prominent position in the world trade, has made it challenging for companies to stay compliant. He has observed a significant increase in demand for solutions to screen for sanctions and deceptive shipping practices, indicating a higher priority of compliance in the industry.

Interviewee 2 (I2) discussed how the war and sanctions against Russian transformed his relatively calm and small sanctions team, into a larger and more substantial one. The higher visibility of sanctions post-invasion elevated the importance of compliance and hence the sanctions department. He noted that top management now treats sanctions with greater respect, giving his team a greater voice within the organization.

### 5.2 Russian oil flows post-sanctions

I1 claims to have observed significant geographical changes in the Russian oil flows after the implementations of the new sanctions. G7 countries, the EU, and the US, has stopped importing oil from Russia. Consequently, these flows are redirected eastward to primarily India and China. This redirection, away from traditional buyers and trade

routes, influenced the volume, and encouraged the emergence of the dark fleet for transporting this oil. I2 echoes this sentiment, highlighting the trade shift.

I1 also notes that he believes this shift in cargo flows is a potential long-term effect of the sanctioning, that Russia will from now on deal more with the BRICS countries rather than the West.

### 5.3 Dark fleet and changes in oil transportation

I2 describes the dark fleet as a group of ships mainly transporting Russian oil, are without International Group, or reputable insurers, and demonstrates deceptive shipping practices. I1 mentioned the same characteristics, but added two, questionable ownership and older tonnage.

Both interviewees mention the significant increase of ship-to-ship transfers, as the major change in oil transportation following the geographical trade shift. These transfers add to the complexity of monitoring cargo flows and tracking the origin of the cargo.

### 5.4 Deceptive shipping practices

I1 mentions several deceptive shipping practices employed by shipowners carrying Russian oil. He outlines three primary methods:

- i. **Ship-to-ship transfers:** As mentioned he takes note of the significant increase in the STS transfers, where vessels shuttle back and forth between ports, accumulating cargoes in one vessel. He claims this strategy is used to optimize tonnage efficiency while making cargo flows less transparent.
- ii. **ID and Location Manipulation:** He notes instances where vessels manipulate their signals, providing false GNSS locations via their AIS devices. Also called AIS spoofing, makes the vessel appear in a different location than reality.
- iii. **Dark activity:** The last of the “big three”, he calls dark activity a traditional method, merely turning off the AIS, hiding the vessels position.

I2 concurs with the observations made by I1 and agrees that these are the “big three” of deceptive shipping practices, specifically noting how chains of ship-to-ship transfers make cargo tracking difficult. He also emphasizes his workplace’s carefulness and

diligence employed when approaching documentation and attestation. He mentions the need for vigilance when verifying legitimacy of documents, as he has read rumors of false paperwork in the news.

## 5.5 Concerns and dangers

From the interviews it is evident that there are significant concerns regarding the dangers associated with deceptive shipping practices.

Both interviewees express their concern regarding the environmental threat posed by using older and less-maintained vessels. The use of these vessels in the dark fleet raises the risk of environmental disasters, as they are more prone to mechanical and structural failures. I1 notes that the lack of proper service during the open sea ship-to-ship transfers could result in oil spills. The environmental threat becomes much worse when considering the lack of reputable insurers. I2 highlights this as his main concern, that a pollution claim because of an accident would not be covered by the vessel's insurer, as people do not know whether these unknown insurers are legitimate.

Other than the environmental risk, I1 also notes the navigational safety risk associated with the deceptive shipping practices previously outlined. The manipulation of AIS data is misuse of a trusted system, crucial for navigation and safety. Giving false signals, or none, increases the risk of maritime accidents, potential collisions, groundings, and navigational hazards.

## 5.6 Thoughts on Romania

To add nuance to the case study both interviewees were asked about their thoughts regarding the ship-to-ship transfers happening in Romanian waters. I1 says he has observed the same pattern disclosed in the case study, where these smaller vessels consolidate Russian cargo onto vessels outside of Romania. However, he notes that these vessels are partaking in this trade with active AIS signals, so it does not seem like they are hiding their activity. He does not want to use the term “obfuscating cargo origin”, but he does admit the activity is not very logical and there could be a potential logic behind it if there is a way of branding the cargo as Romanian when the transfers are made in Romanian waters.

I2 notes that OPL Romania has been looked at as a potential high-risk ship-to-ship area, when asked specifically.

## 6.0 DISCUSSION

### 6.1 Case Study

The Case study provides an example of sanction evading behavior used when carrying Russian oil. The predominant method employed in this example is the method of Ship-to-Ship transfers. As prior written theory suggested, ship-to-ship transfer is a major part of the deceptive practices, this notion is also mentioned specifically by both interviewees. The case study proves that this activity occurs in real life and is possible to identify using only AIS data.

The case study also proves the challenge of identifying the operations when multiple deceptive practices are used simultaneously. When Turba is actively spoofing her position while taking cargo from Simba in Greece, there is no way to identify the STS operation through AIS data only. In this instance, the case study had to rely on incredible luck, as the Bloomberg article helped identify the ship-to-ship operation in the Laconian gulf. Without satellite imagery or on-site photography, this specific operation would be impossible to unveil. The same goes for Turba's discharge outside of Malacca City, where the study

Another highlight of the study is the environmental and security danger associated with the use of scrapping age tankers. Turba, a 26-year-old Suezmax tanker, should ideally already be scrapped. When a tanker gets old, both the machinery and infrastructure experiences significantly reduced quality, and the vessel itself is much less dependable. We saw a clear example of this when Turba started signaling "not under command" during its voyage to the far east, with AIS data implying the vessel was indeed drifting. The dangers of uncontrolled drifting in trafficked waters need no explanation.

A major plot point in case study is the unknown intent of consolidating the cargo in Romanian waters. For the sake of relevance in the study, I do not think the intent matters. In any case, the course of events that are displayed and explained provides solid enough content and proof of sanction evading behavior. Still, the deliberate strategy of consolidating cargo in Romania piques interest and speculation.

When asked about whether he has seen ship to ship transfers outside of Romania as a method of obfuscating the origin country of Russian cargo, Il is cautious about branding the strategy as an effort to obfuscate cargo origin. He states to have observed

cargo transfers, such as the ones presented in stage 1 of the case study but points out that in this case all vessels involved are actively transmitting AIS, so it does not seem like they are fully hiding it. He goes on to agree that it seems like they are doing “something” there, as the activity does not seem very “logical”.

To quote him directly:

“Being very theoretical because we see all these STS’s being done with the AIS on, my guess is that there might be a way of branding the oil as Romanian cargo if the STS is done in Romanian waters. Again, this is very theoretical, and I do not necessarily think anything in breach of sanctions is being done there, but it could be a potential logic behind it.”

I2 also answers the question quite wary but explains that the Romanian territory is among several locations viewed as a high-risk territory for ship-to-ship transfers. Additionally, he mentions that in these long chains of ship-to-ship transfers, the certainty of cargo origin becomes difficult to determine. The case study is an example of such chain.

## 6.2 Deceptive Shipping Practices

As for the topic of deceptive practices there is little discrepancy between previously written theory and the results of this research. Although no added information is discovered, the case study proves the real-life use of these methods. Specifically, it identifies the use of long chains of ship-to-ship transfers used to consolidate cargo, and speculatively to obfuscate cargo origin. It also unveils ID and Location Manipulation in the Laconian Gulf when Turba spoofs her AIS signals while loading cargo from Simba. Additionally deceptive shipping practices are used when Turba dispatches cargo in Malaysia, as the vessel does not register any meeting, nor makes a port call in the area where she dispatches cargo.

During my internship at Gard, I have worked closely with monitoring deceptive shipping practices and have seen countless real-life examples of the sort during my work. From an observational stance, I agree with the interviewees that the three big methods are STSs, Dark Activities, and ID & Location manipulation. The STSs are seen in monitoring work daily, and are relatively easy to track, but as we saw in the case

study major problems arise when one of the participants turns off or manipulates their AIS signal during the operation. The solution to this is satellite imagery, but they are weather dependent, usually only take one picture per day, and are expensive.

One critical point made by I2 in our interview is that sanction evading methods stretches beyond the naval operations of AIS spoofing and ship to ship transfers. He notes that in his company's internal procedures, they are vigilant when it comes to documentation. To stay compliant within the framework of the price cap, his company as a P&I club has to receive price cap attestations from the ship owners and/or charterers, which the company takes very seriously. As a tier three entity in the price cap rules, an insurer is not expected to obtain pricing information, their duty is just to gather an attestation.

If we want to dive deeper into the topic of sanction evading behavior, an interesting topic to delve into is the complicated world of ownership structure and trusts in relation to obfuscating sanctioned ownership. While interning, I have participated in screening work which often narrows down to exploring ownership and assessing sanction risk. The number of registered companies in the United Arab Emirates with anonymous ownership, involved in global shipping operations is staggering. This leads to speculation about the Russian involvement in these companies, and how their earnings might circulate back into Russian hands at the end of the day.

### 6.3 Identifying AIS Spoofing

As disclosed, during my internship I have worked closely with AIS monitoring and have seen quite a number of AIS spoofing attempts. The patterns created in when signals are manipulated, are generally characterized by completely straight lines and geometric patterns. The distinction between normal signals and spoofed signals is clear now, but when these operations become more technologically advanced and refined, one can expect the distinction to shrink. In the following Figure 27 are two examples of obvious AIS manipulations, both from October 2023.



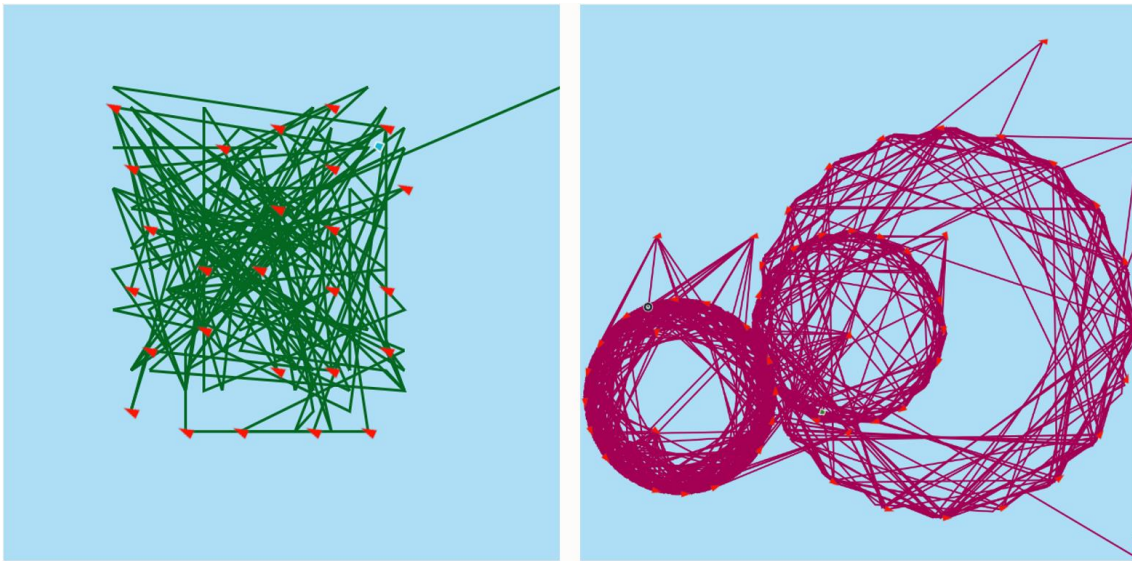


Figure 27, AIS spoofing

## 6.4 Dangers of sanction evading behavior

When discussing the dangers of sanction evading behavior, we can divide the topic into two parts: the direct maritime traffic danger of AIS manipulation, and the indirect dangers of deviating from the standardized western insurance system.

The first part is severely overlooked in public discussion. Safety at sea, and effectiveness of the collective AIS system, relies on the correct usage. When ships go dark or manipulate their signal to digitally appear somewhere else, the navigational risk increases for all vessels in its vicinity. One might think a 300-meter-long vessel is easy to spot and hence avoid, and one of those is true, but a vessel of this size requires early and precise input to effectively navigate. The AIS system allows vessels to have a comprehensive overview over nearby vessels, both their location and their plotted route. When vessels do not show up with AIS, it is an added navigational challenge for the crew, and in the wrong circumstances it poses a great threat to safety at sea.

Mentioned by I1, and showcased in the case study, there is also the general danger of over-utilizing scrapping-age vessels. The scrapping rate for tanker vessels has plummeted to lows not seen since 1974 (Braemar Markets, 2023).

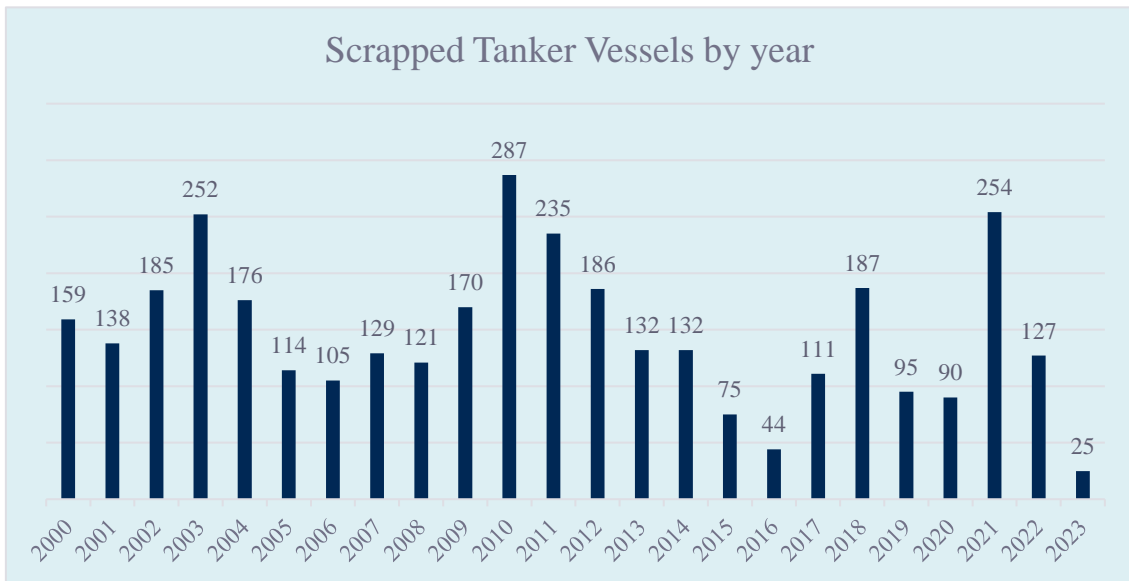


Figure 28, Number of demolished vessels per year since 2000. Data from Braemar.

Figure 27 shows that only twenty-five vessels being scrapped in 2023 (as of 10.12.2023), and the data reflects Svein Moxnes Harfjeld’s comment; that selling vessels to the dark fleet can be seen as the new scrapping (Miller, 2023). Adding to this the average vessel age in the world tanker fleet is poised to grow in the next five years, due to a low orderbook only at 6 percent of the current fleet (Braemar Markets, 2023).

The Dark Fleet, the vessels predominantly employing deceptive shipping practices, comprises of aging vessels. Additionally, the maintenance on these is potentially not up to standards, like with Turba. Couple the operational danger with the lack of reputable insurance, the environmental dangers associated with this practice are significant. This will be discussed further in the following subsection.

## 6.5 A parallel ecosystem in the shipping world

When asked about the potential long-term consequences of the sanctions, I1 speculates that we are now seeing the creation of a parallel ecosystem in the shipping world. In the modern shipping world, we have a Western dominated financial system, and insurance system with the International Group. However, with the sanctions, the need for “non-Western” oil transport prompted the creation of this parallel system, where finance is sorted from eastern sources, and the insurers are for now, unknown. We know the vessels have insurers because of the Turkish strait letters. These letters are a

requirement from the Turkish government, where the vessel must prove their insurance before sailing the Bosphorus strait (Gard, 2022). The important question and concern about these unknown insurers are whether they are of high enough quality to deal with a huge oil spill. In this unwanted scenario, it is not yet proven if these eastern insurers are capable, and the consequences of a situation like this happening in European waters. Bringing in personal observations from my time at Gard, this has been a topic of frequent discussion.

A hypothetical to consider, is a situation where Russia is non-dependent on western vessels to carry out its seaborne oil exports, a situation where this “parallel ecosystem in shipping” is an undisputed reality. I will not try to calculate the exact number of vessels required, but we can use a simpler calculation to get a grasp of the situation. In a podcast episode with e24 (e24, 2023), named “Can Putin crush Western shipping?”, Gard chief executive Rolf Thore Roppestad talks about this exact hypothetical. To make the point, Roppestad compares dark fleet tonnage as a percentage of the global tanker fleet, and Russia percentage share of global oil exports. In this comparison, he explains that both metrics are at approximately 12%, and that this essentially means that the dark fleet has capacity to haul all Russian oil. Due to this Russia has no interest in selling oil below the price cap of \$60 per barrel as there is enough vessels which are non-compliant to meet their demand (Roppestad, 2023). It is important to note that at the time of this interview, Urals barrels were trading at \$70 (Trading Economics, 2023).

## 6.6 Effectiveness of price cap

Before discussion, it is important to understand the original intention of the price cap; to reduce Russia’s revenues, while keeping global energy markets stable. A question asked in both interviews is “Do you believe the price cap on Russian oil has been effective as intended?”. I wanted to ask this question as it has become a heavily debated topic as we have observed the ramifications of the policy evolve throughout 2023. This question could be a thesis of its own, so this will be limited to a basic discussion. The intention is two-parted and will be discussed as such.

### 6.6.1 IMPACT ON RUSSIAN REVENUES:

A Bloomberg article from the 17th of November 2023 discussed whether the price cap has hurt Russia, based on data from the Russian Finance Ministry. The article takes an

early stand that the western sanctions on Russian oil exports, intended to deprive the Kremlin of war funds, are failing in their primary objective. The initial blow was successful and led to a \$25-billion deficit in the Russian budget at the start of '23, but the effects have faded away. Despite the price cap measure, the data reveals increasing revenues in recent months, visualized in Figure 29. Between April and October of '23 the gross petrodollar revenues doubled. The inefficiency is particularly highlighted by the fact that almost every seaborne cargo in October was breaching the threshold. (Bloomberg News, 2023)

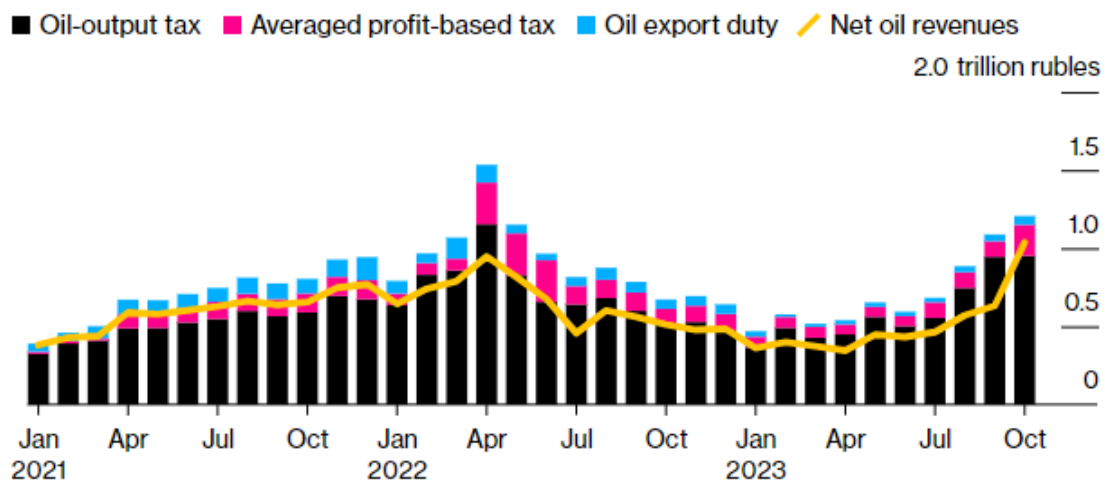


Figure 29, Russian oil revenue. Source: Bloomberg calculations based on monthly data from the Russian Finance Ministry.

### 6.6.2 CONTRIBUTION TO ENERGY MARKET STABILITY:

To discuss whether the global energy market has been kept stable is a question harder to quantify. As presented in the theory section, the oil market has seen a massive disruption since this war started, but India and China already emerged as the primary destinations of Russian crude already in the summer of '22, so the largest shift in this shake up occurred before the price cap introduction.

One way to judge stability in the energy market is to look at commodity prices. The Dow Jones Commodity Index Energy is designed to track the energy sector through commodity futures contracts (S&P Global, 2023). The index tracks the following commodities: WTI Crude Oil, No 2 Heating Oil, Brent Crude Oil, Gasoil, Unleaded Reg Gas RBOB, Natural Gas (S&P Dow Jones Indices, 2022).

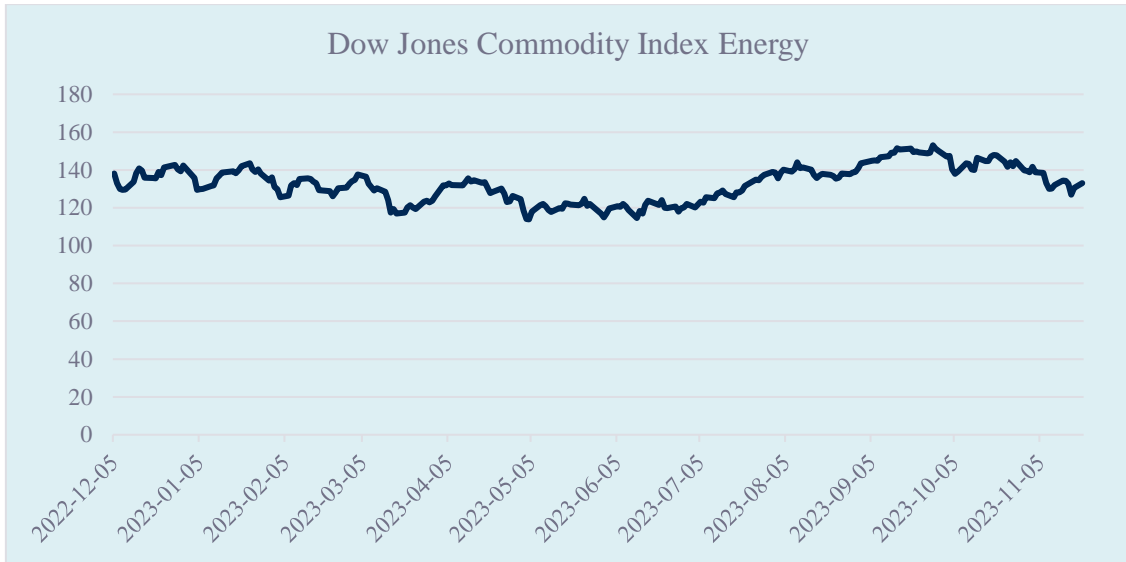


Figure 30, Dow Jones Commodity Index Energy, 05.12.22-20.11.23

Focusing the index to the period post price cap implementation in Figure 30, we get the impression that energy commodity markets have been relatively stable in this period. Although not conclusive, the index indicates that the energy market has been stable after the price cap implementation. Another parameter to look at is crude oil spot price development during the period post price cap. Figure 31 compares the American WTI oil and European Brent oil spot prices during this time span, based on data from the U.S. Energy Information Administration (EIA, 2023).

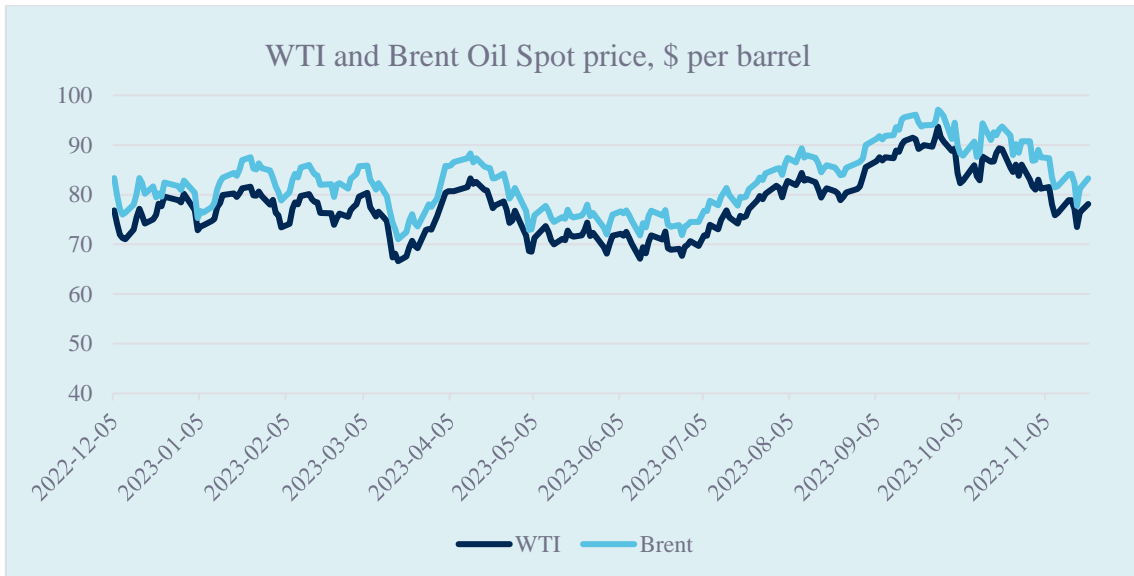


Figure 31, WTI and Brent Oil Spot price, \$ per barrel, 05.12.22-20.11.23, data from EIA.

Both being components of the Dow Jones Commodity Index Energy, oil prices have also remained relatively stable throughout the period. Staying around \$80 and \$70

respectively most of the year, WTI and Brent prices saw a temporary rise in early autumn. Overall, one could say that the goal of keeping stable global energy markets was successful, all be it perhaps not in the policy makers' credit.

### 6.6.3 ASSESSMENT

To conclude a brief discussion of a convoluted topic, while the price cap might not have been as effective in reducing Russian revenue as initially intended, the data suggests that it has contributed to maintaining stability in the global energy market. The complexity of geopolitical and economic factors makes it difficult to draw definitive conclusions, and in such markets causation and correlation are challenging to determine.

The biggest factor contributing to the inefficiency of the price cap is the lax approach to enforcement. Throughout the fall, more reports have been released criticizing the price cap efficiency. On November 14, 2023, Financial Times released an article with comments from an anonymous senior EU government official, who expressed that almost none of the shipments of seaborne crude in October were executed below the price cap (David Sheppard, 2023).

To delve into the hypothetical situation of a world where price caps are fully enforced, or even stricter, CREA, the Center for Research on Energy and Clean Air, publishes monthly analysis on Russian fossil fuel exports and sanctions, which includes certain hypothetical calculations on this.

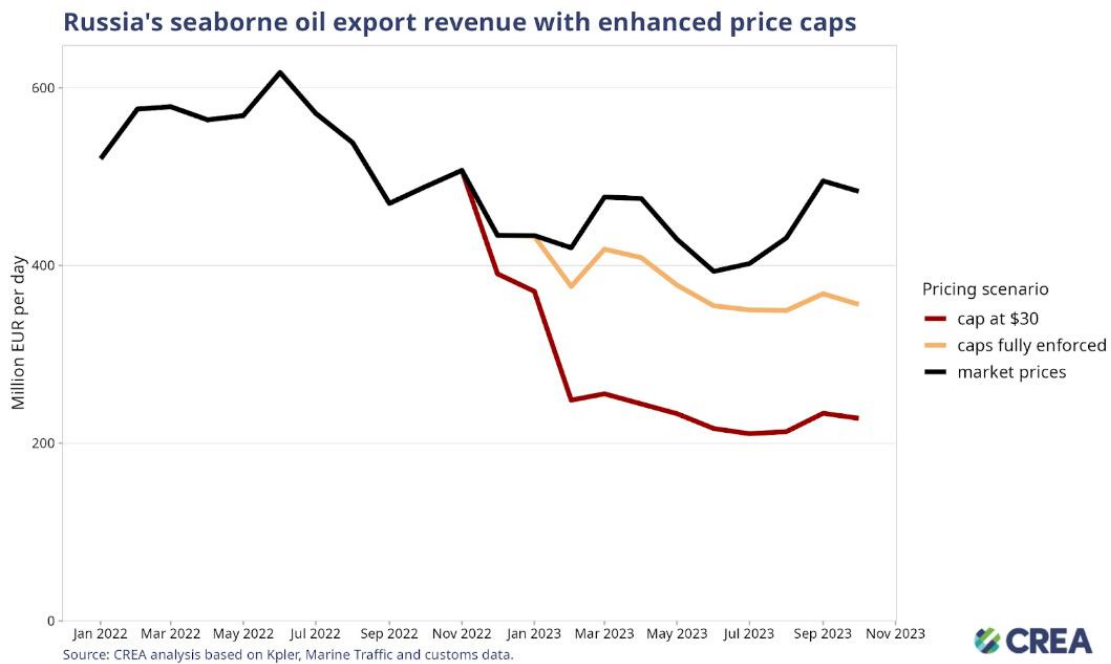


Figure 32, Russia's seaborne oil export revenue with enhanced price caps - Based on Kpler, Marine Traffic and customs data.

Figure 32 tells a clear narrative. If the price caps were fully enforced, Russia's seaborne oil revenue would see a quite drastic, 25% fall, approximately 3,75 billion euros since its implementation in December 2022. Even more, if the price cap was set at \$30 per barrel, a price where Russia would still make money because of their exceptionally low production costs but it would have slashed their oil revenue in half (Levi, 2023). The data clearly indicates that a fully enforced price cap would be efficient in its goal to decrease Russian oil revenue, but with most Russian cargos sold at market value this is not the case (David Sheppard, 2023).

## 6.7 Dark fleet – What is to come?

The Dark fleet is in concept a solution to a temporary problem. The accumulation of vessels was specifically driven by the need to transport Russian oil outside of the western framework, allowing Russia to sell oil without adhering to the G7 price cap. Speculating on the future of this fleet, there is a number of factors to consider, for the purpose of this thesis I believe it can be narrowed down to four: The war, the sanctions, vessel age, and oil price.

How long the war in Ukraine is going to last, is an impossible question to answer. If the war is ongoing, Russia needs substantial financing for their war chest. As concluded in

the price cap assessment, and Figure 32, Russia has a lot to gain by avoiding the price cap. Therefore, we can conclude that – if the war in Ukraine is ongoing, the demand for a dark fleet exists.

We can also assume that if the war is ongoing, sanctions will persist. Even more we can assume further efforts will be taken to hurt Russia's economy, given the inefficiency of the price cap. Potential measures could be vessel insurance control in the Baltic and stricter enforcement of the price cap. We must also consider whether sanctions will outlive the war. Il provides insight on this, noting he has a hard time seeing the sanctions going away any time soon. If the West were to remove the sanctions any time soon, it would be a clear admission of dependance on Russian energy, presumably not in their best interest. Concluded in the price cap assessment, the global energy markets have remained stable since the implementation of the price cap. Furthermore, efforts are made in Europe to reduce dependency on Russian natural gas imports in EU's REPowerEU plan, launched in May 2022 (European Commission, 2022).

The old age of the vessels connected to the dark fleet is mentioned several times in this thesis. The intent behind amassing specifically older vessels is presumably financial. Older vessels, nearing scrapping age, are generally cheaper. Owners are also more likely to be persuaded to sell, given the vessels' limited lifetime. This limited lifetime does of course also apply in the dark fleet. No matter how long these new owners intend to use the vessels, the time for scrapping eventually comes. Should Russia, in this undefined future time, still require the dark fleet for economic purpose, a fleet renewal is eventually required. The ship owners created a conundrum upon themselves with the aggressive buying of older tonnage, significantly increasing the vessel values of these old tankers (Jones, 2023). A renewal of this fleet would prove a great expense. On the other hand, we do not know the amount of money involved in dark trade, how much money these anonymous shipowners have made trafficking Russian oil. Most likely a substantial amount, and there might already be a plan in place for renewal.

The last factor for discussion in this topic is the oil price. For it to make economic sense to have non-compliant vessels transporting Russian oil, the oil price for Urals barrels must stay above \$60. For almost the entire second half of 2023 this has been the case (Trading Economics, 2023). This thesis will not discuss oil price forecasts to limit speculation.



## 7.0 CONCLUSION

The imposition of sanctions against Russia in response to military actions in Ukraine, has not only reshaped the geopolitical landscape but also instigated a seismic shift in global oil trade. This thesis presents how the sanctions have forced Russia to reroute its oil exports from traditional western markets to the eastern powerhouses of India and China. This geographical shift has in turn spawned logistical and compliance related challenges, ingeniously navigated through the deployment of ‘Dark Fleet’ vessels and deceptive shipping practices.

The rise of the Dark Fleet, detailed in this thesis, highlights the adaptability and resilience of the maritime sector and actors within the trade. These aging vessels, operating in the shadow of western standards, have become pivotal in sustaining Russian oil exports amid sanctions. However, it is at a huge risk. The potential environmental and safety risks posed by these vessels, made worse by the lack of reputable insurers, raise questions about the long-term sustainability and ethics of the practice.

The manipulation of AIS signals, a cornerstone of maritime safety and transparency, adds to the associated risks, while revealing the intentional sanction evading behavior of bad actors. The study underscores the extent to which AIS spoofing, chains of ship-to-ship transfers, and other deceptive shipping practices have been weaponized to cloak the movement and operations of vessels engaging in non-compliant oil trade. The strategic use of these practices complicates sanction enforcement and poses significant risks to maritime safety and the integrity of global shipping.

While conclusively creating unwanted effects within the market, the sanctions have also created a positive shift with the elevated importance of compliance now seen in the maritime industry. The interviews unveil a greater demand for screening and compliance data tools, and a greater compliance focus within corporate structures. The shipping industry, traditionally navigating in the regulatory grey zones, is now compelled to adapt to an environment where adherence to sanctions is paramount. The de facto separation of the ‘transparent’ and ‘dark’ side of the industry encourages owners, operators, and managers to comply with regulations with much higher stakes.

In essence this thesis serves as clarion call to policy makers to reassess the impact the sanctions imposed on Russia. The unintended repercussions of the measures greatly

outshine the indented effects, as the Dark Fleet has grown above 530 vessels and deceptive shipping practices are used at a significant increase of rate. The safety and environmental risk that have emerged will be an industry problem for years to come and serve as a ticking time bomb before a major oil spill happens, without proper insurers to clean up.

## 7.1 Future work

For future work, multiple topics raised in this thesis could be researched extensively and prove to be intriguing reads. The hardest task in this work was limitation, as there is an abundance of rabbit holes to fall into. Three suggestions for further research are: A conclusive report judging the effectiveness of the price cap, arbitrage opportunities created by the trade shift of Russian oil, uncovering the intricate ownership structures of dark fleet shipowners.

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