

Interaction between commodity prices and freight rates: Content analysis of the dry bulk market reports*

Emtia fiyatları ve navlun oranları arasındaki etkileşim: Kuru dökme yük piyasası raporlarının içerik analizi

Abdullah AÇIK¹, Sadık Özlen BAŞER²

Abstract

Most of the commodities used as raw materials for final products in the world economy are transported by sea by dry bulk cargo ships. Due to the derived demand structure, the demand for commodities directly affects the demand for shipping. One of the biggest indicators of the demand for commodities is their prices. The purpose of this study is to investigate how the relationship between commodity price and freight rate, which has been examined and verified by many studies in the empirical literature, is interpreted in the maritime industry. In this direction, the industry reports published by Fearnleys, one of the leading institutions of the maritime industry, are analyzed using interpretive content analysis method. Investigated market reports cover the period 23 February 2005 to 13 November 2019 and consist of a 752-week market summary report. The sections related to the dry bulk market and summarizing the Capesize, Panamax and Handymax markets are examined in the reports. According to the results, the relationship between the commodity price and freight rates in the sector reports is interpreted with the assumption that the commodity price reflects the demand for itself. In addition, the cargo shift between ship types arises according to the freight levels. Therefore, information and volatilities from commodity prices affect not only the freight of the specialized ship, but also the other freight markets.

Keywords: Commodity Price, Dry Bulk Market, Sector Reports, Content Analysis

Öz

Dünya ekonomisinde nihai ürünler için ham madde olarak kullanılan emtiaların büyük bir çoğunluğu deniz yoluyla kuru dökme yük gemileriyle taşınmaktadır. Türetilmiş talep yapısı nedeniyle, emtialara olan talep denizcilğe olan talebi doğrudan etkilemektedir. Emtialara olan talebin en büyük göstergelerinden biri ise fiyatlarıdır. Bu çalışmanın amacı, ampirik literatürde birçok çalışma tarafından incelenen ve doğrulanan emtia fiyatı ve navlun oranı arasındaki ilişkinin denizcilik sektöründe nasıl yorumlandığını araştırmaktır. Bu doğrultuda denizcilik sektörünün önde gelen kurumlarından Fearnleys tarafından yayımlanan sektör raporları yorumlayıcı içerik analizi yöntemiyle incelenmiştir. İncelenen piyasa raporları 23 Şubat 2005 ve 13 Kasım 2019 tarihleri arasında kapsamaktadır ve haftalık bazda 752 piyasa özeti raporundan oluşmaktadır. Raporlarda kuru dökme yük piyasası ile ilgili olan ve Capesize, Panamax ve Handymax piyasalarını özetleyen bölümler incelenmiştir. Elde edilen sonuçlara göre, sektör raporlarında emtia fiyatı ve navlun oranları arasındaki ilişki emtia fiyatının kendine olan talebi yansıtmaya varsayımıyla yorumlanmaktadır. Ayrıca gemi tipleri arasındaki yük geçişkenliği navlun seviyelerine göre ortaya çıkmaktadır. Bu yüzden emtia fiyatlarından gelen bilgiler ve oynaklıklar sadece uzmanlaşan geminin navlunlarını değil, diğer piyasa navlunlarını da etkilemektedir.

Anahtar Kelimeler: Emtia Fiyatı, Kuru Dökme Yük Piyasası, Sektör Raporları, İçerik Analizi

* In this article, the principles of scientific research and publication ethics were followed. / Bu makalede bilimsel araştırma ve yayın etiği ilkelerine uyulmuştur.

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¹ Abdullah AÇIK

ORCID ID: 0000-0003-4542-9831

Res. Assist. Dr., Dokuz Eylül University, Maritime Faculty, Department of Maritime Business Administration, İzmir, Turkey, abduallah.acik@deu.edu.tr
Araş. Gör. Dr., Dokuz Eylül Üniversitesi, Denizcilik Fakültesi, Denizcilik İşletmeleri Yönetimi Bölümü, İzmir, Türkiye, abduallah.acik@deu.edu.tr

² Sadık Özlen BAŞER

ORCID ID: 0000-0001-6632-2617

Full Professor Dr., Dokuz Eylül University, Maritime Faculty, Department of Maritime Business Administration, İzmir, Turkey, ozlen.baser@deu.edu.tr
Prof. Dr. Öğretim Üyesi, Dokuz Eylül Üniversitesi, Denizcilik Fakültesi, Denizcilik İşletmeleri Yönetimi Bölümü, İzmir, Türkiye, ozlen.baser@deu.edu.tr

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1. INTRODUCTION

Since the maritime market is a transport market that requires large capital investments, it has very high risks, especially for ship owners. Therefore, making the right decisions at the right time is essential for sustainable commercial activities. Achieving this is only possible by being able to read and understand the market correctly. However, this is difficult due to the relatively different nature of the maritime market from other markets.

The maritime market has a derived demand structure (Ma, 2020:3). Therefore, first of all, there must be a demand for transported goods, so that then maritime transport is demanded for their transportation. In this respect, the maritime market can be immediately affected by the developments in the world economy (Marcus, 1987:1). Also, maritime markets such as dry bulk shipping can also carry information about the intensity of future economic activity (Lawson, 2008:2; Langdana, 2009:94). Because transported products such as iron ore, coal, and grain are industrial raw materials, and they are demanded to be used in the production of future final products (Geman, 2009:191; UN, 2009: 35). In this respect, freight rates, which are a dynamic indicator reflecting demand in dry bulk cargo transportation, are considered by many economists as a leading indicator. The main factor that brings this feature to this market is the inelastic supply structure in the short-run (Koopmans, 1939). Since the shipbuilding process takes 1-3 years, increasing the carrying capacity in the short-run can only be achieved by increasing speed and productivity (Karakitsos and Varnavides, 2014). Due to this structure, increases in freight rates are observed as the supply cannot respond to increases in demand at a similar pace. Therefore, these cycles occurring in the freight market are taken into account as an indicator of the economic situation in the near future (Şahin et al., 2018). The demand for commodities transported by dry bulk cargo has a huge impact on the freight rates in the market, as the ships in this market are only suitable for carrying certain types of cargo (McConville, 1999). Other factors affecting freight rates can be bunker price, climatic and cultural events, and political factors. The prices of commodities are derived from the interaction between supply and demand sides, as well as freight rates (Radetzki, 2008:57). In this respect, the demand for commodities can be carried as information on their prices, and it is likely that there may be an information flow and interaction between the prices of commodities and freight rates.

Studies examining the relationship between commodity prices and maritime markets are quite rich in the literature.

The results obtained in these studies theoretically confirm the existence of a relationship. However, there are not enough evaluations about whether this relationship is realized and interpreted by the sector. In this respect, we made inferences by examining the weekly reports of Fearnleys, one of the leading reporting companies in the maritime industry, with interpretive content analysis in order to determine the practical reflection of this theoretical relationship. The results obtained show that the relationship between commodity prices and freight rates is also evaluated and followed in the sector. However, it is seen that this relationship is not as technical as the studies in the literature and is based on general interpretations.

The rest of the study is organized as follows; commodity trade and ship types used in the transport activities are summarized in the second section; studies examining the commodity-freight relationship in the maritime market are compiled in the third section; the method and dataset used in the study are introduced in the fourth section; the results obtained from the content analyzes are presented in the fifth section; and the findings are evaluated in the last section.

2. SEABORNE COMMODITY TRADE IN THE WORLD

Maritime transportation is a very important tool for global trade and this mode of transport accounts for 90% of world trade by tonnage (Rodrigue, 2013:28). The function of maritime transport is basically transporting goods from places where benefits are low to places where benefits are high (Branch, 2007:2). It is the realization of economic exchange in the globalizing environment (Wilmsmeier, 2014:1). The transported cargoes are generally divided into containerized, general, bulk, hazardous, and petroleum cargo types (Rowbotham, 2014:9). As this research focuses on dry bulk cargoes, information related to this type is concentrated.

Bulk cargoes can be defined as homogeneous goods that do not have a specific form and take the shape of the hold in which they are located (Hinkelman, 2008:678). Also, they are directly loaded to ships without protective packaging (Gubbins, 1996:58). There are basically 3 types of bulk cargoes which are liquid bulk (crude oil, petroleum products, LPG, LNG, chemicals) cargoes, five major bulk (iron ore, coal, grain, bauxite, and phosphate rock) cargoes, and minor bulk (steel products, forest products, cement, fertilizers, sugar) cargoes (Stopford, 2009:63). Dry bulk cargo basically consists of homogeneous commodities that fill the whole ship, and the whole ship is consigned to related cargo contrary to general cargoes (Buxton et al., 1978:213)

The amounts of cargoes transported by sea around the

world and the share of major dry bulk cargoes are presented in Figure 1 for the years 2006-2019. Tanker type cargoes include crude oil, refined petroleum products, gas and chemicals; major bulk cargoes include iron ore, grain and coal; other dry bulk cargoes include minor bulks, containerized trade and residual general cargo. Main bulks accounted for about 27% of the world's total cargoes on average in the period mentioned (UNCTAD, 2020), and this ratio accounts for a large portion of the international seaborne trade. Although the highest point was achieved in 2014 by 30%, it has been at a stable point of 29% for some years and can be seen as an indicator of the stagnant economy in recent years.

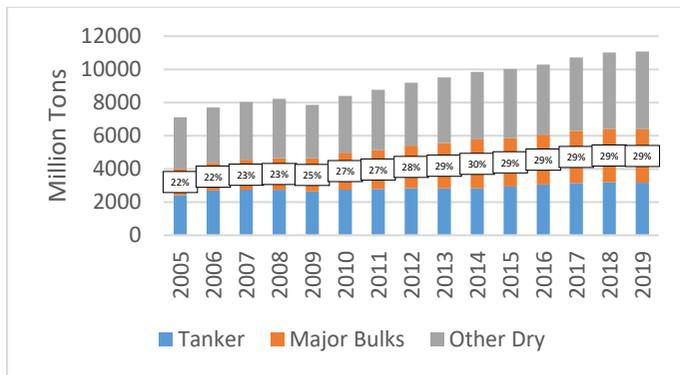


Figure 1. World Maritime Trade (UNCTAD, 2020)

Ship types in the dry bulk shipping are called according to their sizes as Handysize (20,000-35,000 DWT), Handymax (35,000-45,000 DWT), Supramax (45,000-55,000), Panamax (60,000-75,000 DWT) and Capesize (80,000-300,000 DWT) respectively (Alizadeh and Nomikos, 2009: 30). There are many factors that affect the size of these ship types. Basically, it can be mentioned that the Parcel Size Distribution (PSD) function is descriptive in this regard. PSD is the individual shipment of the cargo transported, eg 150,000 tons of iron ore for a steel plant, 80,000 tons of coal for a thermal power plant, or 25,000 tons of wheat for a bread factory. In determining this size, factors such as the stock levels of the end-users, the draft level at the loading and unloading ports, the cost savings achieved by using larger ships are effective (Stopford, 2009:75). In summary, PSD is concerned with which type of cargo should be transported by which ship type and cargoes of similar character are usually transported by the same type of vessels (Lun et al., 2010:8). However, these preferences may change over time. Due to the recently increasing inventory costs and the developing transportation network, many buyers prefer to buy small amounts of cargoes continuously instead of buying a few numbers of large ship cargoes (Kaukiainen, 2012:79).

The usage intensities of the ship types operated in the transportation of the major dry bulk cargoes are presented

in Table 1. According to the table, 70-80% of the iron ore is transported by Capesize ship type. This ship type is specialized in transporting seaborne iron ore with its very large dimensions. In coal transportation, Panamax type ships are used extensively, while Capesize ships also have a high usage rate. In grain transportation, Handymax and Panamax type vessels are the most used vessel types, respectively.

Table 1: Three Types of Main Cargoes of Three Main Bulk Carriers (Chen et al., 2014)

	Iron Ore	Coal	Grain
Capesize	70%-80%	30%-40%	0%-5%
Panamax	10%-20%	40%-50%	40%-50%
Handymax	10%	10%20%	45%-55%

As can be seen from the ratios, although some ships are specialized in specific cargo types, there is also a cargo transfer between them. At this point, assuming that commodity prices carry information about the demand for them, some ship types can be expected to be affected by more than one commodity. In addition, the ability of cargo to pass to different ship types adds to the competitive characteristics of the ships in the dry bulk market among themselves, a perfect competition feature covering the whole market. This situation makes the market much more competitive. Theoretically, many studies assume and test the relationship between commodity prices and freight rates. These studies are briefly reviewed in the next section.

3. LITERATURE REVIEW

As the changes in commodity prices affect the demand for them and sea transportation is used extensively in commodity transportation, it is inevitable to have a relationship between commodity prices and maritime markets. This idea formed the research question in the work of many academics. Although the data sets, methods, and time intervals differ, they are basically based on this idea. Studies examining these relationships in the maritime literature are summarized in Table 2 presented below. In the next sections, the mentioned studies are examined in detail in order to place our study in the related literature.

These studies in the literature can be categorized as follows; reviewing the relationship between commodity and freight prices; reviewing the relationship between commodity and freight derivative markets; reviewing the relationship between commodity price and second-hand ship value; and other commodity-related studies. In general, when the studies between commodity prices and maritime markets are analyzed, it is seen that significant results were obtained even though there is not a rich literature on this subject.

Table 2: Commodity Price Related Studies in the Maritime Literature

Authors	Title	Research Question	Method	Findings
Kavussanos et al., 2010	Information linkages between Panamax freight derivatives and commodity derivatives markets	Are there spillover effects between commodity and freight derivatives, and in which direction?	Co-integration, Generalized Autoregressive Conditionally Heteroscedastic (GARCH) Models	There are significant spillover effects between freight and commodity derivative markets, and grain futures are important indicators for Panamax Forward Freight Agreements (FFA) markets.
Kavussanos et al., 2014	Economic spillovers between related derivatives markets: The case of commodity and freight markets	Whether there are economic spillovers between the freight and commodity derivatives markets.	Co-integration, GARCH Models	Commodity futures lead the FFAs in both in returns and volatilities.
Chou et al., 2015	An analysis of the relationship between Asian Steel Index and the Baltic Capsize Index	Whether there is a causal relationship between Baltic Capsize Index (BCI) and Asian Steel Index (ASI).	Granger Causality Analysis	BCI causes the ASI and therefore it is the leading indicator of the ASI.
Tsioumas and Papadimitriou, 2018	The dynamic relationship between freight markets and commodity prices revealed	Whether the prices of coal, iron ore, and wheat are effective on freight rates of the most widely used vessel size for each commodity.	Granger Causality Analysis, Impulse Response Analysis	There is bidirectional relationship between the BCI and the price of iron ore and coal, and one-way relationship between BPI and wheat price.
Açık and Başer, 2018a	An analytical study on the likely causes of the minor bubbles in the Baltic dry index.	Which factors cause minor bubbles in Dry bulk freight market?	Generalized sup augmented Dickey–Fuller (GSADF) Test and Content Analysis	Commodity price increases cause freight increases
Açık and Başer, 2018b	The Effects of Fast Decline in Crude Oil Prices on the Tanker Market in The Short Run	How the oil price changes effect tanker market in the short run?	Correlation	There is a negative correlation between crude oil price and 3 tanker markets (freight, secondhand, newbuilding?)
Açık and İnce, 2019	Do commodity price shocks matter for dry bulk freight markets?	How do shocks in ore, coal and wheat prices effect Capesize, Panamax and Handymax freight markets?	Asymmetric Causality Test	Ore and wheat prices effect both Capesize and Panamax markets, while ore and coal prices effect Handymax market.
Açık and Başer, 2019a	Impact of Commodity Price on Freight Market Considering The 2008 Crisis: An Investigation of Iron Ore Price and Capesize Shipping Rates	Does effect of iron ore price on freight market change before and after 2008 crisis?	Unit Root Test with Structural Breaks, Asymmetric Causality Test	Positive shocks are causes of positive shocks in the pre-crisis, and negative shocks are causes of negative shocks in the post crisis.
Başer and Açık, 2019a	Do Commodity Prices Matter for Second Hand Values? An Empirical Research on Capesize Market	How do shocks in iron ore price effect the 5 years old Capesize value?	Asymmetric Causality Test	Positive shocks in ore prices are causes of positive shocks and negative shocks are causes of negative shocks in ship values
Açık and Başer, 2020	Asymmetric causality from commodity prices to shipping markets: an empirical research on Istfix region	Price shocks in commodities mostly transported in ISTFIX region effects the freight levels in the region?	Asymmetric Causality	Positive and negative shocks in coal and steel prices are symmetrically causes of the positive and negative shocks in ISTFIX, while the impact of wheat price is asymmetric.
Angelopoulos et al., 2020	Commodity and transportation economic market interactions revisited: New evidence from a dynamic factor model	Whether the freight rates are directly or inversely proportional to the commodity prices.	Generalized dynamic factor model	Commodity prices informationally lead freight rates and the relationship between them is different for dry bulk and tanker markets.

4. METHODOLOGY

Although there are some different types of content analysis, it is basically a technique used to make replicable and valid inferences from the related texts (Krippendorff, 2013:24). Basically, 3 types of content analysis can be mentioned; (i) basic content analysis; (ii) interpretive content analysis; and (iii) quantitative content analysis (Drisko and Maschi, 2015:1). In basic content analysis, word count or some other quantitative methods are used. In this method, it is assumed that the frequency of the word or passage indicates its relative importance. Researchers seek to be objective and transparent by examining texts prepared for other purposes. (Neuendorf, 2002). In interpretive content analysis, objective and systematic inferences from some special characteristics of the texts are at the forefront (Holsti, 1969). These types of analysis consist of summaries and inferences generated by the researcher rather than word counting or other quantitative methods. This method also seeks to be systematic and transparent, but there is no assumption of objectivity (Ahuvia, 2001). In qualitative content analysis, on the basis of the interpretation of the texts, the content is re-examined in detail and filtered by the certain questions of the researchers. The investigation process of text in the qualitative content analysis includes both the inductive determination of groups and the deductive execution of these groups to additional data (Mayring, 2000).

In this study, we found it appropriate to conduct an interpretive content analysis to examine the maritime industry reports. In line with the purpose of the research, one-on-one interviews with people from the industry could also be applied. However, it is difficult to reach entrepreneurs operating in the dry bulk shipping sector. In addition, people operating in the sector also follow the market reports because the reports are prepared by experts in reputable institutions. Also, considering the number of reports and the wide period they cover, it is thought that it can provide much more comprehensive information about the sector. We aimed to reach the conclusion by taking the sentences in which the words "price" and "rate" were mentioned in the analysis and making inferences from them and grouping the findings. The reports we analyzed in the study consist of weekly market reports published by Fearnleys (2019). Fearnleys is one of the leading broker companies in the world and dates back to the 1869s. In that year, the company was founded by Thomas Fearnley (1841-1927) as a shipping & agency business in Oslo. Investigated market reports cover the period 23 February 2005 to 13 November 2019 and consist of a 752-week market summary report. The report

provides summary information about the freight market, the new construction market, the sale & purchase market, and the bunker market from the eyes of shipbrokers. The freight market is handled as tanker, dry bulk, LPG, and LNG markets. In the next section, the results obtained as a result of examining the reports with content analysis are presented.

5. RESULTS

The findings related to commodity prices obtained from the investigation of the reports are presented in Table 3. Chronological order of events is provided by letters of a, b, c, etc. These findings are obtained by scanning and deducing the commodity and its price-related sections in all these 752 weekly reports. According to the findings, generally, 4 types of situations occurred in the market; (i) the increase in commodity demand led to an increase in both commodity prices and transport demand, which result in a rise in the freight rates; (ii) The increase in commodity prices has driven manufacturers to produce more, leading to an increase in demand for transport and freight rates; (iii) the decline in demand for the commodity has caused a decline in both commodity prices and demand for transport negatively affecting the freight rates; (iv) The decline in commodity prices has negatively affected producers' production motivation, leading to a decline in both transport demand and freight rate.

In addition to the inferences about the commodity price and freight rates relationship, different situations related to the commodity that affect freight rates have also been identified. As a result of the report reviews, the relations with the neighboring market were identified and were presented in Table 4 to address the adjacent market effect. The results of this review indicated that all of the interactions were between the Capesize and Panamax markets, and three cases were often observed; (i) Excessive demand in the Capesize market lead to an increase in Panamax freights as it increased demand by transferring Cape-splits to Panamax vessels; (ii) The abundance of Cape-splits caused ship shortages in the Panamax market, which consequently caused freights increase in the market; (iii) When the amount of Cape-splits decreased, freight rates in the Panamax market also decreased since the demand for Panamax-type vessels decreased.

Within the framework of all these findings, it is possible to draw a model like below as in Figure 2. This mechanism is dynamic, so it may be useful to examine it as demand-based and supply-based to simplify the expression. In terms of demand, the demand for commodities naturally affects the commodity price and is influenced by the commodity price.

Table 3: Commodity Related Events in the Reports

Time	Content	Inference
2009a	“Expectations of increased demand of i.ore and higher ore prices have increased the rates.”	Commodity demand increase, high ore prices => Increase in rates
2009b	“Grain prices at the moment are not so price sensitive as i.ore and coal. Buyers are holding back and not yet prepared to pay or even give a price for minerals, demand from China is decreasing which might be a sign of a short-lived upturn.”	Commodity demand decrease => Decrease in rates
2011a	“There is some speculation that the increase in the Pacific activity we have seen is on the back of an increase in the iron ore prices, which have fallen considerably in recent months.”	Commodity price increase => Increase in rates
2011b	“However, iron ore prices are dropping and rates may be expected to drop further.”	Commodity price decrease => Decrease in rates
2012a	“The levels that did fix are down w-o-w levels. C5 continued to slide, due to a very slow iron ore market, believe the lowest level iron ore cargo fixed at USD 6.75 pmt and coal prices are also dropping slowing the coal market with limited activity from Chinese importers.”	Commodity price decrease => Decrease in rates
2013a	“At present it appears that Chinese seasonal re-stocking activities will continue to absorb the growing spot iron ore supply, at least in the short term. This, combined with a relatively stable iron ore price, are good short term indicators for the Cape market.”	Commodity demand increase => Increase in rates
2013b	“The fronthaul market continues to be actively fixed, with the C3 index Tubarao/Qingdao now marked at USD 20 PMT. West Australia holds steady at USD 7.75 PMT - however in general, time charter rates in the Pacific have come off, due to a squeeze on the current coal prices.”	Commodity price decrease => Decrease in rates
2013c	“However, with the iron ore price holding firm at \$132 PMT, many are of the opinion that market fundamentals remain positive and there is still more Chinese restocking activity to come.”	Commodity demand increase, high iron ore prices => Increase in rates
2015a	“The sentiment is bearish with falling demand and prices on coal and i.ore.”	Commodity demand decrease, commodity price decrease => Decrease in rates
2015b	“One the demand side there are a number of minor miners, who are struggling or have already halted operations, due to the low ore price, and the Majors will easily be able to pick up the slack if these volumes need to be moved at all.”	Production decrease, low iron ore prices
2016a	“Increased iron ore prices created a positive sentiment across the market beginning of the week.”	High iron ore prices => Increase in rates
2017a	“The Brazil market have gone very quiet, and fronthaul rates have dropped from around mid to low 20k level on tct. It has been some problems at some loading ports, combined with dropping iron ore prices.”	Commodity price decrease => Decrease in rates
2017b	“The long-anticipated boost in the Cape market did arrive this week. Increased Chinese steel prices have pushed iron ore prices and demand up.”	Commodity demand increase, high iron ore prices => Increase in rates
2019a	“The Capesizes are experiencing a rally this week, supported by a range of factors but increased iron ore prices being the main driver as iron ore prices have reached its highest value since 2013.”	High iron ore prices => Increase in rates
2019b	“Fundamentals for the big ships remain robust, with all major miners back on stage, enjoying historically high iron ore prices and pushing out as much volume as possible.”	Production increase, high iron ore price => Increase in rates
2019c	“Vale is back in the market, and a strong iron ore price combined with high Chinese demand is giving rates a solid push.”	Commodity demand increase, high iron ore price => Increase in rates
2019d	“whilst iron ore prices are up and all major miners needing/taking prompt units.”	High iron ore price => Increase in rates

Table 4: Findings of the Reports

Period	Report Content	Inference
2007	“Cape- split cargoes from Brazil made the rates for trip out increase strongly.”	Cape-split => Increase in Panamax rates
2007	“Especially Atlantic has been strong, lack of tonnage and increased grain cargoes from Brazil, combined with iron ore Cape splits has made it difficult to find tonnage able to make loading within first half March within this area.”	Cape-split, Increase in Grain Shipments => Increase in Panamax rates
2007	“Market heading north and chrs considering splitting cargoes into Panamax bottoms as tonnage is tight in all areas.”	Cape-split, Tonnage Scarce=> Increase in Panamax rates
2007	“With an extremely strong Cape market it was worth while once again to split the Cape cargos, which gave the Panamax market a good push.”	Cape-split=> Increase in Panamax rates
2009	“With the Cape market increasing rapidly, some charterers were willing to split the cargoes into Pmax stems, which were already in a tight squeeze for tonnage in N.Atlantic.”	Cape-split, Tonnage Scarce=> Increase in Panamax rates
2009	“The Cape splits were also seen in the Pacific, which boosted the Pmax rates from usd 19,000 last week to usd 25,000.”	Cape-split=> Increase in Panamax rates
2009	“The market primarily driven by the increased Cape rates resulting in Cape splits, mainly i.ore Bzl/China - and it’s starting to be tight supply of Pmax tonnage to cover the demand.”	Cape-split, Tonnage Scarce=> Increase in Panamax rates
2009	“And with Cape-splits and fresh orders in the market, there were no reasons for a decline in the Atlantic.”	Cape-split=> Increase in Panamax rates
2010	“We expect the market to continue its strengthening as the Cape rates continue to increase and we see more split cargoes being quoted.”	Cape-split=> Increase in Panamax rates
2013	“Atlantic rounds are being paid from Usd 6,500 to 9,000 and a good Usd 15,250 + Usd 550,000 was done USG/Feast. In the Pacific the rounds are now paying abt Usd 300 more than last week (i.e Usd 6,800) and this is much caused from Aussie rounds which seems to be Cape splits being done due to the much stronger Cape market.”	Cape-split=> Increase in Panamax rates
2013	“Pacific on the other hand continues to firm probably due to many Cape stems now being split into Pmax stems.”	Cape-split=> Increase in Panamax rates
2013	“Also the recent Cape rally has had a positive impact on the Panamaxes as we see many Cape splits.”	Cape-split=> Increase in Panamax rates
2013	“NOPAC rounds being fixed from 14k and close to 15k mid-week, but with healthy volumes and a steady flow of Cape splits there is room for elevated levels short term.”	Cape-split=> Increase in Panamax rates
2013	“The Cape market has also had a direct impact on pmax rates with stems being split into pmax stems, but the recent dramatic rate decline for Capes influences the Pmax market with no benefit from these additional cargoes.”	Decrease in Cape Rates, Decrease in Cape-splits=> Decrease in Panamax rates
2017	“A booming Cape market has led to Cape splits talk in the Atl which is a positive factor going forward.”	Cape-split=> Increase in Panamax rates
2018	“The Atlantic market has been much influenced by the strong Capesize market, which again has led to Cape splits into Pmax cargos.”	Cape-split=> Increase in Panamax rates
2019	“Fronthaul and transatlantic trades remain the brightest spots, where shortage of available early units have forced major Brazilian exporters to split Capesize stems destined for China into Panamax lots at high cost to secure tonnage.”	Cape-split, Tonnage Scarce=> Increase in Panamax rates

As the demand for commodities increases, prices rise, and this increase affects the demand for commodities. The increase in demand also increases the demand for transportation services, which consequently positively

affects freight rates in the market. In case of a decrease in demand, the reverse of this plot takes place and the freight rates fall.

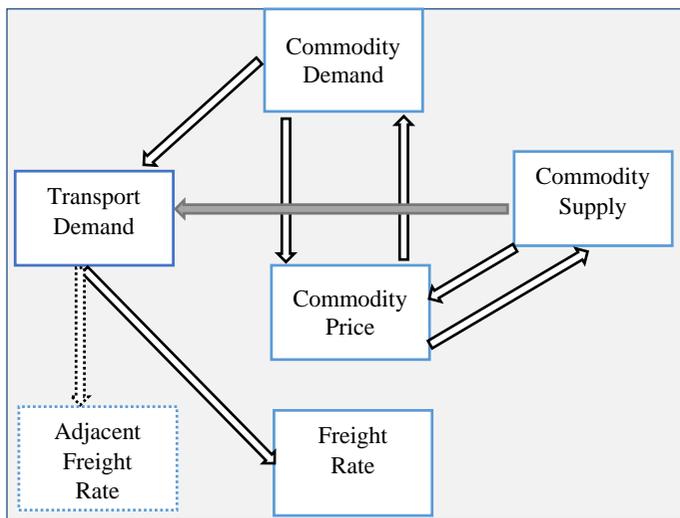


Figure 2: Commodity and Shipping Market Relationship in Practice

In terms of supply, rising commodity prices positively affect production as producers want to make more use of existing high-income conditions. This affects commodity prices and also positively affects the demand for transport services. The increase in transportation demand from this production activity positively affects the freight rates. On the other hand, there is a decrease in freight rate if the reverse scenario occurs.

Adjacent freight means the increase in freight in the adjacent shipping market due to the shift in major cargoes of other ships to this market since excessive demand in the major shipping market occurs in some periods. As can be seen from the reports, it has been effective several times during the period covered, and Panamax vessels have taken advantage of shining Capesize freight rates. Therefore, this effect is indirect and can be observed between neighboring markets.

However, this mechanism may vary for some types of cargoes. The cargo types mentioned in these reports and used in our study are iron ore, coal, and wheat. The first two are minerals and the production quantity can be adjusted in a short time according to the changes in demand. However, as wheat is a plant, it is difficult to plan production since it is affected by climatic conditions and it is very difficult to respond to changes in demand by increasing production in a short time.

6. CONCLUSION

In this study, using content analysis, we aimed to determine how the relationship between commodity price & freight market, which has been examined by many

empirical studies in the literature, is evaluated and interpreted in the sector. To reach this conclusion, we looked at 752 reports on a weekly basis published by one of the main maritime brokerage companies, Fearnleys. According to the results, we determined that the commodity price and freight relationship is also evaluated in the sector and used for positioning according to possible demand changes in the near future. We learned that the increasing demand for commodities caused an increase in commodity prices, and the demand for maritime transport also increased since the demand for commodities increased. In this case, we found that freight rates were also positively affected. In addition, increasing commodity prices encourage producers to produce more, increasing the demand for maritime transport. In the opposite scenario, the decrease in demand for the commodities causes the price to decrease and therefore the freight rates to decrease.

In addition, we determined that the neighborhood relationship is also important. When there is excessive demand in a market, cargo owners can switch to other shipping markets. The markets where this is most experienced are Panamax and Capesize markets. Since Capesize vessels are larger in size, their per-unit transportation costs are considerably lower than Panamax vessels. However, this situation cannot always hinder cargo pass-through. The excessive increase in demand for iron ore forms too much demand in the Capesize ship market and causes the freight rates to rise too high. In this case, it becomes economical to transport iron ore by Panamax type vessels as well and many ore cargoes are shifted to this ship type. Similarly, when the demand for iron ore drops too low, cargo shifted to Panamax type vessels decreases, and freight rates are negatively affected.

As a result, both empirical studies and industry reports confirm the existence of the relationship between commodity prices and freight rates. In this respect, it is not wrong to deduce that commodity prices carry information about the demand for them. Searching for a statistical relationship between them can provide more concrete information about market structures and can benefit stakeholders in the maritime industry to develop commercial strategies. The findings show that although ship types specialize in the transportation of some cargoes, they may be also affected by the markets of other kinds of cargoes. In this respect, the effect of other commodity prices should also be taken into account when examining freight markets.

The parallel course of academic and sectoral environment and its evaluation over concrete events are important for the players in the sector. Because developing information

processing techniques contribute to the solution of highly complex and integrated relationships in the academic environment. In this respect, it is important to monitor whether the results of advanced econometric methods correspond to the sector or not, in order to evaluate how appropriate academic studies are to their goals. The reason for this is that dealing only with the information that numbers carry may lead to reaching findings that are far from real life. Our results show that the findings obtained in the academic literature are in parallel with the information evaluated in the maritime sector. However, it has been also observed that price definitions in the academic area do not meet enough in the sector. In this respect, it is of great importance to bring the tools and terms that make it possible to read the market better in order to reduce risk derived from uncertainty, especially for players in high-risk sectors such as maritime markets.

For further studies, the sample can be expanded by including the sector reports of different companies in the analysis. In addition, the effects of commodities such as iron ore and coal can be examined not only by the type of vessel they specialize in but also crosswise. Because in some market conditions, there may be a cargo shift between them. Finally, if the subject is to be considered as information flow, the relationships between commodity prices and freight rates can be tested by using their variances and volatilities.

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