



City Research Online

City St George's, University of London

Citation: Moutzouris, I. C., Papapostolou, N. C., Marchese, M. & Tamvakis, M. (2024). Determinants of the price premium for Eco vessels. *Commodity Insights Digest*, 2(1), doi: 10.1016/j.trd.2024.104414

This is the published version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/33165/>

Link to published version: <https://doi.org/10.1016/j.trd.2024.104414>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).

COMMODITY INSIGHTS DIGEST

SUMMER 2024

RESEARCH DIGEST ARTICLES

**"DETERMINANTS OF THE PRICE
PREMIUM FOR ECO VESSELS"**



BY IOANNIS MOUTZOURIS, Ph.D., BAYES BUSINESS SCHOOL -
CITY, UNIVERSITY OF LONDON, U.K.;

NIKOS PAPAPOSTOLOU, Ph.D., BAYES BUSINESS SCHOOL -
CITY, UNIVERSITY OF LONDON, U.K.;

MALVINA MARCHESE, Ph.D., BAYES BUSINESS SCHOOL - CITY,
UNIVERSITY OF LONDON, U.K.; and

MICHAEL TAMVAKIS, Ph.D., BAYES BUSINESS SCHOOL - CITY,
UNIVERSITY OF LONDON, U.K.



Determinants of the Price Premium for Eco Vessels

Ioannis Moutzouris, Ph.D.

Bayes Business School - City, University of London, U.K.

Nikos Papapostolou, Ph.D.

Bayes Business School - City, University of London, U.K.

Malvina Marchese, Ph.D.

Bayes Business School - City, University of London, U.K.

Michael Tamvakis, Ph.D.

Bayes Business School - City, University of London, U.K.

Comprehensive abstract available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4742928

As regulations regarding shipping decarbonization and greenhouse gas emissions in general are becoming increasingly strict, ship owners have been facing the trilemma of investing in a cheaper but much more polluting conventional vessel or in a more expensive but eco-friendly one or postponing their investment decision. This paper quantifies the price premium paid for eco-friendly cargo-carrying vessels and examines the determinants of it. Weekly data from January 2019 until December 2023 indicates that eco vessels trade at an average premium of close to 25% compared to their conventional counterparts. However, the corresponding income premia are on average between 9% and 15%. Our findings further suggest that the price premium is time-varying and highly dependent on the prevailing market conditions; in expansionary freight markets, it is significantly lower than in normal/recessionary ones. Empirical estimation using nonlinear threshold autoregressive models indicates that recent price premia and changes in the fleet supply are strong drivers too with fuel costs and market liquidity having ambiguous effects. However, the magnitude and significance of these drivers vary based on the market state and segment. Finally, the paper documents the adverse effect that the current technological and regulatory uncertainty has on investment in newbuilding vessels. Our findings have important implications for industry participants, policymakers, and regulators.

Introduction

Shipping facilitates over 80% of global trade (UNCTAD, 2021), with world seaborne trade, measured in tonne-nautical miles, increasing at an average rate of 3.3% since 2000, based on Clarksons' Shipping Intelligence Network (SIN) timeseries. While shipping is less polluting per transport work (*i.e.*, tonne-nautical mile) compared to other transport modes, due to the scale of its operations, it accounts for 2.8% of global greenhouse gas (GHG) emissions (UNCTAD, 2023). In other words, if global shipping were a country, it would be the sixth largest carbon dioxide (CO₂) emitter in the world (Tiseo, 2023). Without any further action, shipping CO₂ emissions are expected to increase by 90-130% by 2050 compared to the 2008 levels (IMO, 2018).

As a result, shipping environmental regulations are becoming increasingly strict. The International Maritime Organization's (IMO's) Initial Greenhouse Gas Strategy was aiming at reducing CO₂ emissions from vessels by at least 40% by 2030, pursuing efforts towards 70% by 2050, vis-à-vis 2008 levels (IMO, 2018). However, the revised and more ambitious 2023 IMO GHG Strategy aims at GHG emissions peaking from international shipping as soon as possible and reaching net-zero by or around 2050 (IMO, 2023). To achieve that, among other measures, the shipping industry has started in recent years utilizing vessels that



Determinants of the Price Premium for Eco Vessels

are more eco-friendly—in terms of reduced fuel consumption and, in turn, CO₂ emissions— compared to conventional ones.

From a technological perspective, eco-friendly vessels should trade at a price premium compared to their conventional (*i.e.*, non-eco) counterparts. From a financial perspective, though, for an investor to be willing to pay for such premium and for a capital provider to finance such acquisition, the eco vessel must generate higher cash flows or/and have a lower cost of capital than the conventional one.



Ioannis Moutzouris, Ph.D., an Onassis Senior Lecturer in Shipping Finance and Analytics at Bayes Business School (U.K.), during his presentation about shipping decarbonization at the 10th City of London Biennial Meeting, which took place at the International Maritime Organization in London on June 12-13, 2023.

Relevance of the Research Question

This article contributes to the shipping, asset pricing, and sustainable finance literatures by investigating whether such an eco price premium exists, analyzing its determinants, and relating the findings to shipping investment decisions and their effect on the industry. To the best of the authors' knowledge, this is the first paper that explicitly examines shipping sustainability from this perspective as previous research has focused on the technological and regulatory challenges related to sustainable shipping.

There is also a growing body of literature (Mackenzie *et al.*, 2024a; Mackenzie *et al.*, 2024b) examining the implications of environmental regulations on marine insurance, but neither those articles explicitly incorporate the financial dimension. While there exists a vast body of literature examining the determinants of vessel prices (*e.g.*, Greenwood and Hanson, 2015; Moutzouris and Nomikos, 2019), it focuses on a single vessel type and, thus, not on the price differential between eco and conventional vessels.



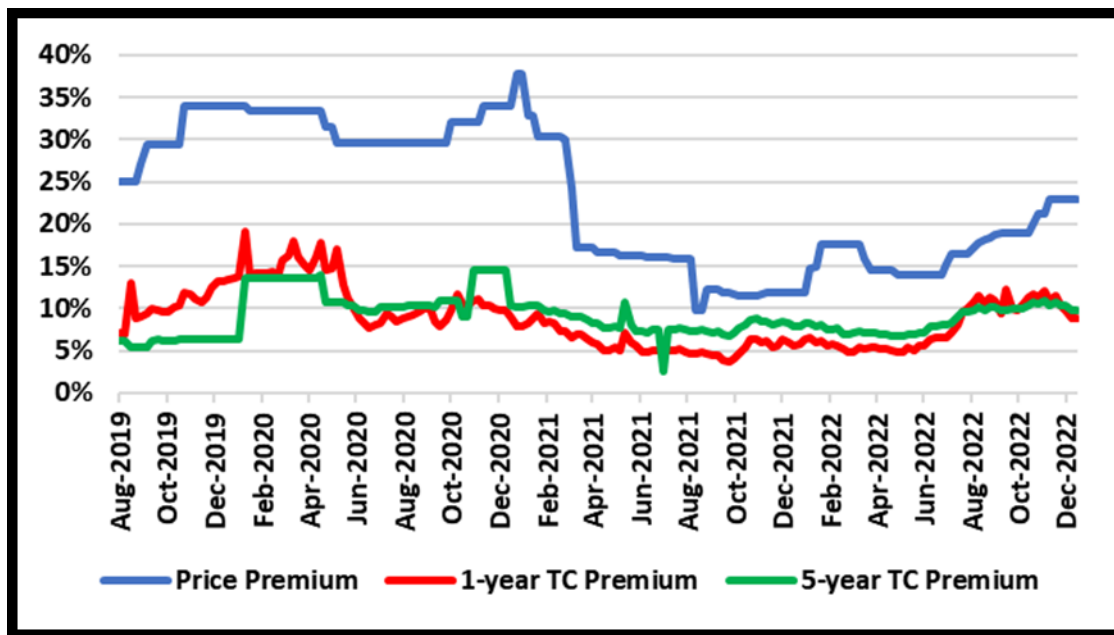
Determinants of the Price Premium for Eco Vessels

A further contribution of the paper lies in the fact that it provides an alternative model specification for the relationship between vessel prices and freight rates while controlling for various frequently incorporated shipping variables. Apart from the above contributions to the academic literature, the empirical findings have important implications for industry participants, policymakers, and regulators.

Data and Initial Findings

The empirical analysis is performed using weekly data from Clarkson's Shipping Intelligence Network (SIN) for a representative vessel type from each of the dry bulk and tanker sectors (which, combined, facilitate more than three quarters of the world seaborne trade), that is Capesize dry bulkers and Aframax tankers.¹ The sample period, given the limited data availability for eco-friendly vessels, ranges from August 16, 2019 to December 30, 2022 for Capesizes and from January 4, 2019 to December 8, 2023 for Aframaxes. The incorporated variables are the prices of second-hand vessels EP_t and CP_t – eco-friendly and conventional vessels, respectively – at period t ; the time-charter (TC) rates ETC_t and CTC_t — for eco-friendly and conventional vessels, respectively; $Fuel_t$ costs; the percentage change in the fleet $Supply_t$ in terms of DWT,² capturing the supply in the sector; and sales of second-hand vessels scaled by the respective size of the fleet as a proxy for market liquidity, LQ_t .

Figure 1
Price and 1- and 5-Year Time-Charter Premia for the Capesize Sector



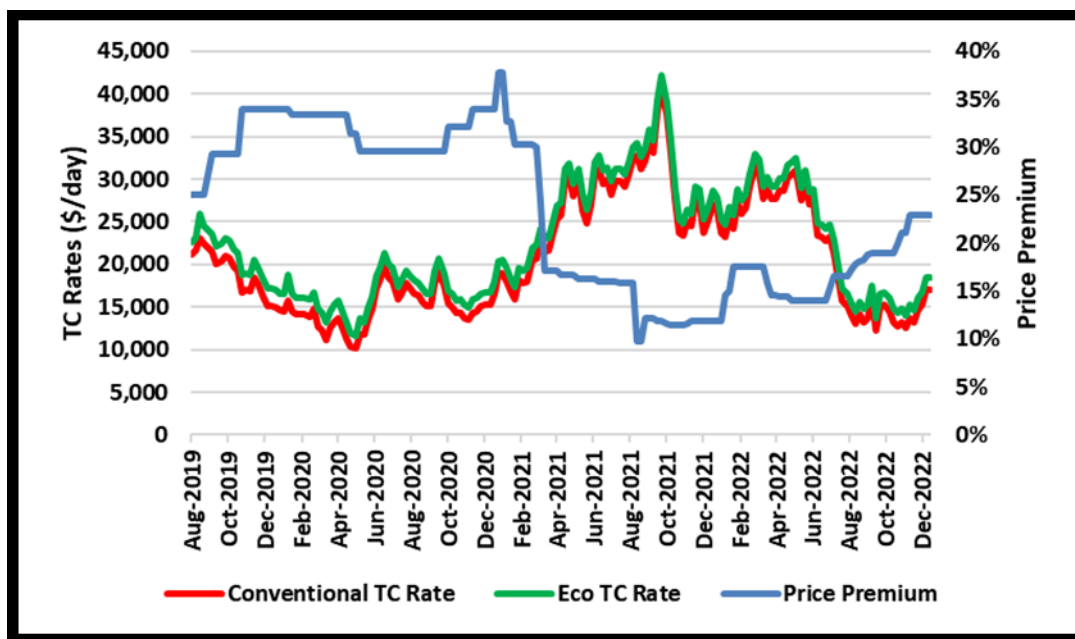
Determinants of the Price Premium for Eco Vessels

To examine the price differentials between eco and conventional vessels, the eco premium variables for prices, PP_t , and TC rates, TCP_t , are defined using the following formulas:

$$PP_t = \frac{EP_t}{CP_t} - 1 \quad \text{and} \quad TCP_t = \frac{ETC_t}{CTC_t} - 1$$

As suggested by Figure 1,³ the estimated price premium for the Capesize vessels is 23.2% on average while the TC ones are close to 9.0%. Similarly, for the Aframax vessels, the corresponding figures are 24.9% and approximately 15%. This implies that TC premia on their own cannot explain the observed price premia.

Figure 2
Price Premium and Eco-Friendly/Conventional TC Rates for Capesize Sector



Furthermore, Figure 2 indicates that, when the price premium is low, freight market conditions are more prosperous, and the opposite. A potential explanation for this finding is that the eco vessel provides more secured income compared to its counterpart. Namely, in normal/recessionary shipping markets, where the demand for vessels is relatively normal/low, a period charterer would prefer leasing first the eco-friendly vessel (as it is more fuel-efficient but also because of ESG principles that become increasingly important). Accordingly, the residual demand for vessels is not significant, which results in a larger TC premium and, *ceteris paribus*, price premium during that period. Expansionary markets, in contrast, are equivalent to high demand for seaborne trade and tight supply of vessels. While eco vessels are still first employed realising very high TC rates, the increased residual demand pushes the TC rates of conventional ones high too – a relatively larger increase compared to the increase in the TC rates of the eco ones. As a result, the TC and price premia decrease during expansionary periods.

Determinants of the Price Premium for Eco Vessels

Methodology and Main Empirical Results

The authors further investigate the determinants of the documented eco price premium through a two-step empirical approach. First, since eco vessels have only recently become available, the time span of the available data is relatively limited. Hence, to develop a robust framework, the paper adopts the approach proposed by Caner and Hansen (2001) which allows testing for the presence of a unit root and of nonlinearity using a Wald test for threshold effects and Wald and t-tests for unit roots. The tests reject the null hypotheses of no threshold and of a unit root suggesting that the price premium follows a two-regime stationary nonlinear data-generating process driven by market conditions. Second, having tested various model specifications, the threshold autoregression (TAR) model of Hansen (1996) is chosen as the most appropriate and best performing one. In turn, this allows testing and analyzing the relationship between eco price premia and various shipping explanatory variables as freight rates, fuel costs, fleet supply, and liquidity in the second-hand market for vessels, depending on freight market conditions. Namely, Regime 1 captures the eco price premium dynamics in normal/recessionary market conditions and Regime 2 in expansionary ones.

The estimation results (Table 1) confirm that TC rates cannot determine on their own the eco price premium since the slope coefficient of TCP , while significant in all cases, is well below 1. Instead, mainly past price premia and growth in the supply of the fleet also possess significant explanatory power. This is in line with the previous finding of the paper that price premia are on average significantly lower than the TC ones. Furthermore, it is evident that the impact of the TC premium is more pronounced during expansionary phases of freight markets, which are also characterized by less persistence of price premia. Those findings are consistent across the dry bulk and tanker sectors.

The explanation for this could be related to the fact that, in expansionary markets, where sentiment is high (Papapostolou *et al.*, 2014), an increase in the TC premium can have a greater impact on the valuation of the eco-friendly vessel than the previous price premium but also than fuel costs. In contrast, in normal/recessionary markets where investors are less optimistic and, thus, more conservative and capital availability is reduced, past price premia and fuel costs can play a more significant role in vessels' valuation.



Determinants of the Price Premium for Eco Vessels

Table 1
Estimation Results for the Model with the 1-year TC Rate

	<i>j</i> = Capesize		<i>j</i> = Aframax	
	Threshold: $CTC_{t-3,j,0.5}$		Threshold: $CTC_{t-4,j,1}$	
	Regime 1 $CTC_{t-3,j,0.5} < 32,875$	Regime 2 $CTC_{t-3,j,0.5} \geq 32,875$	Regime 1 $CTC_{t-4,j,1} < 32,000$	Regime 2 $CTC_{t-4,j,1} \geq 32,000$
Obs. (<i>n</i>)	87	83	153	61
<i>c</i>	0.0003*** (0.0094)	0.0376*** (0.0062)	0.0041** (0.0180)	0.0514** (0.0220)
$PP_{t-1,j}$	0.9143*** (0.0000)	0.5707*** (0.0000)	0.8513*** (0.0000)	0.5598*** (0.0000)
$TCP_{t-1,j}$	-	0.5372*** (0.0015)	-	0.2502*** (0.0009)
$TCP_{t-2,j}$	0.0562*** (0.0042)	-	0.0569*** (0.0007)	-
$Supply_{t-4,j}$	1.8858* (0.0500)	2.1317* (0.0631)	-	-
$Supply_{t-8,j}$	-	-	1.2876** (0.0463)	2.7643** (0.0474)
$Fuel_{t-3}$	0.0019* (0.0530)	0.0476 (0.4800)	-	-
$Fuel_{t-4}$	-	-	0.0529*** (0.0026)	0.0011* (0.0911)
$LQ_{t-4,j}$	0.0031* (0.0140)	0.0046 (0.9713)	-	-
$LQ_{t-8,j}$	-	-	0.0018* (0.0215)	0.0021 (0.1874)
\bar{R}^2	0.8933	0.8872	0.9120	0.8841
<i>F</i> – Stat	1051.62*** (0.0000)		378.11*** (0.0000)	
<i>LR Test</i>	49.56*** (0.0030)		44.59*** (0.0000)	
Boostraps (<i>n</i>)	1000		1000	
Trimming	0.15		0.15	

This table reports the conditional least squares estimates for the threshold models with two regimes including the estimated threshold, the number of observations that lie in the first and second regime, respectively. LR is the likelihood ratio test for the null of no threshold whose p-value is computed through the bootstrap as suggested by Hansen (1996) with N bootstrap replications. The trimming % is the percentage of observations that are excluded from the sample so that a minimal percentage of observations lie in each regime. Figures in () are p-values. ***, **, * indicate significance at the 1%, 5%, and 10% level, respectively.



Determinants of the Price Premium for Eco Vessels

In other words, if in expansionary markets, where TC rates for either vessel are already high, there is a larger increase in the TC rate for the eco vessel compared to the one for the conventional one, this signals to shipowners that investing in the eco vessel is indeed a reasonable decision. In contrast, in normal/recessionary markets, factors such as fuel costs gain more importance.

The slope coefficients for the fleet supply are significantly positive in all cases. While vessels with modern eco engines constitute less than 50% of the total fleet, their fraction has rapidly increased, that is from less than 19% of the total fleet in early 2019 to more than 33% at the end of 2023. This decreased appetite for conventional vessels and the increased supply of eco ones might be driving the prices of the conventional vessels down and, thus, the price premium up. Furthermore, fleet supply has a larger effect on the price premium in expansionary markets as investor sentiment and capital availability are increased.

A further interesting finding is that an increase in fuel costs has a bigger effect on the price premium in normal/recessionary markets. This is because, in normal/recessionary markets, fuel prices amount to a much larger fraction of the vessel's income compared to expansionary ones. As such, a period charterer would prefer leasing first the eco-friendly vessel as it is more fuel-efficient (but also a ship owner operating the vessel in the spot market would realize a higher profit). Finally, second-hand vessel transactions have a small impact on price premia. The authors re-estimate the model using the 5- year TC rates and the main results are similar to the ones discussed above.

Further Discussion and Conclusions

The authors find that eco-friendly vessels trade at an average premium of close to 25% compared to their conventional counterparts. However, the long-term cash flows generated by the former investment are only around 10-15% higher than for the latter. Furthermore, a brief analysis⁴ on the cost of capital between standard and green/sustainability-linked loans reveals that the latter are cheaper by only 23 basis points. Therefore, neither the prevailing time-charter rates nor the cost of capital can explain on their own the observed price differential and justify the eco-friendly investment. Instead, the TAR model estimation suggests that the magnitude of the price premia can also (mainly) be attributed to the persistence of price premia and fleet supply, that is on expectations about the future.

To better understand this finding, it is useful to consider the increasingly strict regulations in the form of the revised and more ambitious 2023 IMO GHG Strategy, the Carbon Intensity Indicator, the inclusion of shipping in the EU Emissions Trading System but also the potential adoption of market-based-measures (such as carbon taxes) in the coming years. These are expected to give a strong competitive advantage to eco vessels against their conventional counterparts, expressed in high spreads between eco and non-eco freight rates and, thus, vessel prices. Thus, investing in the more expensive eco vessel, can be perceived as a rather medium- to long-term strategy.

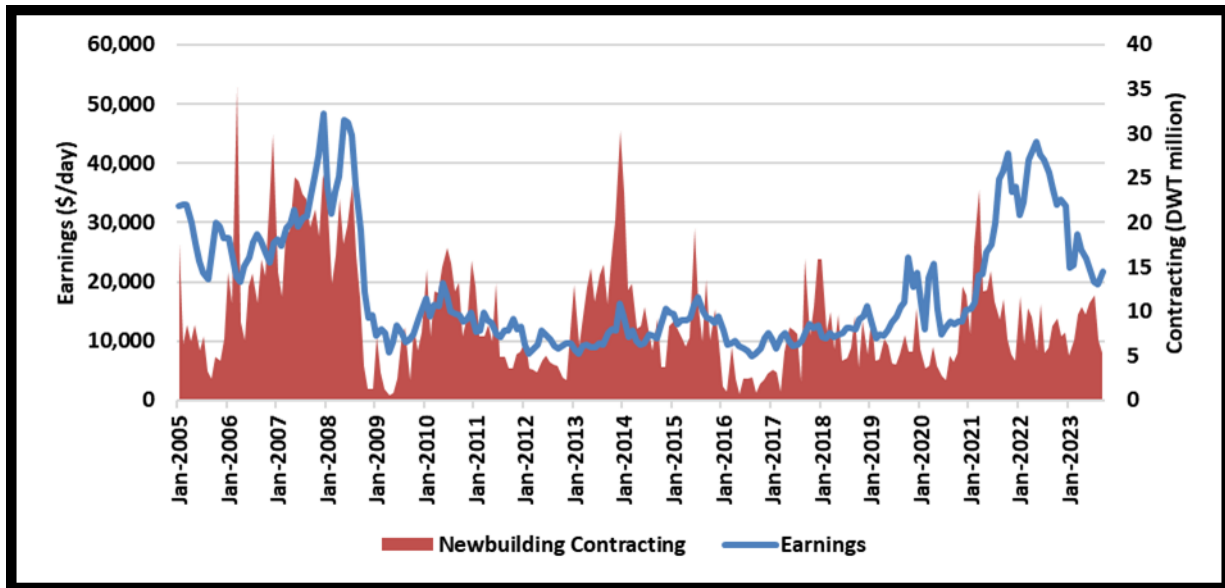
To add to this complexity, this second-hand investment decision is associated with much less technological and regulatory uncertainty compared to the case of newbuilding vessels. The latter can have an economic life of more than 20 years and require in-depth consideration of factors such as future availability and price of alternative fuels, the required vessel specifications and technology to burn those, the current and



Determinants of the Price Premium for Eco Vessels

forthcoming regulations (which can vary among jurisdictions) but also safety concerns related to alternative fuels as ammonia. Therefore, shipowners not only face the dilemma of whether to invest in a cheaper but more polluting conventional vessel or in a more expensive but eco-friendly one but also whether it is rational to postpone their investment decision for when there is more clarity regarding technology and regulations (Moutzouris, 2024). The latter has important implications on new building investment decisions.

Figure 3
Average Vessel Earnings and Investment in Newbuilding Vessels



Source of Data: Clarksons' Shipping Intelligence Network.

Namely, traditionally, the investment decision of shipowners was associated with the current and expected freight market conditions; however, the introduction of this “decarbonization risk” has, on the one hand, weakened the effect of freight rates on new building investment and, on the other hand, adversely affected shipping investment as a whole. Regarding the former fact, while from January 2005 to March 2018 there was a 58% correlation between investment in newbuilding vessels and freight market conditions, this has decreased to 21% from April 2018 and the adoption of the Initial IMO Strategy on the reduction of GHG emissions from ships. With respect to the latter fact, the average monthly investment in the period from April 2018 to September 2023 has decreased by 29% compared to the period from January 2005 to March 2018 (Figure 3). Related to that, as of September 2023, the average age of dry bulk and tanker vessels were circa 13 and 12 years, respectively, and the order books 6% and 8% of the fleet, correspondingly. This underinvestment in newbuilding vessels can have important adverse effects on the mid- to long-term supply of the fleet and the well-functioning of the shipping industry and, in turn, the efficient facilitation of world seaborne trade.

Determinants of the Price Premium for Eco Vessels

This research was motivated by the recent regulatory developments around shipping decarbonization and numerous related discussions and events with various stakeholders, including ship owners/operators, financiers, ship brokers, market analysts, charterers, and regulators. The main outcomes of those discussions are aligned with the findings presented here. As such, to reach the IMO environmental targets without threatening the well-functioning of the shipping industry and world trade, there is an increasing need for consensus among the different regulatory authorities and the various stakeholders.

Endnotes

The authors thank participants at the 2023 Finance Research Workshop at Bayes Business School (formerly Cass), City, University of London; at the 6th Commodity Markets Winter Workshop (2023) in Lillehammer; at a seminar delivered to the U.K. Department for Transport (2023); and at the 2023 Conference on Climate and Energy Finance in Hannover. Their constructive comments helped improve the paper. This work was supported by the U.K. Department for Transport, as part of the U.K. Shipping Office for Reducing Emissions (UK SHORE) Programme and the U.K. Engineering and Physical Sciences Research Council (EPSRC) [grant number EP/Y024605/1].

1 Capesize vessels have a typical cargo-carrying capacity of 180,000 deadweight tonnes and are mainly associated with the trade in iron ore and coal but also grains. Aframax have a typical cargo-carrying capacity of 115,000 deadweight tonnes and are involved with the transportation of oil.

2 A measure expressed in metric tons (1,000 kg) or long tons (1,016 kg) of a ship's carrying capacity, including bunker oil, fresh water, crew, and provisions. This is the most important commercial measure of the capacity.

3 For conciseness, the figures focus on the Capesize sector, but the patterns are similar for the Aframax one.

4 Based on data from Marine Money Deal Database and Clarkson's SIN, a sample of 69 shipping loans for the period 2020 to 2023 is collected and the average spread is calculated. The null hypothesis of equal means between standard and GLs/SLLs spreads at the 5% significance level cannot be rejected.

References

Caner, M. and B. E. Hansen, 2001, "Threshold Autoregression with a Unit Root," *Econometrica*, Vol. 69, No. 6, November, pp. 1555-1596.

Greenwood, R. and S. Hanson, 2015, "Waves in Ship Prices and Investment," *Quarterly Journal of Economics*, Vol. 130, No. 1, February, pp. 55-109.

Hansen, B., 1996, "Inference When a Nuisance Parameter Is Not Identified Under the Null Hypothesis," *Econometrica*, Vol. 64, No. 2, March, pp. 413-430.

International Maritime Organization (IMO), 2018, "Initial IMO GHG Strategy." Accessed via website: <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Reducing-greenhouse-gas-emissions-from-ships.aspx> on May 7, 2024.

International Maritime Organization (IMO), 2023, "IMO Strategy on Reduction of GHG Emissions from Ships." Accessed via website: <https://www.imo.org/en/OurWork/Environment/Pages/2023-IMO-Strategy-on-Reduction-of-GHG-Emissions-from-Ships.aspx> on May 7, 2024.



Determinants of the Price Premium for Eco Vessels

Mackenzie, A., Bryce, C. and I. Moutzouris, 2024a, "Emerging Risks in Marine Decarbonisation: Time to Set Sail," Atrium Underwriters White Paper, Produced in Collaboration with Bayes Business School - City, University of London, February. Accessed via website:

https://www.atrium-uw.com/media/vz0nfiku/5647_27-atrium-marine-decarbonisation-whitepaper-v4a.pdf

on May 7, 2024.

Mackenzie, A., Bryce, C. and I. Moutzouris, 2024b, "The Insurance Implications of IMO Greenhouse Gas Initiatives," Working Paper, Bayes Business School - City, University of London.

Moutzouris, I., 2024, "Letter: Why Shipowners are Wary of Commissioning Green Vessels," *Financial Times*, January 23. Accessed via website: <https://www.ft.com/content/a2189cd2-cd1e-4479-b853-2f861b1f33c2> on May 7, 2024.

Moutzouris, I. and N. Nomikos, 2019, "Earnings Yield and Predictability in the Dry Bulk Shipping Industry," *Transportation Research Part E: Logistics and Transportation Review*, Vol. 125, May, pp. 140-159.

Papapostolou, N., Nomikos, N., Pouliasis, P. and I. Kyriakou, 2014, "Investor Sentiment for Real Assets: The Case of Dry Bulk Shipping Market," *Review of Finance*, Vol. 18, No. 4, July, pp. 1507-1539.

Tiseo, I., 2023, "Shipping Emissions Worldwide - Statistics and Facts," Statista.com, December 18. Accessed via website: <https://www.statista.com/topics/11288/shipping-emissions-worldwide> on May 7, 2024.

United Nations Conference for Trade and Development (UNCTAD), 2021, "Review of Maritime Transport." Accessed via website: <https://unctad.org/publication/review-maritime-transport-2021> on May 7, 2024.

United Nations Conference for Trade and Development (UNCTAD), 2023, "Review of Maritime Transport." Accessed via website: <https://unctad.org/publication/review-maritime-transport-2023> on May 7, 2024.

Keywords

Decarbonization, eco vessels, price premium.

Author Biographies

IOANNIS C. MOUTZOURIS, Ph.D.

Bayes Business School - City, University of London, U.K.

Dr. Ioannis C. Moutzouris is the Associate Dean for Engagement, an Onassis Senior Lecturer in Shipping Finance and Analytics, and the Shipping and Energy Research Programme Lead at Bayes. He is also a Co-Investigator in the U.K. National Clean Maritime Research Hub and a Principal Academic Adviser at the U.K. Department for Transport. His main areas of research are shipping economics and finance.

NIKOS C. PAPAPOSTOLOU, Ph.D.

Bayes Business School - City, University of London, U.K.

Dr. Nikos Papapostolou is a Reader in Shipping Finance and the Director of the world-renowned M.Sc. programme in Shipping, Trade and Finance offered by the Costas Grammenos Centre for Shipping, Trade and Finance at Bayes Business School - City, University of London. He has published extensively in peer-reviewed academic journals in the field of shipping finance and investment.



Determinants of the Price Premium for Eco Vessels

MALVINA MARCHESE, Ph.D.

Bayes Business School - City, University of London, U.K.

Dr. Malvina Marchese is a Senior Lecturer in Finance at Bayes Business School (formerly Cass) and the Director of the International Institute of Forecasters. Her main research interests are in financial econometrics and forecasting with machine learning and traditional econometric approaches.

MICHAEL TAMVAKIS, Ph.D.

Bayes Business School - City, University of London, U.K.

Dr. Michael Tamvakis received his M.Sc. and Ph.D. from City and is currently Professor of Commodity Economics and Finance. He lectures in energy, commodity and shipping economics, power and renewables, and commodity derivatives. His research interests are in the areas of energy and commodity economics, energy derivatives and shipping economics.

Professor Tamvakis is also an Editorial Board member of the *Commodity Insights Digest (CID)*.



COMMODITY INSIGHTS DIGEST

Commodity Insights Digest (CID, ISSN 2996-654X) is a publication of Bayes Business School – City, University of London (U.K.), in association with Chicago-based Premia Research LLC (U.S.A.). The digest is co-edited by Ana-Maria Fuertes, Ph.D. in International Finance, and Hilary Till, M.Sc. in Statistics.

CID seeks to foster knowledge transfer between academics and practitioners by publishing:

- Scholarly research digest articles;
- Practitioner insights and interviews;
- Articles on economic history; and
- Book reviews.

Contributors to *CID* include (a) scholars seeking to enhance the impact of their research by delving into the practical implications of their theoretical or empirical studies; (b) consultants reporting on challenges faced by commodity market participants; and (c) industry economists providing analyses on their areas of market expertise.

Bayes Business School – City, University of London is a world-leading provider of education and cutting-edge research. Bayes' unique location enables strong links with industry in the City of London. © 2024 Bayes Business School – City, University of London (U.K.)



The Summer 2024 *CID* cover image is cropped from the following artwork, whose complete image is above. Poster for the London Midland & Scottish (LMS) Railway: Royal Highlander Approaches Aberdeen. Artist: Norman Wilkinson, R.I., about 1927. On the left side of the text are the letters "LMS" with the company crest on the other side. Printed by McCorquodale and Company Limited. Credit © National Railway Museum/Science Museum Group (U.K.). ■



BAYES
BUSINESS SCHOOL
CITY, UNIVERSITY OF LONDON

Physical Address

Bayes Business School
106 Bunhill Row
London, EC1Y 8TZ
United Kingdom

Website

bayes-cid.com

Contact

To submit articles,
authors can contact
the editors via
editors@bayes-cid.com

City is a member
institution of the
University of London

