
Editorial: Shapes of modern shipping

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The year 2008 has been a milestone for global economies and the maritime sector. The credit crunch and the subsequent economic crisis ended a period of unprecedented growth of trade and transport demand that had marked the years after the turn of the century. The effects on maritime and transport industries are severe. All those involved in shipping, ports and intermodal transport have to revisit earlier assumptions and reshape business models of development to prepare for the future. The observed difficulties are accompanied with considerable opportunities to develop corrective actions that address pre-existing misallocations. The quest of shipping and ports to integrate in intermodal transport systems has to address the post-crisis challenges.

In this context, the Department of Shipping, Trade and Transport of the University of the Aegean decided to devote the European Conference on Shipping, Intermodalism and Ports (ECONSHIP) 2011, which was held in Chios, Greece, an island of maritime tradition, on the theme of ‘Maritime transport: opportunities and threats in the post-crises world’. The conference attracted leading maritime economists and researchers with an

interest in shipping, transport and trade from 34 countries. Conference discussed the prospects of shipping, in the face of various challenges that go well beyond the issue of shipping finance, which emerged as the major headline of the 2008 tsunami that reached global markets. The various faces of these challenges include human resources management, maritime technology, the environmental challenges, safety and security, intermodalism, ports, maritime education, logistics.

The present *IJSTL* volume presents five of the best papers that were first presented at ECONSHIP 2011, which advance our knowledge on the way that modern shipping is shaped. The papers examine the modern structures of shipping in two market segments, namely container transporting liner shipping and liquefied gas respectively, the ways that corporate social responsibility (CSR) and different responses to environmental challenges, like CO₂ emissions pricing, the use of biodiesel, oil outflows, and the operational responses implied by relevant regulatory developments, affect shipping activities and its prospects.

Since their selection by the editors the five studies have been admirably revised and as the peer review process concluded they offer useful insights of both scientific and practical-managerial value.

In the first article, Parola, Caschili, Medda and Ferrari examine the ways that liner container shipping companies develop inter-firm agreements, sharing their slot capacity with commercial partners in order to have fully loaded container ships and reduce financial risk. The scholars estimate the extent of the cooperative behaviour (i.e., connectivity) via an analysis of the practices of 65 ocean carriers that cover over 85% of the global container fleet. They do so by constructing a cooperative container network index that allows measuring to what extent each carrier that cooperates is involved in such inter-firm agreements. When ranking carriers by the percentage of slots supplied in cooperation and total fleet capacity, the study identifies a strong linear correlation. Cooperative agreements in liner shipping allow carriers to increase the commercial capacity by chartering on-board slots in the partners' fleet. Therefore, joint-services produce a 'leverage effect', capable of multiplying the operational capacity of ship-owners. The scholars also investigate the geographic scope and the intensity of the cooperative agreements under analysis.

The study is a timing analysis of inter-firm practices in the shipping world. True, collaborative practices of shipping companies are anything but new phenomenon. Yet, in modern shipping the type and content of these collaborations is somehow of a different nature. The 2008 crisis produced a combination of overcapacity and lower volumes of global seagoing trade, in turn leading to remarkable unprecedented freight rates decline and volatility. In such tough conditions shipping lines accounts experience operating losses. The announcement by the world's three largest container shipping lines of their plans to reorganise deployment of vessels equivalent to 15% of global capacity and set up an operational alliance on some of the busiest trade routes (P3 network) indicate that conditions accelerate the tendency of being involved in further collaboration.

Methodologically, the contribution of this paper rests on supplying empirical findings based on network economics and linear regression analysis. The latter reveals that the larger the vessels size the lower the propensity for cooperation is. With the aforementioned P3 network announcement challenging the finding that ocean carriers involved in deep-sea services with large vessels are less cooperative, one might expect the Parola et al. study being a foundation of future studies that will not only confirm but also challenge its findings.

In the second paper of this volume Wang and Notteboom increase our understanding of a different market segment, the liquefied natural gas (LNG) specialised ships market. While this market developed substantially in the last decade, its features have been studied in a limited number of cases, thus the paper is a welcomed edition.

Wang and Notteboom explore the unique features of the LNG market and analyse its structure in terms of fleet and ownership distribution. They do so providing an overview of its dynamics and of the role of key players on the supply side of this highly structured and capital-intensive market. The scholars also present market data and discuss concentration measures, in a context of comparative analysis that illustrates the unique features of the LNG fleet, comparing to the container and the dry bulk markets. This analysis relates the changes witnessed in the market during the last few years with the increase on the demand for the market in question. The study shows how the traditional structure that included dedicated long term contracts and trade flows on a regional basis changed. This is mostly because of the emergence of the spot trade as well as of the increase of the demand, which led to the increase of vertical integration and the expansion of the key players to upstream and downstream activities. The role of the independent shipowners, as one of the four categories of shipowners that are active in the market, has been crucial in this process, as they are able to make agreements with both the gas sellers (upstream) and the buyers (downstream).

The comparative analysis of Wang and Noteboom brings into the fore the oligopolistic structure of the market, which, compared to the container and the dry bulk markets, is proved to be more concentrated in terms of vessel ownership. However, the fleet is less unequally distributed due to the fact that the average tanker size is centralised in a specific range of capacity. The analysis of the role of the independent shipowners leads the authors to identify this topic as valuable for further research.

In the next paper, Skovgaard examines social responsibility of shipping business, an issue that entered the agenda at both research and industry level the last few years. The study discusses the opportunities that European Union's policy on CSR has created for the maritime industry since the start of the global financial crisis in 2008. Associating the implementation of CSR practices with the potential of gaining competitive advantage the paper also includes a most useful examination of the extend that the maritime industry utilised the opportunities offered by implementing such CSR practices.

Skovgaard presents the major international conventions which appear to include topics that coincide with the general concept of CSR. He also discusses the latter concept as identified by three literature 'lines', namely the motivation driven, the performance driven, and the stakeholders driven lines; with previously published research on CSR practices in shipping being limited, this is a most welcomed contribution in maritime studies. The analysis ascertains that a strategic perspective, whose main idea is that an organisation may seek to improve competitiveness and at the same time remain committed to idea of a better society, inspires the European Commission approach of CSR practices. The scholar comes to the conclusion that while EU policy takes into account the different needs of the businesses according to their size, it remains indifferent on the variations among industries and the level of business they conduct, i.e., whether it is on business to business or on business to customers basis. Advocating that EU competition policy becomes progressively neoliberal, he argues that while the EU CSR strategy focuses on the business case of CSR it does not remain indifferent about the ethical and the regulatory dimensions.

The paper uses then the case of Danish shipping companies that were laggard in reporting their CSR activities, compared to companies of other sectors, which lately moved forward reporting on CSR issues even more intensively than leading Danish companies. Factual evidence suggests that the emphasis to the use of CSR to increase competitiveness has produced the expected results.

The contribution of Skovgard's analysis is that it builds on the realisation that in recent times there is an increasing interest within the shipping industry for the notion and implementation of CSR practices. More than that, it focuses for the first time on the EU policy on CSR and relates that policy with the aim to increase the competitiveness of the maritime industry. Addressing the precise requirements that a CSR approach would impose to an organisation remains a challenge demanding further analysis.

In the next paper, Zhang, van den Driest, Wiegmans and Tavasszy analyse and compare the impact of two practices aiming to address the environmental externalities produced by shipping. These two practices are CO₂ pricing, and the use of biodiesel respectively, with the scholars examining their application on the multimodal freight transport system in and through the Netherlands.

The study employs a GIS-based multimodal flow estimation model, which is applied in the scenario analysis to simulate, visualise, and evaluate the impacts of the tested policies. Scenarios range from the potential of 'doing nothing' to rigid environmentally led pricing of CO₂ emissions, with each of them compared with situations that might be produced by the use of different types of biodiesel alternatives that are available. Following a mapping of demand and supply in GIS and estimating the costs, the scenario analysis shows that the impact of CO₂ pricing is limited in terms of both reducing CO₂ emissions and realising modal shift. Rather than pricing CO₂ emissions it is worth using biodiesel B30 (a blend of 30% biofuel and 70% diesel) that would achieve similar effects on the total transport network cost increase and modal shift from road to intermodal transport. The analysis shows also that different classes of barge would benefit differently by the implementation of each specific case due to the presence of scale economies.

Zhang et al. take into account the changes in the transport demands for the other modes of transport, road, rail, and inland waterways. Special attention is given to the impact of various barge classes in inland waterway transport on the market share. This issue might be of local importance, however still acts as a caution of the importance of taking into account peculiarities present in specific markets. Zhang et al. provide a second note of caution: price is not independent of demand. Thus, the extensive use of a fuel alternative might result in a need to recalculate the alternatives. Scholarly research on the elasticity of fuel prices would answer whether this recalculation is worthy.

The issue concludes with a study by Ventikos and Sotiralis that examines the issue of oil outflows for all major oil tanker categories, focusing on the implementation and probabilistic formulation of the relevant international regulatory framework. The paper details a risk analysis of the tanker fleet in the context of MARPOL (regulation 23) that sets construction requirements to provide adequate protection against oil pollution in the event of standing or collision. The scholars present a probabilistic analysis of oil spills that are results of groundings and collisions and propose a parametric model, which integrates the MARPOL regulations and a detailed statistical analysis of the main particulars of tankers.

The proposed model allows users to choose accident scenarios and cargo tank configurations, calculate theoretical distributions of oil spills under these scenarios, and assess the potential of the different tank configurations. The final outcome is the

optimisation of tanker design and the minimisation of oil outflow. For this, the scholars performed an in depth analysis of the global fleet of tankers. The probabilities produced by the model are based on parametric series of more than 23,000 tanker designs. The cost analysis of oil spills is based on different spill cost models which are results of different regression analysis of historical data between the cost of oil spills and the size of the respective outflow. Before describing their model, its inputs, outputs and constraints, the scholars make reference to the sampling techniques employed in their analysis to get random data.

As previous research dealing with the optimisation of tankers for the reduction of their oil spill performance was based on a reference tanker design, the innovative element of Ventikos and Sotiralis' research is that their model allows the optimisation of selected features of tanker designs of different sizes and in that sense, allow user to adapt the model to the specific parameters and conditions faced. The research outcome takes into account parameters related to tank configuration, oil outflows and possible environmental consequences and costs, providing a useful progress towards to an efficient framework for the evaluation of the environmental performance of oil tankers in case of groundings and collisions.

While the above papers provide a useful addition to maritime studies – in most times combining conceptual advances with practical results and concrete recommendations – they open paths for further research on market structures, social responsible corporate policies, and practical, operational and regulatory issues. The above papers also emphasise how conferences of international nature, like the European Conference on Shipping Intermodalism and Ports (ECONSHIP) held under the auspices of the International Association of Maritime Economists (IAME), prove to be platforms stimulating discussions and generating knowledge.