

## Abstract

The container liner shipping industry has been facing a period of restructuring, particularly over the past decade. It was a period of significant merger and acquisition transactions. These successive waves of consolidation may have influenced the degree of concentration. Next, fundamental changes such as the deployment of ultra large container vessels and the abolishment of the block exemption might affect competition. Reviewing scientific literature as well as, various maritime reports and discussion groups, yielded no univocal answer regarding the market structure and revealed that assessing competition has remained insufficiently unexplored for the container liner shipping industry. The evolution of industrial organisation theory towards the new empirical industrial organisation modelling is an extra incentive to examine the degree of competition for the container liner shipping industry.

In light of these developments, the doctoral thesis assesses the competitive conditions, the concentration and the market structure of the container liner shipping industry. The doctoral thesis addresses two research questions: [RQ1] *Is there an oligopoly in the container liner shipping industry?* and [RQ2] *If the container liner shipping industry is concentrated, does the concentration affect the liner operators' performance?* The present thesis has employed both 'Structure-Conduct-Performance' tests and 'New Empirical Industrial Organisation' models to address the research questions. Next to these two static methodological frameworks for empirical Industrial Organisation, a dynamic view of competition, known as the 'Persistence of Profit' approach, has also been applied.

Chapters two and three cover the market structure of the container liner shipping industry from the perspective of Industrial Organisation economics. Chapter two calculates and discusses a number of alternative concentration measures and the magnitude of market share instability at aggregated level. Finally, the link with the degree of oligopoly is shown. Chapter three continues on this issue at disaggregated level and tests an empirical model for examining the determinants of market share instability.

Chapters four and five introduce two models viz. the Panzar-Rosse model and the Boone indicator in accordance with the New Empirical Industrial Organisation literature. Chapter four documents and estimates the Panzar and Rosse model. This non-structural estimation technique allows to discriminate between oligopolistic, monopolistically competitive and perfectly competitive markets. Both the structural and non-structural approach show that the container liner shipping industry could be described as a monopolistic competition up to 2007. Increased concentration does not immediately contribute to profitability. To understand the (low) performance, the Boone indicator measures the extent to which differences in efficiency are reflected in performance. This result indicates that only efficient liner operators with a operational advantage (lower operating costs due to the deployment of larger vessels) as well as having a large network of services over (inefficient) competitors can attain profits.

To complete the competition analysis, chapters six and seven cover the actual/potential entry and economies of scale, respectively. Chapter six examines a further important structural attribute of industries: barriers to entry. It starts with the study of the freedom of entry/exit and entry/exit conditions, both at industry and at trade level. Secondly, in contrast with the essentially static structure-conduct-performance and the new empirical industrial organisation frameworks, which dominate the analysis of competition in the empirical literature, chapter six is devoted to the persistence of profit methodology that captures the unobservable threat of entry. The 'persistence of profit' approach demonstrates that independent carriers are able to preserve their profits over time. However, abnormal profit erodes at a faster pace than in other industries. Chapter seven defines 'optimal ship size' and 'optimal operations' and outlines the link between both concepts. It does so by quantifying the economies of scale in deploying larger vessels by using a liner service cash flow model. Finally, Chapter eight ties the other chapters together. It examines to what extent the structural and non-structural indicators agree on the competition.