

Competition or cooperation? Ports' strategies and welfare analysis facing shipping alliances

Abstract

This paper investigates the strategic reaction of ports when they face the increasing bargaining power of shipping alliances. A dynamic game model is established to analyze the strategies of the shipping lines (competing à la Cournot or forming an alliance) and the ports (operating independently or forming horizontal cooperation or vertical cooperation). The shipping lines' economies of scale is considered. The results in the equilibrium indicate that (1) forming the alliance is the dominant strategy for the shipping lines; (2) under the shipping alliance, the ports' vertical cooperation reduces their charges and increases their capacities and the market outputs; (3) under the shipping alliance, when the substitutability (between the shipping lines) is strong, the ports choose horizontal cooperation; when the substitutability is weak, the ports choose vertical cooperation; and when the substitutability is intermediate, the ports choose independent operation. We also compare the social welfare and the local social welfare under the shipping alliance. The results indicate that mostly the ports' vertical cooperation is the best for both the local social welfare and the social welfare. Moreover, our analysis is extended to the cases where the shipping lines

engage in Bertrand competition, the ports can change their capacities, the ports also have the economies of scale on their operation, and the ports take asymmetric cooperation strategies, respectively. The results demonstrate the robustness of our conclusions.