

## European Hinterland and Foreland: Impact of Accessibility, Connectivity, Inter-Port Competition on Containerization

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**Abstract :** In this paper, we investigate the relationship between ports and their hinterland and foreland environments and the competitive relationship between the ports themselves. These two environments are changing, evolving and introducing new challenges for commercial and economic development at the regional, national and international levels. Because of the rise of the containerization phenomenon, shipping costs and port handling costs have considerably decreased due to economies of scale. The volume of maritime trade has increased substantially and the markets served by the ports have expanded. On these bases, overlapping hinterlands can give rise to the phenomenon of competition between ports. Our main contribution comparing to the existing literature on this issue, is to build a set of hinterland, foreland and competition indicators. Using these indicators? we investigate the effect of hinterland accessibility, foreland connectivity and inter-ports competition on containerized traffic of European ports. For this, we have a 10-year panel database from 2004 to 2014. Our hinterland indicators are given by two indicators of accessibility; they describe the market potential of a port and are calculated using information on population and wealth (GDP). We then calculate population and wealth for different neighborhoods within a distance from a port ranging from 100 to 1000km. For the foreland, we produce two indicators: port connectivity and number of partners for each port. Finally, we compute the two indicators of inter-port competition and a market concentration indicator (Hirshmann-Herfindhal) for different neighborhood-distances around the port. We then apply a fixed-effect model to test the relationship above. Again, with a fixed effects model, we do a sensitivity analysis for each of these indicators to support the results obtained. The econometric results of the general model given by the regression of the accessibility indicators, the LSCI for port  $i$ , and the inter-port competition indicator on the containerized traffic of European ports show a positive and significant effect for accessibility to wealth and not to the population. The results are positive and significant for the two indicators of connectivity and competition as well. One of the main results of this research is that the port development given here by the increase of its containerized traffic is strongly related to the development of its hinterland and foreland environment. In addition, it is the market potential, given by the wealth of the hinterland that has an impact on the containerized traffic of a port. However, accessibility to a large population pool is not important for understanding the dynamics of containerized port traffic. Furthermore, in order to continue to develop, a port must penetrate its hinterland at a deep level exceeding 100 km around the port and seek markets beyond this perimeter. The port authorities could focus their marketing efforts on the immediate hinterland, which can, as the results shows, not be captive and thus engage new approaches of port governance to make it more attractive.

**Keywords :** accessibility, connectivity, European containerization, European hinterland and foreland, inter-port competition

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