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Potential demand of RORO shipping in East Asia  
visualized by the censored regression model

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博士学位論文内容要旨  
Abstract

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論文題目 Title	Potential demand of RORO shipping in East Asia visualized by the censored regression model (検閲回帰モデルに基づく東アジアにおける車両航送海運の潜在需要の可視化)		

Along with globalization of transportation, the opening of new RORO shipping port networks has become more convenient for regions with ports that are mutually proximal. In Europe, short sea shipping by RORO or ferries is well networked among countries because of their proximity. For instance, within the Mediterranean region, short sea shipping accounts for a high percentage of traffic for Italy and France compared with the share of shipping over deep seas. Comparing with container shipping, RORO shipping has not high market share in East Asia though geographical characteristics of countries are analogous to European.

By consideration of micro-scale and macro-scale factors, this study analyzed the macro information related to freight demand with variables of regional socioeconomic activities. As analyzing of data, we found the RORO activities is related to region population and tourists. But when planning to invite new ports of call to regions for which no shipping service is available, one cannot simply analyze estimation directly between present demand shipped and vessel capacity supplied in other regions. One might rationally infer that such limitations are hiding somewhere among the visual data.

A censored regression model is appropriate to solve this problem because the limited dependent variable is assumed as presented. As measurement instruments, the censored regression is applied to virtual technology levers with the capacity to innovate firm characteristics that are analogous to regional freight tonnage and some RORO shipping socioeconomic activities. Although many present studies have examined RORO shipping, no report of the relevant literature describes the use of censored regression to analyze RORO shipping characteristics. The limit level of censored regression can be distinguished by the mean minus one standard deviation, following the general concept of the normal distribution theory, which differs from that of other papers describing censored regression. In this study, t-statistics and chi-square distribution are used for testing the reliable of the result. In European case, we set reasonable limitation on demand of freight tonnage for analyzing the relations among demand with regional socioeconomic activities by the censored regression. The result shows that the potential demand for freight tonnage for RORO shipping might exist and related to regional population and tourists.

Based on the result by censored regression in European case, the information of prefectural demand of automobile and some socioeconomic activities are collected in domestic Japan for censored regression models. According the geographical characteristics of East Asia, distance and ship size are regarded as principal consideration aspects in this case. We also found that the demand of automobile might related to population and tourists. Under the results of Japanese model, this study chooses appropriate Chinese ports and builds port combinations between Japan and China for introducing potential new RORO shipping port networks in East Asia.