

Price Indices for Ocean Charter Contracts

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Abstract

There is a long history of modeling of prices of commodity transportation by sea. These prices are referred to as (ocean) freight rates. Early contributions go back to the work of Tinbergen and Koopmans in the 1930s. The shipping industry is characterized by an abundance of individual contract data, which is collected and published by so-called charter brokers. The industry publishes this data both in raw form, as monthly and even weekly average prices for selected ship sizes and commodities on selected routes, and in the form of unit value indices.

In this paper, we explore the calculation of these indices using a data set of ocean charter contracts for 1997-2005. We present unit value indices, which we compare with well known industry indices. We then explore the impact of weighting the subindices for aggregation, present indices based on matched models from period to period and we calculate indices are corrected for quality differences. Finally, we estimate price indices in which the duration of the contracts is reflected.

We find that our unit value indices show substantial differences from current industry indices. Weighted aggregation is relevant especially for dry bulk spot rates, where some size classes dominate the others. The matched model results show that matching the indices by route can lead to widely different results compared to the unit value indices. We take this as an indication that care should be taken with indices based on a set of selected 'large' routes only. The hedonic analysis shows that there are no structural quality aspects (such as age of the ship) that influence the level of the price indices. Quality differences do exist, but they are temporary, which is in line with previous research. Finally, the inclusion of contract duration is especially relevant for time charter indices, although there is also some impact for tanker spot rates. We conclude that current industry indices provide only limited insight in market developments, and we question the validity of some of the scientific research that uses these indices in its analysis.

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