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## A Cross Sectional Analysis of Ship Maintenance Expenses

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### Abstract

This paper introduces an econometric model to explain the determinants of expenditure in ship maintenance and repair. The data refer to 112 vessels of different types that operated in 1999 and were collected from ten Greek ship owning and management companies. On the methodological plain the best functional form is obtained when estimating a semi log-linear model. As expected from theory, the empirical results show that maintenance expenditure is positively related to utilization, age, and size. In addition, the effect of age is found to be stronger on vessels younger than 20 years. This may be due to the fact that vessels less than 20 years old can be sold more easily in the second-hand market, whereas older vessels have a shorter lifetime and are also constrained by safety regulations. Therefore, ship owners are more reluctant to spend more once the vessel passes its 4th and especially its 5th special survey. To trace the effect of company policies we included in the model company dummy variables. We found that such effects are present particularly when stores expenses are estimated separately. In turn, this suggested that company policies have still some control on maintenance expenses. Another result is that the elasticities of maintenance expenses with respect to utilization, age, and size at least in 1999 were uniformly less than one, thus revealing the existence of significant economies of scale. And still another result is that the type of ship, the flag, the classification and even the yard where maintenance takes place are significant determinants of the respective outlays.

**Keywords:** Ship maintenance expenses, utilization

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