

TRA VISIONS 2016 Student and Experienced Researchers Competition

Analyzing labor cost drivers in the Belgian inland navigation sector

Osama Al Enezy

*Department of Transport and Regional Economics
Prinsstraat 13 - 2000 Antwerpen - Belgium*

Abstract

The cost of inland waterway transport is subject to various factors, such as the ship type, with regard to the type of cargo carried, the dimensions of the vessel or convoy, or the tonnage capacity of the ship or convoy operating on a waterway. Different cost components need to be taken into account by inland shipping businesses in their decision-making processes, on aspects such as the self-employment of the ship owner, or the salaries paid. Similar to other transport modes, the costs of inland navigation can be divided into fixed and variable components. While the costs of fuel change depending on the distance of the shipping activity, and are thus considered variable, capital and labor costs are considered to be largely fixed, changing with time rather than distance.

The amount of labor costs depends on minimum wage regulations, or standard tariffs, established in the industry, as well as on regulations governing the minimum number and composition of the crew. Other major factors affecting labor costs include the type of operation, concerning the number of sailing hours per day, as well as the equipment standard of the ship, depending on a range of different technical parameters. The different drivers of labor costs in inland waterway transport are discussed in this research paper, based on data applicable to shipping operations in the Rhine corridor and Belgium.

After a review of literature and applications on cost modeling in inland navigation, a new cost simulation model, currently in development for the sector, is introduced. Its basic functionality is presented, before the computations of its labor cost module are explained in detail.

The model makes use of pre-defined, up-to-date values for minimum salaries and compensations, and includes a number of differently-sized ship classes and convoy formations as input parameters. As a first application, it is used to analyze how changes to a number of key parameters affect the labor cost of convoy operations on inland waterways. Each convoy formation is defined by different manning requirements, which specify the number and composition of the crew, based on different professions required aboard. The analysis particularly focuses on cost reductions through the self-employment of ship owners as members of the crew. Systems and strategic analyses are used to determine the degree to which costs can be saved through different approaches to self-employment. The analysis reveals that labor costs can be noticeably reduced through the self-employment of ship owners as boatmasters in the case of small convoy formations. With increasing dimensions of the convoy, however, the savings through self-employment compared to operations with a completely hired crew, decrease continuously. Moreover, the work required for entrepreneurial activity is likely to prevent owners of large fleets from sailing as crew members.

Keywords: Inland waterway transport; cost simulation model; labor cost
