Improving expenditure profiles for port economic impact analysis through tariff data

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Author: Wen-huei CHANG
Co-Authors: Ed Mahoney, Yue Cui

Navigation is one of the US Corps of Engineersâ€™ (USACE) major missions. There are 926 harbors located in US maintained by the Corps which virtually affect all 50 states and other nations in terms of their economic significance. The nationâ€™s coastal transportation system encompasses a network of navigable channels, ports, harbors, and other infrastructure maintained by the Corps, as well as publicly and privately owned vessels, terminals, inter-modal connections, shipyards, and repair facilities. Coastal navigation is not only a key element of state and local governmentâ€™s economic development and job-creation efforts, but also essential in maintaining global competitiveness and national security. Improvements to the navigation system funded by the federal government and implemented by the Corps are subject to a detailed benefit-cost analysis which could include quantification of benefits that accrue at both the national level and regional level. The USACEâ€™s Institute for Water Resources (IWR) has developed an economic impact analysis tool, called Regional Economic System (RECONS), to estimate job creation and retention and other economic measures such as value added, income, and sales for various USACE related activities, including Cropsâ€™ navigation program.

The economic impact studies on US ports can be categorized as cargo movement, local ports users, and capital investments. Practitioners and scholars mostly focused on measuring impacts of local port users and capital investment. Government agencies such as the US Maritime Administration and US Army Corps of Engineers have developed simulation models (e.g., Port Kits and RECONs) to estimate the impacts of cargo movement. As cargo movement is the element most closely tied to a portâ€™s existence, it is often the core component of measuring a port economic impact. For simulation purposes, expenditure associated with cargo movement through the port system has to be standardized as model input either by per commodity type, per cargo type, or per unit. However, getting updated cargo movement data for US ports for regional economic impact analysis remains a challenge in recent years. For example, the Port Kitsâ€™ spending profiles have not been updated since 2000. The typical ways of obtaining expenditure data are through professional estimates or ad hoc survey methods such as in the Port Kits which telephone interviews and mail-in surveys with major shippers were administered. However, the small sample size, complexity of port operation and charging units, the missing or ambiguous data make the reliability, accuracy and representativeness of the expenditure dataset questionable. In addition, time and cost budget are also barriers for updating the expenditure data in a sustainable and consistent fashion.
On the other hand, most major ports in US publish tariff data on an annual basis, which provides the rate that ports charge for various services related to cargo flows. Port tariffs are based on a mix of pricing strategies designed to reflect the demand for port services, the competition between ports, and the cost of providing the services. As such, port tariffs could be a solid and consistent data source to understand the expenditures related the vessels and goods moving through the ports. To improve the quality and accuracy of measuring economic impacts, this study proposes a method to build and update expenditure profile of port related services using the tariff data published by US ports. This study will aim to 1) define the categories of port industry revenues that directly supporting the movement of goods through the ports, and identify the expenditures on services that are essential to moving cargo through the port system. 2) develop convert factors to translate port charges to per commodity-cargo type-unit format and build expenditure profile based on the standard port charges, and 3) develop a model to simulate the economic impacts based on the changes of cargo flows through the ports.