

Model Development to forecast port cargo volumes related to the Basic Policy for Ports

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1. Introduction

Regarding future plans for ports in Japan, under the Ports and Harbors Act, port managers enact port plans, but the Minister of Land, Infrastructure, Transport and Tourism has enacted the “Basic Policy for the Development, Use and Maintenance of Ports and Harbors and Development of Sea Routes Designated to be Developed and Maintained” (below called, “Basic Policy”) as a guideline which must be followed to enact a port plan. It presents prospects for port cargo volumes and container cargo volumes throughout Japan for the next 10 to 15 years, and prospects for port cargo volumes formerly revised in the autumn of 2004 were revised again in September 2011. A prediction model developed by the NILIM was used for this calculation. An outline of this model follows.

2. Outline of the Export/Import Port Cargo Volume Estimation Model

The Export/Import Port Cargo Volume Estimation Model is a model which is divided into the Value of Trade Prediction Block, which estimates the value of trade with major countries and regions of the world, beginning with Japan, and the Port Cargo Volume Calculation Block, which calculates port cargo volumes and container cargo volumes based on the value of trade which has been estimated, with, as its purpose, estimating the port cargo volume and the container cargo volume shipped from or to Japan (see Fig. 1).

The Value of Trade Prediction Block consists of the [1] Manufactured product price prediction sub-model that predicts future manufactured product prices for each country or region considering future change of industrial structure, [2] Trade coefficient prediction sub-model that estimates how much of the manufactured goods which each industry in each country or region needs will be procured from which country or region, and [3] Export/import value prediction sub-model that predicts future value of trade with each country or region, and value of trade by marine transport based on the future final demand by each country or industry. And the Import/Export Port Cargo Volume Calculation Block calculates the port cargo volume and container cargo volume based

on value of marine trade, and calculates the future port cargo volume and container cargo volume which will be shipped to or from Japan in the future.

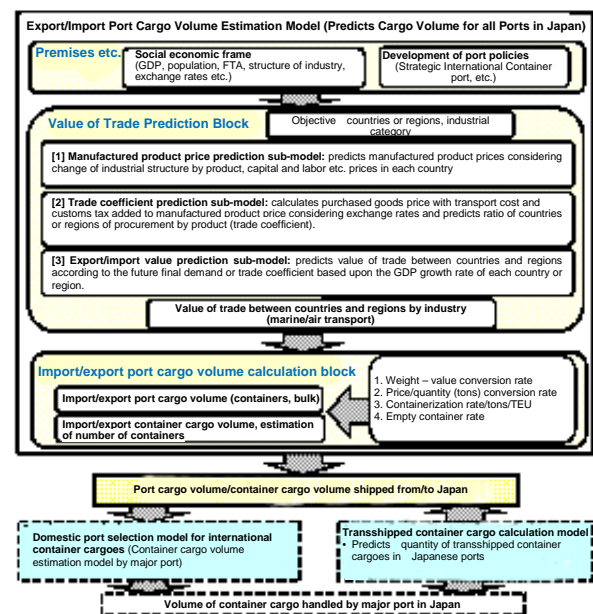


Figure 1. Configuration of the Export/Import Port Cargo Volume Estimation Model

3. Application of the Development Model to the Basic Policy

To estimate the predicted port cargo volumes in the Basic Policy which was revised in September 2011 based on the above Export/Import Port Cargo Volume Estimation Model, export-import port cargo volume and foreign trade container cargo volume for 2020 and 2025 were estimated and applied in accordance with various scenario settings including future GDP, exchange rates etc. set by the Ports and Harbors Bureau. And to study prospects for port cargo volumes of the Basic Policy, transshipped containers from overseas which were transshipped in a port in Japan entered with dotted lines in Figure 1 were added at the same time as container cargo volume was predicted by major port in Japan to calculate the future container cargo volume by major port.

[Reference]

- NILIM Report No. 49, Model Development on Estimating Import and Export Port Cargo Volume considering the International Trading and Industrial Structure, December 2011
- Ministry of Land, Infrastructure, Transport and Tourism; Basic Policy for the Development, Use and Maintenance of Ports and Harbors and Development of Sea Routes Designated to be Developed and Maintained, September 2011.