

Construction of an APEC edition of a Trade and Logistics Prediction System

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(keywords) Trade prediction, international logistics model, APEC

1. Outline of research

The authors have entered future social and economic variables and international economic and transport policies to construct the Trade and Logistics Prediction System, which predicts the future value of international trade and quantity of cargo logistics in countries around the world. Last year, we constructed the APEC (Asia-Pacific Economic Cooperation) edition model, which is an expanded and modified version of this system, and expect that we will receive approval very soon from the Transportation Working Group Maritime Security Experts Group (TPTWG-MEG) of APEC. This report present an outline of this system.

2. The model

Figure 1 is an overall image of the system. This system is broadly divided into two parts, the Trade Prediction Model and the Cargo Logistics Model (International Logistics Model). To apply the trade model, social and economic variables such as population, capital, etc. plus future values of tariff rates and other international economy and trade policies are input to separate scenarios based on the authors' own surveys, and the future values of trade by commodity in participating countries and regions are estimated based on the GTAP (Global Trade Analysis Project) model. Using the International Logistics Model, a trade statistics database etc. is used to convert future values of trade in various countries obtained above to cargo transport demand by zones more detailed than countries, then the multi-mode balanced allocation model which permits simultaneous consideration of marine and land transport networks, which the authors independently constructed, is applied to obtain the quantity of cargo transport by transportation systems under future international transport infrastructure policies.

3. Examples of results of estimation

As examples of results of estimation, results of trade value predictions by scenario in 21 nations and regions participating in APEC (specific names omitted due to space limitations) are shown in Figure 2, and results of the allotment by international trade models based on trade prediction amounts of the 2015 middle case from among these (including numbers of

containers and transshipments handled by major ports, but excluding containers carried by air) are shown in Figure 3.

The final report presents not only results of such future predictions, but the results of changes of future numbers of containers handled depending on whether or not future investment is made in ports and of a simulation of the impacts of detouring when the Strait of Malacca is closed.

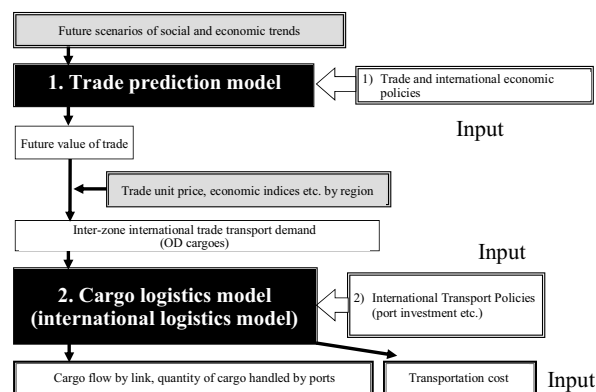


Figure 1. Overall Structure of the Trade and Logistics Prediction System

[Reference documents]

NILIM, MLIT, Japan Impacts of Trade and Transport Policy on International Cargo Shipping and Economic Activities (Final Report), Asia-Pacific Economic Cooperation, Transportation Working Group

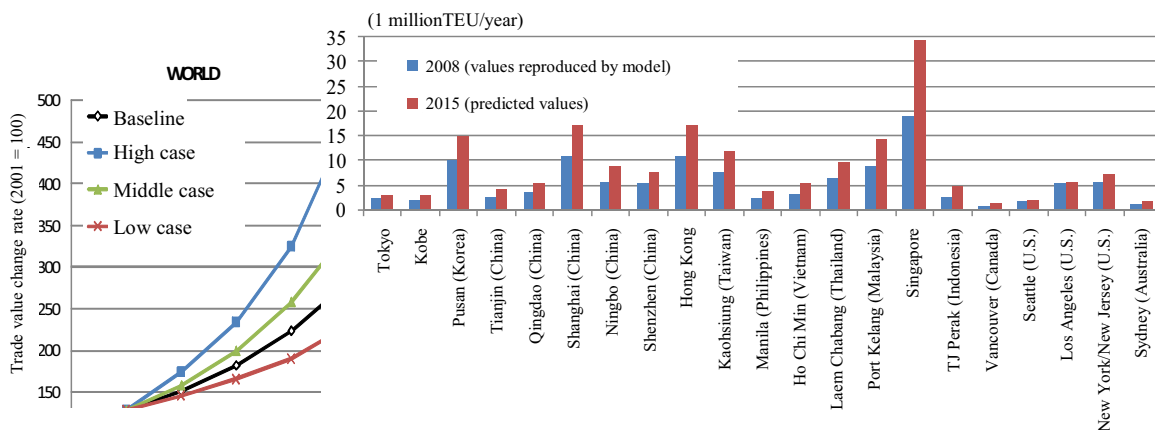


Figure 2. Results of Predictions of Future Trade by Scenario

Figure 3. Predicted Quantities of Cargo Handled in Major Ports in the 2015 Middle Case