

Chapter 2

Background and Objectives

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March 2010

This chapter should be cited as

Kumagai, S., T. Gokan, I. Isono, K. Hayakawa and S. Keola (2010), 'Background and Objectives', Kumagai, S., T. Gokan, I. Isono, K. Hayakawa and S. Keola (eds.), *Geographical Simulation Analysis for Logistic Enhancement in East Asia*. ERIA Research Project Report 2009-7-2, Jakarta: ERIA. pp.3-5.

the geographical coverage of the model from continental Southeast Asia (CSEA) to all ten members of the Association of Southeast East Asian Nations (ASEAN) plus some parts of China and India and (2) the inclusion of sea and air routes and modal choice between land, sea, and air traffic.

This paper is structured as follows: section 2 explains the background and objectives of the model; section 3 explains the features of the system; section 4 explains the model and parameters used in the simulations and the system of modal choice; section 5 depicts the current status of economic geography in the covered region; section 6 explains scenarios and results of the simulations; section 7 states the conclusions and the policy implications of this study.

2. Background and Objectives

2.1 Brief survey of literature

Since the beginning of the 1990s, spatial economics has been studied extensively as a cutting-edge field of economics. It explicitly incorporates "space," which had been not been handled well by mainstream economics, into its theory, and treats various geographic aspects of economic phenomena in the framework of general equilibrium. The dramatic increase in research on spatial economics in the last decade coincided with the globalization and regional integration of the world economy, as represented by the formation of the European Union (the EU) and the North American Free Trade Agreement (NAFTA).

In East Asia, the evolution of *de facto* regional integration makes it apparent that traditional theories of international trade are not adequate to explain the actual trade and investment flows in this region. Spatial economics is indispensable for analyzing regional integration in East Asia because the existence of China and India, both of which have abundant, low-cost labor and a huge domestic market, requires a theory that incorporates the notion of increasing returns.

Although the theory of spatial economics made huge progress in the last decade, empirical application of the theory has not flourished so far. In international economics, the “home market effect,” one of the important concepts of spatial economics, has been a focal point of empirical research and a great deal of effort has been made to prove or disprove the existence (or nonexistence) of this effect (Davis and Weinstein 1999; Hanson and Xiang 2004). Unfortunately, most of the studies that have been done lack actual “geographic factors” because they set “nation” as a unit of analysis.

Some realistic simulation models appeared in the 2000s, although these numerical simulations are rather minor (Fujita and Mori 2005, 396-397). In case of the EU, there are several works to simulate the effects of the infrastructure development. Teixeira (2006) applied a NEG-based simulation model to evaluate the transport policy in Portugal and concluded that the development of transport networks so far has not contributed to the spatial equity in the region. Bosker et al. (2007) divided the EU into 194 Nomenclature of Territorial Units for Statistics (NUTS) II-level regions to see the effect of further integration of the EU based on Puga’s (1999) model. The authors found that further integration leads to higher levels of agglomeration.

2.2 Objectives of IDE/ERIA-GSM

Analysis using IDE/ERIA-GSM has two major objectives. The first objective is to know the dynamics of the location of population and industries in East Asia for the long term. Although there are many analyses to forecast the macroeconomic indices in East Asia at the national level, there has been no analysis using the models to forecast economic development in East Asia at the subnational level except for a scant amount of literature. In an era of regional economic integration, economic analysis at the national level is not enough to provide useful information for regional economic cooperation.

The second objective is to analyze the impacts of specific infrastructure projects on the regional economy at the subnational level. It is difficult to prioritize various infrastructure development projects without the proper, objective evaluation tools. IDE/ERIA-GSM was developed to provide an objective evaluation tool for policy recommendation in infrastructure development.

3. Features of the System

3.1. Basic feature of the system

IDE/ERIA-GSM covers the following 12 countries and regions in the analyses (Figure 1).