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INTRODUCTION

Satoru KUMAGAI

New economic geography (NEG), or spatial economics, is one of the frontiers of social science. Paul Krugman, winner of the Nobel Prize in Economic Sciences in 2008, is one of the largest contributors to the creation of this field, which is at the forefront of economics. His famous paper (1991) presents an important model, now known as the core-periphery model, which provides a common platform for discussion of ‘geography’ in the language of economics. Actually, location, space and geography have long been themes of concern in diverse academic domains, particularly in urban economics, location theory and regional science (Fujita and Thisse 2009).

Following the great strides in theoretical aspects in the 1990s as represented by the milestone book of Fujita, Venables and Krugman (1999), various empirical studies and simulations have appeared. The related fields are wide-ranging, from international economics and urban economics to an engineering-based approach. We recognized a need to survey these fields extensively and identify how NEG, or spatial economics, is related to our own research topics when they involve ‘space’ as a critical element.

Fortunately, there are some useful survey studies in this field. Fujita and Mori

(2005) is the most comprehensive study among these. The authors present an overview of the important topics in the development of NEG thus far, such as urban and regional systems, agglomeration and trade, the fragmentation of firms and production, agglomeration and growth, and the home market effects. Then, the authors identify the four new frontiers of NEG, namely, 1) unification of urban economics and NEG, 2) development of complex numerical simulation models, 3) incorporation of the endogenous development of the transport sector in the model and 4) clarification of spatial linkage through the creation and transfer of knowledge.

For the unification of NEG and urban economics, Tabuchi and Thisse (2006) propose an economic geography model that incorporates commuting costs, which is a fundamental factor in an urban economic model. They derived richer sets of equilibrium than the standard core-periphery model by assuming one of the two goods in the model is costlessly traded. They also found that introduction of non-tradable consumption goods generates urban hierarchy.

For the development of complex numerical simulation models, Bosker et al. (2007) constructed an NEG-based model that incorporates a realistic geography of the EU. Kumagai et al. (2008) also constructed an NEG-based model that features a realistic geography of East Asia.

To incorporate the endogenous transport sector, Behrens et al. (2009) introduce a model that incorporates the transport sector in which each firm maximizes its profit. The authors found that the decline in transport costs induced by the entry of transport firms leads to consumer welfare losses and a widening of the gap in living

standards in different regions in the long run.

For spatial linkage through the creation and transfer of knowledge, Berliant and Fujita (2009) propose a theoretical model of knowledge production for the two-person case. They focus their attention on the differences and commonalities in the knowledge that each person possesses. The model shows that *laissez-faire* interaction tends to produce too much common knowledge, i.e., to be less innovative than the most productive state.

Other than these studies, there is new research being conducted in various related fields. Behrens et al. (2007) analyses the relationship between economic integration and welfare by developing a theoretical model, concluding that 1) the benefits of integration often appear following the appearance of the costs of integration and 2) the development of infrastructure in a country may reduce the welfare of other countries, so international coordination of infrastructure development is required. Markusen and Venables (2007) incorporate the ‘fragmentation’ of production in the traditional trade model and assert that ‘fragmentation’ pushes up the welfare of the world as a whole, while countries which have integrated production might find their welfare reduced because the price of goods will be lowered.

On the empirical side, Brakman et al. (2006) show that the spatial wage structure in the EU actually follows the prediction of NEG, and Rice et al. (2006) analyze the relationship between productivity and income by sub-national region in the UK, concluding that the proximity to the ‘center’ of economic activity boosts the productivity of a region, although that effect disappears rapidly as the travel time from

the center increases beyond ‘80 minutes.’

In this volume, we attempt to present research from the frontier of NEG. However, it is certainly not our intention to cover all issues on the frontier of NEG comprehensively; the five authors here have pursued five different challenges in their respective fields.

Chapter 1 endeavors to show that intermediate goods trade is positively related not only to the importing country’s demand but also its neighbors’ demand for finished goods. Studies to explore the determinants of trade from the viewpoint of new economic geography, especially those analyzing trade using the notion of ‘market access,’ are a new trend in empirical trade studies. The regression results using gravity equations confirm that the market access of finished goods is an important determinant of intermediate goods trade.

Chapter 2 explores the interaction between upstream and downstream firms in a two-region general equilibrium model. How to incorporate the layered transactions among firms in the theoretical model is one of the important issues. For instance, many countries actually set lower tariff rates for intermediate goods and higher tariff rates for final goods. The results derived from the model in this chapter imply that such tariff rates settings tend to preserve the symmetric spread of upstream and downstream firms in both regions, and continued tariff reduction may cause core-periphery structures to appear. In the case where the supply of skilled workers is abundant and circular causality between upstream and downstream firms operates, the model predicts that (1) two interior steady states, at most, exist, (2) when the asymmetric steady states exist,

they are unstable and (3) the location of firms displays hysteresis when the transport costs of intermediate manufactured goods are sufficiently high.

Chapter 3 proposes a new mechanism that links innovation and networks in developing economies to identify explicit production and information linkages. The new economic geography in the era of the ‘knowledge society’ is a recent field that has not yet been extensively explored. The author investigates the testable hypotheses of these linkages using survey data gathered from manufacturing firms in four East Asian countries, i.e., Indonesia, Thailand, the Philippines, and Vietnam. The author found that firms which dispatched engineers to customers achieved more innovations than firms which did not. In addition to this, mutual knowledge exchanges stimulate product and process innovations. These findings support the hypothesis that face-to-face communication and strong complementarities among buyer-seller networks have different roles in product and process innovation.

Chapter 4 seeks to describe the challenges in developing realistic numerical simulation models based on new economic geography; this is an important field of endeavor, but existing literature is sparse. Specifically, adopting the IDE Geographical Simulation Model (IDE-GSM) as an example, the author discusses some problems in developing a realistic simulation model for East Asia. One key concept is to use a ‘topology’ representation of geography, rather than a ‘mesh’ or ‘grid’ representation or simple ‘straight lines’ connecting each city which are used in many other models. In addition to this, the author demonstrates that the modal choice model adopted in the IDE-GSM, which considers both money and time costs, seems to work well, furnishing

the model with another realistic feature.

Chapter 5 aims to identify the roles of product differentiation and geographical differentiation as sources of profit for firms in China. The author employs a simple idea from the recently developed method of empirical industrial organization, in which ‘location’ is one of the long-standing issues of importance. Theoretically, location choice and product choice have been considered as analogues in differentiation. However in the real world, the choice of these strategies will result in a substantial difference in firm behavior and the development process of the industry. The analysis, which utilized original survey data on location of market, product type difference and price, demonstrates that product differentiation mitigates pressure on price competition more than geographical differentiation does, although 70 percent of the firms retains geographical monopolistic position as well.

It is our hope that the chapters in this volume will expand the frontier of new economic geography and related fields a bit further.

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