

Jian Wang

# Economic Analysis of Industrial Agglomeration



# Preface

This book investigates the industrial agglomeration and dispersion within a country under trade liberalization and interregional integration by considering both economic forces and geographical elements. First, it provides a detailed explanation of Krugman's new economic geography (NEG) model and reviews the subsequent refinements of the original model from mainly geographical viewpoints. It points out that many existing models are isomorphic and their two-region assumptions seem unrealistic. Second, this book extends Krugman's original model to a two-country and three-region case where the domestic regions are fully asymmetrical in terms of their sizes and accessibilities to global markets. The simulation results show that when international trade liberalization continues but domestic regions remain poorly integrated, the gate region experiences a change from partial to full agglomeration. When the home country is closed to international trade, the decrease in domestic transport costs makes the hinterland more attractive for manufacturing. However, when it is open to global markets, more manufacturing is undertaken in the gate region during the regional integration. Third, to better explain the reality of developing countries, this book presents an analytical model which assumes that unskilled workers are employed in both traditional and manufacturing sectors. The analytical results show that when the international trade cost is very high, the space economy of home country has full agglomeration in its hinterland and then experiences a process of dispersion until an even industrial distribution exists between the gate and hinterland regions. When the home country is open enough to world markets, firms will first concentrate in the hinterland and then gradually move to the gate region until full agglomeration occurs during regional integration. With further regional economic integration, half of the firms will relocate to the hinterland again, with the other half remaining in the gate region.

Furthermore, the regional economy is assumed to have one manufacturing sector and each manufacturing firm has a unit fixed requirement of capital and a marginal input of labor. Even with constant elasticity substitution (CES) utility function, it can be demonstrated that spatial disparity in terms of wage presents an inverted U-shape respect to regional integration. Accordingly, this book empirically

investigates the home market effect (HME) in terms of wages in the case of China by using panel data for the period 1980–2012. It is found that the wages in coastal regions are higher than those in the interior, due to the size differences between regions. Additionally, regional inequality in wages between the coastal and interior regions evolves in an inverted U-shaped curve during periods of regional integration. The evolution of the space economy in China during the past three decades supports the inverted U-shaped pattern predicted by the theoretical models of spatial economics.

By incorporating the geographical elements into the original NEG model, this book explains the increasing industrial agglomeration in countries in the process of international trade liberalization and regional integration. Additionally, the analytical model provides a reasonable explanation for industrial dispersion. Furthermore, it is also successful in explaining that where the agglomeration arises, in addition to providing the rationales for the occurrence of industrial agglomeration. Based on these results, this book suggests that NEG models should incorporate the geographical elements to better explain the reality of developing countries. Moreover, the conclusion about industrial redispersion implies that further improvements of infrastructure between domestic regions represent a feasible way to alleviate the increasing trend of excessive industrial agglomeration.

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This book contains the results of research undertaken at Ritsumeikan University and Shanghai University. The main work is established on the basis of my four published papers over the period from October 2010 to December 2015 (Wang and Zheng, 2012; Wang and Zheng, 2013a; Wang and Zheng, 2013b; Wang and Xu, 2015). I have incurred many intellectual debts during creation of this book. Foremost, I would like to express my sincere gratitude to my supervisor Prof. Xiao-Ping Zheng for the continuous support of my Ph.D. study and research at Ritsumeikan University. He gave me so much inspiration and encouragement during the book writing and the whole doctoral study. I am grateful to my supervisor for his patience and teaching me the importance of every detail. I am also indebted to my sub-supervisors, Profs. Masayuki Okawa and Ryoji Hiraguchi of Ritsumeikan University for their valuable comments on my doctoral dissertation. Thanks also go to Prof. Dao-Zhi Zeng from Tohoku University who offered me tremendous help on NEG models.

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